



Public Works Department, Park Division  
 965 Fir Street  
 Chico, CA 95928  
 (530) 896-7800

Agenda Prepared: 9/24/2020  
 Agenda Posted: 9/25/2020  
 Prior to: 6:00 p.m.

**CITY OF CHICO  
 BIDWELL PARK AND PLAYGROUND COMMISSION (BPPC)**

Regular Meeting Agenda  
 September 28, 2020, 6:00 pm

**Remote Meeting via City's WebEx Platform**

Materials related to an item on this Agenda are available for public inspection in the Park Division Office at 965 Fir Street, Chico during normal business hours or online at <http://www.chico.ca.us>

**PUBLIC PARTICIPATION:**

This meeting is being conducted in accordance with the Governor's Executive Order N-29-20. Members of the public may virtually attend the meeting by using the City's WebEx platform, by calling into the meeting, or by sending an email to the following email address. ***This meeting will not be televised on Comcast Channel 11.***

*Emailed public comments will be accepted with the subject line **PUBLIC COMMENT ITEM \_\_\_\_\_**, sent to **parkpubliccomment@chicoca.gov** during the meeting prior to the close of public comment on an item. The public is encouraged not to send more than one email per item and not to comment on numerous items in one email. For any emails received during the meeting, the names of the people submitting the email will be read, but not the email itself. However, emails will become part of the public record and available to the public for review after the meeting.*

WebEx public participants may use the following information to remotely view and participate in the Bidwell Park & Playground Commission meeting online:

Event Name: **BIDWELL PARK & PLAYGROUND COMMISSION MEETING 09-28-2020**  
 Date/Time: Monday, September 28, 2020 at 6:00 pm

WebEx Event URL: <https://chico.webex.com/chico/onstage/g.php?MTID=ed8bcb401b0ceab37e19d52aa98ce20ba>  
 Event #: 146 283 4740  
 Public Password: BPPC092820

Call-in Number: 1-844-517-1442      Call-in Password: 146 283 4740

**1. REGULAR COMMISSION MEETING**

1.1. Call to Order

1.2. Roll Call

1.3. Natural Resource Committee Vacancy – Commission members are requested to notify the Chair if interested in filling the vacant seat on the BPPC's Natural Resource Committee.

**2. CONSENT AGENDA**

All matters listed under the Consent Agenda are to be considered routine and enacted by one motion.

**2.1. APPROVAL OF MEETING MINUTES**

**Action:** Approve minutes of BPPC meeting held on 8/31/20.

**3. ITEMS REMOVED FROM CONSENT – IF ANY**

**4. PUBLIC HEARINGS NONE**

**5. REGULAR AGENDA**

## 5.1. PRESENTATION ON UPPER BIDWELL PARK TRAILS INVENTORY DRAFT REPORT

The City's consultant, Trails Labs Co, will present the baseline conditions draft report from their surveys and inventory of the trails in Upper Bidwell Park, and provide an update on the development of a new trails plan. (**Report – Linda Herman, Park & Natural Resource Manager**):

**Recommendation:** The BPPC is requested to provide comments on the draft Report

## 5.2. CONSIDERATION OF THE REPORT FROM THE 9/16/20 BPPC NATURAL RESOURCE COMMITTEE MEETING.

The Natural Resource Committee will provide a report on the following agenda items that were discussed at its 9/16/20 meeting (**Report – Lise Smith-Peters, Committee Interim Chair**):

### 5.2.1. CONSIDERATION OF NOTICE OF PREPARATION OF AN EIR FOR THE DRAFT VEGETATIVE FUELS MANAGEMENT PLAN.

An Environmental Impact Report (EIR) is being prepared for the draft Vegetative Fuels Management Plan ("VFMP") prepared for City-owned parks, greenways and open spaces. Pursuant to CEQA Guidelines §15082(a), the Committee will review the Notice of Preparation requesting comments on the scope and content of the EIR and hear public comments.

**Recommendation:** None at this time, EIR public scoping period ends on 10/09/20.

### 5.2.2. REVIEW OF THE PEREGRINE POINT DISC GOLF AGREEMENT WITH OUTSIDE RECREATION ADVOCATES, INC (ORAI).

At its 2/24/20 meeting, the Bidwell Park & Playground Commission forwarded the five-year review of the operating agreement with ORAI for the Peregrine Point Disc Golf course to the Committee. The Committee will review the status of ORAI's compliance with the agreement terms.

**Recommendation:** The Committee recommended (2-0-1) BPPC approval to direct Staff to:

1. Identify the costs to complete the outstanding tasks, including future biological monitoring;
2. Work with ORAI to propose amendments to the Agreement that reflect the group's current capability to maintain the course.

## 5.3. REVIEW OF THE CHICO MUNICIPAL (CMC) CODE NOISE RESTRICTIONS.

At its 8/31/20 meeting, the BPPC approved Commissioner Glatz's request to agendize review of the current noise restrictions in City parks and greenways and discuss a possible ban on amplified sound, unless allowed by a park permit. (**Report – Jeff Glatz, Commissioner**)

**Recommendation:** The BPPC is requested to provide direction on whether to ban amplified sound or provide other recommendations on amending the CMC noise restrictions. .

## 6. BUSINESS FROM THE FLOOR

Members of the public may address the Commission via WebEx or by email at [parkpubliccomment@chicoca.gov](mailto:parkpubliccomment@chicoca.gov) at this time on any matter not already listed on the agenda, with comments being limited to three minutes or as determined by the Chair. The Committee cannot take any action at this meeting on requests made under this section of the agenda.

## 7. REPORTS AND COMMUNICATIONS

These items are provided for the Commission's information. Although the Commission may discuss the items, no action can be taken at this meeting. Should the Commission determine that action is required, the item or items may be included for action on a subsequent posted agenda.

7.1 Parks Division Report – Linda Herman, Park and Natural Resources Manager

7.2 Street Tree Division Report – Richie Bamlet, Urban Forest Manager

**8. COMMISSIONER REQUESTS**

Pursuant to AP&P 10-1, a majority vote of the commission will be needed in order to agendaize these items for discussion at a future meeting. If agendaized, public comment will be taken at that meeting. Speaker cards will not be accepted for these items.

8.1. By email dated 9/16/20, Commissioner Moore requests to agendaize discussion regarding requesting funding to hire maintenance workers, a resource manager, and a development director for the Parks Division.

**9. ADJOURNMENT**

Adjourn to the next regular meeting on **10/26/20** at **6:00 p.m.** at a location or format to be determined.



Please contact the Park Division Office at (530) 896-7800 if you require an agenda in an alternative format or if you need to request a disability-related modification or accommodation. This request should be received at least 3 working days prior to the meeting.

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**CITY OF CHICO**  
**BIDWELL PARK AND PLAYGROUND COMMISSION (BPPC)**  
Minutes of  
August 31, 2020 Meeting  
**Remote Meeting via City's WebEx Platform**

1. **REGULAR COMMISSION MEETING CALL TO ORDER**

1.1 **Call to Order**

Called to order by Chair McReynolds at 6:03 p.m.

1.2 **Roll Call**

**Commissioners Present:**

Anna Moore  
Garrett Liles  
Lise Smith-Peters  
Jeff Glatz  
Aaron Haar  
Elaina McReynolds

**Commissioners Absent:**

None

**Staff Present:** Erik Gustafson (Public Works Director O&M)  
Linda Herman (Park and Natural Resource Manager)  
Richie Bamlet (Urban Forest Manager)  
Shane Romain (Park Services Coordinator)

**PUBLIC PARTICIPATION:** This meeting was conducted in accordance with the Governor's Executive Order N-29\_20. The public was able to view the meeting via the City's WebEx Platform.

Public comments were also accepted by email sent to parkpubliccomment@chicoca.gov before and during the meeting, prior to the close of public comment on an item.

2. **CONSENT AGENDA**

All matters listed under the Consent Agenda are to be considered routine and enacted by one motion.

2.1 **APPROVAL OF MEETING MINUTES**

**Action:** Approve minutes of BPPC meeting held on 7/20/20.

A motion was made by Vice-Chair Haar and seconded by Commissioner Liles to approve the consent agenda.

The motion carried by the following vote:

AYES: Commissioner Moore, Commissioner Liles, Commissioner Smith-Peters,  
Commissioner Glatz, Vice-Chair Haar, Chair McReynolds

NOES: None

3. **ITEMS REMOVED FROM CONSENT** – None

4. **PUBLIC HEARINGS** – None

5. **REGULAR AGENDA**

5.1 **CONSIDERATION OF COMMENTS RECEIVED ON DRAFT VEGETATIVE FUELS MANAGEMENT PLAN AND FINAL PROPOSED IMPLEMENTATION PROJECTS**

The Bidwell Park and Playground Commission (BPPC) considered public comments received on the first draft of the Vegetative Fuels Management Plan (VFMP) for Bidwell Park, City greenways and open spaces. The BPPC considered further comments from the BPPC or the public, and final approval of potential implementation projects identified in the Draft VFMP. **(Report – Linda Herman, Park & Natural Resources Manager)**

Commissioner Smith-Peters requested that the Verbena Fields project be removed from the list of potential projects and that vegetation removal in Lower and Middle Bidwell Park and Comanche Creek be added to the list.

Chair McReynolds responded and directed Staff to consult with the Mechoopda Indian Tribe regarding the Verbena Fields project before considering removing it from the plan.

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Chair McReynolds opened the hearing to public comments. Email comments were received from John Mertz and Timmarie Hamill.

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Chair McReynolds made a motion, seconded by Commissioner Smith-Peters to send the VFMP plan to the Natural Resources Committee with the intent of having a committee meeting using WebEx within a month.

After discussion of concerns regarding completing the environmental review and the plan by the March 15, 2021 grant deadline, Chair McReynolds rescinded her motion.

Commissioner Liles made a motion, seconded by Commissioner Smith-Peters to move the draft VFMP forward to the next step, which is to issue a public Notice of Preparation of an Environmental Impact Report for the plan.

The motion carried by the following vote:

AYES: Commissioner Moore, Commissioner Liles, Commissioner Smith-Peters  
Commissioner Glatz, Vice-Chair Haar, Chair McReynolds

NOES: None

5.2 **UPDATE ON WATER QUALITY TESTING FOR SYCAMORE POOL IN BIDWELL PARK**

Staff provided an update on a proposed revised policy regarding water quality testing for

Sycamore Pool in Lower Bidwell Park. (**Report – Linda Herman, Park & Natural Resources Manager**)

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Chair McReynolds opened the hearing to the public. Karen Lazlo and Timmarie Hamill addressed the Commission.

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Due to poor audio reception, the BPPC directed Staff to connect with Ms. Hamill and include her public comments in the minutes, which are summarized as follows:

- *“Our Stream Team (ST) data collected monthly at 6-10 sites looks similar and reflects an increase in bacteria levels as you move downstream through the watershed and during summer months.*
- *Also, please consider the capacity of The Stream Team (ST) to assist (volunteer) in updating the bacterial monitoring plan for Sycamore Pool and the other sites the City might be interested in tracking bacteria and other water quality parameters. including setting the management goals with criteria for posting and closure, etc. and also help create the standard operating procedures (SOPs) based on those already created by other communities.*
- *ST agrees that with the increase in park users at sites beyond Sycamore Pool, it would be good to have more data to base management decisions on, beyond Sycamore Pool for safe swimming. ST would like to work with BPPC to identify a more recognized role for providing data and align our monitoring objectives to serve the City in meeting water quality goals. Identifying a role would also help recognize the important work by the hundreds of ST volunteers over the past 20 years, who want to know that the work they do is useful.*
- *ST would also like to volunteer to assist with some outreach and education regarding what folks can do to protect the water quality when swimming in the park and specifically at the Sycamore Pool, such as showering prior to swimming, use of swim diapers (need dispensary installed), and yes,. how to dispose of dog poop properly.*

## **6. BUSINESS FROM THE FLOOR**

Members of the public may address the Commission via WebEx or by email at [parkpubliccomment@chicoca.gov](mailto:parkpubliccomment@chicoca.gov) at this time on any matter not already listed on the agenda, with comments being limited to three minutes or as determined by the Chair. The Commission cannot take any action at this meeting on requests made under this section of the agenda.

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Karen Lazlo addressed the Commission.

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## **7. REPORTS AND COMMUNICATIONS**

These items are provided for the Commission’s information. Although the Commission may discuss the items, no action can be taken at this meeting. Should the Commission determine that action is required, the item or items may be included for action on a subsequent posted agenda.

### **7.1 Parks Division Report – Linda Herman, Park and Natural Resources Manager**

7.2 Street Tree Division Report – Richie Bamlet, Urban Forest Manager

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The Commission recessed at 7:58 p.m. for a ten-minute break. The meeting was reconvened, and all members of the Commission were present.

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**8. COMMISSIONER REQUESTS**

Pursuant to AP&P 10-1, a majority vote of the Commission will be needed in order to agendize these items for discussion at a future meeting. If agendized, public comment will be taken at that meeting. Speaker cards will not be accepted for these items.

**8.1 By email dated 8/17/20, Commissioner Glatz requested to agendize discussion regarding the following topics at future BPPC meetings over the next 90 days:**

- 8.1.1 Designating all of Bidwell Park as a “playground”
- 8.1.2 Revise noise ordinance to ban amplified sound in Bidwell and City parks
- 8.1.3 Establish Code of Conduct for City parks and greenways
- 8.1.4 Providing phone/text number for public to report incidents in the parks and greenways
- 8.1.5 Enhancing enforcement with private security and/or Butte County Sheriff’s Office

Vice-Chair Haar made a motion and seconded by Commissioner Glatz to agendize item 8.1.1.

The motion failed by the following vote:

AYES: Commissioner Glatz, Vice-Chair Haar

NOES: Commissioner Moore, Commissioner Liles, Commissioner Smith-Peters, Chair McReynolds

Commissioner Liles made a motion and seconded by Commissioner Glatz to agendize item 8.1.2.

The motion carried by the following vote:

AYES: Commissioner Moore, Commissioner Liles, Commissioner Glatz, Vice-Chair Haar

NOES: Commissioner Smith-Peters, Chair McReynolds

Vice-Chair Haar made a motion and seconded by Commissioner Glatz to agendize item 8.1.3.

The motion failed by the following vote:

AYES: Commissioner Glatz, Vice-Chair Haar

NOES: Commissioner Moore, Commissioner Liles, Commissioner Smith-Peters, Chair McReynolds

Commissioner Glatz made a motion to agendize item 8.1.4. The motion failed due to the lack of a second vote.

Commissioner Glatz made a motion to agendize item 8.1.5. The motion failed due to the lack of a second vote.

**8.2 Commissioner Haar requested to agendize discussion of the following items at a future BPPC meeting:**

8.2.1 Consider developing Lost Park near City Parking Lot 5 as a river walk recreation area or other revenue opportunity

8.2.2 Addressing potential fire hazards in Lower Bidwell Park, Lindo Channel, and on Humboldt Avenue along Little Chico Creek due to encampments

Commissioner Glatz made a motion and seconded by Commissioner Liles to agendize item 8.2.1.

The motion carried by the following vote:

AYES: Commissioner Moore, Commission Liles, Commission Glatz, Vice-Chair Haar

NOES: Commissioner Smith-Peters, Chair McReynolds

Commissioner Glatz made a motion and seconded by Vice-Chair Haar to agendize item 8.2.2.

The motion carried by the following vote:

AYES: Commissioner Moore, Commissioner Liles, Commissioner Glatz, Vice-Chair Haar, Chair McReynolds

NOES: Commissioner Smith-Peters

**9. ADJOURNMENT**

Adjourned at **8:36** p.m. to the next regular meeting on 9/28/20 at 6:00 p.m. at a location or format to be determined.

Date Approved: \_\_/\_\_/\_\_

Prepared By:

\_\_\_\_\_  
Becky Anderson, Office Assistant

\_\_\_\_\_  
Date

Distribution: BPPC





## BPPC Staff Report

Meeting Date 9/28/20

DATE: 9/24/20  
TO: Bidwell Park & Playground Commission  
FROM: Linda Herman, Parks and Natural Resources Manager  
SUBJECT: PRESENTATION ON UPPER BIDWELL PARK TRAILS INVENTORY DRAFT REPORT

### REPORT IN BRIEF:

The City's consultant, Trails Labs Co, will present the baseline conditions draft report from their surveys and inventory of the trails in Upper Bidwell Park, and provide an update on the development of a new trails plan.

**Recommendation:** The BPPC is requested to provide comments on the draft Report

### BACKGROUND:

As part of the 2008 update of the Bidwell Park Master Management Plan, a preliminary Trails Plan was developed to serve as a guide for future trail maintenance and improvements. The overall goal of the 2008 Trails Plan was to create and maintain a well-functioning trail system which accommodates a variety of users while providing an enjoyable and safe experience while minimizing adverse impacts to sensitive resources within Bidwell Park. One of the first steps outlined in the plan is to survey and inventory the current trail locations and identify problem areas and deficiencies.

### DISCUSSION:

To this end, Staff retained Trails Lab Co to collect baseline data, identify and evaluate problem areas, identify suggestions for management strategies, and ultimately develop an updated Trails Plan for Upper Bidwell Park. Attached for the Commission's review and information is a draft report of the consultant's initial findings and analysis from the baseline condition study of the Upper Park trails. The study provides a GPS-based inventory of both formal and informal (visitor-created) trails, an inventory of the extent of trampling impacts of informal trails, soil loss and trampling impacts from formal trails, and potential indicators and standards of quality for formal trail conditions.

### ATTACHMENTS:

Attachment 1: Upper Park Baseline Trail Condition Draft Report



# DRAFT REPORT

## Upper Bidwell Park

Baseline Trail Condition Surveys: Summary of Findings

**Prepared By:**

**Trail Labs Co**

408 N. Mt. Shasta Blvd.

Mt. Shasta, CA. 96067

[www.traillabs.co](http://www.traillabs.co)

(530) 514-0908

# Abstract

To be completed upon finalization of report and findings

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# Introduction

At Upper Bidwell Park, changing visitor use levels and patterns have contributed to an increasing degree of visitor impacts to natural resources. To better understand the extent and severity of these resource impacts and identify effective management techniques, the park sponsored this research to collect baseline data, identify and evaluate problem areas, identify suggestions for management strategies, and develop a Trail Plan for Upper Bidwell Park.

This document presents initial findings and analysis from the baseline condition study of the formal and informal (visitor-created) trails in Upper Bidwell Park. The study provides a GPS-based inventory of formal and informal trails, an inventory of the extent of trampling impacts of informal trails, soil loss and trampling impacts from formal trails, and potential indicators and standards of quality for formal trail conditions.

## Study Area

The study area for this research was Upper Bidwell Park (UBP), Chico, California. The park is located on the eastern edge of Chico, CA. at an urban-upland interface, where the city of Chico meets the undeveloped Sierra Nevada foothills. UBP is approximately 1.35 miles wide at its broadest point, 0.39 miles wide at its narrowest, and runs a length of 5.58 miles. As an area, UBP encompasses approximately 3,670 acres, and represents approximately 85% of Bidwell Park as a whole (Figure 1). UBP visitation was approximately 450,000 vehicles in 2018, with the busiest season being spring and fall. A moderate network of natural-surfaced, non-motorized formal trails provide visitors with recreation opportunities throughout the park, as well as a single graveled access road for motor vehicles, which runs west to east and parallels Big Chico Creek (Figure 1).

The terrain in UBP is moderately varied (Figure 2). Lowland deposition areas in the west meet gently rising foothills to the east, which then assume an east/west orientation as they enter the deeply carved Big Chico Creek canyon. Bands of prominent rocky cliffs line the upper reaches of the canyon walls, creating inspiring views from both below and above. These eye catching formations gradually give way to increasingly larger bands of grasses, trees and vegetation moving downward into the canyon until meeting a knife-like incision carved by the Creek in the basement basaltic rock of the canyon. The north aspects of the south side of UBP present deeper, more well developed soils, denser vegetation, and greater tree abundance, while the southern aspects of the north side of



UBP presents shallower, poorly developed, rocky soils with sparse vegetation and lower tree abundance.

The history of UBP, as well as trail planning and development is presented in the 2006 version of the Trails Plan, and will not be discussed here. However, we will discuss our observations related to trail connectivity, sustainability, and the influence of site specific variables on trail conditions.

The unique geologic conditions found in UBP, namely the Tuscan Formation - a complex of volcanic lahars and ash separated by layers of river cobble - have resulted in poorly developed, poorly drained, thin soils which are easily eroded. These fragile soils are found throughout the park, but are most susceptible in the front half of the north side of the park where soil development is poorest, there is little cover from trees or vegetation, and park visitation is highest; these soils are neither resistant nor resilient to human use (Figures 3 & 4).



Figure 3: Rocky Conditions, Shallow Soil, and Severe Erosion of North Rim Trail in Upper Bidwell Park, Chico CA.



Figure 4: Rocky Conditions, Shallow Soil, Severe Erosion and Trail Threading of an Informal Trail above Annie Bidwell Trail, Upper Bidwell Park, Chico CA.

Complicating the fragile nature of the soils in UBP, is the rough, rocky nature of the material found below them. Unlike granite or other more stable and smoother rock types, when exposed, the cobbled and highly textured Tuscan Formation creates a largely undesirable surface for trail-based recreation. This rough, and oftentimes loose and off cambered surface leads to trail threading and widening when exposed, causing a repeating cycle of trampling, soil displacement, soil erosion, and then rock exposure (Figure 4). Further, the soils in UBP display low cohesion when subject to the erosive power of water, and they are easily transported during rain events along the trampled edges of trail sections displaying these characteristics.

The processes and soil/rock characteristics described above also lead to rapid saturation of the soils in UBP after rain events. Walking through UBP during or immediately after rain events, or during wetter winters, overland flow and/or standing water is commonly observed in lower lying areas, overland flow on contoured trails, and channelized flow on eroded trails; video and images of a “stream” flowing down North Rim trail were documented during site visits. The rapid saturation of soils and their fragile nature, along with a lack of signage, little to no trail system design and directed connectivity, and few barriers to users, creates a situation where wet weather use (by any user) causes



moderate to severe damage to ground vegetation (grasses, flowers, etc.) along trail boundaries, and displacement (and subsequent transport) of soils (Figures 5 & 6). This situation also has led to the development of many informal trails where users attempt to navigate the wet or muddy soil conditions by creating their own routes. Again, this is most common in the lower lying areas near the UBP entrance.



Figure 5: Muddy Trail Conditions, Upper Bidwell Park, Chico CA.



Figure 6: Saturated Trail Conditions with Visitor Use, Upper Bidwell Park, Chico CA.

The linear nature of UBP, which focuses access and visitor use at the western end of the park, along with many of the characteristics and conditions found in this area (as described above), have resulted in significant visitor-related resource impacts here. In addition, many of the trails in the park have received little maintenance, and those that have, were done so as guided by a generalized trail manual. Unfortunately, the highly unique nature of conditions in UBP makes application and success of broad trail building and maintenance principals difficult at best. With the information collected in this baseline study, park managers will better understand trail conditions in the park, and the underlying causes of the severely impacted conditions seen today.

# Methods

The inventory and impact assessment procedures applied to formal and informal natural surface trails in UBP were adapted from those created by Dr. Jeff Marion of the U.S. Geological Survey at the Patuxent Wildlife Research Center, Virginia Tech Field Station. The complete field assessment manual will be provided in the final report as an appendix to the document. Andrew Pellkofer, Jenna Kane, Alyssa Winkelman, and Ben Johnson conducted fieldwork for this report in December of 2018, and January, September, October, and November of 2019. The following sections describe the sampling design, field methods, and analysis procedures applied to collect and analyze the impact assessment data.

## Trail Assessment Procedures

### Formal Trails

Research goals were to apply accurate and precise trail condition assessment protocols and provide baseline data for use in understanding visitor-related impacts to natural resources and establishing a baseline for future management actions. As concluded by Marion and Leung (2001), point sampling methods provide more useful and appropriate data for these purposes than problem assessment methods. Based on this work, and the moderate length of the trail network in UBP, a 300 ft. point-sampling interval was selected. The interval provided 547 sample points (Figure 7) permitting statistical analysis and the ability to characterize trail conditions across the entire network.

Point-sampling trail surveys involve pushing a measuring-wheel along the trail and stopping at a fixed distance interval following a random start. Field staff navigated to each sample point using the measuring wheel. At each sample point, a transect was established perpendicular to the trail tread with endpoints defined by the most visually obvious outer boundary of trampling-related disturbance. These boundaries are defined by pronounced changes in ground vegetation height (trampled vs. untrampled), cover, composition, or when vegetation cover is reduced or absent, but disturbance to organic litter (intact vs. pulverized). Trail boundary definitions were illustrated with photographs and a consistent objective was to define trail tread that receives the majority (>90%) of traffic. The distance between these disturbance-associated boundaries was measured as trail width.

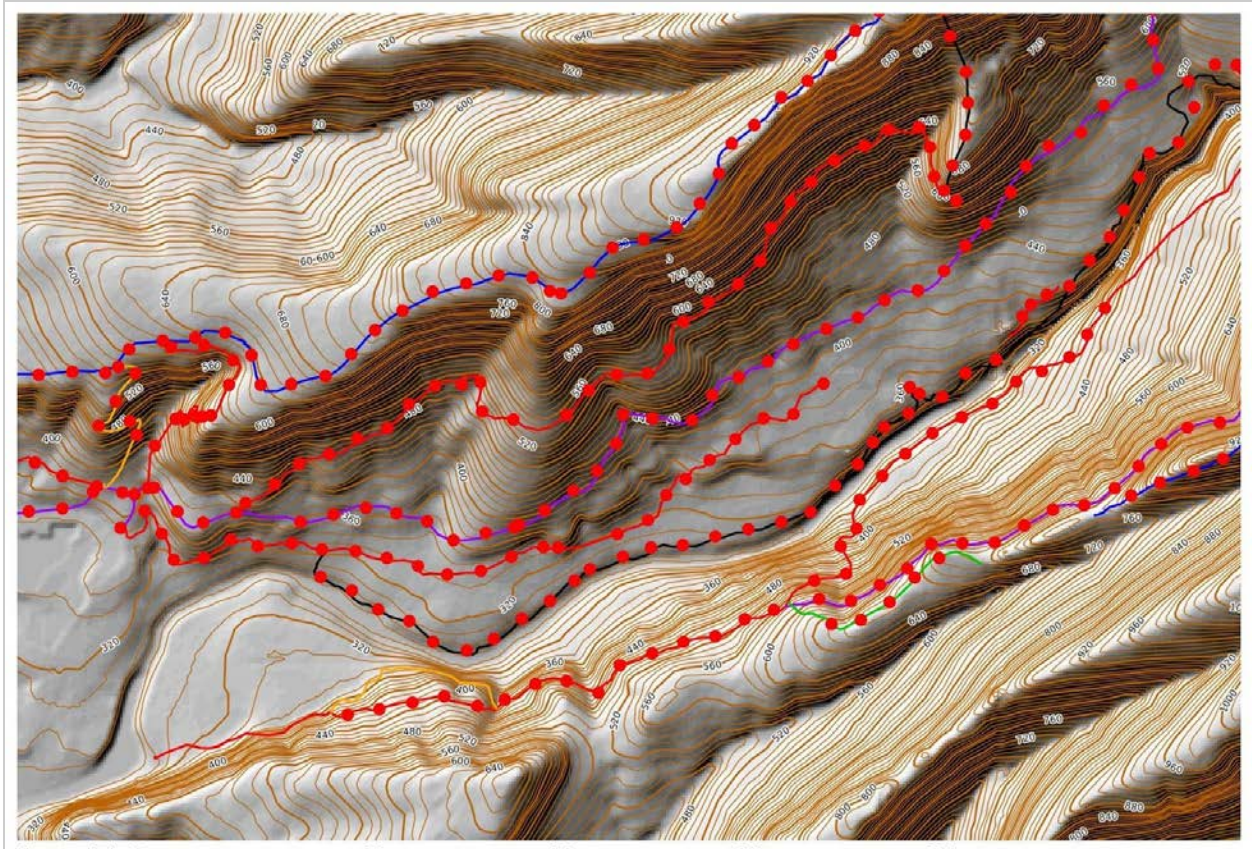


Figure 7: Portion of study area showing formal trails with sampling point locations

At each transect, survey staff assessed the grade of the trail and the dominant fall-line (landform grade). Trail slope alignment angle (TSA) was assessed as the difference in compass bearing between prevailing landform slope (aspect) and the trail's alignment at the sample point (Leung & Marion, 1996). The TSA of a contour-aligned trail would equal  $90^\circ$  while a true "fall-line" trail (aligned congruent to the landform slope) would have a TSA of  $0^\circ$  (Figure 8). The landform position of the trail relative to the local topography was determined as side-hill or fall-line. Tread surface composition was assessed in the following categories: bare soil, vegetation, organic litter, roots, and natural rock. For each category, the percent trail width was recorded to the nearest 5%. A count of additional secondary trails that paralleled the survey trail at each sample point provided a measure of the extent of trail braiding.

The cross section area (CSA) of soil loss ( $\text{ft}^2$ ), from a taut fiberglass tape measure to the tread surface, was measured using a proportional interval method. This measure includes "soil loss" from water/wind erosion, soil compaction of the trail substrates, and soil displacement from traffic. Temporary stakes were placed at positions that enabled

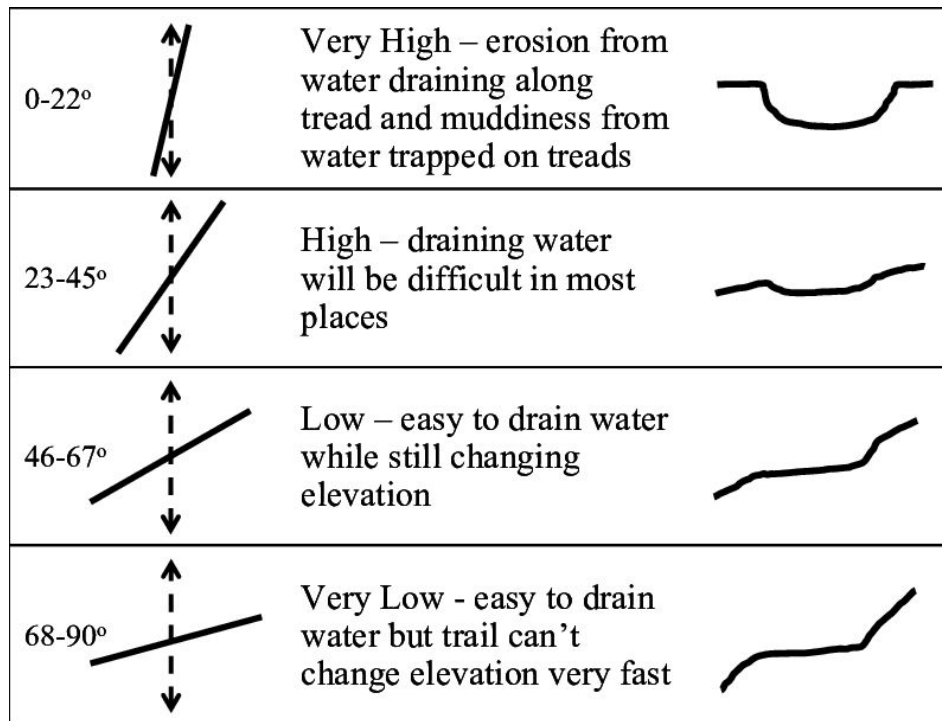


Figure 8. Trail Slope Alignment (TSA) descriptions

a tape measure to be stretched along what survey staff judged to represent the original land surface for fall-line trails, or the post-construction tread surface for constructed side-hill trails. Vertical measurements from the tape measure to the trail substrate surface were taken at 3 proportional, qui-distant intervals, dividing the cross-section into 4 segments.

CSA provides a more accurate measure of trail soil loss that can be extrapolated to provide an estimate of total soil loss from each trail (ft<sup>3</sup>). CSA was calculated from the data collected at each sample point using spreadsheet formulas. CSA measurements were not able to be assessed when sample points fell on bedrock.

Trail condition measures were calculated for each trail and for all trails combined, including area of disturbance, CSA, and mean trail width and depth (Table 1). For example, “area of disturbance”, an estimate of the land area intensively distributed by trail traffic, was calculated by multiplying trail length by mean trail width. CSA volume, an estimate of aggregate soil loss (ft<sup>3</sup>), was calculated by multiplying mean CSA by trail length.

Table 1. Description of trail impact and inventory indicators and calculation methods

<b>Impact Indicators</b>	
Trail Length	Total length of the trail segment being assessed
Trail Width	Width of trail that captures about 95% of all traffic, including trail-sides up to the pre-use land surface for fall-aligned trails or up to the estimated post-construction tread surface for side-hill trails. Assessed at sample points along each trail and averaged for each trail to obtain mean trail width.
Area of Disturbance	The mean trail width times the trail length.
Maximum Incision	Maximum trail depth measure at each sample point transect from the tread surface to the estimated pre-use or post-construction land surface.
CSA Soil Loss	An estimate of soil loss at each sample point from erosion, soil displacement, or compaction, assessed through vertical measurement at a fixed interval across the trail width from the pre-use or post-construction land surface to the current tread surface. Mean CSA is calculated as the average of CSA values measured at the sample points for each trail segment.
CSA Volume	The mean CSA for a trail times trail length - an estimate of the total volume of soil lost from a trail.
Mean Trail Depth	Calculated by dividing mean CSA by mean trail width.
<b>Inventory Indicators</b>	
Trail Grade	Percent grade of the trail at the sample point. Measured with a clinometer.
Trail Slope Alignment Angle	Difference in compass bearing between the prevailing landform slope (aspect) and the trail's alignment at the sample point. Ranges from 90° for a contour-aligned side-hill trail, to 0° for a fall-aligned trail.
Trail Slope Ratio	The quotient of trail grade and landform grade. Trail design guidance recommends a slope ratio of <0.5 to facilitate water removal from trails.

## Informal Trails

Informal trails were mapped as lineal features using the Avenza PDF Maps application loaded on personal smartphone devices. These data were collected as part of a census of the entire area of Upper Bidwell Park. All GPS data were post-processed using CalTopo, a free open-source mapping tool on the internet. Informal trail conditions were assessed during field collection using a condition class system. Condition class ranged from 1-5 with an increased value associated with greater departures from natural conditions, with regard to the condition or change in relative cover of vegetation, organic material, and mineral soil (Table 2). A new informal segment was designated and assessed when a change in condition class was noted in the field. Changes in condition class that were highly localized (<10 ft.) were not mapped.

Table 2: Condition Class rating description applied to informal trails.

<b>Class 1</b>	Trail distinguishable; slight loss of vegetation cover and/or minimal disturbance of organic litter.
<b>Class 2</b>	Trail obvious; vegetation cover lost and/or organic litter pulverized in primary use areas.
<b>Class 3</b>	Vegetation cover lost and/or organic litter pulverized within the center of the tread, some bare soil exposed.
<b>Class 4</b>	Nearly complete or total loss of vegetation cover and organic litter within the tread, bare soil widespread.
<b>Class 5</b>	Soil erosion is obvious as indicated by exposed roots and rocks and/or gullyng.

# Results

## Formal Trail Conditions

Planning for trail conditions assessment surveying was somewhat difficult as many of the trails in UBP appear to be visitor-created, but have been adopted as formal trails. Compounding the difficulty in identifying which trails were formal was inconsistency between various official UBP park maps, as well as trail signage. As the primary objective of the condition assessment surveys was to collect useful data characterizing the sustainability of the trails and to understand the relative influence of various factors on trail conditions, we focused on those trails which were well-known, named, and consistently identified across various maps. The formal trail survey assessed conditions along 16 formal trails from 547 sample points selected to be representative of the approximately 30.5 mile UBP trail system. Figure 9 presents trail lengths for each of the formal trails sampled in UBP. Approximately 71% of the total length of trail sampled was composed of just 5 trails; Annie Bidwell, Middle, North Rim, Guardian, and Yahi trails.

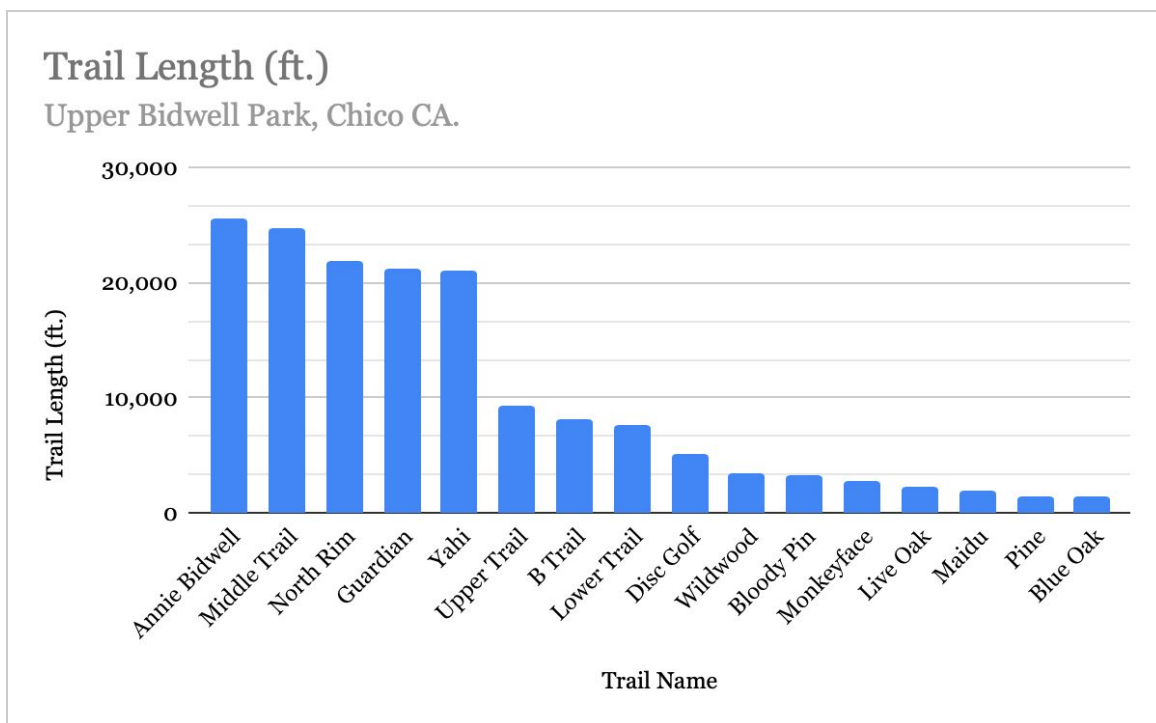


Figure 9. Trail length (ft) by trail.

## Trail Design Indicators

Research literature into trail sustainability commonly identifies trail grade and trail slope alignment (TSA) as having the strongest influence on soil loss. The speed of surface water runoff intercepted and carried downhill along the trail tread increases exponentially with increasing trail grade (Dissmeyer & Foster 1984). This fact further compounds the issue of soil erosion on trails which have a high or very high TSA ( $0^\circ$  to  $45^\circ$ ). These trails tend to become incised, and water trapped on the tread is difficult to direct off, building in volume, and substantially increasing erosivity. In contrast, trails located in flatter terrain tend to have problems with muddiness and excessive widening due to problems with standing/ponding water (Figure 5.)

Contrary to the findings of many published studies, data collected in UBP revealed both trail slope alignment and trail grade did not strongly influence soil loss. 87% of the trails in UBP had a TSA of  $46^\circ$  or more, an erosion hazard rating of either low or very low, and at the same time had some of the greatest soil loss. Similarly, the same percentage of trails in UBP had a trail grade of less than 10%, a commonly acknowledged sustainable trail grade under which many trails are planned and built today. Of these, the three trails with the greatest soil loss had trail grades of less than 5%. These findings suggest that some other indicator(s) most strongly influence soil loss from trails in UBP, and that general application of standard trail management and maintenance practices may not be appropriate.

Trail slope ratio is an ancillary way to assess trail sustainability; IMBA (2004) suggests that keeping the ratio of trail grade to landform below 0.50 is recommended to ensure trail sustainability. This variable is similar to TSA in that it assess how a trail is laid out relative to the prevailing landform slope; instead of using the difference of two compass bearings (azimuths), it uses the grade of the trail and the grad of the dominant landform. 25% of the trails in have slope ratios that exceed 0.50. Similarly to fall-aligned trails, trails with excessive relative grade are prone to erosion problems as a result of the interception and channelization of surface water during periods of heavy runoff.

## Trail Condition Indicators

Trail tread width ranged from a minimum of 1.1 ft to a maximum of 45.8 ft (Figure 10, Table 3). Mean trail tread width for the entire UBP trail system was 4.6 ft, with 44% of the trails exceeding 4.0 ft in width. Total area of intensive trampling disturbance associated with the UBP trail system is estimated to be 741,004 ft<sup>2</sup>, or 17 acres, with an average of 46,313 ft<sup>2</sup> per trail.



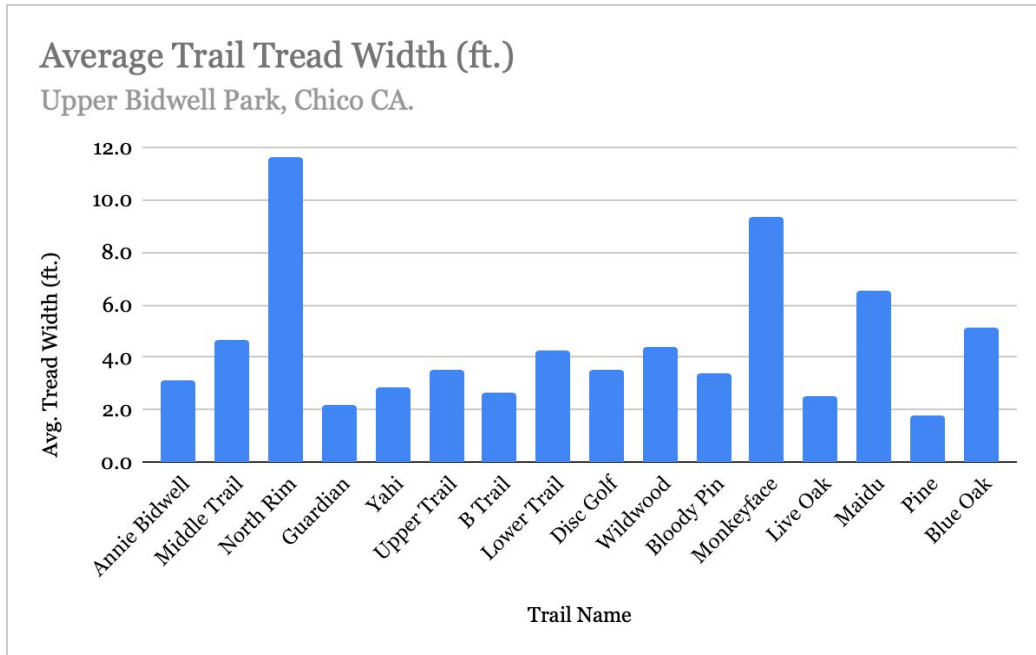


Figure 10. Mean trail tread width (ft) by trail.

Assessed soil loss on trails is attributable to several causal factors, including erosion from water or wind, compaction from traffic, and soil displacement to the trail sides or downslope. At the locations where it was possible to apply this procedure, we measured trail incision determining both an average and maximum depth. Maximum incision ranged from 0.06 ft to 2.10 ft, with a mean of 0.31 ft (Table 3).

Cross-sectional area (CSA) soil loss measurements, while time-consuming, provide a more accurate estimate of soil loss. CSA ranged from 0.04 ft<sup>3</sup> to 12.40 ft<sup>3</sup>, with a mean of 0.67 ft<sup>3</sup>. A calculation extrapolating this measure by the trail system yields an estimated aggregate soil loss of 107,524 ft<sup>3</sup> (3,982 yds<sup>3</sup>, or 400 ten yard dump trucks). On a per-mile basis, soil loss is approximately 3,525 ft<sup>3</sup>/mile (130 yd<sup>3</sup>/mile). Figure 11 provides results for total area of disturbance and soil loss for each trail.

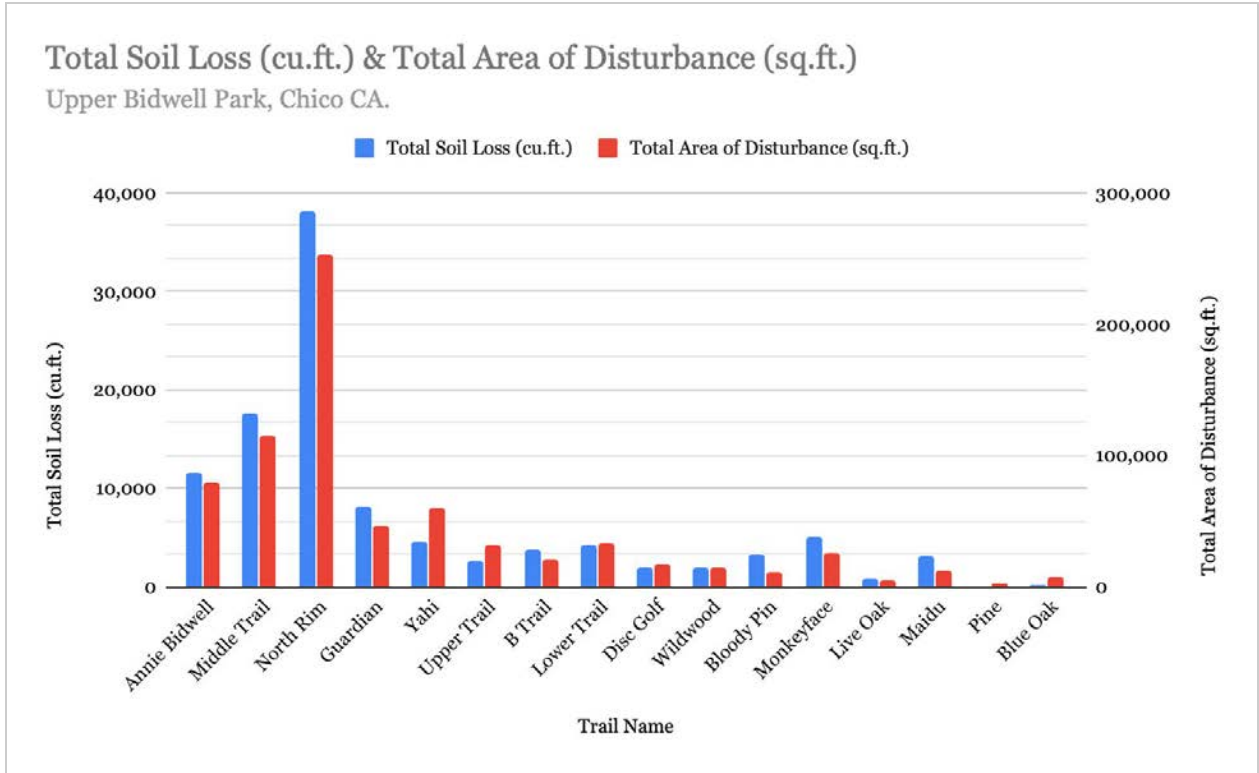


Figure 11. Total soil loss (ft<sup>3</sup>) and total area of disturbance (ft<sup>2</sup>) by trail.

Table 3. Number and percent of sample points by impact indicator category.

Trail Width (ft.)	Sample Points	Percent
0 - 2.0	136	24.9%
2.01 - 3.00	144	26.3%
3.01 - 4.00	70	12.8%
4.01 - 5.00	52	9.5%
5.01 - 10.00	99	18.1%
10.01+	46	8.4%
<b>TOTAL</b>	<b>547</b>	
<b>MEAN: 4.59</b>	<b>RANGE: 1.12 - 45.78</b>	
Maximum Incision (ft.)	Sample Points	Percent
0	0	0.0%
0.01 - 0.10	138	25.2%
0.11 - 0.20	180	32.9%
0.21 - 0.30	105	19.2%

0.31 - 0.40	49	9.0%
0.41 - 0.50	33	6.0%
0.51+	39	7.1%
Unknown	3	0.5%
<b>TOTAL</b>	<b>547</b>	
<b>MEAN: 0.31</b>	<b>RANGE: 0.06 - 2.10</b>	
<b>CSA Soil Loss (cubic ft.)</b>	<b>Sample Points</b>	<b>Percent</b>
0	0	0.0%
0.01 - 0.10	105	19.2%
0.11 - 0.20	109	19.9%
0.21 - 0.30	74	13.5%
0.31 - 0.40	41	7.5%
0.41 - 0.50	35	6.4%
0.51 - 1.00	74	13.5%
1.01+	104	19.0%
Unknown	5	0.9%
<b>TOTAL</b>	<b>547</b>	
<b>MEAN: 0.67</b>	<b>RANGE: 0.04 - 12.40</b>	
<b>Mean Trail Depth</b>	<b>Sample Points</b>	<b>Percent</b>
0	1	0.2%
0.01 - 0.10	224	41.0%
0.11 - 0.20	187	34.2%
0.21 - 0.30	75	13.7%
0.31 - 0.40	30	5.5%
0.41 - 0.50	12	2.2%
0.51+	14	2.6%
Unknown	4	0.7%
<b>TOTAL</b>	<b>547</b>	
<b>MEAN: 0.17</b>	<b>RANGE: 0.04 - 1.02</b>	

Table 4. Trail impact and design indicators summarized by trail name

Trail Name	Trail Length (ft.)	Avg. Tread Width (ft.)	Total Area of Disturbance (sq.ft.)	Avg. Trail Grade (%)	Total Soil Loss (cu.ft.)
Annie Bidwell	25555	3.13	79,862	4	11,645
Middle Trail	24710	4.68	115,643	3	17,544
North Rim	21859	11.60	253,459	4	38,063
Guardian	21225	2.20	46,634	5	8,208
Yahi	21067	2.85	60,041	3	4,634
Upper Trail	9292	3.50	32,505	5	2,594
B Trail	8131	2.65	21,547	5	3,822
Lower Trail	7656	4.27	32,707	2	4,275
Disc Golf	5068	3.54	17,919	5	1,944
Wildwood	3458	4.40	15,230	0	1,991
Bloody Pin	3379	3.41	11,522	11	3,278
Monkeyface	2745	9.34	25,641	7	5,093
Live Oak	2235	2.55	5,688	12	849
Maidu	1959	6.55	12,827	8	3,187
Pine	1497	1.80	2,694	4	121
Blue Oak	1381	5.13	7,085	5	276

Trail Name	Avg. TSA (degrees)	Avg. Max. Incision (ft.)	Avg. CS Depth (ft.)	Avg. CSA (sq.ft.)	Secondary Tread #	Avg. Trail Slope Ratio
Annie Bidwell	65	0.22	0.1	0.46	6	0.41
Middle Trail	60	0.27	0.2	0.71	33	0.36
North Rim		0.31	0.13	1.74	32	0.63
Guardian	73	0.17	0.16	0.39	6	0.28
Yahi	61	0.14	0.08	0.22	10	0.4
Upper Trail	68	1.70	0.12	0.28	4	0.34
B Trail	65	0.27	0.19	0.47	0	0.34
Lower Trail	57	0.19	0.1	0.56	7	0.42
Disc Golf	47	0.20	0.09	0.38	6	0.61
Wildwood	0	0.19	0.13	0.58	0	0
Bloody Pin	56	0.39	0.31	0.97	3	0.64
Monkeyface	63	0.46	0.23	1.86	5	0.48
Live Oak	30	0.31	0.14	0.38	2	0.8
Maidu	66	0.40	0.23	1.63	6	0.48
Pine	73	0.07	0.04	0.08	0	0.33
Blue Oak	72	0.33	0.26	0.2	0	0.34

## Informal Trails

A GPS census inventory of the informal trails within UBP produced spatial datasets that can be summarized in a variety of ways; we have selected two types of summaries that lend themselves to understanding the informal trails within UBP: A quantitative summary of the extent of informal trails, and a description of the spatial distribution of informal trails.

### Quantitative Summary

Field staff surveyed approximately 35 miles of informal trails within UBP, which is equal to 114% of the formal trails within the park by length. Informal trails within UBP tend to be much narrower than their formal trail counterparts, with a mean trail tread width of 2.15 ft, just under half the mean width of formal trails in. The total area of trampling disturbance of informal trails is 397,320 ft<sup>2</sup>, or 9 acres. Further examination of the extent of informal trails by condition class shows 65 % of informal trails are condition class 3 or higher; figure 12 shows a breakdown of informal trails by condition class. Of greater concern is the fact that much of these informal trails are condition class 4 and 5 (50%), condition classes that indicate erosion has or is actively occurring within the tread.

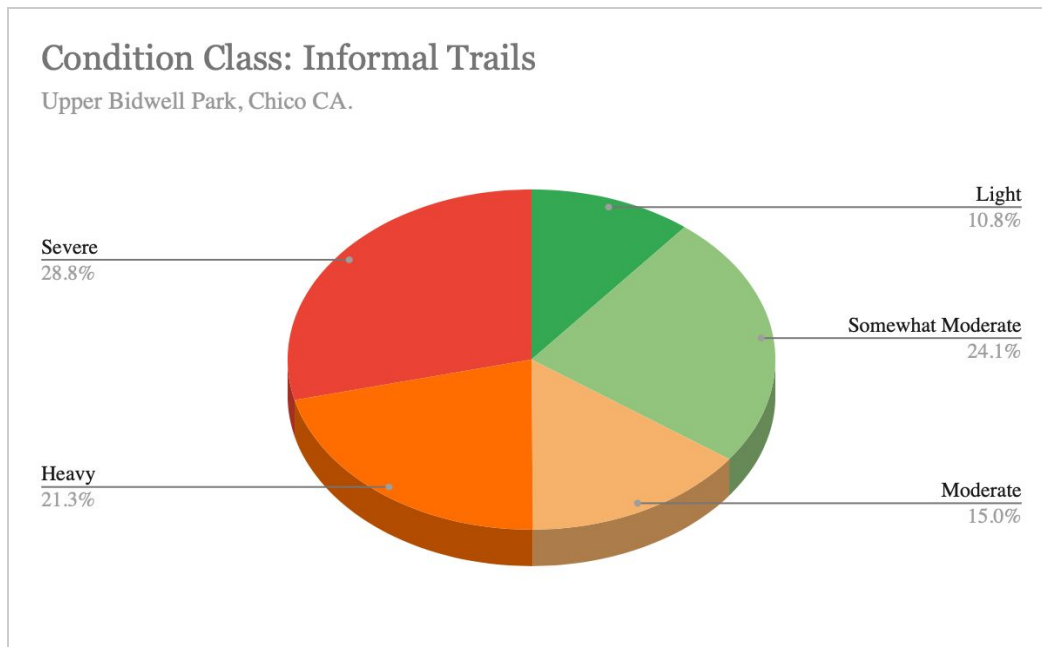


Figure 12. Informal trail condition class summary (%)

## Spatial Distribution

In order to evaluate the spatial distribution of informal trails in UBP we divided the park into zones. The boundaries of these zones were chosen based on landforms, local knowledge of use patterns, formal trail locations, park boundaries, parking and trailhead locations, and other park infrastructure such as roads, powerlines, and gates. This resulted in four zones; North Side Upper, North Side Lower, South Side Upper and South Side Lower (Figure 13).

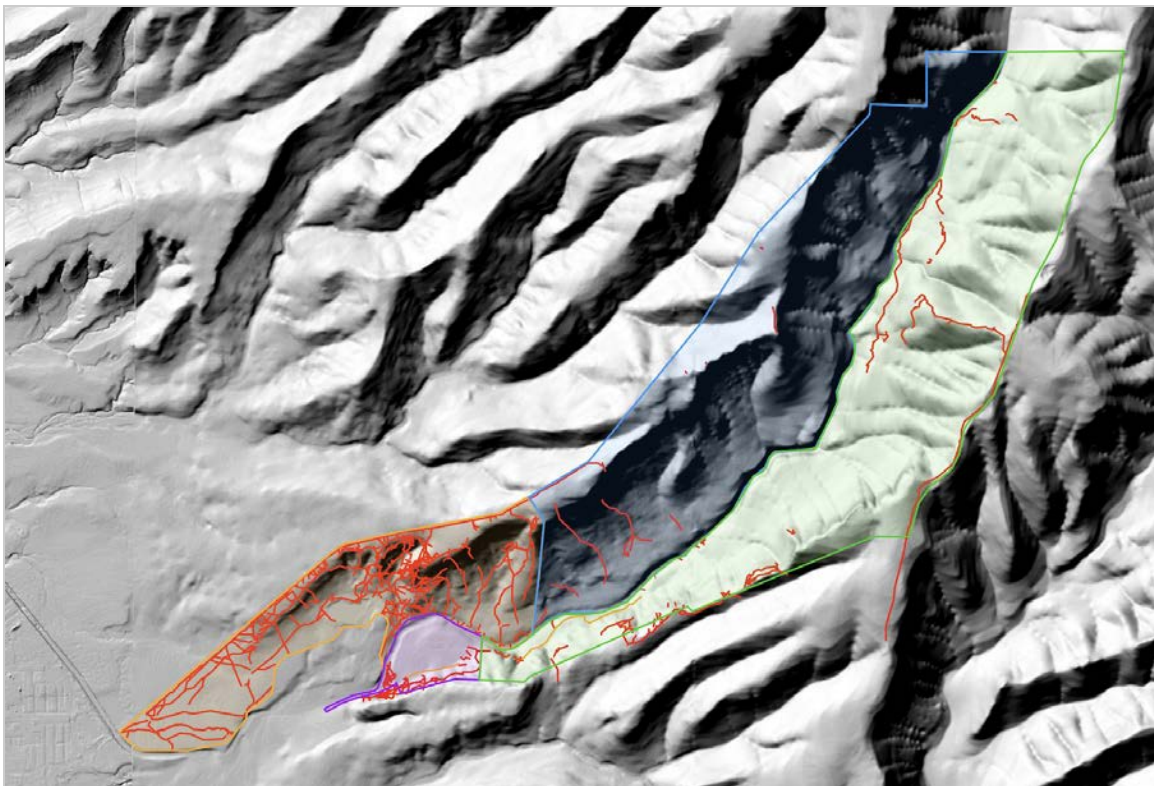


Figure 13. Survey zones developed for condition sampling

The majority of informal trails in UBP are concentrated in the North Side Lower zone (Figure 14), which constitutes the primary entrance to the park, and the major parking and trailhead locations. It also includes the area directly around Monkey Face and Horseshoe Lake, both popular visitor attractions. An additional network of informal trails exist on the South Side Lower zone, again, adjacent to a major parking and trailhead location, as well as access to Big Chico Creek.

The pattern of the informal trails in the North Side Lower zone have formed because of several reasons, some of which are management related, and others of which are related

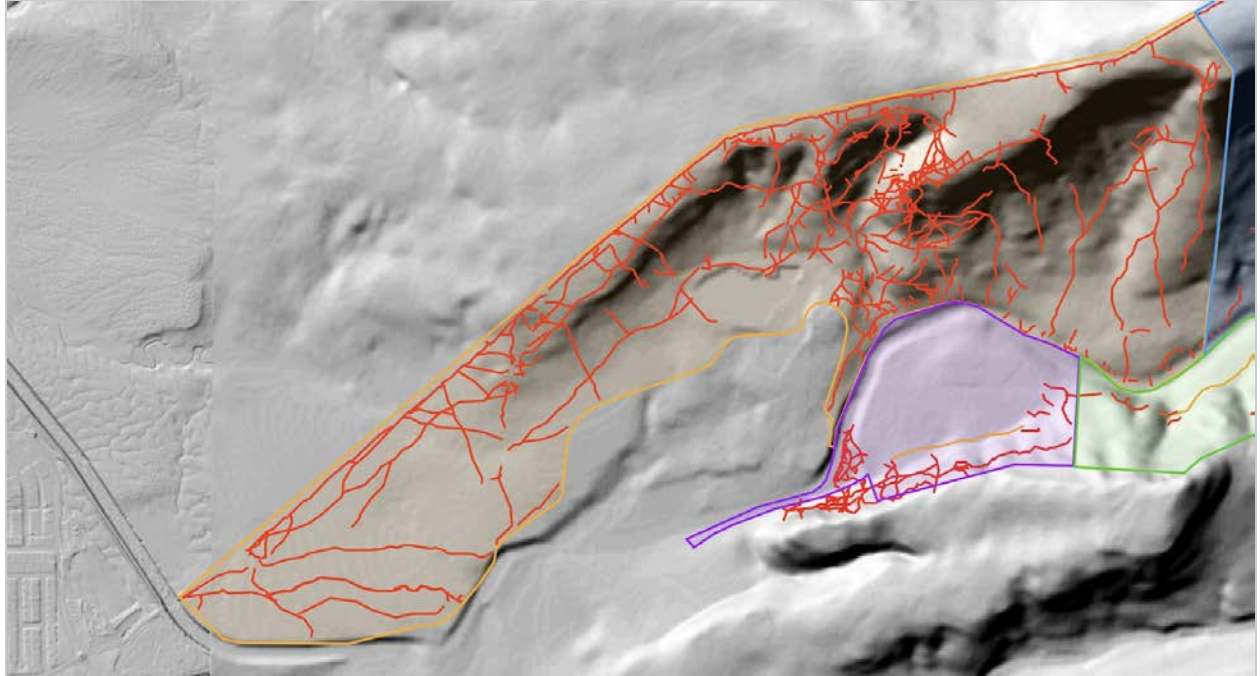


Figure 14. Informal trail network in North Side Lower zone

to natural conditions and user behavior. The majority of these trails have formed as a result of shortcutting and access (Figures 15 & 16), where users are seeking a more direct path to their destination. This can be seen by observing that most informal trails in this zone run perpendicular to formal trails, the exception of which is Monkey Face, where users make their own paths as they seek to explore the natural feature. In addition to shortcutting and exploration, informal trails in the lower “meadow” or low lying areas of the North Side Lower zone are formed due to muddy conditions seen during the winter months. Users seeking to avoid these wet, muddy conditions walk into and through vegetated less-wet areas. This behavior is further exacerbated by a lack of signage, poorly defined and maintained formal trails, and a “wet weather” management policy which targets mountain bike use as the cause of resource damage during wet conditions. Observations made on formal and informal trails during wet conditions suggest pedestrian and equestrian use causes significant trampling of vegetation, and widening of trails, especially in low lying areas receiving concentrated visitor use.

During dry conditions, informal trails such as those classified as secondary (running parallel to the main trail tread, >10ft in length), and those which run for extended lengths along formal trails, appear to be formed due to the roughness of the existing formal trails. Many observations were made of formal trail edges or secondary trails which were receiving new use as users sought to avoid the rough, rocky terrain of the



Figure 15. Drone image of formal and informal trails just above Monkey Face.



Figure 16. Drone image of formal and informal trails at Horseshoe Lake parking lot.



formal trail tread; lack of clear signage or trail boundaries, as well as limited maintenance serve to inadvertently encourage this type of user behavior.

An additional management issue related to the extensive informal trail network seen in UBP, especially in the North Side Lower zone is clear line of sight and a lack of vegetative cover beyond grasses. Users can see their destination from nearly any location in the park, with few landscape features to prevent them from shortcutting. This issue is further compounded by the ease of which vegetation is trampled, creating the appearance of a trail. Field survey staff regularly observed game trails through the lower lying areas of the North Side Lower zone which required further investigation to rule out human use; the difficulty in discerning the difference between an informal trail and game trail is worth noting, as a new visitor to UBP would likely not be able to do so.

The greatest concerns with regards to informal trails are their duplicative nature (Figures 15 & 16), their proximity to sensitive communities of rare vegetation, and the process of soil compaction and displacement they initiate. Informal trails are hike/bike/ridden in by users seeking to fulfill their own individual goals; these goals do not include the protection of sensitive vegetation, or creating a route that can sustain high levels of use. Figures 15 & 16 clearly illustrate the issue of duplicative routes associated with informal trails; multiple spurs connect an assortment of formal trails and destinations over very short distances.

## Discussion & Management

This section of the report reviews and summarizes the study findings and discusses some implications for management actions that can help avoid or reduce the impacts of visitation on the park's formal trail system and informal trails.

### Formal Trails

UBP has a well developed and moderately sized formal trail system. These trails offer visitors multiple routes by which to explore the park, and are relatively well-aligned with the prevailing landform of the canyon. Most trail design and condition indicators are within normally acceptable limits, and on paper, one would assume the trails are in relatively good condition. However, field observations of trail conditions regularly identified eroded and scoured trail segments, active trail tread widening and secondary trail tread development, and ongoing informal trail network use and expansion, especially in the North Side Lower zone.

Trail widening appears to be the most common problem affecting formal trails in UBP. Wimpey and Marion (2010) identify six general behaviors that contribute to trail widening: 1) passing other trail users, 2) side-by-side travel, 3) avoidance of tread problems (e.g., muddiness, erosion, roughness), 4) inability to remain on the intended tread due to poorly marked trails or ambiguous tread borders, 5) roaming associated with picking the easiest route when traversing steep grades, and 6) attraction and avoidance behaviors (e.g., gaining a view or staying away from a drop-off). Of these behaviors, 3) avoidance of tread problems and 4) inability to remain on the intended tread due to poorly marked trails or ambiguous tread borders are thought to contribute the most to trail widening and the development of informal trails in UBP.

The trail conditions influencing these user behaviors are largely the result of the unique geology of UBP, as discussed in the Study Area section of this report. The series of lahars which compose the Tuscan Formation are largely impermeable, have a highly rough texture, create a loose, unstable trail tread when eroded rocks accumulate, and are capped by a thin layer of easily eroded soil. During wet weather conditions, precipitation inputs travel via lateral surface and subsurface flow through the shallow soil matrix, and very little is lost to percolation. This results in easily saturated soils, which can lead to standing water and muddy conditions on trails in low lying areas, and active erosion on steep trails as water increases in velocity when it's released from the soil matrix and captured by the trail tread. It is likely that the Big Chico Creek watershed is characterized as "flashy", having a hydrograph with a rapidly ascending rising limb and short lag time. Soil hydrology of this type was observed on several occasions by the author, where concentrated surface flow was witnessed and documented on North Rim Trail immediately after a rainstorm event. The volume of water flowing down the trail tread was not insignificant, and where the flow encountered low gradient terrain, large deposits of alluvial materials were identified. Additional observations made during and immediately after rain events revealed extensive issues with muddiness and trampling of vegetation in low lying areas.

Beyond the influence of physical characteristics of the park on visitor behavior, poorly marked trails and tread borders are a significant issue. Very few trail signs were observed during field surveys of formal trails, and in several instances, presumed old trail signs were in the former location of the trail, and not at its current location; an indication of trail threading/widening, and lack of maintenance/management. Near many of the trail junctions we encountered, no signage was present and it was often difficult to determine which trail tread was formal and which was not; many shortcut routes were encountered around these junctions. Very few trail tread borders were also observed, and recent edge trampling and widening was commonly encountered.

Trail widening behaviors can be substantially modified by a number of environmental and managerial factors (Wimpey & Marion 2010). Trails in flatter terrain (lower Middle Trail & Wildwood) are particularly prone to widening, unless prevented by dense woody vegetation or some other natural barrier. Relocation to side-hill alignments is the most effective permanent solution but is often impractical, so establishing trail borders with rocks or fencing can be considered when this form of impact becomes excessive. Managers can also contain the lateral spread of traffic along trails by adequately addressing tread problems, such as muddiness, erosion, and excessive rockiness, which visitors will seek to circumvent. Managers can provide physically challenging trails, but keeping visitors on them requires design and maintenance practices that ensure the provision of a tread that is more inviting to traffic than the adjacent trailside terrain. A tread that always appears to the trail user as the most direct or easiest route will likely be used consistently with minimal lateral dispersal of traffic.

## Informal Trails

At 35 miles, the informal trail network in UBP is quite extensive. By far, the North Side Lower zone has the majority of those trails. Concentrated visitor use, lack of signage and trail borders, and shortcutting appear to be the primary cause of these trails. Due to the fragile nature of the soils in UBP, and the lack of sustainable trail design inherent to informal trails, they pose a significant threat to resource protection in the park. Aside from this, these trails degrade the observable landscape and detract from the natural beauty which often brings visitors to the park.

The duplicative nature of the informal trail network in the North Side Lower zone suggests that the formal trail system does not provide the connectivity visitors are seeking. Many informal trails are oriented perpendicular to formal trails and link them through short segments. Some of these trails may be well suited for adoption into the formal trail network however, without proper signage and closure of unwanted informal trails, visitors will continue to use any and all informal trails which provide convenient routing.

In addition to connectivity, informal trails tend to develop in response to muddy conditions seen during wet winter months. With few to no trail borders, no management policy or information for visitors regarding impacts of off-trail travel, and seeking to avoid wet and muddy trails and trail segments, visitors regularly trample trail-adjacent vegetation to get past these locations, or forge entirely new trails. The management policy of prohibiting some use types during wet weather conditions and not others

implies that those which are allowed do not cause significant resource damage. Based on our observations, any use during wet weather conditions, especially in low lying areas, causes resource damage. This damage could be mitigated through elevated trail techniques such as turnpikes or puncheons. These management solutions have been applied to select sections of trail in UBP, some with success. If done properly and to the extent necessary, wet weather use by all use types would likely be acceptable on these trails.

## Management Implications

This study was designed to inform managers of current trail conditions in the park, establish a baseline from which future management actions can be measured, and to determine effective practices for improving conditions which threaten park resources, and the quality and safety of visitor experiences. Our study has determined that the largest threats to UBP resources are trail widening and informal trail development.

Management suggestions to improve trail conditions in UBP and protect park resources:

1. *Improve Communication with Visitors:* Many visitors do not know about special and rare plants, sensitive soils, and the implications of soil erosion to fish and aquatic life caused by off-trail use.
2. *Improve Maintenance and Trail Markings:* Some visitors go off-trail accidentally because formal trails may be poorly marked or indistinguishable from informal trails. Managers must ensure that formal trails are maintained to be a better and preferred route than alternate trail-side terrain or informal trails. During wet periods managers should identify muddy sections and apply corrective actions so that visitors can remain on them.
3. *Consider Formalizing Some Informal Trails:* Some informal trails were created to link adjacent formal trails, while others provide shortcuts to trailheads or across open areas. Others were created to access scenic vistas or favorite places. Managers should consider if those trails are acceptable. If they are, they should be formalized, or closed and replaced by formal trails designed by a trail professional with more sustainable alignment.
4. *Close and Restore Unacceptable Trails:* The closure and recovery of all remaining informal trails will be a formidable management challenge. Trampling impacts and trail creation occur with limited or low levels of traffic, while unassisted natural recovery requires little to no use over years for vegetation to return. We suggest use of both informative trailhead signs and symbolic prompter signs at some formal/informal trail intersections.

5. *Modify Wet Weather Use Policy:* The soils in UBP are sensitive to all use types during wet conditions. Trampling of vegetation, soil displacement, and trail widening are all occurring during wet weather use. Managers should consider blanket closure of trails during wet weather conditions - encouraging use in Middle or Lower Bidwell Park during this time - or developing a small network of trails in the North Side Lower zone which are appropriate for these conditions. A small network of turnpike or puncheon trails could be built and used during wet conditions in this area.

One additional issue identified by our study team was the proliferation of dog feces in the low lying areas of the North Side Lower zone. Aside from countless direct observations of dog feces in this area immediately adjacent to formal and informal trails, visitor behavior seems to suggest this area is used as an off-leash dog park. As this area drains directly into an adjacent waterway, it is suspected that there may be impacts to water quality over time if this use continues unmitigated.



# BPPC Natural Resources Committee Report

Meeting Date 9/28/20

DATE: 9/24/20  
TO: Bidwell Park and Playground Commission  
FROM: Natural Resources Committee (Commissioners Haar, and Smith-Peters)  
SUBJECT: REPORT ON THE NATURAL RESOURCE COMMITTEE MEETING HELD ON 9/16/20

## 1. CALL TO ORDER

Interim Committee Chair Smith-Peters called the meeting to order at 6:17 pm, when Commissioner Haar was able to join the meeting.

**Attendees:** Commissioners present: Lise Smith-Peters, Aaron Haar  
Commissioners absent: None  
Staff/present: Linda Herman (Park & Natural Resource Manager), Shane Romain (Park Services Coordinator).

## 2. REGULAR AGENDA

### 2.1. CONSIDERATION OF NOTICE OF PREPARATION OF AN EIR FOR THE DRAFT VEGETATIVE FUELS MANAGEMENT PLAN.

An Environmental Impact Report (EIR) is being prepared for the draft Vegetative Fuels Management Plan ("VFMP") prepared for City-owned parks, greenways and open spaces. Pursuant to CEQA Guidelines §15082(a), the Committee will review the Notice of Preparation requesting comments on the scope and content of the EIR and hear public comments.

The City's consultant and partner on the VFMP Wolfy Rouble provided an introduction of the Notice of Preparation and restated the intent was to garner public comments on the scope of the EIR. She also summarized the proposed implementation projects.

Commissioner Smith-Peters provided comments on 9/10/20 requesting the removal of the Verbena Fields Stewardship Project from the plan. She also requested that a new implementation project to remove nonnative and invasive vegetation in Lower and Middle Park be added to the plan. A copy of Commissioner Smith-Peter's comments is in the 9/16/20 NRC Agenda packet attached as Attachment A to this report.

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**Public Comment:** Woody Elliott and Heidi Gysin commented on this item during the meeting.

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**Recommendation:** *None at this time, EIR public scoping period ends on 10/09/20.*

### 2.2. REVIEW OF THE PEREGRINE POINT DISC GOLF AGREEMENT WITH OUTSIDE RECREATION ADVOCATES, INC (ORAI).

At its 2/24/20 meeting, the Bidwell Park & Playground Commission forwarded the five-year review of the operating agreement with ORAI for the Peregrine Point Disc Golf course to the Committee. The Committee will review the status of ORAI's compliance with the agreement terms. **(Report – P&NRM Linda Herman).**

**Recommendation:** The Park & Natural Resources Manager recommends the Committee recommend to the BPPC:

1. Approval of extending the Agreement with ORAI for another five-years, and

- Amending the Agreement to change the frequency of the biological monitoring based on the consultant's recommendations, and the provision that ORAI pay for the monitoring costs.

Park & Natural Resource Manager (P&NRM) Herman provided an overview of ORAI's compliance with the operating agreement. This overview is also in the attached 9/16/20 NRC agenda packet. Commissioner Smith-Peters noted the continued need for wood chips and better trail delineation on the back 12 holes at the course. P&NRM Herman informed the Committee that the delivery of chips to the back of the course was the City's responsibility and that weather, COVOD-19, and other factors have delayed the work.

Discussion also took place about whether to amend the Agreement to change the discrepancy between the Exhibits which indicated that the ORAI was to pay for the monitoring every other year and the agreement which states they should pay annually. Commissioner Smith-Peters suggested the agreement also be amended to reflect ORAI capabilities to maintain the course.

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**Public Comment:** Karen Laslo, Christine Luce, Jim McClain, Philip Vitavec, Woody Elliott and Sierra Club representative Grace Marvin provided comments on this item.

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**Recommendation:** The Committee recommended BPPC approval to direct Staff to:

- Identify the costs to complete the outstanding tasks, including future biological monitoring;
- Work with ORAI to propose amendments to the Agreement that reflect the group's current capability to maintain the course.

Below is a chart of the costs of the course improvements over the past couple years:

	Approximate Unit Cost	Funds Spent (2019)	Estimated cost for work still needed
Split Rail Fencing*	\$2.25/LF	\$7,225	\$720
Rice Straw Waddles/Rebar*	\$1/LF	\$4,886	\$4,061
Biological Monitoring	\$/survey	\$7,885	\$3,500
Mulch*	Free Chips when available, cost for labor (Staff & ORAI)		
Tree Wraps/Stakes	Lump sum	\$782	\$300
Signage (Kiosk, map and Sensitive Species)	Lump sum	n/a	\$1,000
	TOTAL	\$20,778	\$9,581

\* Does not include labor, more labor is also required for split rail fencing vs waddles.

### 3. BUSINESS FROM THE FLOOR

Members of the public may address the Committee at this time on any matter not already listed on the agenda, comments are limited to three minutes. The Committee cannot take any action at this meeting on requests made under this section of the agenda.

There was no "Business from the Floor"

### 4. ADJOURNMENT

The meeting was adjourned at 8:26 p.m. Unless otherwise noticed the next regular Natural Resources Committee meeting will be held on October 21, 2020 at 6:00 p.m. at a location or format to be determined.

#### ATTACHMENTS:

Attachment A: 9/16/20 NRC Agenda packet



**CITY OF CHICO**  
**BIDWELL PARK AND PLAYGROUND COMMISSION (BPPC)**  
**NATURAL RESOURCE COMMITTEE**  
**(Commissioners Haar and Smith-Peters)**  
Regular Meeting Agenda  
September 16, 2020, 6:00 p.m.

**REMOTE ONLINE MEETING VIA ZOOM**

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*Materials related to an item on this Agenda are available for public inspection in the Park Division Office at 965 Fir Street during normal business hours or online at <http://www.chico.ca.us/>.*

**PUBLIC PARTICIPATION:**

This meeting is being conducted via teleconference in accordance with Executive Order N-25-20 and N-29-20. Members of the public may virtually attend the meeting remotely using the ZOOM platform.

The public may listen to and/or participate in the Bidwell Park & Playground Meeting via landline or mobile telephone or via computer, with both video and audio enabled or audio only.

If you wish to comment on an item, but do not wish to participate during the meeting, the public may submit comments prior to the meeting via email to [parkpubliccomments@chicoca.gov](mailto:parkpubliccomments@chicoca.gov) prior to and during the meeting and will become public record. Please submit emails with the subject line "**PUBLIC COMMENT ITEM NO. \_\_\_\_**". The public is encouraged not to send more than one email per item and not to comment on numerous items in one email.

**ZOOM MEETING INFORMATION:**

To access the live meeting, you have the following options:

1. Join Zoom Meeting
  - a. <https://us02web.zoom.us/j/82062162992?pwd=NXhGRDI3YVFWdm5xUTVJTjBIZkhHdz09>
2. From a web browser <https://zoom.us/join>
  - a. When prompted, use Meeting ID: 820 6216 2992
3. or, if using the **Zoom App**, enter the **Meeting ID:** 820 6216 2992
4. Directly from your mobile phone you can tap:
  - a. +16699006833,,86983600705# US (San Jose)
5. Dial-in using your landline or mobile phone to:
  - a. 1 669 900 6833
  - b. When prompted, use Meeting ID: 820 6216 2992
  - c. If you are not being heard when called upon to speak, press \*6

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1. **CALL TO ORDER**

2. **REGULAR AGENDA**

2.1. **CONSIDERATION OF NOTICE OF PREPARATION OF AN EIR FOR THE DRAFT VEGETATIVE FUELS MANAGEMENT PLAN.**

An Environmental Impact Report (EIR) is being prepared for the draft Vegetative Fuels Management Plan ("VFMP") prepared for City-owned parks, greenways and open spaces. Pursuant to CEQA Guidelines §15082(a), the Committee will review the Notice of Preparation requesting comments on the scope and content of the EIR and hear public comments. **(Report – P&NRM Linda Herman).**

**Recommendation:** *The Committee is requested to provide comments on the scope and content of the proposed EIR.*

2.2. **REVIEW OF THE PEREGRINE POINT DISC GOLF AGREEMENT WITH OUTSIDE RECREATION ADVOCATES, INC (ORAI).**

At its 2/24/20 meeting, the Bidwell Park & Playground Commission forwarded the five-year review of the operating agreement with ORAI for the Peregrine Point Disc Golf course to the Committee. The Committee will review the status of ORAI's compliance with the agreement terms. **(Report – P&NRM Linda Herman).**

**Recommendation:** The Park & Natural Resources Manager recommends the Committee recommend to the BPPC:

1. Approval of extending the Agreement with ORAI for another five-years, and
2. Amending the Agreement to change the frequency of the biological monitoring based on the consultant's recommendations, and the provision that ORAI pay for the monitoring costs.

3. **BUSINESS FROM THE FLOOR**

Members of the public may address the Committee at this time on any matter not already listed on the agenda, comments are limited to three minutes. The Committee cannot take any action at this meeting on requests made under this section of the agenda.

4. **ADJOURNMENT**

Unless otherwise noticed, adjourn to the next regular meeting on October 21, 2020 at 6:00 p.m. at a location or format to be determined based on COVID-19 status.



Please contact the Park Division Office at (530) 896-7800 if you require an agenda in an alternative format, or if you need to request a disability-related modification or accommodation. If possible, this request should be received at least three (3) working days prior to the meeting.



**PUBLIC WORKS DEPARTMENT  
OPERATIONS & MAINTENANCE**

965 Fir Street (530) 896-7800  
P.O. Box 3420 Fax (530) 895-2634  
Chico, CA 95927-3420 www.Chico.ca.us

**NOTICE OF PREPARATION (NOP) OF A DRAFT ENVIRONMENTAL IMPACT  
REPORT FOR THE CITY OF CHICO VEGETATIVE FUELS MANAGEMENT PLAN**

**PROJECT TITLE:** City of Chico Vegetative Fuels Management Plan

**SUMMARY:** The City of Chico (“City”) is preparing an Environmental Impact Report (EIR) for the City of Chico Vegetative Fuels Management Plan (“VFMP”) for City-owned parcels. The City is requesting comments on the scope and content of the EIR. A description of the VFMP and its location, together with a summary of the probable environmental effects that will be addressed in the EIR, are included herein. The City is the lead agency undertaking preparation of a Draft EIR for the VFMP. City Staff and contractors prepared this Notice of Preparation (NOP) and will hold a scoping meeting to obtain public input regarding the scope and content of the environmental analysis, including the significant environmental issues, the proposed range of alternatives, and mitigation measures that should be included in the EIR. Pursuant to California Environmental Quality Act (CEQA) Guidelines §15063(a), the City **has not** prepared an Initial Study (IS) prior to development of the EIR. The analysis and review of effects that are typically done within an IS will be done within the EIR.

**PUBLIC REVIEW AND COMMENT PERIOD:** The City invites comments on the scope and content of the EIR in response to this NOP. The City prefers that comments be submitted via email at: linda.herman@chicoca.gov. Comments may also be submitted via mail to the following address:

City of Chico Public Works Department-Park Division  
Attn: VFMP – Scoping Comments  
P.O. Box 3420  
Chico CA 95927

Please reference the Vegetative Fuels Management Plan (VFMP) in all correspondence.

Pursuant to State law, comments will be accepted for 30 days after publication of this notice. ***Responses to the NOP must be received via the above email or mailing address by 5:00 p.m. on October 9, 2020.*** Comments will also be received at the EIR Scoping Meetings to be held as noticed below.

Commenters should focus comments on potential impacts of the VFMP on the physical environment. Commenters are encouraged to identify mitigation measures that could minimize potential adverse effects resulting from the VFMP and to identify reasonable alternatives to the VFMP.

**EIR PUBLIC SCOPING MEETING:** The City of Chico’s Natural Resource Committee of the Bidwell Park and Playgrounds Commission will conduct a public scoping meeting on the EIR for the Vegetative Fuels Management Plan on September 16, 2020 at 6:00 p.m. In accordance with the Governor’s Executive Order N-29-20, the meeting will be held entirely virtually via WebEx. For agenda, WebEx login information, and other details, see <https://chico.ca.us/post/2020-agendas> and choose the “Committee” tab.

The purpose of the public scoping meeting is to describe the proposed project and the environmental review process, and to receive verbal input. The City will consider all comments, written and oral, in determining the final scope of the evaluation to be included in the EIR.

The meeting facilities will be accessible to persons with disabilities. If special translation or signing services or other special accommodations are needed, please contact the Park Division Office at (530) 896-7800 at least 72 hours before the meeting.

**PURPOSE OF THE NOTICE OF PREPARATION (NOP):** Pursuant to CEQA Guidelines §15082(a), upon deciding to prepare an EIR, the City as lead agency must issue a Notice of Preparation (NOP) to inform the Governor's Office of Planning and Research trustee and responsible agencies, and relevant federal agencies that an EIR will be prepared. This notice is being sent to responsible or trustee agencies and other interested parties. Responsible and trustee agencies are those public agencies, besides the City of Chico, that have a role in considering approval and/or carrying out the project.

The purpose of the NOP is to provide information describing the project and its potential environmental effects to affected agencies and the public, so that they may comment on the scope and content of the information to be included in the EIR. CEQA Guideline §15082(b) states: "... [E]ach responsible and trustee agency and the Office of Planning and Research shall provide the lead agency with specific detail about the scope and content of the environmental information related to the responsible or trustee agency's area of statutory responsibility that must be included in the draft EIR. The response at a minimum shall identify: (A) The significant environmental issues and reasonable alternatives and mitigation measures that the responsible or trustee agency, or the Office of Planning and Research, will need to have explored in the Draft EIR; and (B) Whether the agency will be a responsible agency or trustee agency for the project." The City encourages responsible and trustee agencies and the Office of Planning and Research to provide this information to the City, so that the City can ensure that the Draft EIR meets the needs of those agencies.

Once the Draft EIR is completed, notice will be given, and the Draft EIR will be made available for review. Copies will be sent to all responsible and trustee agencies, to persons or entities who comment on this NOP, and to any person or entity that requests a copy. The Draft EIR will also be available for review at the City of Chico Park Division Office at 965 Fir Street, Chico, CA. Due to COVID-19, please call the office at 530-896-7800 to make an appointment and masks will be required to enter into City offices.

Following the close of the public review period for the DEIR, the City will prepare a final EIR, incorporating and responding to all comments received during the public comment period, for consideration by the Bidwell Park and Playground Commission and the Chico City Council, at a date for which notice shall be provided. As required by CEQA (§21092.5), the final EIR, including written responses to the comments submitted by public agencies, will be provided to commenting agencies at least 10 days prior to certification.

**PROJECT LOCATION:** The areas included within the VFMP encompass City-owned parcels located within City limits (i.e., all City-owned parcels other than the City's water and sewage treatment plant). Specifically, as shown in **Figure 1** (attached), the VFMP Area includes: 274 City-owned parcels, ranging in size from <0.1 acres to >1,000 acres and totaling about 6,400 acres. The main parks, recreational and open space areas discussed in the VFMP are as follows: Bidwell Park (Upper, Middle, Lower and Lost), Lindo Channel, Verbena Fields, the Teichert Ponds, the Airport Open Space, Bidwell Ranch, Foothill Preserve, various South Chico preserved properties, and the greenways along Little Chico Creek, Bidwell Ave., Comanche Creek, Dead Horse Slough, and Butte Creek Diversion Channel. The VFMP does not discuss CARD-owned properties or the Chico urban forest (street trees).

**PROJECT DESCRIPTION:** The City has determined that there are areas within Chico that are at high risk of wildfire, and that vegetation management/fuels reduction will significantly reduce destructive wildfire risk. The VFMP outlines a framework for managing fuel loads and vegetation on City-owned properties to reduce the likelihood of a catastrophic wildfire, such as the 2018 Camp Fire. Implementation of the VFMP would involve thinning, pruning, grazing, prescribed burning, removal, and other modification of trees and vegetation within the VFMP area to reduce the likelihood of a wildfire occurring and to minimize/slow the spread of a wildfire should one occur.

The City has identified the following primary goals to guide preparation of the Plan and its implementation:

- Reduce the likelihood of catastrophic wildfire on City-owned land;
- Reduce the likely impacts of wildfire to recreational resources and natural resources within City-owned parks and greenways;
- Improve the resilience of the wilder parts of the City parks system, such as Upper Bidwell Park, including by mitigating the unhealthy effects of long-term fire exclusion and by planning to safely reintroduce more regular prescribed fire;
- Reduce the likelihood of wildfires spreading from City-owned wildlands into neighborhoods and business districts and endangering lives and property;
- Reduce the likelihood of ignitions and extreme fire behavior to enhance public and firefighter safety;
- Implement practices to avoid or minimize impacts to natural resources;
- Maintain an active role in regional efforts to reduce wildfire hazard in Butte County.

The goals, objectives, and recommendations identified in the VFMP are based on a combination of evaluating existing field conditions and current vegetation and fire risk conditions at City parcels; analyzing spatial datasets of environmental and wildfire risk factors in a Geographic Information System (GIS); conducting GIS-based analysis and modeling to identify areas that may be subject to extreme fire behavior; identifying locations within the VFMP area that may present increased ignition potential or otherwise contribute to increase fire hazard; attending to and fulfilling the objectives of the 2008 Bidwell Park Master Management Plan (BPMMP), and receiving feedback and guidance from many stakeholders through various meetings, site visits, and written comments.

The VFMP describes various vegetation management techniques that may be employed depending on site conditions, including hand labor, mechanical processes (e.g., mowing), herbicide use, and grazing. Appropriate vegetation management techniques to be employed at a specific site would be identified by City of Chico Public Works Department (Parks Division) personnel during annual workplan development. These plans would identify specific treatment types, area or properties to be treated, implementation timing, and other monitoring and tracking needs. To minimize or mitigate impacts to resources in City parklands and greenways, the VFMP identifies best management practices (BMPs) to be implemented during vegetation management activities, and sets standards for desired conditions (e.g., acceptable vegetation density and composition) in different vegetation types. Finally, the VFMP also identifies and describes in detail a handful of priority projects at specific locations. These priority projects serve as examples of the kinds of vegetation management activities the City contemplates in the future.

The VFMP does not require the City to implement any certain vegetation management project or technique, nor does the City have sufficient resources to implement every possible project every year. However, the VFMP spells out the conditions and circumstances under which a given vegetation management technique may be used. In some cases, once the VFMP's EIR is certified, some vegetation management practices in some parklands may be considered maintenance actions (as opposed to discretionary projects). Other actions will still need supplementary environmental review that will tier off the EIR in the future. The practical effect of the VFMP should be to streamline City vegetation management activities for the next ten or more years.

The revised Draft VFMP is available for public review at the following website:  
<https://www.bcrnd.org/city-of-chico-vegetative-fuels-management-plan-3979084>

**ANTICIPATED ENTITLEMENTS AND APPROVALS:** Implementation of the VFMP may include approvals from the following agencies:

- Chico City Council
- U.S. Fish and Wildlife Service (USFWS)
- USACE
- California Department of Fish and Wildlife (CDFW)
- California Department of Water Resources (DWR)
- Butte County Air Quality Management District (BCAQMD)
- CAL FIRE/CFD
- Regional Water Quality Control Board (RWQCB)
- California State Historic Preservation Office (SHPO)
- California Department of Transportation (Caltrans)

**PROBABLE ENVIRONMENTAL EFFECTS AND PROPOSED SCOPE OF THE EIR:** The EIR will analyze and disclose the direct and reasonably foreseeable indirect potentially significant environmental impacts of implementation of the VFMP (CEQA Guidelines §15126.2, §15130). Where significant impacts are identified, the EIR will describe potentially feasible mitigation measures that could minimize significant adverse impacts (CEQA Guidelines §15126.4).

Topics to be analyzed in the EIR include but are not necessarily limited to the following:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Cultural and Historic Resources (including Tribal Cultural Resources)
- Energy
- Geology and Soils (including Geological and Seismic Hazards)
- Greenhouse Gas Emissions/Global Climate Change
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise and Vibration
- Population and Housing (including Growth Inducement)
- Public Services (including Police Services, Fire Protection Services, Parks and Schools)
- Recreation
- Transportation
- Utilities and Service Systems
- Wildfire
- Cumulative Impacts

Some topics will receive greater analysis than others because some resource areas are expected to experience greater potential impacts than others from implementation of the VFMP. Potential issues and impacts to the existing environment are summarized below. These topics will be further evaluated in the Draft EIR.

**Aesthetics** – Vegetation management activities will impact trees in the VFMP area and will be visible along public roads, highways and parks, and open space. In some cases, vegetation management activities will be visible from private properties that abut parks and open space. The activities proposed under the VFMP would not create a new source of substantial light or glare. The Draft EIR will evaluate whether the VFMP would adversely affect the existing visual character or quality of the Plan area and its surroundings.

**Air Quality** – Vehicle and equipment emissions generated by VFMP activities, as well as prescribed fires and burn piles, may impact air quality. The Draft EIR will describe the potential short- and long-term impacts of the VFMP on local and regional air quality based on methodologies stipulated by the

Butte County Air Quality Management District (BCAQMD) and will include any required mitigation measures to address air pollutant emissions generated by the VFMP.

**Biological Resources** – The VFMP area includes plant and animal species that are identified as candidate, sensitive or special status species (i.e. “protected species”) by the California Department of Fish and Wildlife and/or U.S. Fish and Wildlife Service. In addition, there are riparian habitats and sensitive natural communities within the VFMP area. The Draft EIR will examine the potential for substantial adverse effects on biological resources.

**Cultural and Tribal Cultural Resources** – The analysis in the Draft EIR will assess the potential for ground disturbing activities associated with the VFMP to damage or destroy recorded or unrecorded archaeological sites and paleontological resources and will include the results of consultation with Native American representatives. The Draft EIR will also address potential effects on tribal cultural resources.

**Noise** – Certain vegetation management methods proposed under the VFMP (such as the use of mechanical equipment to remove vegetation) could result in short-term generation of noise above ambient levels while those activities are taking place. The Draft EIR will consider whether the implementation of vegetation management activities will: exceed established standards in the City’s General Plan and noise ordinance, and other applicable standards; have the potential to expose people to excessive ground borne vibrations and noise levels; and result in a substantial temporary or periodic increase in ambient noise levels in the VFMP area.

**Cumulative Impacts** – The Draft EIR will evaluate cumulative impacts of the VFMP, including the effects of other past, present, and reasonably foreseeable projects in the vicinity (CEQA Guidelines §15130). The Draft EIR will also identify and examine a range of reasonable alternatives to the VFMP, including, but not limited to, a No Project Alternative (Guidelines §15126.6).

Date: 9/9/20

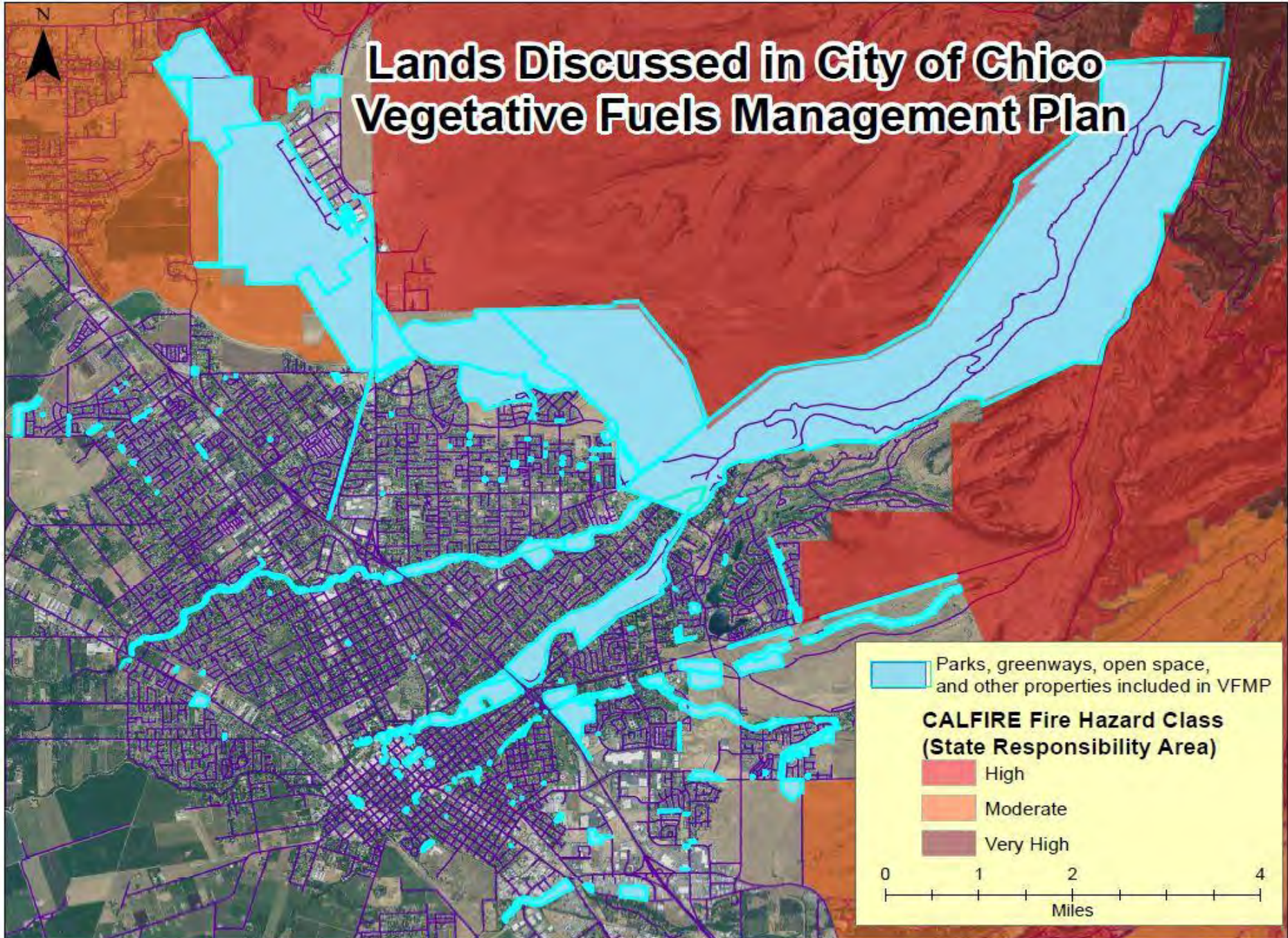
Name: Linda Herman

Signature: *Linda Herman*

Title: City of Chico Park & Natural Resources Manager

Attachment: Map

# Lands Discussed in City of Chico Vegetative Fuels Management Plan



September 10, 2020

Dear Park Commissioners and Staff, I ask that the following projects and actions be considered further in regard to the Vegetation Fuels Management Plan.

### **Removal of 5.4 Verbena Fields Stewardship Project**

The Verbena Fields project was a partnership between the City of Chico, the Mechoopda Tribe, Big Chico Creek Watershed Alliance and Streamminders, which got underway in 2006 – with the restoration of the former gravel quarry to a 20 acre wild land park with trails, native plants and a tribal center area. Volunteer work has taken place in Verbena Fields since 2006 (though not consistently) for years and the Mechoopda have been involved in collecting native willow at the site and more.

In terms of fuel management, which is the focus of the VFMP, the tasks needed at this site truly can be considered maintenance as the original restoration plan of this site underwent CEQA review.

I believe the tasks outlined in the VFMP (mainly pruning dead willow, removing Spanish broom, and other weed removal) can easily be carried out by the Mechoopda Tribe and volunteers. Over 100 participants have participated in the Mechoopda's Tribal Environmental Knowledge program, and hopefully will be interested in volunteering at Verbena and elsewhere in the City's greenways and Bidwell Park. As for a cultural burn in this area, I think that the neighborhood would have to be spoken with about this and then careful planning with the City of Chico Fire Department as well if it were to proceed.

The City of Chico and the Mechoopda Tribe have partnered in many park/greenway projects through the years. The removal of this project from the "shovel ready" list will enable us to add a project that needs more in depth planning and resources devoted to it. The Verbena Fields Stewardship project can be undertaken immediately. The Mechoopda have been partners in the planning of the VFMP and I trust they will continue to be partners in respect to the work on the various projects in the City's greenways and parks.

### **Add the following Project to the "Shovel Ready List"**

Vegetation Fuels Reduction Project for parts of Lower and Middle Park

The project area would be from One Mile east to Five Mile Recreation Area. For years, the City of Chico Park Division has had volunteers work in Bidwell Park to remove invasive weeds. In more recent years, the removal of lower lying vegetation in Lower Park and Middle Park has been conducted with goats, the Ivy League and recently a CAL Fire grant, which paid for 800 hours of California Conservation Corps work. This work definitely needs to continue through this project and I think has been mistakenly termed as routine maintenance by the Park Division.



The correct removal of exotic, invasive trees and shrubs through a variety of means is a priority in terms of fuel reduction. Such exotic trees include Catalpa, Japanese Privets, English Hawthorn, European Hackberry, Prunus, Chinese Pistache, Black Locust, Black Walnuts, Pyracantha, Fig, Bladder Senna, Winged Elm, Olive require different removal and treatment techniques depending on the species. A written plan will describe the unique techniques and describe timeline and the necessary follow up needed for the techniques to be efficient and successful. The project needs to go through the CEQA process that will take place with the full VFMP.

When we consider a project like the Lower and Middle Park vegetation fuels reduction as just “routine” maintenance – we run the risk of having another Nature Center debacle on our hands. Proper planning is a must, boots on the ground with knowledge of how to handle the various species is needed and follow up must be planned for at the appropriate time. Not all species have the same removal and or herbicide application techniques and time of year is also an important variable in effective vegetation management.

Included in such a plan, will be how to dispose of the large amount of vegetation material produced by the removal of large weed trees and shrubs. In some areas, prescribed burns may be able to clear some of the vegetation but that tool will definitely have to be carefully planned and directed.

Lower Park and some of Middle Park’s location close to homes and the health of the park in general makes this project a priority.

Add Comanche Creek Greenway Project

Update (way out of date) and implement Comanche Creek restoration plan. Volunteers have spent thousands of hours trying to manage this area. There needs to be an updated plan, and the support needed to remove invasive weed trees, and other exotics.



## BPPC Natural Resource Committee Report

Meeting Date 9/16/20

DATE: 9/11/20  
TO: BPPC Natural Resource Committee  
FROM: Linda Herman, Park & Natural Resources Manager  
SUBJECT: REVIEW OF THE PEREGRINE POINT DISC GOLF AGREEMENT WITH OUTSIDE RECREATION ADVOCATES, INC (ORAI).

### REPORT IN BRIEF:

At its 2/24/20 meeting, the Bidwell Park & Playground Commission (BPPC) considered the 2019 biological monitoring reports prepared by the City's consultant, the 2019 annual report from the Outside Recreation Advocacy Inc, (ORAI), and an update on the mitigation measures for the Peregrine Point Disc Golf Course (PPDG). The BPPC forwarded discussion of the five-year review of the PPDG Operating Agreement with ORAI to the Natural Resource Committee.

**Recommendation:** The Park & Natural Resources Manager recommends the Committee recommend to the BPPC:

1. Approval of extending the Agreement with ORAI for another five-years, and
2. Amending the Agreement to change the frequency of the biological monitoring based on the consultant's recommendations, and the provision that ORAI pay for the monitoring costs.

### FISCAL IMPACT:

In 2019, the City spent \$21,821, for biological monitoring, split rail fencing, waddles, and other materials due in part to the Stoney Fire damages. ORAI contributed approximately \$2,604 in materials and 806 hours in volunteer labor (a value of approximately \$21,500 @ \$25/hr.) toward the disc golf course maintenance and mitigation. COVID-19 impacted ORAI and Staff's ability to perform work on the course in 2020. A few individuals from ORAI have worked on their own on the course, but there have been very few full work crew days held.

### BACKGROUND:

In 2010, an Agreement between the City and ORAI, a copy of which is in Exhibit A, was executed to require that the group provide the following:

1. Closure and relocation of the existing 9-Hole disc golf short course
2. Redesign and construction of the long course (18 holes)
3. Mitigation measures during construction, and
4. Ongoing maintenance of the course and monitoring of Butte County Checkerbloom, Bidwell Knotweed/Wildflowers, and Blue Oaks pursuant to the PPDG Mitigation and Monitoring Program (MMMP).

Staff provided updates to the BPPC on 3/26/18, 4/29/19, and 2/24/20 regarding ORAI's compliance with their Agreement (ORAI compliance and mitigation status summaries attached as Exhibit "A". The BPPC approved Staff playing a larger role in managing the PPDG to work with ORAI to complete the work needed on the course by the end of the second 5-year extension period in June 2020. Staff and ORAI has worked together to complete the following items:

1. Reinstalled mulch destroyed in the Stoney Fire on tees and targets on the front half of the course and in areas that can be reached manually.
2. Installed new tree protection measures by wrapping the priority trees with plastic garden fencing.
3. Alternate basket locations were identified and reviewed by the Consultant for environmental concerns.
4. Placed native grass waddles or other method to better delineate and decommission trails. .
5. Installed split rail fencing around of sensitive Bidwell's Knotweed areas between Holes 2 and 14
6. Installation of informative tee signs and other interpretive signage.
7. The basket at Hole 18 that was damaged by Stoney Fire bulldozers was replaced.
8. Tee signs posts have been installed for all 18 Holes.

The City's consultant performed the 2018 and 2019 biological studies of the Checkerbloom, Knotweed, and Blue Oaks at PPDG. In their annual reports, the Consultant provided the following observations and recommendations:

Blue Oaks:

- While disc golf activities do result in bark damage, there is no evidence that the overall health of the trees is being significantly impacted by these activities as the average health status of the priority oak trees and the reference oak trees were the same or nearly the same.
- Deducted that since there is no correlation between the tree health status and the amount of disc damage, the continued annual monitoring does not appear to be useful or necessary.
- Recommended continuing to wrap potentially impacted Oak trees with plastic fencing, but not tightly and to use stakes or fence posts to provide space between the wrap and tree trunks.
- Recommended occasional monitoring (i.e. every 5 to 10 years) of just the overall health and of the priority and reference oak trees by a Certified Arborist.

Butte County Checkerbloom (Special Status List 1)

- A few more locations were observed in 2019, but the general distribution of the Butte County Checkerbloom (BCC) within the course remained consistent as in past surveys.
- The majority of the BCC areas showed no evidence of human disturbance, except for trails through two groups (CG4 and CG3).
- There is evidence that a number of racemes are being browsed by wildlife.
- Recommended that the intensive monitoring be reduced to every 3-5 years, and/or be simplified to detecting evidence of disc golf related disturbance within the BCC areas rather than conducting individual plant and stem counts.

Bidwell Knotweed (Special Status List 4)

- Bidwell's knotweed distribution across the course site has remained relatively consistent and variability most likely attributed to response to natural environmental conditions.
- Only a few small portions of the occurrences have showed evidence of human disturbance, noting that the human related impacts are not solely due to disc golf use, and the likely larger percentage of the damage appears to be from the trails used by hikers and mountain bikers.
- Recommended that the intensive monitoring be conducted every 3-5 years or simplified by documenting human disturbance or bare ground in the for mapped patches of Bidwell's knotweed to track the effectiveness of management responses (i.e. increasing signage and making trails more defined etc.).

The Committee's review of the ORAI's compliance with the Agreement and a possible another 5-year extension was delayed due to COVID-19 restrictions.

**DISCUSSION:**

The following table lists the pending tasks that needed to be completed by ORAI or City Park Staff in 2020. However, the COVID-19 pandemic greatly impacted ORAI's and the City's ability to complete the outstanding work at PPDG. As with the City's many other volunteers, ORAI members were not comfortable going outside and gathering in groups during the shelter in place orders. Park Staff was reduced in deployment and were busy putting up signs, sanitizing and other COVID related tasks during that time. They are also busy with increased vandalism, graffiti and maintenance as Bidwell Park is busier than ever, especially with Council's previous direction to allow camping in the park during the pandemic. Status of the work that has been completed is also depicted in the table.

TASK	TENTATIVE TIMELINE	STATUS
Tee Signs – ORAI to Print/install tee signs	March - June, 2020	ORAI will place temporary laminate signs on Tees to garner public feedback and sponsors. Permanent signs will be made following the temp review period.

<b>Tree Wraps</b> - Additional tree wrap installation on new trees identified near alternate basket locations. Upgrade existing wraps with new wood spacer design.	March - June, 2020	ORAI has installed tree protectors on some of the trees near the alternate pin locations. Materials have been procured and cut for the remaining trees and will be installed once the ability to have full workdays are allowed.
<b>Annual mulch spreading</b> – Mulch Chips have been delivered on site. Park Staff will rent an UTV and deliver chips to backside of course for spreading by ORAI.	March	Some chips have been spread by hand by ORAI .City Staff has not yet been able to deliver the bulk loads of chips to the back holes.
<b>Alternate Baskets</b> - Identify and install pin sleeves for alternate baskets locations for last 3 holes	March -April	All of the alterative basket locations have been installed by ORAI and have pin sleeves, except for holes 9 and 16 where there is s rock base.
<b>Trail Delineation</b> - Continue the use wattles and rice straw to designate primary trails on the lower holes and abate rogue trails	On-Going	Park staff have put brush and other obstacles to try to stop bicyclists from using the trail along the west property line fence, and will be using additional waddles to delineate and decommission trails on the back holes.
<b>Split Rail Fencing</b> - Work with the Parks Staff to install more split rail to protect sensitive species areas identified by the Consultant.	April - May, 2020	Staff mapped the areas to fence off, on hole 7, 14, and 15, but have not had time to install
<b>Interpretive Signs</b> – Trail signs to direct South Rim users were installed. New Open/Close sign has been ordered. New Kiosk and sensitive species interpretive signs for sensitive areas.	March-April	Staff is working with Big Chico Creek Ecological Reserve students to help design the interpretive signs.
<b>Replace Burned Benches</b> - Start groundwork on replacing benches lost in the Stoney Fire	Low priority Fall 2020	Two benches have been rebuilt by ORAI at Hole 12 and 13.
<b>Loop Trail</b> – Develop a return loop trail back to the parking lot out of the disc golf play area for hikers and bikers.	On-going	No work has been done on this trail.
<b>Parking</b> –gravel the entrance and parking area and place better signage on Hwy 32 entrance.	On-going	No work has been done on this task.

As discussed previously with the Commission, ORAI fulfilled all of the mitigation and agreement requirements pre and during construction of the course. They paid for ongoing biological monitoring reports from years 2011-2016, even though Exhibit B in the Agreement states that they only pay for the surveys every other year. ORAI has also continued to be good stewards and maintained the course by picking up trash, fixing benches split-rail fencing, planting acorns, spreading chips when they can, etc., which lessens the burden on the City's limited Park staff. They provide guidance and direction to their members as well as the public, including nongolfers who also use the area extensively, about the rules of the course and the need to protect the Peregrine Point trailhead area. For these reasons, Staff recommends that the Agreement with ORAI be extended for another 5 years.

Based on no definitive evidence of significant impacts caused by only disc golfers, Staff also recommends that the Agreement be amended to reflect the consultant's recommendations to change the monitoring frequency of Blue Oaks to five (5) years, and the monitoring of the Checkerbloom and Knotweed to every three (3) years to be paid by the City.

**Attachments:**

Exhibit A: ORAI Agreement

Exhibit B: ORAI Agreement Compliance Status Summary

ITEM 2.2 EXHIBIT A

OPERATING AGREEMENT  
FOR RECREATIONAL SERVICES IN BIDWELL PARK  
(CITY OF CHICO/OUTSIDE RECREATION ADVOCACY, INC.)

THIS OPERATING AGREEMENT (Agreement) entered on June 18, 2010, between the City of Chico, a municipal corporation of the State of California (City), and Outside Recreation Advocacy, Inc., a non-profit corporation (Operator).

RECITALS

WHEREAS, City desires to maintain public use of disc golf activities at the premises in Bidwell Park off Highway 32, more particularly described below;

WHEREAS, Operator desires to construct and maintain the disc golf course in compliance with the Bidwell Park Master Management Plan (MMP), and to provide disc golf activities for members and the public;

THEREFORE, IT IS AGREED by both City and Operator as follows:

1. DESCRIPTION OF PREMISES

City hereby grants to Operator permission to enter upon, occupy, and use the premises located at in Bidwell Park described in Exhibit A attached hereto and by this reference incorporated herein, for the purpose of a disc golf facility and subject to the terms and conditions set forth herein. Facilities on the premises will include, but are not limited to, improvements and equipment in areas specific to disc golf (Collectively "Disc Golf Facility"). City and Operator shall work cooperatively to establish management responsibility levels, to be identified in a Disc Golf-Trailhead Area Plan, for locations identified as joint-use areas within the premises.

2. SCOPE OF USE

The premises, as depicted in Exhibit A, may be occupied and used by Operator solely to conduct the following Recreational Services in Bidwell Park limited to:

- a. 18-hole disc golf long course consistent with City Council approval on May 19, 2009, the Bidwell Park Master Management Plan (BPMMP), Environmental Impact Report (EIR), and Master Mitigation and Monitoring Program (MMMP);
- b. 12-hole disc golf short course consistent with City Council approval on May 19, 2009, the BPMMP, EIR, and MMMP. Operator understands that City Council approved the 12-hole disc golf short course for a period of up to five-years from the date of City Council approval during which time a search for a replacement short course will be conducted;

## ITEM 2.2 EXHIBIT A

- c. All Recreational Activities and availability of the premises shall be subject to weather conditions based on the City of Chico Bidwell Park Wet Weather Policy; and
- d. Operator may sell non-food items including, but not limited to, hats, T-shirts, and discs, for the benefit of Operator's non-profit organization at games and exclusive use days.

### 3. TERM

The initial term of this Agreement shall be for the five-year period commencing on June ~~18~~, 2010, and terminating on June ~~17~~, 2015. Thereafter, the term of this Agreement shall be automatically extended for two successive five-year periods.

At the end of the fourth year of this Agreement, City will conduct a review of the Agreement to determine whether City will agree to extend the Agreement for a second five-year term. If the Agreement is so extended, City shall conduct another review at the end of the ninth year in order to determine whether City will agree to extend the Agreement for a third five-year term.

### 4. PERMISSION NOT EXCLUSIVE

The permission given is not exclusive to Operator, and City reserves the right at any time to permit other persons to conduct these above-mentioned Recreational Services in Bidwell Park.

Notwithstanding the above, Operator shall have exclusive use of each course for up to ten (10) days per year. Operator will:

- a. Limit the number of players to 90 during tournaments;
- b. End tournaments by 5:00 p.m.;
- c. Not hold tournaments during state holidays; and
- d. Have the ability to reschedule tournaments that are cancelled due to weather or other conditions beyond Operator's control (i.e. air quality and wildfires) within sixty (60) days of the tournament date.

Operator shall submit a list of the exclusive use dates to City on an annual basis on or before February 1 of each year.

Tournament fees and entry charges will be determined by Operator for the exclusive use days.

## ITEM 2.2 EXHIBIT A

The parking area and non-disc golf related facilities including, but not limited to, restrooms and picnic tables shall remain open to the public during exclusive use days unless Operator obtain park permits and reservations pursuant to CMC 12R.08 and 12R.10.

Operator will be allowed to hold a game one Saturday per month. Games shall require no fee or sign-up, and be open to the public. The Disc Golf Facility will be open to the public during such games and will be considered non-exclusive use days.

### 5. CONSIDERATION

Consideration, in lieu of payment of any operation fees, shall be set forth as follows:

- a. The principal consideration to be given by Operator to City for its use of the premises is the agreement by Operator to implement the MMMP in accordance with this Agreement, construct both courses, and use such premises for the purpose of operating the Recreational Services, described in Section 2, above, for Operator's members as well as members of the general public;
- b. As additional consideration, Operator shall provide an annual report (i.e. events, usage, status of mitigation and monitoring program) to the Bidwell Park and Playground Commission; and
- c. As additional consideration, Operator shall regularly publicize the availability, including, but not limited to, hours of operation and special events.

### 6. GENERAL PUBLIC AVAILABILITY REQUIREMENTS

The premises and associated Recreational Activities will be available to the general public at all times except those days of Operator's exclusive use as defined above. All Recreational Activities and availability of the premises shall be subject to weather conditions.

### 7. COMPLIANCE WITH LAWS

In exercising the permission given, Operator shall comply with all federal, state, and City statutes, ordinances, and regulations, including, but not limited to, any standards for conducting Recreational Services in Bidwell Park, now or hereafter adopted.

### 8. WASTE AND NUISANCE

During the term of this Agreement, Operator shall not commit nor allow to be committed any waste on the premises nor maintain or allow to be maintained any nuisance thereon.

### 9. NONDISCRIMINATION

In exercising the permission given, Operator shall not discriminate against any person on the basis of race, religious creed, color, national origin, ancestry, physical disability, mental

## ITEM 2.2 EXHIBIT A

disability, medical condition, marital status, sex, age, or sexual orientation. The California Fair Employment and Housing Act defines discrimination because of sex as including sexual discrimination, gender discrimination, and discrimination based on pregnancy, childbirth, or related medical conditions.

### 10. CONDITION OF PREMISES

At the commencement of this Agreement, Operator shall accept the premises and all improvements thereon and all facilities appurtenant thereto in their present condition and "as is". No representation, statement or warranty, express or implied, has been made by or on behalf of City as to the condition of the premises or as to the use that may be made of such premises. In no event shall City be liable for any defect in the premises or for any limitation on its use.

### 11. IMPLEMENTATION PLAN AND CONSTRUCTION

#### a. 18-Hole Disc Golf Long Course and 18 Disc Golf Targets

Within sixty (60) days of executing this Agreement, Operator agrees to provide an implementation plan to the City for the construction of the 18-hole disc golf long course and the placement of 18 disc golf targets at alternative locations outside of Bidwell Park consistent with the phases and time frames in Exhibit C. The construction of the 18-hole disc golf long course shall be consistent with the BPMMP Alternative B and MMMP. Operator may prepare the implementation plan in phases. The implementation plan, or any phased portions of the plan, shall be approved by the City prior to construction. The implementation plan shall be enforceable under this Agreement. Operator will provide a draft budget which includes Operator's best estimate of the costs, time and materials that will be needed to accomplish the specific time frames and milestones set forth in the implementation plan

In accordance with specific time frames and milestones set forth in the implementation plan, Operator agrees to complete construction of the 18-hole disc golf long course and the placement of the 18 disc golf targets within eighteen (18) months of City's authorization to proceed. Completion schedule may be modified with City approval if weather or other conditions beyond Operator's control delay construction.

City's authorization will include approval of City's Proposition 40 grant funds for an amount not to exceed \$52,000.00 for reimbursement for construction of the 18-hole disc golf long course and placement of eighteen (18) disc golf targets at alternative locations outside of Bidwell Park. A minimum of \$7,200.00 of City's Proposition 40 grant funds will be used to install 18 disc golf targets at alternative locations outside of Bidwell Park.

Operator will provide up to \$52,000.00 of matching funds, in money or equivalent value of supplies, materials, services and volunteer time. Volunteer time shall be valued at a per hour rate based on the current or revised rate for California set forth at



## ITEM 2.2 EXHIBIT A

[www.independentsector.org/programs/research/volunteer\\_time.html](http://www.independentsector.org/programs/research/volunteer_time.html). Operator will provide documentation of volunteer hours with each reimbursement request or quarterly, whichever is more frequent.

Operator and City will coordinate expenditure of grant funds in accordance with the terms and conditions of the granting agency and the reimbursement requirements set forth in section 13, below.

### b. Disc Golf Short Course

Operator shall remove all tone poles/targets and other disc golf course improvements related to the 18-hole disc golf short course at the Disc Golf Facility upon the earlier of:

1. Completion of the construction of the 12-hole disc golf short course consistent with the BPMMP Alternative B and the MMMP for operation until May 19, 2014; or
2. Completion of construction of a 12-hole equivalent located outside of the Disc Golf Facility. The equivalent does not have to be located at the same facility and may be cumulative.

If a 12-hole equivalent is not constructed by December 15, 2012, Operator agrees to provide an implementation plan to the City which is consistent with the BPMMP Alternative B and the MMMP, for the construction of the 12-hole disc golf short course consistent with the phases and time frames in Exhibit D by no later than January 15, 2013. Operator may prepare the implementation plan in phases. The implementation plan, or any phased portions of the plan, shall be approved by the City prior to construction. The implementation plan shall be enforceable under this Agreement.

Notwithstanding the above, if a new location for a 12-hole disc golf short course or the equivalent is not identified and approved by the City Council on or before May 19, 2014, Operator shall remove all tone poles/targets and other disc golf course improvements related to any disc golf short course at the Disc Golf Facility.

## 12. MITIGATION AND MONITORING REQUIREMENTS

In compliance with the BPMMP, Operator agrees to construct the 18-hole long and 12-hole short disc golf courses at the Disc Golf Facility and conduct all Recreational Activities on premises in accordance with Resolution No. 93-08, entitled, "Resolution of the City of Chico Council of the City of Chico Adopting Findings Regarding Environmental Effects and Adopting a Master Mitigation Monitoring Program for the Bidwell Park Master Management Plan Update (State Clearinghouse Number 2004102045)." A copy of the MMMP with all requirements is attached as Exhibit B.

## ITEM 2.2 EXHIBIT A

Prior to construction and annually thereafter, City agrees to collect data pursuant to Mitigation Measure BIO-1B-F, Mitigation Measure BIO-1D-E, and Mitigation Measures BIO-3C-F and -K, required by and in accordance with the MMMP. However, Operator agrees to reimburse City for costs associated with such data collection in an amount not to exceed five thousand dollars (\$5,000.00). During the initial or any extended term of this Agreement, this “not to exceed amount” shall be increased annually by three percent (3%).

### 13. REIMBURSEMENT

#### a. Costs and Reimbursement

In accordance with the implementation plan required pursuant to section 12.a, above, qualified, actual costs will be reimbursed to Operator as provided for in this section 13. The maximum amount to be reimbursed to Operator pursuant to this Agreement shall not exceed \$52,000.00. All funds to be paid and remitted by City to Operator pursuant to this Agreement shall include the documentation of the actual costs to be paid or reimbursed, including but not limited to invoices. Within 15 business days (i.e., other than Saturday, Sunday, or legal holidays recognized by City) of its receipt of the monthly reimbursement submittal, City will confirm its review and approval to Operator. In the event that City notifies Operator of any deficiency in a monthly reimbursement submittal, City and Operator will cooperate in good faith to resolve any deficiency promptly.

#### b. Completion, Inspection, and Acceptance of Improvements

Operator shall install and construct the 18-hole disc golf long course and the 18 disc golf targets in alternative locations outside Bidwell Park in compliance with City approved plans and specifications. The 18-hole disc golf long course and the 18 disc golf targets in alternative locations outside Bidwell Park shall not be accepted unless completed in a manner consistent with the design plans and specifications, and constructed in accordance with applicable City standards relating to the installation and construction of the 18-hole disc golf long course and the 18 disc golf targets in alternative locations outside Bidwell Park. Prior to City's acceptance of the 18-hole disc golf long course and the 18 disc golf targets in alternative locations outside Bidwell Park, such improvements shall be subject to inspection by City. Operator shall provide City with:

1. As-built drawings or similar design plans and specifications in a form complying with applicable City requirements; and
2. Evidence satisfactory to City that all costs of installing and constructing the 18-hole disc golf long course and the 18 disc golf targets in alternative locations outside Bidwell Park have been fully paid by Operator.

### 14. MAINTENANCE AND REPAIR

Operator shall, at its sole cost and expense, maintain the premises and all disc golf improvements thereon and appurtenances thereto in good repair and in at least as good condition as that in which they were delivered, ordinary wear and tear excepted.

## ITEM 2.2 EXHIBIT A

### 15. UTILITIES AND SERVICES

During the term of this Agreement, Operator shall be responsible for providing and paying for any electricity or other utilities required on the premises and City shall have no responsibility of any kind for any such utilities.

### 16. RIGHT OF ENTRY

Operator shall permit City and any agent or employee of City to enter in and upon the premises at all reasonable times for the purpose of inspecting same, or for the purpose of posting notices of nonresponsibility for alteration, additions, or repairs, without any liability to Operator for any loss of occupation or quiet enjoyment of the premises thereby occasioned.

### 17. ALTERATIONS OR ADDITIONS TO IMPROVEMENTS ON PREMISES

All improvements to the premises made by Operator will be done in accordance with City approved plans. Operator shall not make any alteration or addition to the improvements on the premises without the prior approval of City.

Upon termination of this Agreement, any alterations or additions to the improvements on the premises made by Operator shall become the property of City without the payment of any compensation therefor; provided, however, that upon termination of this Agreement, City shall have the right to require Operator to remove any additions to the improvements on the premises and/or restore any altered improvement to its original condition, all at Operator's sole cost and expense.

### 18. INDEMNIFICATION

Operator shall exercise the permission granted herewith at Operator's own risk and Operator shall indemnify City, its boards, commissions, and members thereof, its officers, agents, and employees, against all liability or damages, costs, losses, and expenses, including, but not limited to, attorneys' fees, arising out of or in any way connected with any construction, alterations or additions to premises performed by Operator, any injuries caused by or related to Operator's equipment on premises, and any injuries to participants of organized events or tournaments held on premises and sponsored by Operator.

Operator further agrees that City shall not be liable to Operator if for any reason whatsoever Operator's occupation or use of the premises hereunder shall be hindered or disturbed by third parties, including, but not limited to, park users, weather, animals, or outside enforcement agencies.

## ITEM 2.2 EXHIBIT A

### 19. GENERAL LIABILITY INSURANCE

During the term of this Agreement, Operator shall, at its sole cost and expense, obtain commercial general liability insurance (occurrence policy form) from one or more U.S. domiciled insurance companies licensed to do business in the State of California with an A.M. Best Company rating of "B" or better or, in the alternative, an unlicensed U.S. domiciled company or companies with an "A" rating, which provides coverage for bodily injury, personal injury and property damage liability in the amount of at least \$1,000,000 per occurrence, and \$2,000,000 in the aggregate, with a maximum policy deductible of \$5,000. The insurance coverage required herein shall be evidenced by a certificate of insurance with policy endorsements and shall be executed by an authorized official of the insurer(s). In addition to the limits of coverage described above, the certificate of insurance shall provide that the insurer shall provide to City at least 30 days prior notice of cancellation or material change in coverage, or 10 days prior notice of cancellation for non-payment.

Operator acknowledges and agrees that City of Chico, its officers, boards and commissions, and members thereof, its employees and agents, are covered as additional insureds with respect to any liability arising out of the activities of Operator as the named insured. Such additional insured status shall be evidenced by a policy endorsement executed by an authorized official of the insurer(s). A blanket endorsement which provides additional insured status to any person or organization with whom Operator, as named insured, has entered into a written contract, such as this Agreement, shall satisfy this requirement.

The insurance coverage required herein shall be primary insurance with respect to the City of Chico, its officers, officials and employees. Any insurance or self-insurance maintained by the City of Chico, its officers, officials or employees shall be in excess of the insurance afforded to the named insured by the insurance coverage required herein and shall not contribute to any loss. Such primary insurance status shall be evidenced by a policy endorsement issued by an authorized official of the insurer(s). In the alternative, a letter issued by an authorized official of the insurer(s) and copies of the pertinent page(s) of the policy shall satisfy this requirement.

### 20. NOTICE OF DEFAULT

Operator shall not be deemed to be in default of any of the covenants and conditions of this Agreement, except those covenants and conditions with respect to a sale, assignment, encumbrance or subletting of the leased premises or with respect to abandonment of the leased premises, unless City shall first serve Operator with a notice describing the nature of such default and requiring Operator to cure such default on or before a date not less than 10 days following the date of such notice and Operator shall thereafter fail to cure such default on or before the date specified in such notice.

## ITEM 2.2 EXHIBIT A

### 21. REMEDIES UPON DEFAULT

Upon default by Operator of any of the covenants and conditions of this Agreement the rights of City shall be as follows:

- a. City, without any further notice to Operator, shall have the right to perform those acts in respect to which Operator is in default, and Operator shall thereafter promptly reimburse City for any costs incurred by City in connection therewith together with interest thereon at the legal rate.
- b. City, immediately upon serving notice thereof on Operator, shall also have the right to terminate this Agreement and any and all interest of Operator in and to the leased premises including all improvements thereon and facilities appurtenant thereto by legal proceedings or otherwise.

All rights and remedies contained herein shall be construed and held to be cumulative and not one of them shall be exclusive of the other and City shall have the right to pursue any one or all of such remedies or any other remedy or relief which may be provided for by law whether or not stated in this Agreement.

### 22. WAIVER OF DEFAULT

Any waiver by City of a default of this Agreement arising out of the breach of any of the covenants, conditions, or restrictions of this Agreement shall not be construed or held to be a waiver of any succeeding or preceding default arising out of a breach of the same or any other covenant, condition, or restriction of this Agreement.

### 23. TERMINATION

Either party hereto may terminate this Agreement at any time by giving the other party hereto at least 180 days prior notice of such termination; provided, however, that upon the breach by Operator of any of the terms and conditions of this Agreement, City may terminate this Agreement and Operator's right to occupy and use the premises immediately upon giving notice of such termination to Operator.

### 24. SALES, ASSIGNMENTS, TRANSFERS, AND ENCUMBRANCES

Due to the unique nature of this Agreement, Operator shall not sell, assign, transfer, or encumber this Agreement or any interest of Operator in and to the premises, in whole or in part, and any such sale, assignment, transfer, encumbrance, whether voluntary or involuntary, shall be void and of no effect.

ITEM 2.2 EXHIBIT A

25. AMENDMENTS

This Agreement may be modified or amended only by a writing duly authorized and executed by both City and Operator. It may not be amended or modified by oral agreement or understanding between the parties unless the same shall be reduced to a writing duly approved and executed by both parties.

26. NOTICES

All notices or demands to be given, made, or sent, or which may be given, made, or sent by one party to the other pursuant to this agreement shall be deemed to have been given, made, or sent when made in writing, and deposited in the U.S. mail, postage prepaid, addressed as follows:

a. To City: City of Chico  
Attention: City Manager  
P.O. Box 3420  
Chico, CA 95927-3420

b. To Operator: Outside Recreation Advocacy, Inc.  
P.O. Box 7762  
Chico, CA 95926

The address to which any notice demand, or other writing may be given, made, or sent by any party as above provided may be changed by written notice given by such party as above provided.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the effective date first set forth above.

CITY OF CHICO


OUTSIDE RECREATION ADVOCACY,  
INC.

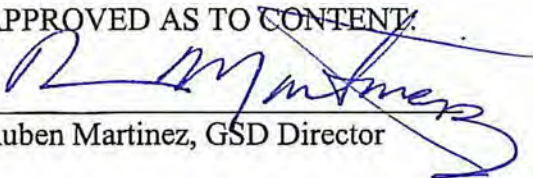
  
David Burkland, City Manager

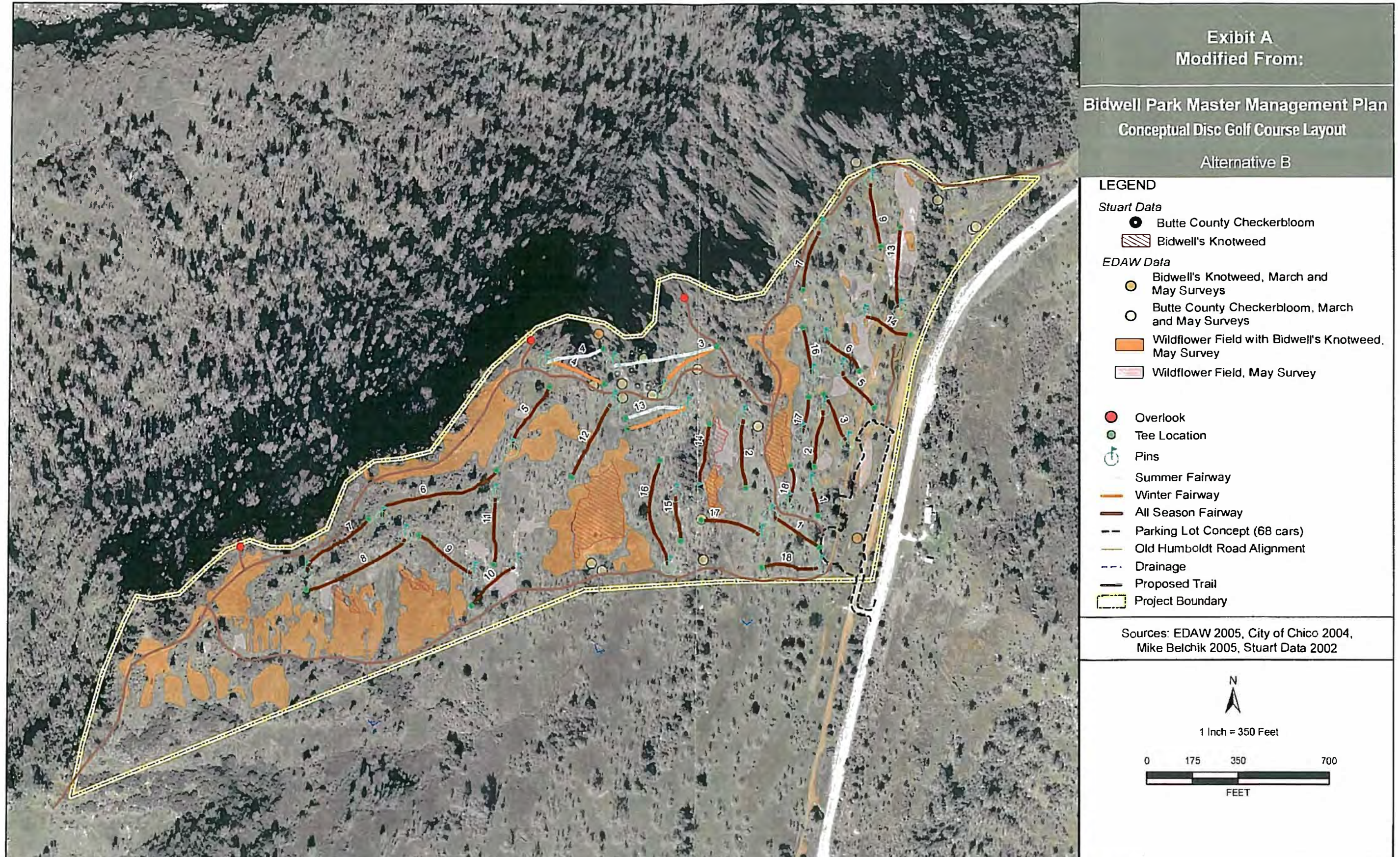
  
Lon Glazner, President

APPROVED AS TO FORM:

Authorized pursuant to City Council  
Minute Order No. 05-10 approved on 4/20/10.

  
Lori J. Barker, City Attorney  
By: Alicia M. Rock  
Assistant City Attorney

APPROVED AS TO CONTENT:  
  
Ruben Martinez, GSD Director



**Table 1-1: Master Mitigation Monitoring Program for the Bidwell Park Disc Golf/Trailhead Area concept Plan E.I.R.**

Mitigation Measure	Party Responsible for Implementation	Funding Responsibility	Implementation Trigger/Timing/ DATE	Frequency
<b>AIR QUALITY</b>				
<p><b>Mitigation Measure AQ-2: Control Short-term Construction Emissions</b></p> <p>Consistent with BCAQMD guidelines, the following measures shall be implemented to reduce potentially significant effects on air quality resulting from construction related to the Disc Golf/Trailhead Area Concept Plan Project:</p>	OPERATOR/CITY	OPERATOR/CITY	During construction activities	Monitor weekly during construction
a. Alternatives to open burning of vegetative material removed from a project site shall be used unless otherwise deemed infeasible by the AQMD. Among suitable alternatives are chipping, mulching, or conversion to biomass fuel;	N/A	N/A	TBD	Monitor weekly during construction
b. Adequate and applicable dust control measures (identified in detail below) shall be implemented during all phases of project development and construction as outlined below:	OPERATOR	OPERATOR	During construction activities	Monitor weekly during construction
1. All active construction sites shall be watered at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.	OPERATOR	OPERATOR	During construction activities – primarily where vehicles are being used	Implement daily; monitor weekly during construction.
2. Chemical soil stabilizers shall be applied to inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).	OPERATOR	OPERATOR	Will review on a case by case basis – may not be needed for small sites	Implement as needed, monitor weekly during construction
3. On-site vehicles speeds shall be limited to a speed of 15 mph on unpaved roads.	OPERATOR	OPERATOR	TBD	Implement daily; monitor weekly during construction
4. Land clearing, grading, earth moving or excavation activities shall be suspended when winds exceed 20 miles per hour.	OPERATOR	OPERATOR	TBD	Implement and monitor as needed



OPERATING AGREEMENT FOR RECREATIONAL SERVICES IN BIDWELL PARK (CITY OF CHICO/OUTSIDE RECREATION ADVOCACY, INC)

ITEM 22 EXHIBIT A  
EXHIBIT B

Mitigation Measure	Party Responsible for Implementation	Funding Responsibility	Implementation Trigger/Timing/ DATE	Frequency
5. Non-toxic binders (e.g., latex acrylic copolymer) shall be applied to exposed areas after cut and fill operations and the area shall be hydroseeded.	OPERATOR	OPERATOR (dependent on amount of area)	TBD	Monitor weekly during construction
6. Vegetative ground cover shall be planted in disturbed areas as soon as possible after disturbance.	OPERATOR	OPERATOR	TBD	Implement and monitor one time after construction
7. Inactive storage piles shall be covered.	OPERATOR	OPERATOR	TBD	Monitor weekly during construction
8. Paved streets adjacent to each project site shall be swept or washed at the end of each day as necessary to remove excessive accumulations of silt and/or mud which may have accumulated as a result of activities on the project site.	OPERATOR	OPERATOR	TBD	Implement daily; monitor weekly during construction
9. A publicly visible sign shall be posted with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 24 hours if a complaint is received. The telephone number of the BCAQMD shall also be visible to ensure compliance with BCAQMD Rule 201 & 207 (Nuisance and Fugitive Dust Emissions).	OPERATOR	OPERATOR/CITY	TBD	Monitor weekly during construction
<b>BIOLOGY</b>				
<p><b>Mitigation Measure BIO-1b: Implement Measures to Protect Butte County Checkerbloom in the Disc Golf/Trailhead Concept Plan Area</b></p> <p>The following measures shall be implemented to mitigate potential direct and indirect effects on populations of Butte County checkerbloom from implementation of the Disc Golf/Trailhead Area Concept Plan:</p>	OPERATOR/CITY	OPERATOR/CITY	Before ground-disturbing activities and during ongoing operation	See Below

OPERATING AGREEMENT FOR RECREATIONAL SERVICES IN BIDWELL PARK (CITY OF CHICO/OUTSIDE RECREATION ADVOCACY, INC)

ITEM 22 EXHIBIT A  
EXHIBIT B

Mitigation Measure	Party Responsible for Implementation	Funding Responsibility	Implementation Trigger/Timing/ DATE	Frequency
<p>a. As provided in Appendix H of the BPMMP, the Disc Golf/Trailhead Area Concept Plan shall be implemented to avoid direct and indirect impacts on known locations of Butte County checkerbloom on the site. All disc golf structures (e.g., tees, targets, fairways) and trails shall be placed a minimum of 50 feet from locations that currently support Butte County checkerbloom wherever possible. Where this cannot be accomplished due to physical site constraints, the buffer may be reduced, but shall remain at a minimum of 25 feet.</p>	OPERATOR	N/A	TBD	Implement during construction; monitor monthly
<p>b. Before construction of any facility at the Disc Golf/ Trailhead area in the vicinity of known locations of Butte County checkerbloom, exclusionary fencing shall be installed along a 25-foot buffer around the outer perimeter of the occurrence. Exclusionary fencing shall be installed under the guidance of a qualified botanist before commencement of construction to keep workers and equipment from disturbing existing Butte County checkerbloom plants. The fencing shall be kept in place and periodically inspected and repaired, if necessary, for the duration of construction.</p>	OPERATOR	OPERATOR	TBD	Implement prior to construction; monitor monthly during construction.
<p>c. The Disc Golf/Trailhead Area Concept Plan shall restrict foot traffic to clearly defined trails and disc golf features. Trails shall be constructed as narrow as possible to avoid degradation of suitable habitat for Butte County checkerbloom (and other special status plant species). Where existing disc golf structures and trails in the vicinity of existing locations of Butte County checkerbloom will be decommissioned, barriers (such as boulders) shall be placed to discourage use of these trails and structures.</p>	OPERATOR with qualified botanist	OPERATOR	TBD	Implement during construction; monitor monthly during construction

OPERATING AGREEMENT FOR RECREATIONAL SERVICES IN BIDWELL PARK (CITY OF CHICO/OUTSIDE RECREATION ADVOCACY, INC)

ITEM 22 EXHIBIT A  
EXHIBIT B

Mitigation Measure	Party Responsible for Implementation	Funding Responsibility	Implementation Trigger/Timing/ DATE	Frequency
d. Permanent signage at the trailhead/test area shall be installed to inform Park users of the presence and sensitivity of Butte County checkerbloom (and other sensitive resources) on the site.	OPERATOR	OPERATOR	TBD	Install after construction; monitor signage annually.
e. As provided in Appendix H of the BPMMP, alternate pin locations for Holes 3 and 4 of the long course shall be used from March 1 through July 1 to provide further assurance that potential disturbance of nearby checkerbloom plants during the active growth and blooming period of the plants is minimized.	OPERATOR Clarification – The alternate pin location is for Hole 3. There is an alternate Tee location for Hole 4. For Hole 13, the winter fairway will become the all season fairway unless site conditions dictate require changing tee locations. This item is not referenced.	OPERATOR/CITY	TBD	Implement and monitor annually
f. Per Plant Objective P-8 of the BPMMP, an adaptive management program shall be implemented that relies on periodic data collection on the distribution of Butte County checkerbloom at the Disc Golf/ Trailhead site. The goal of this adaptive management program shall be to document and monitor changes in the existing population of Butte County checkerbloom over time. The adaptive management plan is intended to address the fact that, notwithstanding the buffers and signage, the CITY cannot guarantee that the use of the park will not disturb Butte County checkerbloom	OPERATOR	OPERATOR	TBD	Monitor annually

OPERATING AGREEMENT FOR RECREATIONAL SERVICES IN BIDWELL PARK (CITY OF CHICO/OUTSIDE RECREATION ADVOCACY, INC)

ITEM 22 EXHIBIT A  
EXHIBIT B

Mitigation Measure	Party Responsible for Implementation	Funding Responsibility	Implementation Trigger/Timing/ DATE	Frequency
<p>g. If data collection indicates a decline in existing populations after implementation of the Disc Golf/Trailhead Area Concept Plan and Plant Objective O. P-8 of the BPMMP, relocation of trails or disc golf structures in the vicinity of these populations, or other management strategies that would benefit the plants based on the data collected, shall be implemented. This strategy would implement Plant Objective P-7 and Plant Implementation Strategies and Guidelines I. P-3 and I. P-4 of the BPMMP. The overall goal of the adaptive management strategy shall be the long-term maintenance of the same number and approximate extent of occurrences of Butte County checkerbloom as documented during the 2005 surveys.</p>	OPERATOR/CITY	OPERATOR to reimburse CITY for surveys of checkerbloom, wildflower fields (Years 1, 3 and 5 and every other year thereafter – cost est. to be \$2,000 per survey)	TBD	Monitor annually; develop program as needed
<p><b>Mitigation Measure BIO-1d: Implement Measures to Protect Bidwell's Knotweed at the Disc Golf/Trailhead Area</b></p> <p>The following measures shall be implemented to mitigate for potential direct and indirect effect to Bidwell's knotweed at the Disc Golf/Trailhead Concept Plan area:</p>	OPERATOR/CITY	OPERATOR/CITY	TBD	See below
<p>a. The Disc Golf/Trailhead Area Concept Plan shall be implemented to minimize direct and indirect impacts on Bidwell's knotweed habitat on the site. Because Bidwell's knotweed is an annual plant species, population sizes may fluctuate greatly from year to year. Therefore, simply avoiding plants that are present in a given year would not ensure that great numbers of individuals would not be affected in subsequent years. Therefore, a habitat approach shall be taken to minimize impacts on this species. This approach would entail minimizing impacts to wildflower fields, the native plant community that supports Bidwell's knotweed.</p>	OPERATOR/CITY of Chico	OPERATOR/CITY	During construction of Disc Golf/Trailhead Area Plans and during ongoing operation	Implement prior to and during construction; monitor weekly during construction

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<p>b. Consistent with the Disc Golf/Trailhead Area Concept Plan, trails shall generally be placed outside of wildflower fields. The Disc Golf/Trailhead Area Concept Plan shall be implemented to restrict foot traffic to clearly defined trails and disc golf structures. The number of trails dissecting wildflower fields shall be minimized to the fewest number necessary to facilitate reasonable access to the disc golf course and scenic viewpoints, and trails shall be as narrow as possible and have clearly marked edges to reduce widening and discourage users from wandering off the path. Existing trails through wildflower fields that will not be retained as part of the Disc Golf/Trailhead Area Concept Plan shall be decommissioned, and barriers (such as boulders) shall be placed just outside any points where trails enter the wildflower field community to discourage use of these trails.</p>	<p>OPERATOR/CITY</p>	<p>OPERATOR/CITY</p>	<p>TBD</p>	<p>Implement prior to and during construction; monitor monthly during construction</p>
<p>c. Exclusionary fencing shall be installed under the guidance of a qualified botanist before commencement of construction to keep workers and equipment from disturbing wildflower field habitat intended for preservation. High priority shall be given to preserving those wildflower field communities that contained Bidwell's knotweed during surveys conducted in 2005.</p>	<p>OPERATOR/CITY</p>	<p>OPERATOR/CITY</p>	<p>TBD</p>	<p>Implement prior to construction; monitor monthly during construction</p>
<p>d. Permanent signage at the trailhead/rest area shall be installed to inform Park users of the presence and sensitivity of Bidwell's knotweed and wildflower field habitat and to deter users from disturbing the species.</p>	<p>OPERATOR</p>	<p>OPERATOR</p>	<p>TBD</p>	<p>Implement following construction; monitor signage annually</p>

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e. Per Plant Objective O. P-8 of the BPMMP, an adaptive management program shall be implemented that relies on periodic data collection on the distribution of Bidwell's knotweed at the Disc Golf/ Trailhead site. The goal of this adaptive management program shall be to document and monitor changes in the existing population of Bidwell's knotweed over time.	CITY	CITY	TBD	Monitor annually
f. If data collection indicates a decline in the number or extent (i.e. square feet) of existing populations after implementation of the Disc Golf/Trailhead Area Concept Plan, relocation of trails or disc golf structures in the vicinity of these populations, or other management strategies that would benefit the plants based on the data collected, shall be implemented. Seasonal and annual variation of the plants in response to environmental conditions such as rainfall shall be taken into consideration when determining if a decline is occurring. This strategy would implement Plant Objective O. P-7 and Plant Implementation Strategies and Guidelines I. P-3 and I. P-4 of the BPMMP.	OPERATOR	OPERATOR to reimburse CITY for surveys of Bidwell's knotweed, wildflower fields (Years 1, 3 and 5 and every other year thereafter -- cost est. to be \$2,000 per survey)	TBD	Monitor annually; develop program as needed
Mitigation Measure BIO-2c: Implement Measures to Protect and Compensate for Loss of Vernal Pool Invertebrate and Western Spadefoot Habitat	CITY	CITY	N/A	Implement prior to and during construction; monitor as indicated below
The CITY shall ensure that the following measures are implemented to avoid, minimize, and mitigate potential project effects on vernal pool invertebrates and western spadefoot:	None exists	None exists		

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<p>a. Before any ground-disturbing project activities begin, the CITY shall retain a qualified biologist to identify and map potential habitat in areas that could be affected by the given project. The CITY shall ensure, through coordination with the biologist, that the footprint of project features and construction zones, staging areas, and access routes are designed to avoid direct or indirect effects on suitable habitat for vernal pool invertebrates and western spadefoot to the extent feasible and practicable. In addition to vernal pools, suitable habitat for western spadefoot includes the surrounding grassland matrix.</p>	<p>CITY  None exists</p>	<p>CITY  None exists</p>	<p>N/A</p>	<p>Implement prior to construction; monitor monthly during construction</p>
<p>b. If vernal pool invertebrate and western spadefoot habitat cannot be avoided, measures shall be implemented to minimize and mitigate unavoidable effects. Before beginning any ground-disturbing project activities in such habitat, USFWS shall be consulted to identify appropriate measures to minimize and compensate for adverse effects on special-status vernal pool invertebrates; DFG shall be consulted to identify measures to minimize and compensate for adverse effects on western spadefoot. Avoidance and minimization measures shall include those described in USFWS's vernal pool crustacean Programmatic Consultation (USFWS 1996a). Minimization measures for vernal pool invertebrates shall include, but would not be limited to, fencing of habitat to be avoided, timing of ground disturbance to correspond with the dry season, conducting worker awareness training, and periodic biological monitoring. Compensation shall include preservation, enhancement, and/or creation of suitable habitat in areas that currently, or could in the future, support special-status invertebrate and/or spadefoot populations.</p>	<p>None exists</p>	<p>None exists</p>	<p>N/A</p>	<p>Implement prior to construction</p>

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c. Authorization for take of vernal pool invertebrates under ESA shall be obtained if it is determined that implementation of a program component is likely to result in take, despite implementation of avoidance and minimization measures.	CITY None exists	CITY None exists	N/A	Implement prior to construction
d. All other measures developed through informal consultation with USFWS and DFG shall be implemented, as well as any additional measures adopted through a formal permitting process, if applicable.	CITY None exists	CITY	N/A	Implement prior to construction; during and after construction; monitor as required
Measures to Protect Nesting Raptors and Burrowing Owls  The following measures shall be implemented to minimize and mitigate the potential disturbance of nesting raptors and burrowing owls.	See below	See below	See below	See below
Mitigation Measure BIO-2d(1): Protect Tree-Nesting Raptors  a. Before project construction, it shall be determined whether any construction or tree removal is proposed during the raptor nesting season (February 1 to August 31). If no construction or tree removal will occur during the raptor nesting season, no further mitigation shall be necessary.	OPERATOR/CITY  (construction)	OPERATOR/CITY	Before and during construction during the breeding season of tree-nesting raptors	Implement prior to construction
b. If construction or tree removal is proposed during the raptor nesting season, a focused survey for special-status and common raptor nests shall be conducted by a qualified biologist during the nesting season to identify active nests within 500 feet of the project area. The survey shall be conducted no less than 14 days and no more than 30 days before the beginning of construction or tree removal.	OPERATOR/CITY	OPERATOR/CITY	TBD	Implement prior to construction



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<p>c. If nesting raptors are found during the focused survey, impacts shall be avoided by establishment of appropriate buffers. No project activity shall commence within the buffer area until a qualified biologist confirms that the nest is no longer active. The DFG guidelines for a 500 foot buffer will be implemented, but the size of the buffer may be adjusted if a qualified biologist determines a greater or lesser buffer would be appropriate and DFG concurs with any determination for a lesser buffer. The CITY shall coordinate with DFG on the appropriate buffer width for each species documented. Monitoring of the nest by a qualified biologist may be required if the activity has potential to adversely affect the nest or disturb the birds using the nest to the point of causing nest failure.</p>	<p>OPERATOR/CITY</p>	<p>● OPERATOR/CITY</p>	<p>TBD</p>	<p>Implement during construction</p>
<p><b>Mitigation Measure BIO-2d(2): Protect Peregrine Falcon</b></p> <p>a. If construction at the Disc Golf/Trailhead Area Concept Plan site is to occur during the peregrine falcon breeding period (generally February 1 to June 30), an appropriate buffer around the southern cliff edge shall be determined by a qualified biologist and construction activities shall be avoided within the buffer zone unless a qualified biologist confirms there is no active nest on the cliff.</p> <p>b. If construction commences between June 30 and February 1, no buffer will be necessary.</p>	<p>No Trees to be removed for disc golf.</p> <p>OPERATOR - biologist</p>	<p>OPERATOR</p> <p>OPERATOR</p>	<p>Before and during construction during the breeding season of peregrine falcons known to nest below the South Rim</p> <p>TBD</p>	<p>Implement during construction</p> <p>Implement during construction</p>

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<p><b>Mitigation Measure BIO-2f: Implement Measures to Protect Other Special-status Nesting Birds</b></p> <p>The following measures shall be implemented to minimize and mitigate the potential disturbance of nesting special-status birds (February to August).</p>	OPERATOR - biologist	See below	Before and during construction during the breeding season of yellow warbler, yellow-breasted chat, and loggerhead shrike.	
<p>a. The CITY shall design Park Improvement Projects to minimize disturbance and removal of nesting habitat for special-status nesting birds to the extent feasible and practicable. Nesting habitat that cannot be avoided shall be removed during the non-nesting season, to the extent feasible and practicable.</p>	OPERATOR/CITY	OPERATOR/CITY	TBD	Implement during construction
<p>b. To avoid potential impacts to active nests of special-status birds, a qualified biologist shall conduct preconstruction surveys to identify active special-status bird nests within 500 feet of construction areas. The survey shall be conducted no more than 10 days before project activities begin. If an active nest is found, an appropriate buffer to minimize impacts shall be determined by a qualified biologist in coordination with DFG. No project activities shall commence within the buffer area until a qualified biologist confirms that the nest is no longer active or the birds are not dependent upon it. The size of the buffer may vary, depending on the nest location, nest stage, and construction activity.</p>	OPERATOR/CITY	OPERATOR/CITY	TBD	Implement prior to construction
<p><b>Mitigation Measure BIO-3c: Implement Measures to Protect Oak Woodland</b></p> <p>The following measures shall be implemented to mitigate potential impacts on oak woodlands resulting from implementation of the Disc Golf/Trailhead Area Concept Plan:</p>	OPERATOR	OPERATOR	Before and during construction activities within or in the immediate vicinity of oak woodland habitat; ongoing for site management of the Disc Golf/ Trailhead Area Concept Plan site.	See below

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<p>a. Where possible, trails, improvements, and facilities shall be constructed outside of oak woodlands. The number of trails dissecting oak woodlands shall be minimized to the fewest number necessary to accomplish the goals of the site-specific Park Improvement Projects. The width of trails through oak woodlands shall be minimized and trails shall have clearly marked edges that discourage trail widening and deter users from straying off the designated trail.</p>	OPERATOR – biologist	OPERATOR	TBD	Implement during construction
<p>b. Trails through oak woodlands that are decommissioned as part of a site-specific Park Improvement Project shall be reclaimed using barriers (such as boulders) to discourage continued use of these trails.</p>	OPERATOR/CITY	OPERATOR/CITY	TBD	Implement during and following construction; monitor annually
<p>c. Grading, trenching, equipment storage, and other soil-disturbing or compacting activities shall not occur within the drip lines of oak trees. New structures and impervious-surface materials shall not be placed in the drip lines of oaks, except where deemed necessary to reduce the footprint size of trees as part of the proposed Disc Golf/Trailhead Concept Plan and to reduce soil compaction.</p>	OPERATOR	OPERATOR	TBD	Implement during and following construction; monitor monthly during construction
<p>d. To ensure that the drip lines of oaks are not disturbed during construction, protective fencing shall be installed, under the guidance of a qualified botanist, certified arborist, or Registered Professional Forester, at least 1 foot beyond the outer edge of the drip lines of all oaks that grow within the construction zones of the site-specific Park Improvement Projects, and no project activities shall be allowed within these exclusion zones, unless specifically required as part of project construction.</p>	OPERATOR/CITY	OPERATOR/CITY	TBD	Implement prior to and during construction; monitor monthly during construction

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e. The oak woodland management guidelines contained in Section 3 of the NRMP (Appendix C of the BPMMP) shall be implemented. These guidelines include recommendations for sustaining oak woodlands, initiating a burning program, and maintaining the oak landscape.	OPERATOR/CITY	OPERATOR/CITY	TBD	During and following construction
In addition to the measures outlined above, the following additional measures shall be implemented in connection with development and ongoing maintenance of the proposed Disc Golf/Trailhead Concept Plan to protect oaks and to mitigate for any unavoidable loss resulting from mortality over time. These measures are based on site observations, oak woodland management guidelines provided by DFG, and measure recommended in the tree assessment (Appendix E4):	OPERATOR/CITY	OPERATOR/CITY	TBD	Implement during and following construction
f. Any modification to the proposed design and layout of the site shall be subject to the same impact avoidance and minimization criteria as the initial design;	OPERATOR/CITY	OPERATOR-CITY	TBD	Implement during and following construction
g. Information describing the value of native oak trees and the importance of the preservation and protection of oak woodland for wildlife habitat and the aesthetic values of Bidwell Park shall be provided at the informational kiosk at the Disc Golf/Trailhead area site. The information shall discuss the importance of avoiding direct impacts resulting from bark and limb damage as well as indirect effects such as soil compaction/root damage and shall encourage site users to act responsibly and prevent adverse effects.	OPERATOR - CITY	OPERATOR to reimburse CITY for surveys of oaks (Years 1, 3 and 5 and every other year thereafter – cost est. to be \$1,000 per survey	TBD	Implement following construction; inspect signage annually
h. In cases where disc golf pins are located within groves of oak trees or oak trees are within fairways, measures to protect the tree trunks such as the installation of shielding pole structures shall be implemented. Installation shall be implemented without damage to the root zone, and in a manner that preserves the visual character of the site.	OPERATOR /CITY	OPERATOR/CITY	TBD	Implement during and following construction; monitor annually

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i. In cases where trees or trails are located within drip lines of oaks or in the immediate vicinity of drip lines, a 6 inch layer of woodchip mulch shall be applied to a 20' radius around the trees and on the trails to minimize soil compaction; this layer shall be maintained on an ongoing basis, as needed, to ensure continued protection of the root zones.	CITY	CITY	TBD	Implement during and following construction; monitor annually
j. Periodic monitoring of the oaks at the site shall be conducted to determine if any unavoidable impacts are occurring as a result of site use, in spite of the impact minimization measures.	OPERATOR	OPERATOR	TBD	Monitor at least twice yearly following construction
k. Any unavoidable impacts to oaks resulting from construction, or tree mortality resulting from ongoing use of the site shall be mitigated by replanting oak woodland habitat at the Disc Golf/Tailhead site in areas located outside of the footprint of facilities and trails in areas not currently occupied by other sensitive resources and suitable to support blue oak woodland.	OPERATOR/CITY	OPERATOR/CITY	TBD	Implement as needed after construction
l. Oak planting should be from seeds (acorns) or seedlings that are obtained from the local genetic stock and should be of the same species as those targeted for replacement. Replacement ratios shall be at least 5:1 for trees lost/replaced that are greater than 5 inches diameter at breast height.	OPERATOR/CITY	To be accomplished above  B10-3c-f	TBD	Implement and monitor as needed after construction
m. Oak plantings shall be protected from browsing, planted on the north and east side of existing trees, and irrigated during the first few years as outlined in the oak assessment (Appendix E4) to enhance their chance of survival.	OPERATOR/CITY Relating to disc golf facilities only.	OPERATOR/CITY	TBD	Implement and monitor as needed after construction
n. Replacement plantings shall be monitored for their success for a period of five years or until the desired performance criterion of 5:1 is achieved, whichever is longer. If planting does not succeed, remedial actions such as replanting shall be implemented.	OPERATOR/CITY	OPERATOR/CITY	TBD	Monitor yearly after planting for five years or until success criteria are achieved

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n. If requested, community/user group stewardship of the plantings shall be allowed to contribute to restoration/ revegetation efforts under guidance and supervision by CITY staff.	OPERATOR/CITY	OPERATOR/CITY	TBD	Implement after construction
<b>Mitigation Measure BIO-3d: Implement Measures to Protect Wildflower Fields</b>  The following measures shall be implemented to minimize potential disturbances to wildflower field communities resulting from implementation of the Disc Golf/Trailhead Area Concept Plan:	OPERATOR/CITY	OPERATOR/CITY	Before and during construction of components of the Disc Golf/ Trailhead Area Concept Plan that occur within the immediate vicinity of wildflower fields	See below
a. Mitigation Measure BIO-1d shall be implemented to minimize adverse effects on wildflower fields resulting from implementation of the Disc Golf/Trailhead Area Concept Plan.	OPERATOR/CITY	OPERATOR/CITY	TBD	Implement during construction; monitor as indicated above
b. Whenever possible, trail segments, site improvements, facilities and other design features shall be located to minimize impacts to wildflower fields.	CITY of Chico	CITY of Chico	TBD	Implement prior to and during construction; inspect monthly during construction
c. Exclusionary fencing shall be installed under the guidance of a qualified botanist before commencement of construction to keep workers and equipment from disturbing wildflower field habitat intended to be preserved on the project sites (some areas may be lost, consistent with site design).	OPERATOR	OPERATOR	TBD	Implement prior to and during construction; inspect monthly during construction
d. The number of trails dissecting wildflower fields shall be minimized to the fewest number necessary to accomplish the goals of the site-specific Park Improvement Projects.	OPERATOR	OPERATOR	TBD	Implement prior to and during construction

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e. Trails through wildflower fields shall be as narrow as possible and shall have clearly marked edges that discourage trail widening and deter users from straying off the designated trail.	● OPERATOR/CITY	OPERATOR/CITY	TBD	Implement prior to and during construction
f. Existing trails through wildflower fields that will not be retained as part of the site-specific Park Improvement Projects shall be reclaimed using barriers (such as boulders) to discourage use of these trails. If these reclaimed trails fail to revegetate on their own over time, re-seeding may be considered.	OPERATOR/CITY	OPERATOR/CITY	TBD	Prior to, during and after construction; monitor annually
g. Permanent signage shall be installed at kiosks located at the Disc Golf/Trailhead Area Concept Plan site to inform Park users of the presence and sensitivity of the wildflower field community and discourage visitors from off-trail use and trampling of vegetation.	OPERATOR	● OPERATOR	TBD	Install after construction; monitor annually
<p><b>Mitigation Measure BIO-4: Implement Measures to Protect Jurisdictional Wetlands</b></p> <p>The following measures shall be implemented to mitigate impacts on waters of the United States:</p> <p>a. Before the implementation of specific components of the Disc Golf/Trailhead Area Concept Plan that occur in the immediate vicinity of wetlands or other waters of the United States, a delineation of waters of the United States, including wetlands, that would be affected by the proposed projects shall be made by qualified biologists through the formal Section 404 wetland delineation process. The delineation shall be submitted to and verified by USACE.</p>	CITY	None exists	Before and concurrent with any component of the Disc Golf/Trailhead Area Concept Plan that involve ground-disturbing activities in or near jurisdictional wetlands and/or waters of the state	Implement prior to construction

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b. If, based on the verified delineation, it is determined that fill of waters of the United States would result from implementation of any of the site-specific Park Improvement Projects, authorization for such fill shall be secured from USACE through the Section 404 permitting process.	CITY	CITY	N/A	Implement prior to construction  N/A
c. The acreage of waters of the United States, including wetlands, that would be adversely affected by project construction shall be replaced or restored/enhanced on a "no net loss" basis in accordance with USACE regulations and CITY General Plan Policy OS. G-9. Habitat restoration, enhancement, and/or replacement shall be at a location and by methods agreeable to USACE, as determined during the Section 404 permitting process.	CITY of Chico  None Exist	CITY of Chico	N/A	Implement prior to construction  N/A
d. Purchasing credits at a mitigation bank is the CITY's preferred method of mitigation.	N/A	N/A	N/A	Implement prior to construction  N/A
e. Concurrently with the CWA Section 404 permit, the CITY shall obtain CWA Section 401 Clean Water Certification from the Central Valley RWQCB before project implementation.	N/A	N/A	N/A	Implement prior to construction  N/A



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f. The CITY shall also coordinate with the Central Valley RWQCB regarding any wetland features that are not subject to USACE jurisdiction under Section 404 of the CWA, but may be subject to State regulation under the Porter Cologne Act. All conditions required by the RWQCB as part of the Section 401 Water Quality Certification process or Porter Cologne permitting process shall be implemented.	N/A	N/A	N/A	Implement prior to construction  N/A
<b>CULTURAL RESOURCES</b>				
<b>Mitigation Measure CUL-1: Protect Historic and Unique Archaeological Resources from Impacts</b>  The CITY shall implement the following mitigation to reduce potential direct impacts on historic and unique archaeological resources:	CITY of Chico	CITY of Chico	During final design of projects and during construction activities	See below
a. Consistent with the policies of the BPMMP, a qualified archaeologist shall conduct a cultural resources assessment of the proposed project site during project planning and design. For the Trails Plan, this can be accomplished on a segment by segment basis.	Done	CITY	N/A	This part of the measure has been completed
b. If cultural resources are documented in the planning area, they shall be evaluated for their significance.	Done	CITY	N/A	This part of the measure has been completed
c. If it has been determined by a qualified archaeologist that a cultural resource is significant, the project shall be designed or redesigned to avoid these cultural resources to the greatest extent feasible.	Done	CITY	N/A	This part of the measure has been completed
d. If avoidance of significant sites is not feasible, mitigation in the form of data recovery shall be applied to archaeological sites.	CITY – none known	CITY	TBD	Implement during construction; monitor monthly

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<p>e. For portions of the Humboldt Wagon Road that cannot be avoided during implementation of the Disc Golf/ Trailhead Concept Plan, impacts would result in destruction of a portion of the route and intrusion of newer elements that would alter the immediate surroundings. As outlined in the management plan (see Jensen, et al. 1996; Table 2), this segment of the road appears significant based upon the associated archaeological deposit (NRHP Criterion D/CRHR Criterion 4), which will not be impacted by construction, and the association of the wagon road with John Bidwell. As currently designed, neither Alternative A nor Alternative B will result in destruction or alteration of the surroundings of the archaeological deposit, and would impact only a percentage of the route associated with the original person responsible for its construction, John Bidwell. The surrounding environment of this segment of the route has been previously impacted by construction of a more recent dirt road that parallels the contemporary route of Highway 32, such that the immediate surroundings have been altered from what was present during the historic period. Therefore, because neither alternative would impact the archaeological deposit or substantially impair the significance of the resource as it relates to its association with a person of historic importance (NRHP Criterion B/CRHR Criterion 2), both alternatives would result in less-than-substantial adverse changes in the significance of this resource.</p>	<p>Will be preserved –</p>	<p>CITY</p>	<p>TBD</p>	<p>Implement during construction; monitor monthly</p>
<p>f. Mitigation of any adverse changes resulting from direct impacts caused by implementation of the Disc Golf/Trailhead Area Concept Plan shall take the form of interpretive signage presenting an historic overview and the historic importance of the Humboldt route.</p>	<p>CITY if needed</p>	<p>CITY</p>	<p>TBD</p>	<p>Install signage after construction; monitor annually</p>

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<p><b>Mitigation Measure CUL-2b: Protect Human Remains from Vandalism and Inadvertent Destruction</b></p> <p>a. In accordance with the California Health and Safety Code, if human remains are uncovered during ground-disturbing activities related to implementation of the Disc Golf/Trailhead Area Concept Plan Project, all such activities in the vicinity of the find shall be halted immediately and the CITY or the CITY's designated representative shall be notified. The CITY shall immediately notify the county coroner and a qualified professional archaeologist. The coroner shall examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the coroner determines that the remains are those of a Native American, he or she shall contact the Native American Heritage Commission (NAHC) by phone within 24 hours of making that determination (Health and Safety Code).</p>	CITY	OPERATOR - CITY	During construction activities	Implement during construction
<p>Section 7050[c]). The responsibilities of the CITY for acting upon notification of a discovery of Native American human remains are identified in detail in the California Public Resources Code Section 5097.9. The CITY or its appointed representative (Park Director) and the professional archaeologist shall consult with a Most Likely Descendant (MLD) determined by the NAHC regarding the removal or preservation and avoidance of the remains and determine whether additional burials could be present in the vicinity.</p>	CITY	CITY	During construction activities	Implement during construction

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Mitigation Measure	Party Responsible for Implementation	Funding Responsibility	Implementation Trigger/Timing/ DATE	Frequency
<b>HYDROLOGY</b>				
<p><b>Mitigation Measure HYDRO-1b: Comply with Water Quality Standards and Waste Discharge Requirements</b></p> <p>When required, the CITY shall obtain a General Permit for Discharges of Storm Water associated with Construction Activity (Construction General Permit), which pertains to water pollution resulting from project construction. In compliance with permit requirements, the CITY shall file a Notice of Intent (NOI) with the State Water Resources Control Board (SWRCB) and prepare a Storm Water Pollution Prevention Plan (SWPPP) before commencement of construction activities. The SWPPP will incorporate BMPs to prevent, or reduce to the greatest extent feasible, adverse effects on water quality from erosion and sedimentation. In addition, all new trails shall be designed, constructed, and maintained per the CITY's Trails Manual.</p>	OPERATOR – CITY	OPERATOR-CITY	Before commencement of construction activities	Implement and monitor as indicated in SWPPP
<b>NOISE</b>				
<p><b>Mitigation Measure Noise-1: Construction Related Noise</b></p> <p>The following measures shall be implemented to mitigate for construction noise control associated with the Disc Golf Trailhead Area Concept Plan Project:</p>	CITY	CITY	During construction of Park Improvement Projects	N/A
<p>a. Construction equipment shall be properly maintained and equipped with noise control, such as mufflers, in accordance with manufacturers' specifications</p>	OPERATOR	OPERATOR	TBD	N/A
<p>b. Construction activities shall be limited to the hours of 7:00 a.m.–9:00 p.m., Monday through Saturday, and to 10:00 a.m.–6:00 p.m. on Sundays and holidays.</p>	OPERATOR	OPERATOR	May vary with approval of CITY	N/A
<p>c. Construction equipment shall be arranged to minimize travel adjacent to occupied residences and turned off during prolonged periods of non-use.</p>	OPERATOR	OPERATOR	TBD	N/A

Mitigation Measure	Party Responsible for Implementation	Funding Responsibility	Implementation Trigger/Timing/ DATE	Frequency
<p><b>TRAFFIC</b></p> <p>Mitigation Measure Traffic-4: Coordinate with Caltrans</p> <p>a. To address the potential increase in traffic hazards resulting from implementation of the Disc Golf/Trailhead Area Concept Plan, the CITY shall coordinate with Caltrans to obtain an encroachment permit for construction of the site access and parking lot for the Disc Golf/Trailhead area. As part of the consultation with Caltrans, the CITY shall address the potential need for additional signage and/or a left turning lane to address traffic safety along SR 32. The CITY shall implement any measures deemed necessary by Caltrans as a condition of the encroachment permit or as a result of the consultation on safety.</p>	<p>CITY</p>	<p>CITY</p>	<p>Prior to construction of the Disc Golf/Trailhead Area Concept Plan</p>	<p>N/A</p>

ITEM 2.2 EXHIBIT A

OPERATING AGREEMENT  
FOR RECREATIONAL SERVICES IN BIDWELL PARK  
(CITY OF CHICO/OUTSIDE RECREATION ADVOCACY, INC.)

EXHIBIT C

FOUR-YEAR IMPLEMENTATION PLAN

	<u>Years(s)</u>
1. Complete Phase 1 - 18-hole long course	18 months from City's Authorization to Proceed
2. Complete Phase 2 - 18-hole off site targets	18 months from City's Authorization to Proceed
3. Complete Phase 3 - 12-hole short course. (When triggered by Implementation plan)	May 19, 2014

Exhibit C-1

ITEM 2.2 EXHIBIT A

OPERATING AGREEMENT  
FOR RECREATIONAL SERVICES IN BIDWELL PARK  
(CITY OF CHICO/OUTSIDE RECREATION ADVOCACY, INC.)

EXHIBIT D  
ANNUAL CALENDAR OF IMPLEMENTATION AND CHECK-LIST

By 1 December of every Agreement Year	Operator will submit to City its proposed work plan for capital improvements.
By 1 October of the last year of term	Operator or City must notify the other party of its intention in appropriate years to exercise its option to extend the term of this Agreement.
By 1 January of each agreement year	City will advise Operator of the acceptance Operator's work plan Agreement Year for improvements or will notify Operator that such plan is unacceptable and, at City's discretion, will request changes by Operator or refer the matter to a mediation panel.
On or before 1 May of each agreement year	Representatives of City and Operator will meet, confer and coordinate of each Agreement Year regarding site activities and management issues.
By December 1, 2011	City decide on location for off-site short course and communicate in writing same to Operator.
By January 15, 2012	If authorized, Operator will submit implementation plan for Hwy 32 12 hole short course.
By May 19, 2014	City Council determination of alternate location for short disc golf course, if needed .

Exhibit D-1

ITEM 2.2 EXHIBIT B

**STATUS OF COMPLIANCE WITH ORAI DISC GOLF AGREEMENT – REVISED 2/20/20**

The City and ORAI entered into an Agreement for the construction, maintenance, and monitoring of the Disk Golf site on June 18, 2010. The following table summarizes the sections from the Agreement and ORAI’s compliance as of December 2019.

Section	Category	Requirement	Performance/Observations
2	SCOPE OF USE	<p>The Disc Golf area may be occupied and used by ORAI solely to conduct the following Recreational Services in Bidwell Park limited to:</p> <ol style="list-style-type: none"> <li>1. 18-hole disc golf long course consistent with City Council approval on May 19, 2009, the BPMMP, EIR, and MMMP.</li> <li>2. 12-hole disc golf short course. ORAI understands that City Council approved the 12-hole disc golf short course for a period of up to five-years from the date of City Council approval during which time a search for a replacement short course will be conducted;</li> <li>3. All Recreational Activities and availability of the premises shall be subject to weather conditions based on the City of Chico Bidwell Park Wet Weather Policy; and</li> <li>4. Operator may sell non-food items including, but not limited to, hats, T-shirts, and discs, for the benefit of Operator's non-profit organization at games and exclusive use days.</li> </ol>	<ol style="list-style-type: none"> <li>1. ORAI developed and operated the 18-hole disc golf long course consistent with City Council approval on May 19, 2009. Course was completed in February 2011.</li> <li>2. Instead of operating the 12-hole disc golf short course on the Hwy 32 site for the approved 5-year period, ORAI and the City closed the short course in 2010.</li> <li>3. Although approved by Council and provided in the Agreement, ORAI has chosen not to exercise the provision to re-establish the course at the Hwy 32 site even though a suitable alternate location for the 12-hole short course has not been determined. As an alternative, Sherwood Forest in Hooker Oak Park is also being heavily used and maintained by CARD and ORAI</li> <li>4. The long course is subject to wet-weather policies and the City has observed general compliance by ORAI club members, but the course is also used by a lot of out of town guests that may not know the rules.</li> </ol>
4	PERMISSION NOT EXCLUSIVE (TOURNAMENT LIMITATIONS)	<ol style="list-style-type: none"> <li>1. Permit other persons to conduct Recreational Services.</li> <li>2. Exclusive use of each course for up to 10 days/yr. ORAI will:               <ol style="list-style-type: none"> <li>a. Limit the number of players to 90 during tournaments;</li> <li>b. End tournaments by 5:00 p.m.</li> <li>c. Not hold tournaments during state holidays; and</li> <li>d. Ability to reschedule tournaments that are cancelled due to weather</li> </ol> </li> <li>3. Submit a list of the exclusive use dates to City on an annual basis on or before February 1 of each year.</li> </ol>	<p>Orai is in compliance with these provisions. Rangers contacted ORAI on only one scheduled event on a closed trail day to redirect the event to another site. City has not received permit applications from other users to use the facility.</p>



ITEM 2.2 EXHIBIT B

**STATUS OF COMPLIANCE WITH ORAI DISC GOLF AGREEMENT – REVISED 2/20/20**

5	CONSIDERATION	<ol style="list-style-type: none"> <li>1. Implement the MMMP</li> <li>2. Submit annual report</li> <li>3. Publicize availability.</li> </ol>	<p>ORAI has conducted maintenance of infrastructure and submitted annual reports each year. ORAI has continued to fundraise and promote proper use of the Disc Golf Course. These activities can be found in the ORAI annual reports.</p>
6	GENERAL PUBLIC AVAILABILITY REQUIREMENTS	<p>The premises shall available to the general public for recreational purposes at all times, except on Operator's exclusive use days.</p>	<p>The premises remain available to all members of the public, which include mountain bikers, hikers, bird and native plant enthusiasts, etc..</p>
11	IMPLEMENTATION AND CONSTRUCTION	<ol style="list-style-type: none"> <li>1. Construct 18-Hole Disc Golf Long Course and 18 Disc Golf Targets</li> <li>2. Relocate Disc Golf Short Course by 2014.</li> </ol>	<p>Completed. ORAI complied with the terms and conditions of the Long Course Planning and Construction. ORAI also removed the targets on the Short Course in 2010. The short course has not been relocated.</p>
12	MITIGATION AND MONITORING REQUIREMENTS	<p>Prior to construction and annually thereafter, City agrees to collect data pursuant to Mitigation Measure B10-1B-F, Mitigation Measure B10-1D-E, and Mitigation Measures B10-3C-F and -K, required by and in accordance with the MMMP. However, Operator agrees to reimburse City for costs associated with annual data collection of Checkerbloom, Knotweed/Wildflowers, and Blue Oaks for <b>Years 1, 3 und 5 and every other year thereafter in an amount not to exceed \$5,000/year</b>. During the initial, or any extended term of this Agreement, the "not to exceed amount" shall be increased annually by three percent (3%), currently at \$6,149/yr.</p>	<p>In progress. Despite only being required to fund the surveys every other year, ORAI funded the detailed botanical and oak monitoring surveys from 2011-2015. The costs of the studies have increased each year. In 2016, the P&amp;NRM requested that only knotweed data be collected and with no detailed report. ORAI paid for this data collection. In April 2017, Interim P&amp;NRM contacted Northern Land Trust to conduct the botanical studies but was told they were unavailable. Studies were conducted in 2018 and 2019 paid by the City primarily due to Stoney Fire. ORAI's total contribution toward surveys from 2011-2016 is \$48,587 while the required amount that should have been paid under the Agreement should have been \$14,481 (2011, 2013, and 2015).</p>
13	REUMBURSEMENT	<ol style="list-style-type: none"> <li>1. City Council authorized reimbursement to ORAI for up to \$52,000 (approximately 50% of Hwy 32 site development cost of \$84,000, plus installation of disc golf targets in local parks) of Prop 40 grant funds for construction of the 18-hole disc golf long course and placement of disc golf targets at alternative locations outside of Bidwell Park. \$7,200.00 of grant funds was to be used to install targets at the park locations.</li> <li>2. ORAI to provide up to \$52,000.00 in matching funds, in money, or equivalent value of supplies, materials, services, and volunteer time. Volunteer time shall be valued at a per hour rate based on the current or revised rate for California set fort at <a href="http://www.independentsector.org">www.independentsector.org</a>.</li> </ol>	<ol style="list-style-type: none"> <li>1. ORAI was reimbursed \$41,997 (50% of total costs) for the construction of the 18-hole course and the installation of baskets at the following locations: <ol style="list-style-type: none"> <li>a. In 5 Neighborhood Parks</li> <li>b. 20<sup>th</sup> Street Community Park</li> <li>c. Hooker Oak Park</li> </ol> </li> <li>2. ORAI, through local sponsors and volunteers, donated nearly 2,000 volunteer hours toward the development of Hwy 32 site and the park targets, in addition to providing its 50% share of the construction costs. As reported in the annual reports from 2011-2019, ORAI also provided cash and in-kind contributions in the amount of \$148,055. This includes the cost of the mitigation studies, maintenance supplies, insurance, and 4,036 hours of volunteer labor at an average value rate \$24 per hr.</li> </ol>

ITEM 2.2 EXHIBIT B

**STATUS OF COMPLIANCE WITH ORAI DISC GOLF AGREEMENT – REVISED 2/20/20**

14	MAINTENANCE AND REPAIR	ORAI shall, at its sole cost and expense, maintain the premises and all disc golf improvements thereon and appurtenances thereto in good repair and in at least as good condition as that in which they were delivered, ordinary wear and tear excepted.	ORAI has completed ongoing repairs to infrastructure, removed graffiti, installed signage, and encouraged users to pick up trash on a regular basis. The infrastructure is in good shape, except for the need for better tree protection designs, installation of mulch, installation of alternative basket locations, and decommissioning of rogue trails/erosion caused by all users. Due to the increased multi-use of the site and based on the Mitigation & Monitoring Plan, maintenance responsibilities lie with both the City and ORAI. In 2019, trees were wrapped with plastic fencing, alternative basket locations were identified for 15 holes, tee signposts were installed for all holes, split rail fencing and straw waddles were used to protect sensitive areas and delineate trails. Replenishment of mulch and additional waddles and split rail on the back of the course, and signage throughout are still needed.
17	ALTERATIONS OR ADDITIONS	All improvements and modifications to the premises made by ORAI will be done in accordance with City approved plans.	ORAI has implemented improvements according to City approved plans and in compliance with the BPMMP as approved by the City.
18/19	INDEMNIFICATION/ INSURANCE	<ol style="list-style-type: none"> <li>1. ORAI shall indemnify City, its boards, commissions, and members, its officers, agents, and employees, against all liability or damages, costs, losses, and expenses, including, but not limited to, attorneys' fees, arising out of or in any way connected with construction, alterations or additions to premises performed by Operator, and any injuries caused by or related to Operator's equipment on premises, and any injuries.</li> <li>2. ORAI shall, at its sole cost and expense, obtain commercial general liability insurance which provides coverage for bodily injury, personal injury and property damage liability in the amount of at least \$1,000,000 per occurrence, and \$2,000,000 in the aggregate, with a maximum policy deductible of \$5,000.</li> </ol>	ORAI has continued to provide the required insurance and indemnification provisions every year from 2010 to 2019 per the ORAI agreement.



## BPPC Staff Report

Meeting Date 9/28/20

DATE: 9/23/20  
TO: Bidwell Park & Playground Commission  
FROM: Linda Herman, Parks and Natural Resources Manager  
SUBJECT: REVIEW OF THE CHICO MUNICIPAL (CMC) CODE NOISE RESTRICTIONS AND POSSIBLE BAN ON AMPLIFIED SOUND.

### REPORT IN BRIEF:

At its 8/31/20 meeting, the Bidwell Park & Playground Commissions (BPPC) approved Commissioner Glatz's request to agendize the review of the current noise restrictions in City parks and discuss a possible ban on amplified sound, unless allowed by a park permit.

**Recommendation:** The BPPC is requested to provide direction on whether to ban amplified sound or provide other recommendations regarding amending the CMC noise restrictions.

### BACKGROUND:

The Chico Municipal Code (CMC) has several Sections, both in the Title 12R-Park Rules, and in Title 9.38 that provide noise restrictions. In July 2018, the BPPC directed its Policy Advisory Committee (PAC) to review these codes for possible revision. The Committee also reviewed noise restrictions in other nearby cities. A copy of the PAC Staff report with the CMC noise related language and more information from other cities is attached as Attachment 1. The PAC recommended, and the BPPC approved, that the current CMC codes addressing noise seem sufficient but that more enforcement of these rules is needed.

### DISCUSSION:

Commissioner Glatz requested that the BPPC reconsider banning amplified sound in Bidwell Park and other city parks unless authorized by a park reservation permit. For this discussion, Commissioner Glatz is providing the attached email dated 9/15/20 which includes a "Guidelines for Community Noise" document prepared for the World Health Organizations (WHO) and some additional information on noise rules in San Francisco, Los Angeles, and New York (Attachment 2)

### ATTACHMENTS:

Attachment 1: 7/11/18 PAC Report  
Attachment 2: 9/15/20 Email from Commissioner Glatz



## Policy Advisory Committee Staff Report

Meeting Date 7/11/18

DATE: 7/5/18  
TO: Policy Advisory Committee (PAC) of the Bidwell Park and Playground Commission (BPPC)  
FROM: Linda Herman, Parks & Natural Resource Manager  
SUBJECT: REVIEW AND CONSIDERATION OF REGULATIONS REGARDING THE USE OF AMPLIFIED SOUND IN CITY PARKS

### REPORT IN BRIEF:

At its 6/25/18 meeting, the Bidwell Park and Playground Commission (BPPC) considered Commissioner Glatz's request that the Commission review the regulations regarding amplified sound in Bidwell Park and other City parks. The BPPC forwarded this discussion to its Policy Advisory Committee (PAC).

**Recommendation:** *The Committee is requested to provide a recommendation to the BPPC on whether to revise the amplified sound restrictions in City Parks and greenways.*

### BACKGROUND:

Following are some of the existing Chico Municipal Codes (CMC) Sections pertaining to noise restrictions in City parks and greenways.

#### **"12R.04.190 Unreasonable noises - Prohibited - Exception.**

No person shall cause a loud or excessive noise within a city park or playground which unreasonably disturbs the peace and quiet of any neighborhood, the quiet enjoyment of property, or any reasonable person of normal sensitivity residing or working in the area, unless such noise is emanating from a public event for which a permit has been issued by the director or Bidwell Park and Playground Commission, in which case the conditions of such permit as to noise shall apply."

The noise conditions for an event permit would be as follows:

#### **9.38.050 Public property noise limits.**

Except as otherwise provided in this chapter, no person shall produce, suffer or allow to be produced on public property, by human voice, machine, animal, or device, or any combination of same, a noise level that exceeds sixty (60) dBA at a distance of 25 feet or more from the source.

#### **9.38.052 General noise regulations.**

- A. This section contains an entirely separate and independent method of determining whether a violation of this chapter has occurred. No person shall willfully or negligently make, produce, suffer, or allow to be produced, at any time, any unreasonable noise. Enforcement of this section shall not require the use of a sound level meter.
- B. A violation of this section shall be proven by reference to one or more of the following criteria:
1. The volume or loudness of the noise (measured by the distance away from the source at which the noise can be clearly heard);
  2. The pitch or frequency of the noise;
  3. Whether the nature of the noise is usual or unusual;
  4. Whether the origin of the noise is natural (i.e., not caused or produced by a person or persons) or unnatural;
  5. The tonal or rhythmic quality of the noise;
  6. Whether the noise is recurrent, intermittent, or constant;
  7. Whether the noise is from a commercial or noncommercial activity;
  8. If the noise is from a commercial activity, whether the particular use is permitted in the area, and whether the noise could be reasonably expected to derive from the use;
  9. Whether the noise is a necessary attribute of a particular use (i.e., routine solid waste collection or a properly functioning mechanical device);

10. The proximity of the noise to residential sleeping facilities;
11. The proximity of the noise to offices or places of work;
12. The number of persons affected, or the density of inhabitation of the area;
13. The nature or zoning of the area within which the noise emanates or in which the impact of the noise occurs;
14. The amount and type of background noise, if any;
15. The time of the day or night the noise occurs (indicating the relationship of the noise to the normal activities that occur at a given time);
16. The day of the week; and
17. The duration of the noise.

**9.38.056 Noise from vehicles and bicycles.**

- A. No person shall use or operate any sound amplification system in or on a vehicle located within a public park, within a public parking lot, or on any other public property other than a highway within the city which is audible to a person of normal hearing sensitivity more than fifty feet from such vehicle nor shall any person use or operate any such sound amplification system on or in a vehicle located on private property where the sound amplification system is audible to a person of normal hearing sensitivity more than twenty-five feet from the vehicle or beyond the property line of such private property, whichever is greater. Noise from a sound amplification system in or on a vehicle located on a public highway shall be regulated in the manner provided for by the California Vehicle Code.
- B. No person shall use or operate any sound amplification system on or from a bicycle on any highway, within a public park, within a public parking lot, or on any other public property within the city which is audible to a person of normal hearing sensitivity more than fifty feet from such bicycle.
- C. Vehicle horns, or other devices primarily intended to create a loud noise for warning purposes, shall not be used when a vehicle is at rest, or when a situation endangering life, health, or property is not imminent.

**DISCUSSION:**

In preparation of this discussion and at the request of Commissioner Glatz, Staff researched noise restrictions from the following sample of other local agencies:

**City of Redding:**

Restricts amplified sound to no more than 75 decibels from 50 yards from the source between 1:00 pm and 6:00 pm unless you have a permit. A permit allows sound from 11 am to 10 pm, but still must not exceed 75 decibels from 50 yards.

**City of Red Bluff:**

Requires a separate noise permit and has same 75 dba from 50 yards from the source restrictions.

**City of Yuba City**

**Sec. 9-2.12. - Loud or boisterous conduct.**

It shall be unlawful for any person to use loud, boisterous, threatening, abusive, insulting, or indecent language, or engage in other loud or disturbing conduct by the use of any loudspeaker or other noise making device, or engage in any disorderly conduct or behavior tending to a breach of the public peace and enjoyment in any park or recreation area. Any person who is loud, boisterous, threatening, abusive, insulting, or publicly offensive shall not be permitted to remain within any park or recreation area.

Playing amplified music or a musical instrument may be allowed, if (1) the use meets the City-established noise and operating criteria within City parks and recreational areas and (2) a permit is obtained from Yuba City Leisure Services, located in City Hall at 1201 Civic Center Boulevard. The person responsible for the conduct of an activity shall sign the permit and the permit holder is totally responsible for the supervision and safety of all participants at the event. The permit must be kept at the facility or recreation area during use and shown to anyone requesting to see verification.

**City of Davis:**

**24.04.020 Registration—Required.**

It is unlawful for any person, other than personnel of law enforcement or governmental agencies, to install, use or operate within the city a loudspeaker or sound amplifying equipment in a fixed or movable position or mounted upon any sound truck for the purposes of giving instructions, directions, talks, addresses, lectures or transmitting music, to any persons or assemblages of persons in or upon any street, alley, sidewalk, park, place, or other outdoor public property without first filing a registration statement and obtaining approval thereof as set forth in this article. The provisions of this section shall also apply to the use of sound amplifying equipment upon public or private property when used in connection with outdoor or indoor public or private events, whether or not admission is charged or food or beverages are sold, when such activity is to be attended by more than one hundred persons and the noise emanating from the event will be audible at the property plane, or in the case of a street dance or concert on the nearest residential property. Outdoor sponsored athletic events and graduations held on school property and indoor events held in any assembly hall, school building, or other private or public building with an occupancy rate of more than one hundred people are exempt from the requirements of this section.

**24.02.030 Maximum noise limit.**

No person shall produce, suffer or allow to be produced in any location a noise level of more than twenty dBA above the limit, but not greater than eighty dBA, on Table No. 1 measured at the property plane. This section constitutes an absolute noise limitation applicable notwithstanding any other provision of this chapter, or any exception, exemption or waiver provided therefrom, except that the provisions of this section shall not apply to those activities referred to in Section [24.02.040](#)(a) through (d) or to emergencies.

**From:** [Old River Road](#)  
**To:** [Linda Herman](#)  
**Cc:** [Erik Gustafson](#)  
**Subject:** Revising Noise Ordinance in Park(s)  
**Date:** Tuesday, September 15, 2020 10:21:38 AM  
**Attachments:** [Research on Noise.pdf](#)  
[IMG\\_4097.PNG](#)  
[IMG\\_4093.PNG](#)  
[IMG\\_4109.PNG](#)  
[IMG\\_4095.PNG](#)  
[IMG\\_4106.PNG](#)  
[IMG\\_4108.PNG](#)

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**ATTENTION:** This message originated from outside **City of Chico**. Please exercise judgment before opening attachments, clicking on links, or replying.

Hi Linda:

I put together a little research material on different Noise Guidelines.

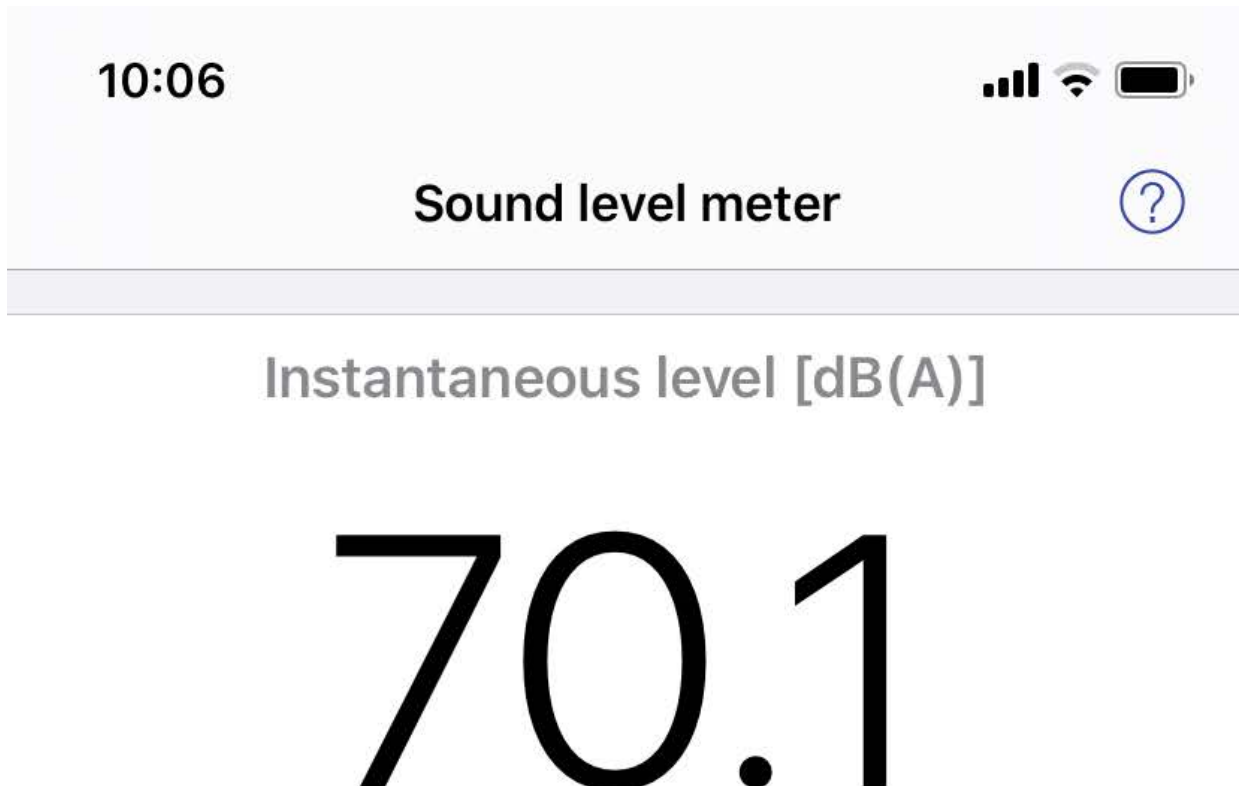
Both LA County and NYC prohibit amplified music. Others have very low measurement thresholds. I spoke with the Chief and Deputy Chief and they support a new ordinance that would prohibit amplified music in the Park(s) (except my permit). This is the easiest way to enforce an ordinance. For a Park environment, the decibel allowable increase is so low that it is more beneficial to community and enforcement to just prohibit and not have to measure this small increase.

I am also attaching some levels I took of the ambient and the noise pollution from park users in the park, mostly the blaring music from autos, but also bikes, etc. Ambient is about 42-49 (see attached). Even SF has only a 10 dB increase and you can see these readings are well beyond that, but you have to measure so just prohibiting is easiest and still fair, as the Parks should be for serenity.

I would like to help on this, so please reach out with questions and perhaps I can see the report you put together.

Thank you,

Jeff



**Total Run Time**

--:--:--

**Instantaneous level**

70.1 dB(A)

**LAeq**

--.- dB

**Lmax**

--.- dB

**LCpeak**

--.- dB

**TWA**

--.- dB

**Dose**

--.- %

**Projected dose**

--.- %



**dB**

Sound level meter



Saved



Noise Info



Settings



5:22

📶 LTE 🔋

## Sound level meter



Instantaneous level [dB(A)]

# 65.3

**Total Run Time**

--:--:--

**Instantaneous level**

65.3 dB(A)

**LAeq**

--.- dB

**Lmax**

--.- dB

**LCpeak**

--.- dB

TWA ---.- dB

Dose ---.- %

Projected dose ---.- %



dB

Sound level meter



Saved



Noise Info



Settings

6:36



Sound level meter



Instantaneous level [dB(A)]

68.6

Total Run Time

--:--:--

Instantaneous level

68.6 dB(A)

LAeq

--.- dB

Lmax

--.- dB

LCpeak

--.- dB

TWA

--.- dB

Dose

--.- %

Projected dose

--.- %



dB

Sound level meter



Saved



Noise Info



Settings

5:22



# Sound level meter



Instantaneous level [dB(A)]

# 49.3

**Total Run Time**

--:--:--

**Instantaneous level**

49.3 dB(A)

**LAeq**

--.- dB

**Lmax**

--.- dB

**LCpeak**

--.- dB

**TWA**

--.- dB

Dose

--.- %

Projected dose

--.- %



dB

Sound level meter



Saved



Noise Info



Settings

2:55



Sound level meter



Instantaneous level [dB(A)]

42.4

Total Run Time	--:--:--
Instantaneous level	42.4 dB(A)
LAeq	--.- dB
Lmax	--.- dB
LCpeak	--.- dB
TWA	--.- dB
Dose	--.- %
Projected dose	--.- %



dB

Sound level meter



Saved



Noise Info



Settings

6:04



Sound level meter





Instantaneous level [dB(A)]

66.8

Total Run Time

--:--:--

Instantaneous level

66.8 dB(A)

LAeq

--.- dB

Lmax

--.- dB

LCpeak

--.- dB

TWA

--.- dB

Dose

--.- %

# Projected dose

--.- %



dB

Sound level meter



Saved



Noise Info



Settings

---

Jeffrey Glatz  
1095 Woodland Ave  
Chico, CA 95928  
323.353.1950 Mobile



# **GUIDELINES**

FOR

## **COMMUNITY NOISE**

**Edited by**

**Birgitta Berglund**  
**Thomas Lindvall**  
**Dietrich H Schwela**

This WHO document on the *Guidelines for Community Noise* is the outcome of the WHO- expert task force meeting held in London, United Kingdom, in April 1999. It bases on the document entitled “Community Noise” that was prepared for the World Health Organization and published in 1995 by the Stockholm University and Karolinska Institute.



**World Health Organization, Geneva**  
Cluster of Sustainable Development and Healthy Environment (SDE)  
Department of the Protection of the Human Environment (PHE)  
Occupational and Environmental Health (OEH)

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## Foreword

Noise has always been an important environmental problem for man. In ancient Rome, rules existed as to the noise emitted from the ironed wheels of wagons which battered the stones on the pavement, causing disruption of sleep and annoyance to the Romans. In Medieval Europe, horse carriages and horse back riding were not allowed during night time in certain cities to ensure a peaceful sleep for the inhabitants. However, the noise problems of the past are incomparable with those of modern society. An immense number of cars regularly cross our cities and the countryside. There are heavily laden lorries with diesel engines, badly silenced both for engine and exhaust noise, in cities and on highways day and night. Aircraft and trains add to the environmental noise scenario. In industry, machinery emits high noise levels and amusement centres and pleasure vehicles distract leisure time relaxation.

In comparison to other pollutants, the control of environmental noise has been hampered by insufficient knowledge of its effects on humans and of dose-response relationships as well as a lack of defined criteria. While it has been suggested that noise pollution is primarily a “luxury” problem for developed countries, one cannot ignore that the exposure is often higher in developing countries, due to bad planning and poor construction of buildings. The effects of the noise are just as widespread and the long term consequences for health are the same. In this perspective, practical action to limit and control the exposure to environmental noise are essential. Such action must be based upon proper scientific evaluation of available data on effects, and particularly dose-response relationships. The basis for this is the process of risk assessment and risk management.

The extent of the noise problem is large. In the European Union countries about 40 % of the population are exposed to road traffic noise with an equivalent sound pressure level exceeding 55 dB(A) daytime and 20 % are exposed to levels exceeding 65 dB(A). Taking all exposure to transportation noise together about half of the European Union citizens are estimated to live in zones which do not ensure acoustical comfort to residents. More than 30 % are exposed at night to equivalent sound pressure levels exceeding 55 dB(A) which are disturbing to sleep. The noise pollution problem is also severe in cities of developing countries and caused mainly by traffic. Data collected alongside densely travelled roads were found to have equivalent sound pressure levels for 24 hours of 75 to 80 dB(A).

The scope of WHO's effort to derive guidelines for community noise is to consolidate actual scientific knowledge on the health impacts of community noise and to provide guidance to environmental health authorities and professional trying to protect people from the harmful effects of noise in non-industrial environments. Guidance on the health effects of noise exposure of the population has already been given in an early publication of the series of Environmental Health Criteria. The health risk to humans from exposure to environmental noise was evaluated and guidelines values derived. The issue of noise control and health protection was briefly addressed.

At a WHO/EURO Task Force Meeting in Düsseldorf, Germany, in 1992, the health criteria and guideline values were revised and it was agreed upon updated guidelines in consensus. The essentials of the deliberations of the Task Force were published by Stockholm University and Karolinska Institute in 1995. In a recent Expert Task Force Meeting convened in April 1999 in London, United Kingdom, the Guidelines for Community Noise were extended to provide global coverage and applicability, and the issues of noise assessment and control were addressed in more detail. This document is the outcome of the consensus deliberations of the WHO Expert Task Force.

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## Preface

Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources except noise at the industrial workplace. Main sources of community noise include road, rail and air traffic, industries, construction and public work, and the neighbourhood. The main indoor sources of noise are ventilation systems, office machines, home appliances and neighbours. Typical neighbourhood noise comes from premises and installations related to the catering trade (restaurant, cafeterias, discotheques, etc.); from live or recorded music; sport events including motor sports; playgrounds; car parks; and domestic animals such as barking dogs. Many countries have regulated community noise from road and rail traffic, construction machines and industrial plants by applying emission standards, and by regulating the acoustical properties of buildings. In contrast, few countries have regulations on community noise from the neighbourhood, probably due to the lack of methods to define and measure it, and to the difficulty of controlling it. In large cities throughout the world, the general population is increasingly exposed to community noise due to the sources mentioned above and the health effects of these exposures are considered to be a more and more important public health problem. Specific effects to be considered when setting community noise guidelines include: interference with communication; noise-induced hearing loss; sleep disturbance effects; cardiovascular and psychophysiological effects; performance reduction effects; annoyance responses; and effects on social behaviour.

Since 1980, the World Health Organization (WHO) has addressed the problem of community noise. Health-based guidelines on community noise can serve as the basis for deriving noise standards within a framework of noise management. Key issues of noise management include abatement options; models for forecasting and for assessing source control action; setting noise emission standards for existing and planned sources; noise exposure assessment; and testing the compliance of noise exposure with noise immission standards. In 1992, the WHO Regional Office for Europe convened a task force meeting which set up guidelines for community noise. A preliminary publication of the Karolinska Institute, Stockholm, on behalf of WHO, appeared in 1995. This publication served as the basis for the globally applicable *Guidelines for Community Noise* presented in this document. An expert task force meeting was convened by WHO in March 1999 in London, United Kingdom, to finalize the guidelines.

The *Guidelines for Community Noise* have been prepared as a practical response to the need for action on community noise at the local level, as well as the need for improved legislation, management and guidance at the national and regional levels. WHO will be pleased to see that these guidelines are used widely. Continuing efforts will be made to improve its content and structure. It would be appreciated if the users of the *Guidelines* provide feedback from its use and their own experiences. Please send your comments and suggestions on the WHO *Guidelines for Community Noise – Guideline document* to the Department of the Protection of the Human Environment, Occupational and Environmental Health, World Health Organization, Geneva, Switzerland (Fax: +41 22-791 4123, e-mail: schwelad@who.int).

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# Executive Summary

## 1. Introduction

Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources except noise at the industrial workplace. Main sources of community noise include road, rail and air traffic; industries; construction and public work; and the neighbourhood. The main indoor noise sources are ventilation systems, office machines, home appliances and neighbours.

In the European Union about 40% of the population is exposed to road traffic noise with an equivalent sound pressure level exceeding 55 dB(A) daytime, and 20% are exposed to levels exceeding 65 dB(A). When all transportation noise is considered, more than half of all European Union citizens is estimated to live in zones that do not ensure acoustical comfort to residents. At night, more than 30% are exposed to equivalent sound pressure levels exceeding 55 dB(A), which are disturbing to sleep. Noise pollution is also severe in cities of developing countries. It is caused mainly by traffic and alongside densely-travelled roads equivalent sound pressure levels for 24 hours can reach 75–80 dB(A).

In contrast to many other environmental problems, noise pollution continues to grow and it is accompanied by an increasing number of complaints from people exposed to the noise. The growth in noise pollution is unsustainable because it involves direct, as well as cumulative, adverse health effects. It also adversely affects future generations, and has socio-cultural, esthetic and economic effects.

## 2. Noise sources and measurement

Physically, there is no distinction between sound and noise. Sound is a sensory perception and the complex pattern of sound waves is labeled noise, music, speech etc. Noise is thus defined as unwanted sound.

Most environmental noises can be approximately described by several simple measures. All measures consider the frequency content of the sounds, the overall sound pressure levels and the variation of these levels with time. Sound pressure is a basic measure of the vibrations of air that make up sound. Because the range of sound pressures that human listeners can detect is very wide, these levels are measured on a logarithmic scale with units of decibels. Consequently, sound pressure levels cannot be added or averaged arithmetically. Also, the sound levels of most noises vary with time, and when sound pressure levels are calculated, the instantaneous pressure fluctuations must be integrated over some time interval.

Most environmental sounds are made up of a complex mix of many different frequencies. Frequency refers to the number of vibrations per second of the air in which the sound is propagating and it is measured in Hertz (Hz). The audible frequency range is normally considered to be 20–20 000 Hz for younger listeners with unimpaired hearing. However, our hearing systems are not equally sensitive to all sound frequencies, and to compensate for this various types of filters or frequency weighting have been used to determine the relative strengths of frequency components making up a particular environmental noise. The A-weighting is most commonly used and weights lower frequencies as less important than mid- and higher-frequencies. It is intended to approximate the frequency response of our hearing system.

The effect of a combination of noise events is related to the combined sound energy of those events (the equal energy principle). The sum of the total energy over some time period gives a level equivalent to the average sound energy over that period. Thus,  $L_{Aeq,T}$  is the energy average equivalent level of the A-weighted sound over a period T.  $L_{Aeq,T}$  should be used to measure continuing sounds, such as road traffic noise or types of more-or-less continuous industrial noises. However, when there are distinct events to the noise, as with aircraft or railway noise, measures of individual events such as the maximum



noise level (L<sub>Amax</sub>), or the weighted sound exposure level (SEL), should also be obtained in addition to L<sub>Aeq,T</sub>. Time-varying environmental sound levels have also been described in terms of percentile levels.

Currently, the recommended practice is to assume that the equal energy principle is approximately valid for most types of noise and that a simple L<sub>Aeq,T</sub> measure will indicate the expected effects of the noise reasonably well. When the noise consists of a small number of discrete events, the A-weighted maximum level (L<sub>Amax</sub>) is a better indicator of the disturbance to sleep and other activities. In most cases, however, the A-weighted sound exposure level (SEL) provides a more consistent measure of single-noise events because it is based on integration over the complete noise event. In combining day and night L<sub>Aeq,T</sub> values, night-time weightings are often added. Night-time weightings are intended to reflect the expected increased sensitivity to annoyance at night, but they do not protect people from sleep disturbance.

Where there are no clear reasons for using other measures, it is recommended that L<sub>Aeq,T</sub> be used to evaluate more-or-less continuous environmental noises. Where the noise is principally composed of a small number of discrete events, the additional use of L<sub>Amax</sub> or SEL is recommended. There are definite limitations to these simple measures, but there are also many practical advantages, including economy and the benefits of a standardized approach.

### **3. Adverse health effects of noise**

The health significance of noise pollution is given in chapter 3 of the *Guidelines* under separate headings according to the specific effects: noise-induced hearing impairment; interference with speech communication; disturbance of rest and sleep; psychophysiological, mental-health and performance effects; effects on residential behaviour and annoyance; and interference with intended activities. This chapter also considers vulnerable groups and the combined effects of mixed noise sources.

*Hearing impairment* is typically defined as an increase in the threshold of hearing. Hearing deficits may be accompanied by tinnitus (ringing in the ears). Noise-induced hearing impairment occurs predominantly in the higher frequency range of 3 000–6 000 Hz, with the largest effect at 4 000 Hz. But with increasing L<sub>Aeq,8h</sub> and increasing exposure time, noise-induced hearing impairment occurs even at frequencies as low as 2 000 Hz. However, hearing impairment is not expected to occur at L<sub>Aeq,8h</sub> levels of 75 dB(A) or below, even for prolonged occupational noise exposure.

Worldwide, noise-induced hearing impairment is the most prevalent irreversible occupational hazard and it is estimated that 120 million people worldwide have disabling hearing difficulties. In developing countries, not only occupational noise but also environmental noise is an increasing risk factor for hearing impairment. Hearing damage can also be caused by certain diseases, some industrial chemicals, ototoxic drugs, blows to the head, accidents and hereditary origins. Hearing deterioration is also associated with the ageing process itself (presbycusis).

The extent of hearing impairment in populations exposed to occupational noise depends on the value of L<sub>Aeq,8h</sub>, the number of noise-exposed years, and on individual susceptibility. Men and women are equally at risk for noise-induced hearing impairment. It is expected that environmental and leisure-time noise with a L<sub>Aeq,24h</sub> of 70 dB(A) or below will not cause hearing impairment in the large majority of people, even after a lifetime exposure. For adults exposed to impulse noise at the workplace, the noise limit is set at peak sound pressure levels of 140 dB, and the same limit is assumed to be appropriate for environmental and leisure-time noise. In the case of children, however, taking into account their habits while playing with noisy toys, the peak sound pressure should never exceed 120 dB. For shooting noise with L<sub>Aeq,24h</sub> levels greater than 80 dB(A), there may be an increased risk for noise-induced hearing impairment.

The main social consequence of hearing impairment is the inability to understand speech in daily living conditions, and this is considered to be a severe social handicap. Even small values of hearing impairment (10 dB averaged over 2 000 and 4 000 Hz and over both ears) may adversely affect speech comprehension.

*Speech intelligibility* is adversely affected by noise. Most of the acoustical energy of speech is in the frequency range of 100–6 000 Hz, with the most important cue-bearing energy being between 300–3 000 Hz. Speech interference is basically a masking process, in which simultaneous interfering noise renders speech incapable of being understood. Environmental noise may also mask other acoustical signals that are important for daily life, such as door bells, telephone signals, alarm clocks, fire alarms and other warning signals, and music.

Speech intelligibility in everyday living conditions is influenced by speech level; speech pronunciation; talker-to-listener distance; sound level and other characteristics of the interfering noise; hearing acuity; and by the level of attention. Indoors, speech communication is also affected by the reverberation characteristics of the room. Reverberation times over 1 s produce loss in speech discrimination and make speech perception more difficult and straining. For full sentence intelligibility in listeners with normal hearing, the signal-to-noise ratio (i.e. the difference between the speech level and the sound level of the interfering noise) should be at least 15 dB(A). Since the sound pressure level of normal speech is about 50 dB(A), noise with sound levels of 35 dB(A) or more interferes with the intelligibility of speech in smaller rooms. For vulnerable groups even lower background levels are needed, and a reverberation time below 0.6 s is desirable for adequate speech intelligibility, even in a quiet environment.

The inability to understand speech results in a large number of personal handicaps and behavioural changes. Particularly vulnerable are the hearing impaired, the elderly, children in the process of language and reading acquisition, and individuals who are not familiar with the spoken language.

*Sleep disturbance* is a major effect of environmental noise. It may cause primary effects during sleep, and secondary effects that can be assessed the day after night-time noise exposure. Uninterrupted sleep is a prerequisite for good physiological and mental functioning, and the primary effects of sleep disturbance are: difficulty in falling asleep; awakenings and alterations of sleep stages or depth; increased blood pressure, heart rate and finger pulse amplitude; vasoconstriction; changes in respiration; cardiac arrhythmia; and increased body movements. The difference between the sound levels of a noise event and background sound levels, rather than the absolute noise level, may determine the reaction probability. The probability of being awakened increases with the number of noise events per night. The secondary, or after-effects, the following morning or day(s) are: reduced perceived sleep quality; increased fatigue; depressed mood or well-being; and decreased performance.

For a good night's sleep, the equivalent sound level should not exceed 30 dB(A) for continuous background noise, and individual noise events exceeding 45 dB(A) should be avoided. In setting limits for single night-time noise exposures, the intermittent character of the noise has to be taken into account. This can be achieved, for example, by measuring the number of noise events, as well as the difference between the maximum sound level and the background sound level. Special attention should also be given to: noise sources in an environment with low background sound levels; combinations of noise and vibrations; and to noise sources with low-frequency components.

*Physiological Functions.* In workers exposed to noise, and in people living near airports, industries and noisy streets, noise exposure may have a large temporary, as well as permanent, impact on physiological functions. After prolonged exposure, susceptible individuals in the general population may develop permanent effects, such as hypertension and ischaemic heart disease associated with exposure to high sound levels. The magnitude and duration of the effects are determined in part by individual characteristics, lifestyle behaviours and environmental conditions. Sounds also evoke reflex responses, particularly when they are unfamiliar and have a sudden onset.

Workers exposed to high levels of industrial noise for 5–30 years may show increased blood pressure and an increased risk for hypertension. Cardiovascular effects have also been demonstrated after long-term exposure to air- and road-traffic with LAeq,24h values of 65–70 dB(A). Although the associations are weak, the effect is somewhat stronger for ischaemic heart disease than for hypertension. Still, these small risk increments are important because a large number of people are exposed.

*Mental Illness.* Environmental noise is not believed to cause mental illness directly, but it is assumed that it can accelerate and intensify the development of latent mental disorders. Exposure to high levels of occupational noise has been associated with development of neurosis, but the findings on environmental noise and mental-health effects are inconclusive. Nevertheless, studies on the use of drugs such as tranquillizers and sleeping pills, on psychiatric symptoms and on mental hospital admission rates, suggest that community noise may have adverse effects on mental health.

*Performance.* It has been shown, mainly in workers and children, that noise can adversely affect performance of cognitive tasks. Although noise-induced arousal may produce better performance in simple tasks in the short term, cognitive performance substantially deteriorates for more complex tasks. Reading, attention, problem solving and memorization are among the cognitive effects most strongly affected by noise. Noise can also act as a distracting stimulus and impulsive noise events may produce disruptive effects as a result of startle responses.

Noise exposure may also produce after-effects that negatively affect performance. In schools around airports, children chronically exposed to aircraft noise under-perform in proof reading, in persistence on challenging puzzles, in tests of reading acquisition and in motivational capabilities. It is crucial to recognize that some of the adaptation strategies to aircraft noise, and the effort necessary to maintain task performance, come at a price. Children from noisier areas have heightened sympathetic arousal, as indicated by increased stress hormone levels, and elevated resting blood pressure. Noise may also produce impairments and increase in errors at work, and some accidents may be an indicator of performance deficits.

*Social and Behavioural Effects of Noise; Annoyance.* Noise can produce a number of social and behavioural effects as well as annoyance. These effects are often complex, subtle and indirect and many effects are assumed to result from the interaction of a number of non-auditory variables. The effect of community noise on annoyance can be evaluated by questionnaires or by assessing the disturbance of specific activities. However, it should be recognized that equal levels of different traffic and industrial noises cause different magnitudes of annoyance. This is because annoyance in populations varies not only with the characteristics of the noise, including the noise source, but also depends to a large degree on many non-acoustical factors of a social, psychological, or economic nature. The correlation between noise exposure and general annoyance is much higher at group level than at individual level. Noise above 80 dB(A) may also reduce helping behaviour and increase aggressive behaviour. There is particular concern that high-level continuous noise exposures may increase the susceptibility of schoolchildren to feelings of helplessness.

Stronger reactions have been observed when noise is accompanied by vibrations and contains low-frequency components, or when the noise contains impulses, such as with shooting noise. Temporary, stronger reactions occur when the noise exposure increases over time, compared to a constant noise exposure. In most cases, LAeq,24h and L<sub>dn</sub> are acceptable approximations of noise exposure related to annoyance. However, there is growing concern that all the component parameters should be individually assessed in noise exposure investigations, at least in the complex cases. There is no consensus on a model for total annoyance due to a combination of environmental noise sources.

*Combined Effects on Health of Noise from Mixed Sources.* Many acoustical environments consist of sounds from more than one source, i.e. there are mixed sources, and some combinations of effects are common. For example, noise may interfere with speech in the day and create sleep disturbance at night.

These conditions certainly apply to residential areas heavily polluted with noise. Therefore, it is important that the total adverse health load of noise be considered over 24 hours, and that the precautionary principle for sustainable development be applied.

**Vulnerable Subgroups.** Vulnerable subgroups of the general population should be considered when recommending noise protection or noise regulations. The types of noise effects, specific environments and specific lifestyles are all factors that should be addressed for these subgroups. Examples of vulnerable subgroups are: people with particular diseases or medical problems (e.g. high blood pressure); people in hospitals or rehabilitating at home; people dealing with complex cognitive tasks; the blind; people with hearing impairment; fetuses, babies and young children; and the elderly in general. People with impaired hearing are the most adversely affected with respect to speech intelligibility. Even slight hearing impairments in the high-frequency sound range may cause problems with speech perception in a noisy environment. A majority of the population belongs to the subgroup that is vulnerable to speech interference.

#### 4. Guideline values

In chapter 4, guideline values are given for specific health effects of noise and for specific environments.

##### **Specific health effects.**

*Interference with Speech Perception.* A majority of the population is susceptible to speech interference by noise and belongs to a vulnerable subgroup. Most sensitive are the elderly and persons with impaired hearing. Even slight hearing impairments in the high-frequency range may cause problems with speech perception in a noisy environment. From about 40 years of age, the ability of people to interpret difficult, spoken messages with low linguistic redundancy is impaired compared to people 20–30 years old. It has also been shown that high noise levels and long reverberation times have more adverse effects in children, who have not completed language acquisition, than in young adults.

When listening to complicated messages (at school, foreign languages, telephone conversation) the signal-to-noise ratio should be at least 15 dB with a voice level of 50 dB(A). This sound level corresponds on average to a casual voice level in both women and men at 1 m distance. Consequently, for clear speech perception the background noise level should not exceed 35 dB(A). In classrooms or conference rooms, where speech perception is of paramount importance, or for sensitive groups, background noise levels should be as low as possible. Reverberation times below 1 s are also necessary for good speech intelligibility in smaller rooms. For sensitive groups, such as the elderly, a reverberation time below 0.6 s is desirable for adequate speech intelligibility even in a quiet environment.

*Hearing Impairment.* Noise that gives rise to hearing impairment is by no means restricted to occupational situations. High noise levels can also occur in open air concerts, discotheques, motor sports, shooting ranges, in dwellings from loudspeakers, or from leisure activities. Other important sources of loud noise are headphones, as well as toys and fireworks which can emit impulse noise. The ISO standard 1999 gives a method for estimating noise-induced hearing impairment in populations exposed to all types of noise (continuous, intermittent, impulse) during working hours. However, the evidence strongly suggests that this method should also be used to calculate hearing impairment due to noise exposure from environmental and leisure time activities. The ISO standard 1999 implies that long-term exposure to LAeq,24h noise levels of up to 70 dB(A) will not result in hearing impairment. To avoid hearing loss from impulse noise exposure, peak sound pressures should never exceed 140 dB for adults, and 120 dB for children.

*Sleep Disturbance.* Measurable effects of noise on sleep begin at LAeq levels of about 30 dB. However, the more intense the background noise, the more disturbing is its effect on sleep. Sensitive groups mainly include the elderly, shift workers, people with physical or mental disorders and other individuals who have difficulty sleeping.

Sleep disturbance from intermittent noise events increases with the maximum noise level. Even if the total equivalent noise level is fairly low, a small number of noise events with a high maximum sound pressure level will affect sleep. Therefore, to avoid sleep disturbance, guidelines for community noise should be expressed in terms of the equivalent sound level of the noise, as well as in terms of maximum noise levels and the number of noise events. It should be noted that low-frequency noise, for example, from ventilation systems, can disturb rest and sleep even at low sound pressure levels.

When noise is continuous, the equivalent sound pressure level should not exceed 30 dB(A) indoors, if negative effects on sleep are to be avoided. For noise with a large proportion of low-frequency sound a still lower guideline value is recommended. When the background noise is low, noise exceeding 45 dB LAmax should be limited, if possible, and for sensitive persons an even lower limit is preferred. Noise mitigation targeted to the first part of the night is believed to be an effective means for helping people fall asleep. It should be noted that the adverse effect of noise partly depends on the nature of the source. A special situation is for newborns in incubators, for which the noise can cause sleep disturbance and other health effects.

*Reading Acquisition.* Chronic exposure to noise during early childhood appears to impair reading acquisition and reduces motivational capabilities. Evidence indicates that the longer the exposure, the greater the damage. Of recent concern are the concomitant psychophysiological changes (blood pressure and stress hormone levels). There is insufficient information on these effects to set specific guideline values. It is clear, however, that daycare centres and schools should not be located near major noise sources, such as highways, airports, and industrial sites.

*Annoyance.* The capacity of a noise to induce annoyance depends upon its physical characteristics, including the sound pressure level, spectral characteristics and variations of these properties with time. During daytime, few people are highly annoyed at LAeq levels below 55 dB(A), and few are moderately annoyed at LAeq levels below 50 dB(A). Sound levels during the evening and night should be 5–10 dB lower than during the day. Noise with low-frequency components require lower guideline values. For intermittent noise, it is emphasized that it is necessary to take into account both the maximum sound pressure level and the number of noise events. Guidelines or noise abatement measures should also take into account residential outdoor activities.

*Social Behaviour.* The effects of environmental noise may be evaluated by assessing its interference with social behavior and other activities. For many community noises, interference with rest/recreation/watching television seem to be the most important effects. There is fairly consistent evidence that noise above 80 dB(A) causes reduced helping behavior, and that loud noise also increases aggressive behavior in individuals predisposed to aggressiveness. In schoolchildren, there is also concern that high levels of chronic noise contribute to feelings of helplessness. Guidelines on this issue, together with cardiovascular and mental effects, must await further research.

### **Specific environments.**

A noise measure based only on energy summation and expressed as the conventional equivalent measure, LAeq, is not enough to characterize most noise environments. It is equally important to measure the maximum values of noise fluctuations, preferably combined with a measure of the number of noise events. If the noise includes a large proportion of low-frequency components, still lower values than the guideline values below will be needed. When prominent low-frequency components are present, noise

measures based on A-weighting are inappropriate. The difference between dB(C) and dB(A) will give crude information about the presence of low-frequency components in noise, but if the difference is more than 10 dB, it is recommended that a frequency analysis of the noise be performed. It should be noted that a large proportion of low-frequency components in noise may increase considerably the adverse effects on health.

*In Dwellings.* The effects of noise in dwellings, typically, are sleep disturbance, annoyance and speech interference. For bedrooms the critical effect is sleep disturbance. Indoor guideline values for bedrooms are 30 dB LAeq for continuous noise and 45 dB LMax for single sound events. Lower noise levels may be disturbing depending on the nature of the noise source. At night-time, outside sound levels about 1 metre from facades of living spaces should not exceed 45 dB LAeq, so that people may sleep with bedroom windows open. This value was obtained by assuming that the noise reduction from outside to inside with the window open is 15 dB. To enable casual conversation indoors during daytime, the sound level of interfering noise should not exceed 35 dB LAeq. The maximum sound pressure level should be measured with the sound pressure meter set at “Fast”.

To protect the majority of people from being seriously annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55 dB LAeq on balconies, terraces and in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50 dB LAeq. Where it is practical and feasible, the lower outdoor sound level should be considered the maximum desirable sound level for new development.

*In Schools and Preschools.* For schools, the critical effects of noise are speech interference, disturbance of information extraction (e.g. comprehension and reading acquisition), message communication and annoyance. To be able to hear and understand spoken messages in class rooms, the background sound level should not exceed 35 dB LAeq during teaching sessions. For hearing impaired children, a still lower sound level may be needed. The reverberation time in the classroom should be about 0.6 s, and preferably lower for hearing impaired children. For assembly halls and cafeterias in school buildings, the reverberation time should be less than 1 s. For outdoor playgrounds the sound level of the noise from external sources should not exceed 55 dB LAeq, the same value given for outdoor residential areas in daytime.

For preschools, the same critical effects and guideline values apply as for schools. In bedrooms in preschools during sleeping hours, the guideline values for bedrooms in dwellings should be used.

*In Hospitals.* For most spaces in hospitals, the critical effects are sleep disturbance, annoyance, and communication interference, including warning signals. The LMax of sound events during the night should not exceed 40 dB(A) indoors. For ward rooms in hospitals, the guideline values indoors are 30dB LAeq, together with 40 dB LMax during night. During the day and evening the guideline value indoors is 30 dB LAeq. The maximum level should be measured with the sound pressure instrument set at “Fast”.

Since patients have less ability to cope with stress, the LAeq level should not exceed 35 dB in most rooms in which patients are being treated or observed. Attention should be given to the sound levels in intensive care units and operating theaters. Sound inside incubators may result in health problems for neonates, including sleep disturbance, and may also lead to hearing impairment. Guideline values for sound levels in incubators must await future research.

*Ceremonies, Festivals and Entertainment Events.* In many countries, there are regular ceremonies, festivals and entertainment events to celebrate life periods. Such events typically produce loud sounds, including music and impulsive sounds. There is widespread concern about the effect of loud music and impulsive sounds on young people who frequently attend concerts, discotheques, video arcades, cinemas, amusement parks and spectator events. At these events, the sound level typically exceeds 100 dB LAeq. Such noise exposure could lead to significant hearing impairment after frequent attendances.

Noise exposure for employees of these venues should be controlled by established occupational standards; and at the very least, the same standards should apply to the patrons of these premises. Patrons should not be exposed to sound levels greater than 100 dB LAeq during a four-hour period more than four times per year. To avoid acute hearing impairment the LAmax should always be below 110 dB.

*Headphones.* To avoid hearing impairment from music played back in headphones, in both adults and children, the equivalent sound level over 24 hours should not exceed 70 dB(A). This implies that for a daily one hour exposure the LAeq level should not exceed 85 dB(A). To avoid acute hearing impairment LAmax should always be below 110 dB(A). The exposures are expressed in free-field equivalent sound level.

*Toys, Fireworks and Firearms.* To avoid acute mechanical damage to the inner ear from impulsive sounds from toys, fireworks and firearms, adults should never be exposed to more than 140 dB(lin) peak sound pressure level. To account for the vulnerability in children when playing, the peak sound pressure produced by toys should not exceed 120 dB(lin), measured close to the ears (100 mm). To avoid acute hearing impairment LAmax should always be below 110 dB(A).

*Parkland and Conservation Areas.* Existing large quiet outdoor areas should be preserved and the signal-to-noise ratio kept low.

Table 1 presents the WHO guideline values arranged according to specific environments and critical health effects. The guideline values consider all identified adverse health effects for the specific environment. An adverse effect of noise refers to any temporary or long-term impairment of physical, psychological or social functioning that is associated with noise exposure. Specific noise limits have been set for each health effect, using the lowest noise level that produces an adverse health effect (i.e. the critical health effect). Although the guideline values refer to sound levels impacting the most exposed receiver at the listed environments, they are applicable to the general population. The time base for LAeq for “daytime” and “night-time” is 12–16 hours and 8 hours, respectively. No time base is given for evenings, but typically the guideline value should be 5–10 dB lower than in the daytime. Other time bases are recommended for schools, preschools and playgrounds, depending on activity.

It is not enough to characterize the noise environment in terms of noise measures or indices based only on energy summation (e.g., LAeq), because different critical health effects require different descriptions. It is equally important to display the maximum values of the noise fluctuations, preferably combined with a measure of the number of noise events. A separate characterization of night-time noise exposures is also necessary. For indoor environments, reverberation time is also an important factor for things such as speech intelligibility. If the noise includes a large proportion of low-frequency components, still lower guideline values should be applied. Supplementary to the guideline values given in Table 1, precautions should be taken for vulnerable groups and for noise of certain character (e.g. low-frequency components, low background noise).

**Table 1: Guideline values for community noise in specific environments.**

Specific environment	Critical health effect(s)	$L_{Aeq}$ [dB(A)]	Time base [hours]	$L_{Amax}$ fast [dB]
Outdoor living area	Serious annoyance, daytime and evening	55	16	-
	Moderate annoyance, daytime and evening	50	16	-
Dwelling, indoors	Speech intelligibility & moderate annoyance, daytime & evening	35	16	
Inside bedrooms	Sleep disturbance, night-time	30	8	45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60
School class rooms & pre-schools, indoors	Speech intelligibility, disturbance of information extraction, message communication	35	during class	-
Pre-school bedrooms, indoor	Sleep disturbance	30	sleeping-time	45
School, playground outdoor	Annoyance (external source)	55	during play	-
Hospital, ward rooms, indoors	Sleep disturbance, night-time	30	8	40
	Sleep disturbance, daytime and evenings	30	16	-
Hospitals, treatment rooms, indoors	Interference with rest and recovery	#1		
Industrial, commercial shopping and traffic areas, indoors and outdoors	Hearing impairment	70	24	110
Ceremonies, festivals and entertainment events	Hearing impairment (patrons:<5 times/year)	100	4	110
Public addresses, indoors and outdoors	Hearing impairment	85	1	110
Music and other sounds through headphones/earphones	Hearing impairment (free-field value)	85 #4	1	110
Impulse sounds from toys, fireworks and firearms	Hearing impairment (adults)	-	-	140 #2
	Hearing impairment (children)	-	-	120 #2
Outdoors in parkland and conservations areas	Disruption of tranquillity	#3		

#1: As low as possible.



- #2: Peak sound pressure (not LAF, max) measured 100 mm from the ear.
- #3: Existing quiet outdoor areas should be preserved and the ratio of intruding noise to natural background sound should be kept low.
- #4: Under headphones, adapted to free-field values.

## 5. Noise Management

Chapter 5 is devoted to noise management with discussions on: strategies and priorities in managing indoor noise levels; noise policies and legislation; the impact of environmental noise; and on the enforcement of regulatory standards.

The fundamental goals of noise management are to develop criteria for deriving safe noise exposure levels and to promote noise assessment and control as part of environmental health programmes. These basic goals should guide both international and national policies for noise management. The United Nation's Agenda 21 supports a number of environmental management principles on which government policies, including noise management policies, can be based: the principle of precaution; the "polluter pays" principle; and noise prevention. In all cases, noise should be reduced to the lowest level achievable in the particular situation. When there is a reasonable possibility that the public health will be endangered, even though scientific proof may be lacking, action should be taken to protect the public health, without awaiting the full scientific proof. The full costs associated with noise pollution (including monitoring, management, lowering levels and supervision) should be met by those responsible for the source of noise. Action should be taken where possible to reduce noise at the source.

A legal framework is needed to provide a context for noise management. National noise standards can usually be based on a consideration of international guidelines, such as these *Guidelines for Community Noise*, as well as national criteria documents, which consider dose-response relationships for the effects of noise on human health. National standards take into account the technological, social, economic and political factors within the country. A staged program of noise abatement should also be implemented to achieve the optimum health protection levels over the long term.

Other components of a noise management plan include: noise level monitoring; noise exposure mapping; exposure modeling; noise control approaches (such as mitigation and precautionary measures); and evaluation of control options. Many of the problems associated with high noise levels can be prevented at low cost, if governments develop and implement an integrated strategy for the indoor environment, in concert with all social and economic partners. Governments should establish a "National Plan for a Sustainable Noise Indoor Environment" that applies both to new construction as well as to existing buildings.

The actual priorities in rational noise management will differ for each country. Priority setting in noise management refers to prioritizing the health risks to be avoided and concentrating on the most important sources of noise. Different countries have adopted a range of approaches to noise control, using different policies and regulations. A number of these are outlined in chapter 5 and Appendix 2, as examples. It is evident that noise emission standards have proven insufficient and that the trends in noise pollution are unsustainable.

The concept of environmental an environmental noise impact analysis is central to the philosophy of managing environmental noise. Such an analysis should be required before implementing any project that would significantly increase the level of environmental noise in a community (typically, greater than a 5 dB increase). The analysis should include: a baseline description of the existing noise environment; the

expected level of noise from the new source; an assessment of the adverse health effects; an estimation of the population at risk; the calculation of exposure-response relationships; an assessment of risks and their acceptability; and a cost-benefit analysis.

Noise management should:

1. Start monitoring human exposures to noise.
2. Have health control require mitigation of noise immissions, and not just of noise source emissions. The following should be taken into consideration:
  - specific environments such as schools, playgrounds, homes, hospitals.
  - environments with multiple noise sources, or which may amplify the effects of noise.
  - sensitive time periods such as evenings, nights and holidays.
  - groups at high risk, such as children and the hearing impaired.
3. Consider the noise consequences when planning transport systems and land use.
4. Introduce surveillance systems for noise-related adverse health effects.
5. Assess the effectiveness of noise policies in reducing adverse health effects and exposure, and in improving supportive "soundscapes".
6. Adopt these *Guidelines for Community Noise* as intermediary targets for improving human health.
7. Adopt precautionary actions for a sustainable development of the acoustical environments.

## Conclusions and recommendations

In chapter 6 are discussed: the implementation of the guidelines; further WHO work on noise; and research needs are recommended.

*Implementation.* For implementation of the guidelines it is recommended that:

- Governments should protection the population from community noise and consider it an integral part of their policy of environmental protection.
- Governments should consider implementing action plans with short-term, medium-term and long-term objectives for reducing noise levels.
- Governments should adopt the *Health Guidelines for Community Noise* values as targets to be achieved in the long-term.
- Governments should include noise as an important public health issue in environmental impact assessments.
- Legislation should be put in place to allow for the reduction of sound levels.
- Existing legislation should be enforced.
- Municipalities should develop low noise implementation plans.
- Cost-effectiveness and cost-benefit analyses should be considered potential instruments for meaningful management decisions.
- Governments should support more policy-relevant research.

*Future Work.* The Expert Task Force worked out several suggestions for future work for the WHO in the field of community noise. WHO should:

- Provide leadership and technical direction in defining future noise research priorities.
- Organize workshops on how to apply the guidelines.

- Provide leadership and coordinate international efforts to develop techniques for designing supportive sound environments (e.g. "soundscapes").
- Provide leadership for programs to assess the effectiveness of health-related noise policies and regulations.
- Provide leadership and technical direction for the development of sound methodologies for environmental and health impact plans.
- Encourage further investigation into using noise exposure as an indicator of environmental deterioration (e.g. black spots in cities).
- Provide leadership and technical support, and advise developing countries to facilitate development of noise policies and noise management.

*Research and Development.* A major step forward in raising the awareness of both the public and of decision makers is the recommendation to concentrate more research and development on variables which have monetary consequences. This means that research should consider not only dose-response relationships between sound levels, but also politically relevant variables, such as noise-induced social handicap; reduced productivity; decreased performance in learning; workplace and school absenteeism; increased drug use; and accidents.

In Appendices 1–6 are given: bibliographic references; examples of regional noise situations (African Region, American Region, Eastern Mediterranean Region, South East Asian Region, Western Pacific Region); a glossary; a list of acronyms; and a list of participants.

## Introduction

Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources, except noise at the industrial workplace. Main sources of community noise include road, rail and air traffic, industries, construction and public work, and the neighbourhood. Typical neighbourhood noise comes from premises and installations related to the catering trade (restaurant, cafeterias, discotheques, etc.); from live or recorded music; from sporting events including motor sports; from playgrounds and car parks; and from domestic animals such as barking dogs. The main indoor sources are ventilation systems, office machines, home appliances and neighbours. Although many countries have regulations on community noise from road, rail and air traffic, and from construction and industrial plants, few have regulations on neighbourhood noise. This is probably due to the lack of methods to define and measure it, and to the difficulty of controlling it. In developed countries, too, monitoring of compliance with, and enforcement of, noise regulations are weak for lower levels of urban noise that correspond to occupationally controlled levels (>85 dB LAeq,8h; Frank 1998). Recommended guideline values based on the health effects of noise, other than occupationally-induced effects, are often not taken into account.

The extent of the community noise problem is large. In the European Union about 40% of the population is exposed to road traffic noise with an equivalent sound pressure level exceeding 55 dBA daytime; and 20% is exposed to levels exceeding 65 dBA (Lambert & Vallet 19 1994). When all transportation noise is considered, about half of all European Union citizens live in zones that do not ensure acoustical comfort to residents. At night, it is estimated that more than 30% is exposed to equivalent sound pressure levels exceeding 55 dBA, which are disturbing to sleep. The noise pollution problem is also severe in the cities of developing countries and is caused mainly by traffic. Data collected alongside densely traveled roads were found to have equivalent sound pressure levels for 24 hours of 75–80 dBA (e.g. National Environment Board Thailand 19 1990; Mage & Walsh 19 1998).

- (a) In contrast to many other environmental problems, noise pollution continues to grow, accompanied by an increasing number of complaints from affected individuals. Most people are typically exposed to several noise sources, with road traffic noise being a dominant source (OECD-ECMT 19 1995). Population growth, urbanization and to a large extent technological development are the main driving forces, and future enlargements of highway systems, international airports and railway systems will only increase the noise problem. Viewed globally, the growth in urban environmental noise pollution is unsustainable, because it involves not simply the direct and cumulative adverse effects on health. It also adversely affects future generations by degrading residential, social and learning environments, with corresponding economical losses (Berglund 1998). Thus, noise is not simply a local problem, but a global issue that affects everyone (Lang 1999; Sandberg 1999) and calls for precautionary action in any environmental planning situation.

The objective of the World Health Organization (WHO) is the attainment by all peoples of the highest possible level of health. As the first principle of the WHO Constitution the definition of 'health' is given as: "A state of complete physical, mental and social well-

being and not merely the absence of disease or infirmity”. This broad definition of health embraces the concept of well-being and, thereby, renders noise impacts such as population annoyance, interference with communication, and impaired task performance as ‘health’ issues. In 1992, a WHO Task Force also identified the following specific health effects for the general population that may result from community noise: interference with communication; annoyance responses; effects on sleep, and on the cardiovascular and psychophysiological systems; effects on performance, productivity, and social behavior; and noise-induced hearing impairment (WHO 1993; Berglund & Lindvall 1995; *cf.* WHO 1980). Hearing damage is expected to result from both occupational and environmental noise, especially in developing countries, where compliance with noise regulation is known to be weak (Smith 1998).

Noise is likely to continue as a major issue well into the next century, both in developed and in developing countries. Therefore, strategic action is urgently required, including continued noise control at the source and in local areas. Most importantly, joint efforts among countries are necessary at a system level, in regard to the access and use of land, airspace and seawaters, and in regard to the various modes of transportation. Certainly, mankind would benefit from societal reorganization towards healthy transport. To understand noise we must understand the different types of noise and how we measure it, where noise comes from and the effects of noise on human beings. Furthermore, noise mitigation, including noise management, has to be actively introduced and in each case the policy implications have to be evaluated for efficiency.

This document is organized as follows. In Chapter 2 noise sources and measurement are discussed, including the basic aspects of source characteristics, sound propagation and transmission. In Chapter 3 the adverse health effects of noise are characterized. These include noise-induced hearing impairment, interference with speech communication, sleep disturbance, cardiovascular and physiological effects, mental health effects, performance effects, and annoyance reactions. This chapter is rounded out by a consideration of combined noise sources and their effects, and a discussion of vulnerable groups. In Chapter 4 the Guideline values are presented. Chapter 5 is devoted to noise management. Included are discussions of: strategies and priorities in the management of indoor noise levels; noise policies and legislation; environmental noise impact; and enforcement of regulatory standards. In Chapter 6 implementation of the WHO Guidelines is discussed, as well as future WHO work on noise and its research needs. In Appendices 1–6 are given: bibliographic references; examples of regional noise situations (African Region, American Region, Eastern Mediterranean Region, South East Asian Region, Western Pacific Region); a glossary; a list of acronyms; and a list of participants.

# California Noise Laws

California Health and Safety Code

DIVISION 28. NOISE CONTROL ACT

CHAPTER 1. FINDINGS, DECLARATIONS, AND INTENT

46000. The Legislature hereby finds and declares that:

- (a) Excessive noise is a serious hazard to the public health and welfare.
- (b) Exposure to certain levels of noise can result in physiological, psychological, and economic damage.
- (c) There is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas.
- (d) Government has not taken the steps necessary to provide for the control, abatement, and prevention of unwanted and hazardous noise.
- (e) The State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise.
- (f) All Californians are entitled to a peaceful and quiet environment without the intrusion of noise which may be hazardous to their health or welfare.
- (g) It is the policy of the state to provide an environment for all Californians free from noise that jeopardizes their health or welfare. To that end it is the purpose of this division to establish a means for effective coordination of state activities in noise control and to take such action as will be necessary to achieve the purposes of this section.

46001. No provision of this division or ruling of the Office of Noise Control is a limitation or expansion:

- (a) On the power of a city, county, or city and county to adopt and enforce additional regulations, not in conflict therewith, imposing further conditions, restrictions, or limitations.
- (b) On the power of any city, county, or city and county to declare, prohibit, and abate nuisances.
- (c) On the power of the Attorney General, at the request of the office, the state department, or upon his own motion to bring an action in the name of the people of the State of California to enjoin any pollution or nuisance or to protect the natural resources of the state.
- (d) On the power of a state agency in the enforcement or administration of any provision of law which it is specifically permitted or required to enforce or administer.
- (e) On the right of any person to maintain at any time any appropriate action for relief against any private nuisance as defined in the Civil Code or for relief against any noise pollution.

46002. Nothing in this division shall be construed as giving the Office of Noise Control authority or responsibility for adopting or enforcing noise-emission standards for any product for which a regulation has been, or could be, prescribed or promulgated by the Environmental Protection Agency under the Noise Control Act of 1972.

CHAPTER 2. SHORT TITLE

46010. This division shall be known and may be cited as the California Noise Control Act of 1973.

## CHAPTER 3. DEFINITIONS

46020. Unless the context otherwise requires, the definitions set forth in this chapter govern the construction of the words used in this division.

46021. "Local agency" means and includes every local agency, including a county, city, whether general law or chartered, city and county, school district, municipal corporation, district, political subdivision, or any board, commission or agency thereof, or other local public agency.

46022. "Noise" means and includes excessive undesirable sound, including that produced by persons, pets and livestock, industrial equipment, construction, motor vehicles, boats, aircraft, home appliances, electric motors, combustion engines, and any other noise-producing objects.

46023. "Office" means the Office of Noise Control.

46024. "Public agency" means and includes every state agency and every local agency.

46025. "State agency" means and includes every state office, officer, department, division, bureau, board, council, commission, or other state agency.

## CHAPTER 4. ESTABLISHMENT OF OFFICE

46040. There is within the state department an Office of Noise Control.

## CHAPTER 5. DUTIES OF THE OFFICE

46050. The office shall, in order to protect health and well-being establish and maintain a program on noise control, including but not limited to:

- (a) Determining the psychological and physical health effects of noise.
- (b) Determining the physiological effects of noise upon plant and animal life.
- (c) Monitoring noise.
- (d) Collecting and disseminating authoritative information on adverse effects of noise and of means for its control.
- (e) Developing, in cooperation with local governments, model ordinances for urban, suburban, and rural environments.
- (f) Providing assistance to local governmental entities engaged in developing and implementing noise abatement procedures.
- (g) Developing criteria and guidelines for use in setting standards for human exposure to noise.
- (h) Developing standards for the use of noise-producing objects in California.
- (i) Developing criteria for submission to the Legislature so that state agencies may require noise control in equipment purchased for state use.

46050.1. Notwithstanding Section 65040.2 of the Government Code, the office shall adopt, in coordination with the Office of Planning and Research and each state department and agency as it deems appropriate, guidelines for the preparation and content of noise elements as required by Section 65302 of the Government Code.

In adding Section 39850.1 to the Health and Safety Code, which was the predecessor to this section, and amending

Section 65302 of the Government Code by Chapter 1124 of the Statutes of 1975, it was the intent of the Legislature to ensure, insofar as possible, that new and periodically revised noise elements in local governments' general plans be more standardized, comprehensive, and utilitarian than they had been previously.

However, the Legislature also recognized that some cities and counties had already adopted noise elements pursuant to the existing Section 65302 of the Government Code and that others had received extensions on the due date of their noise element until September 20, 1975. Those cities and counties were not required to resubmit new noise elements consistent with Section 65302 of the Government Code, or to recognize guidelines adopted pursuant to this section, but are required, upon initial and periodic revision of the noise element, to comply with Section 65302 of the Government Code and to recognize those guidelines.

The requirement that the office adopt guidelines for the preparation and content of noise elements shall be inoperative during the 1993-94 fiscal year.

## CHAPTER 6. ASSISTANCE TO LOCAL AGENCIES

46060. It is the purpose of this chapter to encourage the enactment and enforcement of local ordinances in those areas which are most properly the responsibility of local government. It is further the purpose to insure that the state is of maximum assistance to local agencies in the discharge of those responsibilities, furnishing technical and legal expertise to assist local agencies in the enactment and enforcement of meaningful and technically sufficient noise abatement measures.

46061. The office shall provide technical assistance to local agencies in combating noise pollution. Such assistance shall include but not be limited to:

- (a) Advice concerning methods of noise abatement and control.
- (b) Advice on training of noise control personnel.
- (c) Advice on selection and operation of noise abatement equipment.

46062. The office shall provide assistance to local agencies in the preparation of model ordinances to control and abate noise. Such ordinances shall be developed in consultation with the Attorney General and with representatives of local agencies, including the County Supervisors Association of California and the League of California Cities. Any local agency which adopts any noise control ordinance shall promptly furnish a copy to the office.

## CHAPTER 7. COORDINATION OF STATE AND FEDERAL ACTIVITIES

46070. The director shall promote coordination of the programs of all state agencies relating to noise research, abatement, prevention, and control. Each state agency shall, upon request, furnish to the director such information as he may reasonably require to determine the nature, scope, and results of the noise research and noise control programs of the agency.

46071. On the basis of regular consultation with appropriate state agencies, the director shall compile and publish, from time to time, a report on the status and progress of state activities relating to noise research and noise control. This report shall describe the noise programs of each state agency and assess the contributions of those programs to the state's overall efforts to control noise.

46072. In any case where any state agency is carrying out or sponsoring any activity resulting in noise which the director determines amounts to a public nuisance or is otherwise objectionable, such agency shall consult with the director to determine possible means of abating such noise. This section does not apply to any action of a private person for which a license, permit, or other entitlement for use is required to be issued by a state agency.

46073. The Legislature authorizes and directs that all state agencies shall, to the fullest extent consistent with existing authority, administer the programs within their control in such a manner as to further the policy declared in



Section 46000. This section shall not be construed to limit or expand the authority of any state agency to issue or deny a license, permit, or other entitlement for use.

46074. Each state agency authorized to adopt regulations in the area of noise control shall in the manner specified in subdivision (c) of Section 11423 of the Government Code give notice to and invite the comments of the office concerning any proposed adoption, amendment, or repeal of a regulation in the area of noise control.

46075. In accordance with the provisions of Section 11426 of the Government Code or other applicable law, the office may petition any public agency for the adoption of regulations or other measures otherwise within the authority of that public agency in the area of noise control.

46076. The Office of Noise Control shall maintain a program to insure that all state agencies are advised of available federal assistance and funds for noise control programs. The office may, at the request of individual agencies, act for them for the following purposes:

(a) Applying for federal funds which may be made available to the states for noise control programs or related research as a result of the Noise Control Act of 1972 (P.L. 92-574) or any other federal program or law.

(b) Receiving technical assistance from the Environmental Protection Agency to facilitate the development and enforcement of state noise standards and model noise legislation.

46077. The office shall maintain a program to ensure coordinated state and federal noise control programs including, but not limited to, the following:

(a) The study of federal noise regulations proposed for adoption pursuant to the Noise Control Act of 1972.

(b) The preparation of comments, evaluations, objections or the use of any other means to ensure that the federal government considers existing California noise control statutes and regulations prior to the adoption of regulations in order to prevent the adoption of federal noise regulations weaker than existing state standards.

## CHAPTER 8. RESEARCH AND PUBLIC INFORMATION

46080. In furtherance of his responsibilities under this division and to complement, as necessary, the noise research programs of federal agencies and of other state agencies, the director is authorized to:

(a) Conduct research, and finance research by contract with other public and private bodies, on the effects, measurement, and control of noise, including but not limited to:

(1) Investigation of the psychological and physiological effects of noise on humans and the effects of noise on domestic animals, wildlife, and property, and determination of acceptable levels of noise on the basis of such effects.

(2) Development of improved methods and standards for measurement and monitoring of noise.

(3) Determination of the most effective and practicable means of controlling noise generation, transmission, and reception.

(b) Coordinate with and become knowledgeable concerning the noise research programs of other governmental entities including the federal government.

(c) Disseminate to the public information on the effects of noise, acceptable noise levels, and techniques for noise measurement and control.

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CALIFORNIA CODES  
VEHICLE CODE SECTION 27000-27007

27007. No driver of a vehicle shall operate, or permit the operation of, any sound amplification system which can be heard outside the vehicle from 50 or more feet when the vehicle is being operated upon a highway, unless that system is being operated to request assistance or warn of a hazardous situation.

This section does not apply to authorized emergency vehicles or vehicles operated by gas, electric, communications, or water utilities. This section does not apply to the sound systems of vehicles used for advertising, or in parades, political or other special events, except that the use of sound systems on those vehicles may be prohibited by a local authority by ordinance or resolution.

12.08.380 - Noise zones designated.

Receptor properties described hereinafter in this chapter are hereby assigned to the following noise zones:

Noise Zone I—Noise-sensitive area; Noise Zone II—Residential properties; Noise Zone III—Commercial properties; Noise Zone IV—Industrial properties.

(Ord. 11778 § 2 (Art. 4 § 402), 1978; Ord. 11773 § 2 (Art. 4 § 402), 1978.)

17.12.310 - Disturbances prohibited.

A person shall not disturb the peace and quiet of any beach by:

- A. Playing, causing, or producing any unduly loud music or any boisterous or unusual noise, including amplified sound exceeding exterior levels specified for residential areas under the Noise Ordinance of the Los Angeles County Code (Section 12.08.430 et seq.) unless authorized by permit, license, or other means by the Director.
- B. Causing or producing any repetitive tooting, blowing, or sounding of any automobile siren, horn, signal, or noise-making device.
- C. Any tumultuous conduct.
- D. The use of any vulgar, profane, or indecent language therein.
- E. Operating a vessel or vehicle motor in such a manner that engine or exhaust noise is unusually loud.

(Ord. 2012-0005 § 38, 2012: Ord. 91-0121 § 2, 1991: Ord. 9767 Art. 3 § 40, 1969.)

17.04.435 - Disturbances prohibited.

A person shall not disturb the peace and quiet of any park by:

- A. Willfully making or continuing, or causing to be made or continued, any excessively loud or unnecessary noise which unreasonably disturbs the peace or enjoyment of a park, thereby causing substantial discomfort or annoyance to any reasonable person of normal sensitivities that is present in the park or in its immediate proximity.
- B. Any obscene, violent, or riotous conduct.
- C. The use of any vulgar, profane, indecent, offensive, or abusive language or other form of communication that is inherently likely to provoke an immediate violent reaction by the person to whom the communication is directed.

(Ord. 2012-0030 § 13, 2012: Ord. 10309 Art. 3 § 38, 1971.)

12.08.390 - Exterior noise standards—Citations for violations authorized when.

A. Unless otherwise herein provided, the following exterior noise levels shall apply to all receptor properties within a designated noise zone:

Noise Zone	Designated Noise Zone Land Use (Receptor property)	Time Interval	Exterior Noise Level (dB)
I	Noise-sensitive area	Anytime	45
II	Residential properties	10:00 pm to 7:00 am (nighttime)	45
		7:00 am to 10:00 pm (daytime)	50
III	Commercial properties	10:00 pm to 7:00 am (nighttime)	55
		7:00 am to 10:00 pm (daytime)	60
IV	Industrial properties	Anytime	70

B. Unless otherwise herein provided, no person shall operate or cause to be operated, any source of sound at any location within the unincorporated county, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level, when measured on any other property either incorporated or unincorporated, to exceed any of the following exterior noise standards:

Standard No. 1 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 30 minutes in any hour. Standard No. 1 shall be the applicable noise level from subsection A of this section; or, if the ambient L50 exceeds the foregoing level, then the ambient L50 becomes the exterior noise level for Standard No. 1.

Standard No. 2 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 15 minutes in any hour. Standard No. 2 shall be the applicable noise level from subsection A of this section plus 5dB; or, if the ambient L25 exceeds the foregoing level, then the ambient L25 becomes the exterior noise level for Standard No. 2.

Standard No. 3 shall be the exterior noise level which may not be exceeded for a cumulative period of more than five minutes in any hour. Standard No. 3 shall be the applicable noise level from subsection A of this section plus 20dB; or, if the ambient L8.3 exceeds the foregoing level, then the ambient L8.3 becomes exterior noise level for Standard No. 3.

Standard No. 4 shall be the exterior noise level which may not be exceeded for a cumulative period of more than one minute in any hour. Standard No. 4 shall be the applicable noise level from subsection

## ARTICLE 29: REGULATION OF NOISE

### SEC. 2900. DECLARATION OF POLICY.

- (a) Building on decades of scientific research, the World Health Organization and the U.S. Environmental Protection Agency have determined that persistent exposure to elevated levels of community noise is responsible for public health problems including, but not limited to: compromised speech, persistent annoyance, sleep disturbance, physiological and psychological stress, heart disease, high blood pressure, colitis, ulcers, depression, and feelings of helplessness.
- (b) The General Plan for San Francisco identifies noise as a serious environmental pollutant that must be managed and mitigated through the planning and development process. But given our dense urban environment. San Francisco has a significant challenge in protecting public health from the adverse effects of community noise arising from diverse sources such as transportation, construction, mechanical equipment, entertainment, and human and animal behavior.
- (c) In order to protect public health, it is hereby declared to be the policy of San Francisco to prohibit unwanted, excessive, and avoidable noise. It shall be the policy of San Francisco to maintain noise levels in areas with existing healthful and acceptable levels of noise and to reduce noise levels, through all practicable means, in those areas of San Francisco where noise levels are above acceptable levels as defined by the World Health Organization's Guidelines on Community Noise.
- (d) It shall be the goal of the noise task force described in this Article to determine if there are additional adverse and avoidable noise sources not covered in this statute that warrant regulation and to report to the Board of Supervisors and recommend amendments to this Article over the next three years. In addition, the noise task force shall develop interdepartmental mechanisms for the efficient disposition and any enforcement required in response to noise complaints.

**150 dB**  
**140 dB**  
**130 dB**  
**120 dB**  
**110 dB**  
**100 dB**  
**90 dB**  
**80 dB**  
**70 dB**  
**60 dB**  
**50 dB**  
**40 dB**  
**30 dB**  
**20 dB**

# Typical Car Audio Sound System



**150 dB**  
**140 dB**  
**130 dB**  
**120 dB**  
**110 dB**  
**100 dB**  
**90 dB**  
**80 dB**  
**70 dB**  
**60 dB**  
**50 dB**  
**40 dB**  
**30 dB**  
**20 dB**



**Hearing Damage  
w/ Long Exposure**

# CARING FOR YOUR COAST



**SWIM NEAR AN OPEN  
LIFEGUARD TOWER**

**NADE CERCA DE UN SALVAVIDAS**

**CAUTION - BEWARE OF:**

RIP CURRENTS • PIERS/PILINGS • ROCKS  
JETTIES/GROINS • UNEVEN OCEAN BOTTOM

**PRECAUCIÓN - CUIDADO CON:**

CORRIENTES MARINAS • MUELLES/PILOTES • PIEDRAS  
ESCOLLERAS/ROMPEOLAS • FONDO DISPAREJO

## VIOLATORS WILL BE CITED



**No Alcohol**  
17.12.320 LACC



**No Smoking**  
17.12.365 LACC



**No Dogs or  
Other Animals**  
17.12.290 LACC  
17.12.300 LACC



**No Overnight Sleeping  
or Camping**  
17.12.260 LACC  
17.12.250 LACC



**No Fireworks**  
17.12.400 LACC



**No Fires**  
17.12.370 LACC



**No Soliciting or  
Selling Merchandise**  
17.12.340 LACC



**Permit Required for  
Events/Activities**  
17.12.345 LACC



**No Drones**  
17.12.425 LACC



**No Motorized  
Scooters/Bikes**  
17.12.230 LACC



**Parking Lots are  
for Parking Only**  
17.12.232 LACC



**No Disturbances**  
17.12.310 LACC

## New York City Parks

Welcome to your park. This is a shared public space provided for your enjoyment and recreation. We want you to have a fun and safe time. Dogs must be properly licensed and vaccinated. Please be courteous and respectful to others.

### Park rules prohibit:

- Littering and dumping of debris
- Smoking within the park
- Barbecuing, except in designated areas
- Unleashed dogs, except in designated areas between the hours of 9pm to 9am when the park is open
- Using illegal drugs and alcohol
- Feeding birds and squirrels
- Entering the park after it is closed
- Solicitation and obstructing entrances
- Amplifying sound, performing and rallying, engaging in commercial activity, and vehicles, except by permit

This park closes at 9pm.

For questions about Parks, please call 311 or visit [www.nyc.gov/parks](http://www.nyc.gov/parks).

City of New York



Parks & Recreation



©

LongIslandExchange.com



DATE: 9/24/20  
TO: Bidwell Park and Playground Commission (BPPC)  
FROM: Linda Herman, Park and Natural Resources Manager  
SUBJECT: Park Division Report

## NARRATIVE

### 1. Updates

- a. Caper Acres Nico Shade and Resurfacing Project– Staff is working on an application to the State for the City's share of Prop 68 Per Capita Park funds for the Nico Shade Project in Caper Acres. Melton Design is finishing up the construction bid documents and engineering drawings are being prepared for the shade structure for the building permits. A Notice of CEQA Categorical Exemption – Existing Facilities will be filed with the County and State Clearing House next week.
- b. City Plaza Closure – Starting on 9/24/20, the City's Facilities Division will be closing City Plaza for 2-weeks to perform some deep cleaning, pest control, reseeding of turf, and other maintenance repairs.
- c. Council Action - Park Reservation Fees & CARD Agreement– On 9/15/20, the City Council unanimously approved:
  - i. The resolutions amending the Chico Municipal Code and City Fee Schedule related to park reservations and fees. The revised reservation fees will become effective on 11/15/20.
  - ii. A new Cooperative Agreement with Chico Area Recreation and Park District (CARD) which restates the commitment from both agencies to coordinate park programs and facilities, continues the lifeguard program, and provides for the transfer of Community Park development impact funds directly to CARD over a transition period, and transfer of ownership and maintenance of neighborhood parks built through the development process to CARD.

### 2. Administrative and Visitor Services

- a. Admin Staffing– Recruitment for the vacant Administrative Assistant position has been completed but is on hold due to the current hiring freeze. The administrative staff have been doing a great job keeping up with the increased workload.

### 3. Maintenance Program

General - Staff provides on a need and time basis the cleaning and safety inspections of all recreation areas including; grounds, playgrounds, picnic sites, roads and paths, coupled with the weekend cleaning and re-supplying of all open park restrooms. As well as maintenance and repair of park fixtures, daily opening of gates, posting reservations, unauthorized camp clean up and the constant removal of graffiti from all park infrastructure.

- a. Lower Park:- Staff continues the ongoing repair to vandalized fixtures in the Lower Park along with routine maintenance to lights, irrigation, buildings and down limb pick up. Staff has completed the repair to picnic site 34 caused from a downed tree.
- b. Middle Park- Routine maintenance, (mowing lawns, irrigation repairs, downed tree and limb removals, building maintenance, etc.).
- c. Upper Park:
  - i. Horseshoe Lake Lot E is an ongoing repair issue with the fence being ran into with vehicles on a regular basis. A better solution needs to be found as replacing the fence materials have doubled in price from last

year. Staff has suggested changing the flow of the lot by making it a one-way loop and are open to suggestions on how to stop the daily destruction of the fencing.

- ii. Staff delivered 80-cubic yards of chip materials throughout the Disc golf course.
- iii. Staff is presently working on installing the new metal Bear Hole sign at the entrance to the parking area.
- d. Greenway Parks: Routine maintenance. As time and staff permit. Staff worked with O&M to deliver soil to a new BMX track location.
- e. Upcoming projects: install the new Bear Hole sign, side trim and elevate the Lower Park drives, grade parking lots, Fall turf program.

#### 4. Ranger and Lifeguard Programs

- a. Sworn Rangers– A candidate for a new sworn Ranger has passed the recruitment and background check process. The candidate is scheduled to enter into the police academy in December. Recruitment for the third sworn ranger is in process.
- b. Citations/Warnings– The Rangers have been busy primarily responding to encampment related issues. A DUI arrest was made in Upper Park on 9/20/20. The Rangers will begin providing regular citation and warning information starting with the October monthly Division Report.
- c. Significant Incidents
  - i. Possible Bear Siting – On 9/18/20, Rangers, Park Staff, and CA Fish & Wildlife Service Wardens spent approximately 3 hours looking for a potential early morning bear siting near the Deer Pens in Lower Park. The bear was not located during the search and has been seen since.

#### 5. Volunteer and Donor Program

- a. Alliance for Work Force Development (AFWD) – The AFWD sanitation crew continues to spruce up, paint and disinfect picnic tables, BBQs, benches and other amenities throughout Bidwell Park. The AFWD grant originally scheduled to terminate at the end of September, has been extended to the end of December.
- b. CAVE– The CSU, Chico Community Action Volunteers in Education (CAVE) Adopt a Park program is planned to be back in session starting the week of September 28<sup>th</sup>. The student volunteers will be in Verbena Fields on Friday mornings working with our Mechoopda Tribe partners and on Saturday mornings in Bidwell Park.
- c. Upcoming Volunteer Opportunities –
  - i. Make a Difference Day– Tentative plans for Make a Difference Day on Saturday, October 24<sup>th</sup> are being explored. COVID-19 safety and responsible planning are top priority. ]
  - ii. Volunteer Calendar – To find out about upcoming volunteer events please [CLICK HERE](#) or visit <https://www.chico.ca.us/post/volunteer-calendar>

## MONTHLY SUMMARY TABLES

**Table 1. Monthly Volunteer Hours**

Parks and Greenway -PALS- (Partners, Ambassadors, Leaders & Stewards) Volunteer Activities, August 2020							
Date	Location	Partner/Agency	# of Volunteers	Hrs. Worked	# of Vols Xs Hrs. = Total Hrs.	Task	Leader
Various	Bidwell Park and Greenways	PALS Ambassadors	140	various	1266	Various/ Ambassadors	Shane Romain
8/8/2020	Humboldt Rd	Respect the Walls	19	3	57	Gen Cleanup	Debbie Meline
8/8/2020	Peregrine Point	ORAI	1	2	2	Planning	Phil Brock
8/14/2020	Comanche Creek	FOCCG	3	4	12	Gen Cleanup	Liz Stewart
8/15/2020	Lower Park	PALS	6	3	18	Veg Mgmt	Kevin Seeger
8/16/2020	Peregrine Point	ORAI	2	1	2	Basket Relocate	Phil Brock
8/22/2020	Lower Park	Boy Scouts Pack 3	4	6	24	Veg Mgmt	Sarah Felder
8/27/2020	Lower Park	PALS	3	5	15	Gen Cleanup	Dennis Deromedi
8/29/2020	Peregrine Point	ORAI	2	5	10	Bench install hole 12	Phil Brock
8/29/2020	Lower Park	Stand up for Chico	32	3	96	Gen Cleanup	Angela McLaughlin
				<b>TOTAL HRS.</b>	<b>1502</b>		

**Table 2. Monthly Incidents**

Fire Incidents, September 2020		
DATE	LOCATION	INCIDENT DETAILS
9/2/2020	Council Ring	8:45 PM 2nd time today Chico Fire is responding to One Mile for large flames seen.
9/3/2020	South 1 Mile	12:00 AM large flames from a cooking fire
9/9/2020	Site #16	Illegal fire within encampment.
9/9/2020	Lindo Channel	Illegal fire within encampment.
9/14/2020	Site 25	7:30 PM Illegal fire within encampment.
9/14/2020	Site 36	8:00:00 PM Illegal fire within encampment
9/15/2020	1-Mile/Petersen Drive	4:30 PM Ranger spotted fire across the creek from Sites 31/32. Approximate 1/4-acre burn.
9/16/2020	South 1 Mile	8:00 AM Illegal burn near 12 tables
9/17/2020	LCC at Pine & Cypress	7:45 PM Illegal fire with at least 2-foot flames



DATE: 9/24/20  
TO: Bidwell Park and Playground Commission (BPPC)  
FROM: Richie Bamlet, Urban Forest Manager  
SUBJECT: Street Trees Division Report

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## NARRATIVE

### 1. Updates

- a. Tree maintenance work has commenced with the City contractor, West Coast Arborists.
- b. The Citywide tree inventory with Davey Resource Group is almost completed.
- c. Two Urban Forest Coordinator intern positions have been filled.

### 2. Planning/Monitoring

- a. Damage Reports – UFM completed one damage report for Risk Management. The claim related to vehicle impact and cost recovery of landscaping costs.

### 3. Planning and Building Development

- a. UFM reviewed many plan reviews in the new Trakit permitting system. Comments included Tree Protection Zone enforcement of protected trees and landscaping species choice.
- b. Weekly Planning review meetings continue in WebEx format.

### 4. Miscellaneous

- a. Davey Resource Group tree inventory specialists continue surveying all trees located in the City right-of-way. Surveyors are currently assessing trees situated near paved surfaces in Lower Bidwell park. Just under 2000 trees have been tagged and logged into the database.
- b. Tree Division assisted the board of Stansbury house with grounds maintenance. Eight ornamental tree cages were provided to the board. The cages will be used to help improve the aesthetics of the grounds.

### 5. Maintenance

- a. UFM met with PG&E contractors to determine management of street trees during utility pole the replacement program.
- b. Tree Division worked with Public Works Engineering during The Esplanade road widening project to safeguard the historical Cork oak trees. All trees were able to be preserved and root systems were left intact during sidewalk repaving operations. See figure 2

- c. The contractor West Coast Arborists removed twenty-eight dead and dying trees in various locations throughout the City. Stumps will be ground and replaced with soil ready for replanting.

**6. Outreach, Training and Education**






- a. Two Urban Forest Outreach Coordinator intern positions started. CSU students Gianna Anselmo and Ashleyann Bacay will be based at the offices of Butte Environmental Council. Current tasks include preparation for fall planting season and associated public outreach.
- b. UFM contributed to two news stories covered in Enterprise Record. One story covered climate change and affect on landscape and one covered the upcoming fruit tree gleaning project.
- c. UFM was guest on KZFR 90.1 Ecotopia 9/8/20. The topic of discussion was the future of Chico's urban forest in the face of climate change.

**7. Street Tree Supervisor Report**

The Street Tree Supervisors monthly summary data tables for August included below:

**MONTHLY SUMMARY TABLES**

Table 1

Category	Staff Hours	% of Total	% Change from Last Month	Trend
Tree Crew Hours				
1. Safety	150.5	13.6%	138.1%	
2. Tree Work	786	71.2%	100.4%	
3. Special Projects	48	4.3%	37.8%	
4. Admin Time/Other	120	10.9%	169.0%	
Monthly Totals	1104.5	100.0%	101.3%	



Item	Values	% Change from Last Month	Trend
<b>5. Productivity</b>			
<b>Calls</b>			
Call Outs	140	81.4%	-----□□
Service Requests: Submitted	0	-	
Service Requests: Completed	117	102.6%	-----□□□
Sub Total	0	-	
<b>Trees</b>			
Planted: Trees	0	-	
Pruned	165	179.3%	□□□-----
Removed: Trees (smaller)	0	-	
Removed: Stumps	0	-	
Removed: Trees	3	20.0%	---□-----
Sub Total	168	157.0%	□□□-----
<b>Tree Permits (#)</b>			
Submitted	3	-	□□ □
Approved	3	-	-- □
Denied	0	-	
Total	3	-	□□ □
<b>6. Contracts</b>			
Expenditures (\$)	\$ 50,700	-	□
<b>Trees (#)</b>			
Planted	0	-	
Pruned	0	-	
Removed: Trees (smaller)	0	-	
Removed: Stumps	28	-	□
Removed: Trees	0	-	
Routine Maintenance	0	-	
Total	28	-	□

**Table 2 above.**

**8. Upcoming Issues/Miscellaneous:**

- a. Butte County Local Food Network has begun planning an upcoming community fruit tree gleaning project. Initial focus will be on City-owned persimmon trees.
- b. Another yard tree and street tree giveaway event is being planned in conjunction with Butte Environmental Council for the fall.
- c. Tree Division is currently scheduling resources for fall tree pruning programs. The DCBA district will be an initial focus.

## PHOTOGRAPHS



Figure 1. Japanese persimmon Hachiya variety ready soon for gleaning.

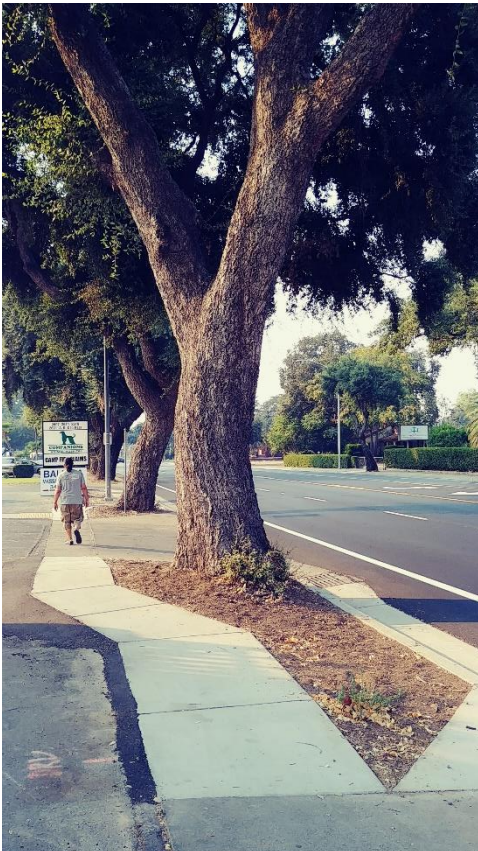


Figure 2, left. Cork oak on Esplanade after esplanade road improvement completion. No roots were cut during ADA sidewalk upgrades



Figure 3, right. Contractor removes large dying Black walnut on 16<sup>th</sup> St.

**From:** [Anna Moore](#)  
**To:** [Linda Herman](#)  
**Subject:** Agenda Items  
**Date:** Wednesday, September 16, 2020 9:03:18 AM

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**ATTENTION:** This message originated from outside **City of Chico**. Please exercise judgment before opening attachments, clicking on links, or replying.

Good Morning, Linda—

I'd like to vote to agendize discussion on requesting new positions in the parks division: 2-3 maintenance staff, a resource manager, and a development director. With climate change happening so profoundly all around us, now is absolutely the time to make sure our park is as resilient as possible. We need a revenue stream and staff on the ground more than ever.

Thank you.

—Anna B Moore