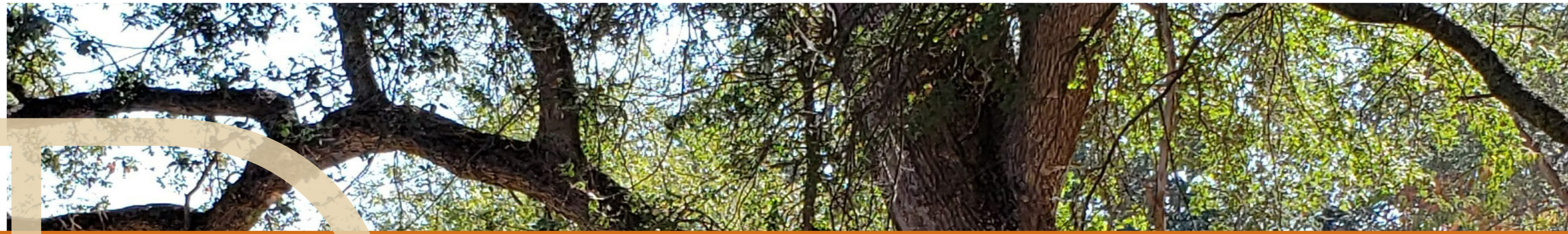

APPENDIX D
MONITORING PLAN

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American River Parkway
Natural Resources Management Plan

MONITORING PLAN

Draft | September 2022

1.0 Introduction

The American River Parkway Natural Resources Management Plan (NRMP) complements the American River Parkway Plan (Parkway Plan or ARPP) by establishing management guidelines for maintaining and enhancing the Parkway's natural resources. The NRMP describes the resources and outlines management goals and objectives across the American River Parkway (Parkway), as well as general and specific management actions within each of the ARPP Area Plans that contribute to meeting the overall goals and objectives.

This NRMP Monitoring Plan provides Regional Parks with a framework for monitoring and reporting the progress of general and specific management actions set forth in the NRMP. This will include ongoing coordination with stakeholders and/or project proponents to ensure that project implementation and monitoring activities are integrated into the overall monitoring and reporting goals of the NRMP. These monitoring and reporting goals cover biological resources, physical resources, cultural resources, human use impact reduction, as well as agency and community coordination.

1.1 Purpose and Need

This monitoring plan has been prepared to guide monitoring and reporting of progress towards achieving the goals of the NRMP. The specific objectives for each goal are provided along with the time frame for initial implementation and the details of what should be monitored and/or tracked annually both before and after initial implementation. Additionally, this plan provides the framework for reporting progress and adaptive management actions that were taken and/or are being recommended that should and/or have been made to achieve successful implementation of the NRMP goals and objectives. These monitoring and reporting tasks are essential for informing updates to the NRMP within 5-10 years.

1.2 Adaptive Management

Every year the implementation of the NRMP will be examined through the monitoring plan, and the annual monitoring report will identify what is working and what is not, whether progress is being made or if a different approach is needed.

Adaptive management is the term that describes how resource management is modified in response to what is happening in the field. Ideally, it will ensure that human usage of the Parkway complements its habitats, plants, and wildlife.

Adaptive management is a method of improving resource management by learning from past decisions and outcomes. It is essential in instances where existing management strategies have failed to meet success criteria or desired outcomes. Adaptive management is generally achieved by

1. Exploring alternative means to accomplish management objectives
2. Forecasting the outcomes of alternatives based on current knowledge derived from monitoring or literature
3. Applying one or more alternative methods to improve or replace existing management actions
4. Continuing monitoring to learn about the impacts of management action changes, then
5. Using the results from monitoring to update knowledge and adjust management actions.

It is important to consider the following principles of adaptive management:

1. All methods allow for flexibility. If a new, more effective, or more cost and time efficient monitoring method is discovered, it may be implemented instead of, or in addition to, the methods specified in this plan.
2. Data gathered during monitoring is interpreted and the results are used to assess and manage risks to assure desired goals and objectives are met. This is a high-level monitoring plan, but by using information gathered to follow how NRMP goals and objectives are being met, the annual reports can identify trends and detect the need for changes in management to meet the goals and objectives of the NRMP.
3. Decisions are informed by science and are evidence- based. If an alternate management strategy is proposed, scientific data will guide any changes made to methods or monitoring.
4. Phasing is an appropriate tool. A change in approach may be phased if a new strategy is proposed, to allow it to be tested in a stepwise manner. Phasing allows time for assessment and minimization of risk when alternative strategies are proposed.
5. Collaboration with stakeholders is critical to success. Many tasks included in the NRMP were guided by input and collaborations with regulatory agencies (e.g., USACE Ecosystem Restoration concept), research and educational institutions (e.g., CSUS planning for the Bushy Lake Conceptual Restoration Plan) and other entities to meet mutual goals and/or regulatory permit requirements. Any adaptive management changes to a given task must be reviewed by applicable stakeholders vested in the successful completion of a given task to ensure the consistency and likelihood of meeting the goals and objectives specified in the NRMP.

Adaptive management can also include updating the monitoring plan to reflect new information. For example, the NRMP Environmental Impact Report may identify additional monitoring tasks that would fit into this Monitoring Plan; or there may be new projects in the future that were not anticipated in the NRMP that need to be tracked through the Monitoring Plan.

1.3 Monitoring Plan Responsibilities

Regional Parks is responsible for conducting and/or coordinating the monitoring, tracking, and reporting associated with this plan, including management of a comprehensive database associated with NRMP and Parkway Plan elements. Since some monitoring may be conducted by others, it will be the responsibility of Regional Parks to coordinate and integrate those monitoring efforts into the monitoring and reporting associated with this plan.

1.4 Monitoring Plan Updates

The monitoring plan is based on an adaptive management method. The plan will therefore need to be periodically updated, in coordination with a technical advisory committee and the Recreation and Park Commission. Monitoring Plan updates may occur as often as annually, or less often as needed. However, it is recommended that this monitoring plan be updated in conjunction with achieving initial implementation of some of the objectives (e.g., mapping of vegetation communities is complete by 2024 and an update would detail ongoing monitoring needs).. Monitoring Plan updates will include the details of what changed between each of the versions in order to help inform updates to the NRMP.

2.0 Monitoring NMRP Goals, Objectives and Actions

This section identifies the monitoring activities associated with specific goals and objectives. Regional Parks is responsible for conducting annual monitoring to assess progress towards achieving the goals of the NRMP as outlined below. The NRMP recognized that some of the objectives will not be immediately achievable but have a targeted timeline for completion is stated. Monitoring will continue prior to implementation to track progress towards meeting the objective.

2.1 Biological Resources Goals and Objectives

The NRMP biological resources goals include assessing the existing resources, conserving, restoring and naturalizing high quality habitat including ensuring adequate connectivity for wildlife, controlling invasive non-native species, and rehabilitating areas that have been impacted by fires, encampments, and social trails. Specific objectives that help to evaluate the progress towards meeting the goals are aimed at assessing, mapping, and quantifying acreages.

2.1.1 Assessing, Mapping, and Tracking Biological Resources (Goal 1.1)

The assessment of the biological resources in the Parkway is a critical component of monitoring because it will provide a basis of understanding the amount and location of various resources that will contribute to making informed decisions about current and future management actions. Table 1 below provides the specific objectives that contribute to meeting the NRMP goal of assessing biological resources within the Parkway

Table 1 – Objectives for Assessing Biological Resources

1.1 - Assess biological resources within the Parkway.	
	1.1a - Update vegetation community maps, including a frequently inundated floodplain/shaded riverine aquatic (SRA) habitat map.
	1.1b - Complete Parkway-wide surveys for sensitive species habitat.
	1.1c - Update invasive plant species surveys and maintain a tracking system.
	1.1d - Develop and maintain tracking system for homeless encampments in the Parkway.

Regional Parks will update its existing vegetation community maps, which was last done in 2009, and will include mapping of invasive plant species. Vegetation mapping may integrate or utilize new data collected by other agencies and stakeholders (e.g., SAFCA and Water Forum). This mapping data will contribute to creating maps for sensitive species habitat within the Parkway, including rearing habitat for juvenile salmonids (i.e., inundated floodplain where SRA habitat occurs). Another component of mapping will be tracking the location of homeless encampments in the Parkway. Due to the transient nature of encampments this element of the map will continually be updated. As data is collected it will be important to ensure that data is identified by each Area Plan so that evaluations can focus in on individual areas. Overall, this information will contribute to ongoing updates to the NRMP management categories and help maintain the desired condition of "conservation" for most Parkway areas (see discussion below).

The targeted completion timeline for this initial mapping exercise is within 2-years (2024). Thereafter, these maps will be updated annually as changes occur from implementation of new projects or disturbances, such as wildfire.

2.1.2 Tracking Management for High-Quality Habitat (Goals 1.2 through 1.7)

In addition to baseline biological resources assessments in the Parkway, the NRMP also provides maps that represent the best estimate of the areas associated with the following NRMP management categories: conservation, restoration, and naturalization. These management categories identify the anticipated level of management that will be required. Areas in the "conservation" status require only minimal maintenance as they are currently in a high-quality state. Areas that do not yet provide high-quality

habitat are identified as “restoration” and “naturalization” and require a medium to high level of maintenance intensity to bring them into the “conservation” category, which is the desired condition for all Parkway habitats. Table 2 provides the goals and objectives as shown in the NRMP. Table 3 below provides a consolidated version of those initial objectives that support the goal of maintaining, enhancing, and creating high quality native riparian, grassland, woodland, and elderberry vegetation communities in the next 3-5 years, and provides a future projection of what might be expected in 6-10 years.

Table 2 - Goals and Objectives for Conserving, Restoring, and Naturalizing High-Quality Habitat

Goal	Objectives
1.2 - Conserve high- quality native habitats.	
	1.2a - Conserve high-quality native riparian vegetation communities.
	1.2b - Conserve high-quality native grassland vegetation communities.
	1.2c - Conserve high-quality native woodland vegetation communities.
	1.2d - Conserve high-quality native elderberry vegetation communities.
1.3 - Restore high-quality native habitats that require improvement.	
	1.3a - Restore 25 ac of high-quality native riparian vegetation.
	1.3b - Restore 1 ac of high-quality native grassland vegetation communities.
	1.3c - Restore 6 ac of high-quality native woodland vegetation communities.
	1.3d - Restore 19 ac of high-quality native elderberry vegetation communities.
1.4 - Naturalize habitats that have been altered by human activity.	
	1.4a - Naturalize 50 ac (3-5 years) and 40 ac (6-10 years) of native riparian vegetation communities.
	1.4b - Naturalize 4 ac (3-5 years) and 45 ac (6-10 years) of native grassland vegetation communities.
	1.4c - Naturalize 6 ac (3-5 years) and 86 ac (6-10 years) of native woodland vegetation communities.
	1.4d - Naturalize 30 ac (3-5 years) of native elderberry vegetation communities.
	1.4e - Coordinate with project proponents to implement 90 to 120 acres (3-5 years) of salmonid habitat enhancement projects.

Table 3 – Goals and Objectives for Conserving, Restoring, and Naturalizing High-Quality Habitat

	Conserve[1]	Restore (acres)	Naturalize (acres)	
Habitat Types	3-5 Years	3-5 Years	3-5 Years	6-10 Years
Riparian vegetation communities	TBD	25	50	40
Grassland vegetation communities	TBD	1	4	45
Woodland vegetation communities	TBD	6	6	86
Elderberry vegetation communities	TBD	19	30	0
Salmonid Habitat Enhancement	TBD	0	30-65	0
Total	TBD	51	120 – 155	171

Notes: [1] The acreages for each of the vegetation communities under the conserve category will be provide under the effort associated with assessing biological resources (Goal 1.2).

The progress toward updating the acreages in the conservation category will be tracked annually. The first update to this category is tied to the biological assessment objectives outlined under Goal 1.2 above. After the initial acreages (i.e., baseline targets for conserved habitat) have been quantified they will be updated annually in response to changes that occur in relation to the actions in the restoration and naturalization categories or based on other unforeseen changes, such as wildfire or flooding. Monitoring of the conservation category will also include details of the management actions that were taken (e.g., noxious weeds targeted, acres mowed/grazed, herbicide used, ladder fuel removed, etc.) to ensure the associated lands remain in the conservation management category.

A decline in the conservation category acreage shall initiate adaptive management actions to prevent further decline and to increase the acreage of high-quality habitat as soon as possible to the previous level.

Additionally, the NRMP identified several specific monitoring and maintenance actions that should also be monitored annually:

- Maintain mature London plane trees in parking and picnic areas for nesting birds. *(Discovery)*
- Maintain created spawning and rearing habitat. This may include periodic replenishment of gravel to maintain suitable spawning habitat for salmonids. *(Arden Bar, Ancil Hoffman, Sacramento Bar, Lower Sunrise, Upper Sunrise, and Sailor Bar)*
- Monitor bluff erosion with consideration given to managing invasive plants. *(San Juan Bluff and Sunrise Bluff)*

Annual monitoring will also include tracking the details of the changes associated with the restoration and naturalization categories. This will include providing specific details of the project proponents, funding, location, project footprint, acres, long-term management plans, when implementation occurred or when it is expected, and other relevant details.

The initial acreages provided in the NRMP for the restoration and naturalization management categories were conservative based on what was reasonably likely to occur in the next 10 years. Potential actions associated with restoration and/or naturalization management categories were identified in each Area Plan of the NRMP (Appendix A) and some of them are expected to be implemented in the near future (3-5 years). It is important to note that the list of potential actions is subject to change in response to further evaluation and/or new information. Likewise, additional actions that may help meet the NRMP goals for these management categories may be added to the list overtime. Therefore, annual monitoring will also track changes to that list. All of the monitoring identified above will result in updates to the mapping assessments conducted for Goal 1.

2.1.3 Tracking Management to Address Degraded Habitat (Goals 1.5 – 1.7)

Closely associated with Goals 2-4 discussed above are the goals and objectives associated with the rehabilitation of damaged habitat, expansion or connection of important wildlife corridors, and reduction of invasive non-native species. These objectives, shown in Table 4, will influence the changes in the habitat acreages monitored in each of the management categories discussed above and are expected to be implemented in 3-5 years.

Table 4 - Goals and Objectives to Address Degraded Habitat

Goal	Objectives
1.5 - Rehabilitate habitats damaged or degraded by fire or homeless populations.	
	1.5a - Preparation of a plan to rehabilitate wildfire- damaged areas, prioritizing vulnerable vegetation, to ensure a timely response to minimize wildfire impacts. Document and evaluate all areas damaged/degraded by wildfire.
	1.5b - Parallel to Rehabilitation, identify areas requiring repair, which is different than rehabilitation, and include in annual O&M plans.
1.6 - Expand corridors to connect native vegetation communities/wildlife habitat	
	1.6a - Complete Wildlife Connectivity Opportunity Plan.
	1.6b - Reduction of barriers to fish and wildlife movement in the Parkway.
1.7 - Reduce the prevalence of invasive, non-native species.	
	1.7a - Update Invasive Plant Management Project.
	1.7b - Replacement of 5 acres of invasive, non-native species with native species identified in the NRMP.

Regional Parks will annually monitor progress towards developing and implementing projects that addresses rehabilitation of areas damaged by wildfire. In addition, other areas that might be damaged but do not need full rehabilitation will be identified and included in Regional Parks' annual operation and maintenance activities.

In association with the annual monitoring for restored and naturalized habitat Regional Parks will track progress towards reducing wildlife barriers (including fish) in the lower Parkway and provide the status of developing a plan that address connectivity. This will include tracking opportunities to implement the potential actions related to improving and/or expanding wildlife connectivity listed below, which were identified in the NRMP:

- Trestles and Bridges in the Discovery and Woodlake areas: identify opportunities to improve or accommodate wildlife movement, as future improvements are made to Highway 160, State Route 51/Capital City Freeway, or the railroad trestles
- Future projects in the Woodlake Area, such as bridge widening (referred to as the Third Main Track Project) or anticipated developed recreation improvement near Highway-160 should integrate wildlife connectivity into the early design process.
- Northgate or Del Paso Boulevards in the Discovery Area: Identify opportunities for improving/expanding wildlife habitat connectivity as future improvements are made to these roadways.

Annual invasive plant management monitoring will include tracking progress towards converting 5-acres of lands with invasive non-native species into native vegetation communities. In addition, annual monitoring will provide details of the continued management, maintenance, and control of the targeted invasive weeds identified in the 2000 Invasive Plant Management Plan (IPMP). The key invasive weeds in each area are identified in Table 5 below but continued surveillance of any and all targeted weeds should occur in all areas. In addition, areas should be identified for restoration activities to help discourage re-invasion (i.e., planting native species in place of noxious weed species that were removed).

Table 5 - Ongoing Invasive Plant Management by Area Identified in 2000 IPMP[1].

	Red Sesbania	Giant Reed	Chinese Tallow	Spanish Broom	Pampas Grass	French Broom	Scotch Broom	Tree of Heaven	Tamarisk
Discovery	X	X							X
Woodlake	X	X							
Cal Expo	X	X							
Paradise Beach	X	X	X	X					
Campus Commons	X	X	X						
Howe Ave.	X	X	X	X					
Watt Ave.	X	X	X						
SARA Park	X	X	X	X	X				
Arden	X	X	X	X	X				
River Bend	X	X	X	X	X	X	X		
Sarah Court	X								
Ancil Hoffman	X		X	X	X	X			
Rossmoor	X			X				X[2]	
San Juan Bluffs				X		X			
Sacramento Bar	X		X	X	X	X			
Lower Sunrise		X		X	X		X		
Sunrise				X	X	X	X		

	Red Sesbania	Giant Reed	Chinese Tallow	Spanish Broom	Pampas Grass	French Broom	Scotch Broom	Tree of Heaven	Tamarisk
Upper Sunrise		X	X	X			X		
Sailor Bar				X	X	X	X		X

Notes: [1] The NRMP discusses the targeted weeds for each area but may have missed a few that are incorporated into this table.
[2] This weed is a focus of the Phase III IPMP and has not yet been target

Regional Parks will document the progress towards updating the 2000 IPMP and subsequent to that update will provide annual monitoring of the progress to control the updated list of targeted weed species.

2.2 Physical Resources Goals and Objectives

There are two goals identified in the NRMP that are aimed at protecting levees and improving water quality. The specific objectives that help to evaluate the progress towards meeting the goals are coordination, tracking, and mapping (Table 6).

Table 6 - Goals and Objectives for Physical Resources

Goals	Objectives
2.1 - Protect levees throughout the Parkway.	
	2.1a - Stabilization of 100% of all levees throughout the Parkway consistent with maintaining a natural riverine environment.
2.2 - Improve water quality.	
	2.2a - Coordination with SWQCB to monitor and map high *E. coli* levels.
	2.2b - Identify reaches of the river that have chronic levels of high *E. coli* levels.

Regional Parks will coordinate with the agencies responsible for flood risk management in the Parkway on an annual basis to track their ongoing activities and plans related to operations and maintenance and efforts to ensure the levees meet applicable federal, state, and local standards.

Regional Parks will also coordinate with the State Water Quality Control Board (SWQCB) regarding the water quality within the Parkway. Data gathered by SWQCB will continue to be shared including the mapped locations where there are high and chronic levels of E. coli.

2.3 Cultural Resources

The NRMP Cultural Resources goals are centered on partnering with tribal governments and protecting archaeological and historical resources. The specific objectives include ensuring protection of the officially designated cultural resources and meeting with representatives of tribal governments (Table 7).

Table 7 –Goals and Objectives for Cultural Resources

Goal	Objectives
3.1 - Protect archaeological and historical resources.	
	3.1a - Protection of 100% of the officially designated archaeological and historical resources (listing is provided in the data management system).
3.2 - Form a partnership with tribal governments to protect and manage cultural resources in the Parkway.	
	3.2a - Establishment or participation in regular annual meetings with tribal government representatives.

Regional Parks will track progress towards full protection of registered cultural resources and provide updates on their status thereafter. Annual updates on the progress of establishing regular partnership/coordination meetings with tribal government representatives within 2-year (2024) will be tracked and once partnerships established, monitoring will track the outcomes and potential recommended actions from those meetings.

2.4 Human Use Impact Reduction

The NRMP goals associated with reducing human use impacts includes, reducing encampment impacts, ensuring large group gatherings and special events are monitored, ensuring transmission line corridors provide environmental benefits, reducing impacts associated with ambient light, and ensuring active public engagement and education on the value of the Parkway resources to the region. The objectives to achieve these goals are centered on surveying, mapping, monitoring, updating plans, mitigating impacts, and entering into agreements. Table 8 lists the goals and objectives for human use impact reduction.

Table 8 – Goals and Objectives for Human Use Impact Reduction

Goal	Objectives
4.1 - Minimize human use impacts on all Parkway resources.	
	4.1a - Locate and design future recreational use areas and facilities with sensitivity to water resources.
	4.1b - Documentation and mapping of social trails in the Parkway.
4.2 - Reduce impacts associated with homeless encampments in the Parkway.	
	4.2a - Elimination or mitigation of the detrimental consequences associated with homeless encampments, such as: (1) accumulated debris; (2) environmental degradation; and (3) health and public safety issues including degradation of public infrastructure such as levees
4.3 - Monitor impacts related to large group gatherings and special events.	
	4.3a - Continue practice of permitting large special event activities within developed recreational areas as per the policies of the American River Parkway Plan.
4.4 - Maximize environmentally beneficial opportunities within transmission line corridors.	
	4.4a - Utilization of transmission line corridors for environmentally beneficial vegetation in accordance with an executed Vegetation Management Agreement.
	4.4b - Execution of Vegetation Management Agreement with transmission corridor utility companies.
4.5 - Reduce the amount of ambient light impacting biological resources in the Parkway while ensuring a safe park environment.	
	4.5a - Complete a baseline ambient night light survey to identify areas in the Parkway where there is an unnecessary amount of ambient light and create a plan for reducing the light, consistent with American River Parkway policies.
4.6 - Interpret environmental, archaeological, and historical resources and educate the public on the significance of the Parkway in the greater Sacramento region.	
	4.6a - Update the interpretation plan for the American River Parkway.
	4.6b - Inclusion of interpretive elements with large environmental enhancement projects including mitigation projects.

Regional Parks will track the progress of concepts and designs of proposed or potential recreational facilities to ensure that sensitivity to water resources remains a key objective..

Regional Parks will monitor the progress toward documenting and mapping social trails. Trail mapping and surveys throughout the Parkway will be completed in each Area Plan and will include all social and maintained trails. The survey will include details about the general use of the trail (e.g., walking, biking, horse riding, etc.), characteristics of the trail (e.g., width, substrate, etc.), estimated level of use, and other details as appropriate. The trail survey is anticipated to be completed within 3-years and will be essential for determining which social trails may be negatively impacting natural resources and need to be remediated. Annual monitoring will then track progress toward remediating trails by planting and/or blocking these trails to discourage use.. Trails that are being utilized for off-trail bicycling will be identified and actions will be identified that could be employed to reduce impact from these activities in the Parkway.

Annual monitoring by Regional Parks will track the progress towards reducing the impacts associated with homeless encampments and rehabilitating areas as necessary to restore the areas to provide high-quality habitat.

Regional Parks will document and monitor the annual activities of large group gatherings and special events that are permitted in the Developed areas of the Parkway.

Annual monitoring by Regional Parks will track progress towards developing agreements with the utility companies for vegetation management agreements within their easements. These agreements will ensure vegetation management activities benefit Regional Parks' regular maintenance activities and facilitate restoration or naturalization of areas within the easements that support wildlife, including pollinator species. Transmission line undergrounding will be encouraged whenever possible. Once agreements are implemented annual monitoring will provide details of the management activities that are planned and have occurred.

Regional Parks will track annual progress towards achieving baseline surveys for ambient lighting within the Parkway and for developing a plan for reducing ambient light within the Parkway. The ambient light plan, which will likely require coordination with local jurisdictions, should be implemented within 3-5 years and annual monitoring will track progress towards reducing ambient light in the Parkway.

Annual monitoring by Regional Parks will track the progress towards updating the Parkway Interpretation Plan and include interpretive elements for the larger restoration and/or naturalization projects within the Parkway.

2.5 Agency and Community Coordination

The NRMP goals associated with agency and community coordination includes NRMP implementation oversight and monitoring, coordination with fire agencies to reduce fire risks, supporting scientific research engagement, implementing an NRMP monitoring program, and encouraging public outreach and educational activities (Table 9). The objectives to achieve these goals include forming an oversight committee for implementation of the NRMP and the monitoring plan, coordination with fire agencies, colleges, and local schools to help develop plans and programs.

Table 9 – Goals and Objectives for Agency and Community Coordination

Goal	Objectives
5.1 - Oversee implementation of NRMP.	
	5.1a - Create a sub-committee of the American River Parkway Advisory Committee to meet at least once per year with Regional Parks' staff to evaluate the implementation of the NRMP.
5.2 - Coordinate with fire agencies to reduce wildfire fuel and hazards in the Parkway.	
	5.2a - Update and implement the wildfire prevention plan. Develop response, and recovery plans.
	5.2b - Develop and maintain a tracking system for wildfires in the Parkway.
5.3 - Support scientific research programs to increase the quantity and quality of data describing the condition of Parkway resources.	
	5.3a - Establishment of ongoing research and data collection programs with CSUS, UC Davis, and other local colleges.
	5.3b - Development of a citizen science data program.
	5.3c - Identify research needs to understand Parkway conditions and fill data gaps.
5.4 - Implement a robust Natural Resource Management Plan Monitoring Program.	
	5.4a - Provide annual updates of monitoring data to the NRMP geodatabase.
5.5 - Encourage public outreach and educational activities to increase the public's understanding and appreciation of Parkway resources.	
	5.5a - Establishment of one educational partnership, per year, with local school districts and community-based organizations to develop curriculum for teaching environmental stewardship and proper use of Parkway resources.

Regional Parks will annually monitor and document the efforts of an NRMP implementation committee. This will include tracking progress towards and/or documenting the efforts of the NRMP monitoring plan and associated data that is collected.

Annual monitoring will track the progress towards development of a fire risk reduction and rehabilitation plan within 2-years (2025), as well as a tracking system of where wildfires have occurred annually.

Regional Parks will track the progress towards identifying research needs and coordinating with local colleges and stakeholders to develop research and citizen science programs. In addition, annual monitoring will track the progress towards establishing other partnerships with local school districts and community-based organizations to develop curriculum for teaching environmental stewardship and proper use of the Parkway. This particular action could potentially be merged with the update of the Parkway Interpretation Plan identified under Goal 1.4 above.

3.0 Reporting

Annual reports will be prepared by Regional Parks, or its contractors or assigns, to document management, monitoring, and progress towards meeting the goals and objectives of the NRMP. Reports will include a list of the individuals who prepared the report and participated in the monitoring activities, including titles and affiliations. Reports will be made available on Regional Parks' website and/or the website will indicate that reports are available upon request. The report will also include, at a minimum, the following sections and details:

1. Biological Resources Goals and Objectives
    a. Assessing Mapping, and Tracking (Goal 1.1)
        - Status towards completing mapping activities (Parkway-wide and by Area Plan) and estimated time of completion
        - Methods utilized for mapping each category and ongoing updates (e.g., survey dates/times, scale, equipment, etc.,)
        - Additional maps acquired or recommendations additional resource maps
        - The maps for the lower, middle, and upper Parkway reaches will be provided in the appendix of the monitoring report when this objective has been completed and when maps are updated (TBD).
    b. Habitat Management (Goal 1.2 – 1.4)
        - Document and discuss updated acreages for each of the management categories (i.e., conservation, restoration, and naturalization) and the four broad vegetation communities (i.e., riparian, grassland, woodland and elderberry) in each category compared to the baseline and/or previous year. A table with past and current acreages will be provided and when the acreages in each management category changes new maps will be included in the report.
        - Discuss the Conservation management actions taken in specific locations, include details about the outcomes or effectiveness of actions (i.e., weed control, fire suppression, periodic ladder fuel reduction, trail and encampment remediation, etc.), and provide details about the actions planned for the coming year. Provide applicable maps as necessary.
        - Discuss Restoration and Naturalization management actions. Details of implemented projects will be provided (i.e., who, where, what, when, why). Discuss the time periods and responsibilities associated with establishment and long-term management of the area(s). Discuss performance standards, monitoring, and reporting. Provide details about projects being planned for the near future.
        - Summarize habitat management activities generally across the Parkway, as well as lessons learned, and progress towards achieving the overall goal of increasing the area under conservation management by conducting restoration and naturalization management actions.
    c. Degraded Habitat Management (Goal 1.5 – 1.7)

- Discuss the progress towards initiating and/or completing preparation of a wildfire rehabilitation plan and a wildlife connectivity plan, as well as the update to the 2000 IPMP. When plans have been finalized they will be included in the appendices of the annual monitoring report. Additionally, as plans are finalized recommendations will be provided on what details should be updated in the monitoring plan to ensure the goals and objectives of those plans are adequately monitored in the future, if applicable.
- Discuss projects that were addressed under Goals 1.2-1.4 above that reduce/remove barriers to wildlife movement in the Parkway and/or removed large stands of non-native plants that may or may not be covered in the 2000 IPMP (e.g., black locust removal from Glenn Hall).
- Document activities associated with expanding wildlife connectivity, specifically as it relates to identifying opportunities specific bridges, rail trestles, and roads/highways (as noted in the NRMP under specific Area Plans as desired actions).
- Document and track the replacement of 5 acres of non-native invasive plants with native plants. This should also be discussed in the Habitat Management section and a map should be provided.

2. Physical Resources Goals and Objectives
    a. Document planned and recently completed flood risk reduction efforts. Include relevant details of who the project proponent is, the purpose and type of the project, when it will be or was implemented, and provide details of who is responsible for management of the site over the life of the project. If the project involves onsite mitigation the as-built designs should be included, as well as a long-term management plan. Provide timelines for construction and establishment and include graphics showing locations, if applicable.
    b. Document the coordination between Regional Parks and SWQCB. Discuss and summarize the data that was collected over the year and provide maps for the lower, middle, and upper river.
3. Cultural Resources Goals and Objectives
    a. Typically designated archaeological and historical resources are protected by confidentiality and public access is restricted. Therefore, the reported information will only indicate that these resources remain protected.
4. Human Use Impact Reduction Goals and Objectives
    a. Discuss upcoming recreational uses and facilities that are proposed, if any, and how sensitivity to water resources are being considered.
    b. Provide details about the progress towards completing the initial social trail mapping across the Parkway. Describe any trails that were mapped during the year and discuss issues that were observed and make recommendations for trails that should be closed and remediated, if applicable. Details about how trails will be closed and remediated will also be discussed. Once trail mapping has been completed and a recommendation is made to update the monitoring plan consideration will be given to continuing to map trails periodically.

    c. Discuss and document the progress towards reducing encampments and efforts that were made to rehabilitate areas. Details should include the area(s) cleaned and restored, the details of what was involved in site preparation and restoration and summarize the success of the efforts. If there are different strategies that could be employed that may be more successful for reducing damage to resources in association with encampments they will be included in the report.
    d. Discuss the number of events held during the year, where they occurred, what type of event, and the number that attended.
    e. Discuss the progress towards implementing agreements with the electrical utilities related to management of habitat under transmission corridor lines. Once agreements are established and a recommendation is made to update the monitoring plan consider on-going monitoring and reporting activities associated with these agreements. For example, ongoing coordination meetings that better time successful maintenance actions like mowing could be documented in relation to fire suppression and managing native shrubs, grasses, and or forbs.
    f. Discuss the progress towards completing a baseline ambient night light survey and the plan to reduce lighting within the Parkway. Once completed consider a recommendation to update the monitoring plan to include ongoing tracking of progress towards implementing a plan to reduce light within the Parkway.
    g. Discuss the progress towards updating the Parkway Interpretation Plan, including habitat mitigation elements. Once completed consider a recommendation to update the monitoring plan to include monitoring and reporting of the Interpretive Plan to ensure a successful and relevant program is provided..
5. Agency and Community Coordination Goals and Objectives
    a. Document the names and affiliation of the members of the NRMP committee and when meetings were held. Provide a summary of the discussions held during the annual meeting and actions that were recommended and/or implemented.
    b. Discuss progress towards updating and implementing the wildfire prevention plan, as well as response and recovery plans. Once completed consider a recommendation to update the monitoring plan to include ongoing monitoring and reporting of the plans.
    c. Discuss progress towards identifying potential research opportunities within the Parkway that would facilitate establishment of ongoing research and data collection programs with local colleges and a citizen science program. Once programs are established the monitoring plan will be updated to provide details for ongoing monitoring and reporting of these programs.
    d. Document the updates to the Parkway database. A list should be provided that documents what was updated, when it was updated, and how it can be accessed. A table similar to the one below should be provided as part of the report.

	Location Available	Reason for Update	Last Update
Database Files (shp, kmz, xlsl)			
Parkway Land Uses	TBD	ARPP Update	2008
Parkway Inundation Areas	TBD	NRMP	2021
Parkway Land Alteration	TBD	NRMP	2021

	Location Available	Reason for Update	Last Update
Database Files (shp, kmz, xlsl)			
Parkway Vegetation Communities	TBD	NRMP	2021
Parkway Management Categories	TBD	NRMP	2022
IPMP 2000 (plan & treatments)	TBD	IPMP	2000
IPMP Update (plan & treatments)	TBD		
Habitat, Rearing Inundated Floodplain	TBD		
Habitat, Sensitive Species	TBD		
Habitat, Spawning	TBD		
Wildlife barriers and entrainment	TBD		
Invasive Plants Surveys	TBD		
Homeless Encampments	TBD		
Mitigation Sites	TBD		
Bank Protection Sites	TBD		
Bluff Erosion	TBD		
Restoration Sites	TBD		
Native Riparian Communities	TBD		
Native Grassland Communities	TBD		
Native Woodland Communities	TBD		
Wildfire Locations	TBD		
E. Coli Data	TBD		
Social Trail Mapping	TBD		
Ambient Light Surveys	TBD		
Plans (pdf)			
Ambient Light Reduction Survey	TBD		
Interpretive Plan	TBD		
Wildfire Prevention, Response, and Recovery Plan(s)	TBD		
Mitigation Management Plans	TBD		

e. Discuss outreach and educational activities/partnerships that were pursued with local schools and school districts to develop curriculum based on teaching environmental stewardship centered on Parkway resources.

6. Report Summary

a. Provide and overall summary of issues and/or successes with implementation of the NRMP during the prior year. Indicate what specific areas and or management actions that should take priority in the coming year. Summarize recommendations that were made in each of the sections above. Provide an overall general status of appropriately managing the natural resources within the Parkway.

Appendix A – NRMP Potential Actions for Restoration and Naturalization

The list below is a consolidated list of the potential actions included in the NRMP under each Area Plan. These are specifically related to the NRMP restoration and naturalization management categories. The actions that are italicized are expected to occur within the first five-ten years of implementation of the NRMP.

Discovery
Develop conceptual restoration plans for burned areas: Develop a wildfire rehabilitation strategy for vulnerable mature vegetation to ensure a timely response for minimizing undesirable wildfire impacts.
Establish native riparian species/remove non-natives: Improve and expand riparian forest habitat along Bannon Slough and Steelhead Creek, including managing for growth and retention of tall overstory trees. Actions may include removal of nonnative invasive species, managing the density of wild grape, expanding the riparian corridor along the southern edge of Bannon Slough where conditions allow, and enhancing the understory with appropriate native species. Particular attention should be given to the point where Steelhead Creek enters the Parkway at El Camino Avenue; encampments and associated degradation are hampering wildlife connectivity to the stream corridors and associated wildlife habitat to the north.
Improve habitat at Camp Pollock: Continue to coordinate with Camp Pollock land managers to further integrate native habitat improvements, interpretive designs, and public access.
Purchase and naturalize Riverdale mobile home park: Identify appropriate use for the former Riverdale mobile home park if it is brought into public ownership (refer to Parkway Plan).
Purchase and naturalize Urrutia property: Develop a Conceptual Naturalization Plan for the Urrutia Property if it is brought into public ownership. This should include the removal of rubble and restoration of the bank line in consideration of current and future conditions. (USACE Mitigation Project)
Woodlake
Develop a Conceptual Naturalization Plan for storm-water runoff channel: Develop a plan to improve aquatic and riparian habitat within and along the channels that also may help improve water quality that flows into the river. Consideration should also be given to properly integrating the unpaved trail crossing through the area.
Develop plan to remove abandoned piping just downstream of island on RR.
Expand riparian corridor: Beyond the footprint of the USACE Ecosystem Restoration concept, improve and expand riparian forest habitat along the western-most portion of the naturalized canal, including managing for growth and retention of tall over-story riparian trees. Actions may include removal of nonnative invasive species, expanding the riparian corridor toward the south where conditions allow, enhancing the understory with appropriate native species, and enhancing the canal itself to increase wildlife values. In addition, remove "natural" levee at the top of RR bank, resulting from elevated hydraulic mining debris aggradation, to re-connect a moderately large area of high value riparian forest.
Identify a process to have old bridge debris removed as a part of future associated projects.
Implement USACE ecosystem restoration project: Refine the existing USACE Ecosystem Restoration concept for Woodlake, which currently includes non-native invasive plant species eradication, planting native grassland, grading to improve floodplain connectivity (including removal of a berm that would allow remnant mining pits to be inundated more often and provide positive drainage to the LAR, seasonal wetlands, and fish-rearing habitat), grading and planting riparian forest, planting oak savanna and planting oak woodland. The goal is to naturalize the site to provide habitat for target species, including forage habitat for raptors and other avian species that rely on grasslands.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.

Cal Expo
Continue CSUS research and habitat development: Refinement of the USACE Ecosystem Restoration concept should be closely coordinated with efforts being undertaken by CSU Sacramento and the Wildlife Conservation Board to develop a Bushy Lake Conceptual Restoration Plan, as the efforts overlap and are generally consistent with one another. Consider methods to properly integrate the off-paved trail bicycle trails within the footprint of the ecosystem restoration concept. (In progress)
Develop a conceptual plan to address deteriorating outfalls: Re-construct the engineered concrete drainage outfall aprons for Chicken Ranch and Strong Ranch sloughs to protect against ongoing and progressive bank erosion due to undercutting using a design approach and materials that can adjust to bank line changes without aggravating bank erosion; suggest removing the broken and undercut concrete members and replacing with large angular rock.
Develop conceptual restoration plans for burned areas: To rehabilitate areas that have been damaged by previous fires and have not shown signs of recovery to pre-burn conditions. Increase tall tree overstory in burned areas: Develop a wildfire rehabilitation strategy for vulnerable mature vegetation to ensure a timely response for minimizing undesirable wildfire impacts.
Identify a process to have old bridge debris removed as a part of future associated projects.
Implement USACE ecosystem restoration project: Refine the existing USACE Ecosystem Restoration concept for Cal Expo/Bushy Lake, which currently includes non-native invasive plant species eradication, grading and planting riparian forest, constructing a side channel, grading to create seasonal wetlands, terracing steep banks and planting riparian vegetation, restoring emergent wetlands, and planting oak savanna. The current concept also includes routing water from Chicken and Strong Ranch sloughs via pump into a treatment wetland. However, given several complexities associated with the pumping and treatment wetland elements, they are not likely to be advanced for implementation. The overall goal is to naturalize the site to provide habitat for target species, including conservation of Bushy Lake and its associated habitats.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
Paradise
As the remainder of the Two Rivers Trail is implemented, identify opportunities for onsite planting to the extent consistent with flood control considerations and hydraulic limitations.
Develop a conceptual naturalization plan for the area of Paradise Beach adjacent to the levee. The naturalization plan may include elements to improve and expand riparian forest habitat in the area between the levee and river channel. (USACE Mitigation Project)
Identify a process to have old bridge debris removed as a part of future associated projects.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
Campus Commons
Improve floodplain connectivity to reduce fish stranding: Develop a plan to improve floodplain connectivity and minimize fish stranding at the downstream end of the plan area.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat. (USACE WRDA 16 Project)
Replace declining black locust trees at Alumni Grove with native trees, such as Valley oak or California Sycamore.
Howe Ave. and Watt Ave.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.

SARA Park
Establish valley oak riparian woodland: Expand target habitats on the right bank upper berm by establishing valley oak riparian woodland and elderberry. (USACE Mitigation Project)
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
Maintain flow through the drainage slough: Consistent with managing invasive weeds, identify opportunities to maintain water flow through the drainage slough.
Arden Bar
Develop conceptual naturalization plan for Arden Pond: Implement USACE plan for Arden Pond as appropriate in consideration of ongoing processes that would preserve existing habitat values while incorporating rearing salmonid habitat. *(USACE Mitigation Project – currently on hold contingent on Urrutia)*
Improve native riparian and oak woodland communities: In other areas identified for Naturalization, develop concepts for increasing oak riparian woodland, live oak/blue oak woodland, or where feasible grading areas to support willow riparian scrub/forest.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
River Bend
Develop conceptual naturalization plan for Cordova Creek confluence area: The plan should focus on providing improved connectivity and enhanced wildlife conditions to the upstream naturalized portion of Cordova Creek. It should also address the narrow bridge crossing and identify interpretive opportunities. (Water Forum Restoration Project)
Develop conceptual naturalization plans for areas identified for naturalization: The plan for the central naturalization areas of River Bend should consider enhancement of woodland savanna and/or native grasslands and forbs. The plan in the upstream area adjacent to Hagan Park should consider providing improved native grasslands and forb habitat, as well as maintaining the narrow corridor to upstream areas and expanding it if opportunities arise. Collaborate with potential project partners (e.g., UC Davis) to incorporate suitable pollinator/butterfly habitat into naturalization plans, where appropriate
Improve spawning riffle: Construct gravel augmentation site to create suitable spawning habitat for salmonids.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
Sarah Court
Improve degraded riparian habitats: Restore existing habitats in areas identified for Restoration. Restoration may include removal of non-native invasive species, managing social trails, improving riparian vegetation in areas where it has been degraded, and improving the understory with appropriate native species.
Ancil Hoffman
Develop a Conceptual Naturalization Plan for the areas identified for Naturalization.
Enhance native woodlands and grasslands: The area adjacent to the entrance should be considered for additional plantings, whether it be woodland savanna or enhancement of existing grasses and forbs.
Improve degraded riparian habitats: When considering proposals to transform channel conditions in this area, consider ongoing natural processes and the durability of proposed designs in light of natural processes.
Improve habitat values on Carmichael Creek: Consideration should be given to naturalizing and realigning Carmichael Creek if a modified alignment is feasible and would provide additional habitat values beyond what is possible within the current alignment.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.

Support interpretive uses at Effie Yeaw Nature Center: Specific consideration should be given to conservation actions that support and balance ongoing interpretive uses at Effie Yeaw nature center.
Rossmoor Bar
Enhance woodland savanna and/or grasslands: The areas in the southeast (along El Manto Drive) should be considered for additional plantings, whether it be woodland savanna or enhancement of existing grasses and forbs.
Improve degraded riparian habitats: Restore existing habitats in areas identified for Restoration. Restoration may include removal of non-native invasive species, managing social trails, improving riparian vegetation in areas where it has been degraded, and improving the understory with appropriate native species.
Improve fallow agricultural area fields with woodland savanna or grassland: Develop a Conceptual Naturalization Plan for the graded agricultural area in the RM 15.1—15.65 reach which incorporates native vegetation that is suited to the soils and geology in this reach.
Improve spawning riffle: Construct gravel augmentation site to create suitable spawning habitat for salmonids.
Recontour and improve substrate to support woody vegetation: Develop a Conceptual Naturalization Plan to address piles of aggregate material and lack of topsoil in a manner that would support native woody vegetation.
Sacramento Bar
Develop conceptual naturalization plan for open mining pits/ponds: Develop a Conceptual Naturalization Plan for the areas identified for Naturalization. A substantial portion of Sacramento Bar was highly altered for mining purposes. The remnant topography includes several open water pits, high ground created for mining access routes, and severing of high flow bypass channels. The naturalization plan should develop a concept that naturalizes these large areas in a manner that brings these elements together while improving habitat value. Material could be used to fill some ponds (e.g., the pond closest to the river channel which naturally wants to fill) while regrading and enhancing others. Recontouring and enhancing the substrate in mined areas would also provide areas to expand riparian and woodland habitats.
Improve degraded riparian habitats: Consider recontouring some areas and/or removing cobble to create conditions that would better support riparian vegetation and natural processes. Plan should consider that during high flows the area has a propensity to be depositional due to the widened channel in the area.
Improve spawning riffle: Construct gravel augmentation site to create suitable spawning habitat for salmonids.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
Lower Sunrise
Develop a Conceptual Naturalization Plan for the areas identified for Naturalization, including improvements to riparian forest.
Enhance woodland savanna and/or grasslands: Augment degraded native communities with plantings of woodland and grassland species to enhance habitat value. (Potential PG&E Mitigation Project)
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
Sunrise Bluffs
Improve degraded riparian habitat: Augment degraded native communities with plantings of riparian species to enhance habitat value.
Improve spawning riffle: Construct gravel augmentation site to create suitable spawning habitat for salmonids.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
Upper Sunrise
Develop conceptual naturalization plan for areas altered by mining: Develop a Conceptual Naturalization Plan for the area identified for Naturalization. The area has been scraped clean in some manner and soils need to be assessed. These areas could ultimately support oak woodland/savanna or grassland with proper preparation.
Improve spawning riffle: Construct gravel augmentation site to create suitable spawning habitat for salmonids.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
Sailor Bar
Develop a Conceptual Naturalization Plan for the areas identified for Naturalization. Consider opportunities to naturalize Illinois Creek.
Expand oak habitats in conservation and naturalization areas: Augment degraded native communities with plantings of oak woodland species to enhance habitat value.
Lower Floodplain: Develop a plan to lower the floodplain to increase inundation frequency, increase SRA habitat to improve rearing conditions for target fish species and wildlife habitat.
Naturalize relict pools/remove gunite: The former “pool” in the northwest corner could be naturalized. Consideration should be given to removal of bentonite/gunite layer to facilitate establishment of native plant species.
Recontour mined areas to support oak habitats: Areas identified for naturalization have been highly disturbed from mining. Substantial effort is likely needed to grade, recontour, and supplement soils in order to support oak woodland and/or savanna. Specific consideration should be given to increasing woodland in the eastern end, not to high density, but could support more oaks. Areas recently used for gravel augmentation projects should be considered for further grading, contouring, and soil amendment prior to planting.