



Pleasant Grove and Curry Creek Ecosystem Restoration Plan

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PLACER LEGACY

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 **FOOTHILL ASSOCIATES**
ENVIRONMENTAL CONSULTING • PLANNING • LANDSCAPE ARCHITECTURE

Pleasant Grove / Curry Creek Ecosystem Restoration Plan

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1.0 EXECUTIVE SUMMARY

The Pleasant Grove/Curry Creek Ecosystem Restoration Plan was developed to examine growth in the Pleasant Grove and Curry Creek watersheds, project potential impacts of that development on habitat, hydrology and water quality, and makes recommendations for strategies and projects to help reduce those impacts. This document is organized into six main chapters: this executive summary, the introduction, a summary of existing conditions, analysis of likely future conditions at build-out, restoration strategies and projects, and a discussion of implementation issues.

1.1 VISION, GOALS AND OBJECTIVES

Development of the ERP has been guided by the following Vision. The vision generally describes the desired future condition of the watershed.

“The Pleasant Grove/Curry Creek Watershed sustains a variety of healthy native upland and riparian habitats situated within an economically sustainable matrix of carefully planned and implemented mixed use communities and agricultural lands.”

The Vision is further articulated by a set of Goals that expand on the desired future condition in seven main areas. Objectives are intended to implement each of the Goals and guide the development of specific ERP strategies and projects.

GOAL 1: Sensitive habitats and species within the watershed are protected.

Objective 1.1 - Identify the various habitat types within the watershed and evaluate their distribution and condition.

Objective 1.2 - Identify the wildlife species that have potential to occur within the watershed based on habitat availability.

Objective 1.3 - Prioritize which habitat types and species are significantly threatened and/or in decline.

Objective 1.4 - Provide protection to sensitive habitats and species through a combination of means including public acquisition, conservation easements, and development of preserves.

GOAL 2: Degraded habitat areas with high potential for healthy ecosystem functionality are restored and/or enhanced.

- Objective 2.1 - Identify opportunities for improving ecosystem function through specific restoration or enhancement projects.
- Objective 2.2 - Prioritize restoration/enhancement projects based on overall ecosystem value, feasibility, and sustainability so that limited resources available for restoration/enhancement are expended for the greatest benefit.
- Objective 2.3 - Seek and obtain funding and other resources as needed to implement restoration/enhancement projects.
- Objective 2.4 - Develop and implement stewardship of restoration/enhancement projects for adequate establishment periods to insure their long-term success.

GOAL 3: Ongoing monitoring and mapping of ecosystem conditions provides meaningful information to prevent and/or correct adverse impacts.

- Objective 3.1 - Implement a regular program of water quality monitoring to characterize ambient conditions and to identify both the source (point and non-point) and constituents of discharges into surface waters.
- Objective 3.2 - Monitor the condition of restoration/enhancement projects to provide information on project benefits and to improve the design and implementation of future projects.
- Objective 3.3 - Map and monitor hydrology and hydraulics of the watershed to better understand impacts from large and small storm events and dry season flows on channel form, vegetation and water quality.
- Objective 3.4 - Map and monitor vegetation and wildlife distribution and condition in the sensitive habitats to provide early detection of possible adverse impacts and to aid in developing adaptive management strategies. Include non-native invasive species in this monitoring.

Objective 3.5 - Establish and populate a database with historical and future data on water, vegetation, and wildlife monitoring for purposes of change detection and tracking.

Objective 3.6 - Establish standard approaches to gathering and interpreting monitoring data so that historical observations may be related to current observations in a meaningful way.

GOAL 4: Biological diversity of healthy native habitat is maintained by preventing the establishment of invasive, non-native plant and animal species in native ecosystems.

Objective 4.1 - Identify most significant non-native invasive species and vectors by which they are entering the watershed.

Objective 4.2 - Map locations where non-native invasive species are established or becoming established.

Objective 4.3 - Develop a prioritized strategy to eradicate and/or control significant non-native invasive species that includes coordination with public and private stakeholders in adjacent watersheds.

Objective 4.4 - Secure funding or other support to implement the prioritized strategy for significant non-native invasive species eradication/control.

Objective 4.5 - Identify ongoing maintenance/management strategies to prevent reestablishment or maintain control of the establishment of non-native species

Objective 4.6 - Implement public education projects to publicize the adverse impacts of non-native invasive species and to limit their introduction and spread through vectors such as private ornamental landscapes and the release of non-native fish or wildlife into natural areas.

GOAL 5: The ecological richness, function and viability of the watershed are enhanced by the size, location, diversity, and connectivity of habitat areas.

Objective 5.1 - Develop an overall open space and habitat preservation strategy for the watershed that

includes a representative variety of native habitat communities of adequate size and with connecting corridors to maintain access for wildlife.

Objective 5.2 - Protect, enhance or recreate natural riparian processes, particularly hydrology and associated high water events, to promote the natural cycle of channel movement and sediment deposition that create a mosaic of riparian vegetation types.

Objective 5.3 - Design and implement restoration projects that complement the existing diversity and structure of habitat types and locations.

GOAL 6: Practices, policies, and ordinances related to flood control, land use and agriculture, and economic development strategies serve to protect and/or enhance ecosystem function of sensitive habitats.

Objective 6.1 - Review existing policies, ordinances and other mechanisms that are intended to protect sensitive habitats and evaluate their effectiveness.

Objective 6.2 - Recommend modifications to existing policies and ordinances to better facilitate the protection of sensitive habitats.

Objective 6.3 - Integrate meaningful ecosystem protection and restoration opportunities with the development review and approval process to encourage low impact development and ecologically sensitive transportation planning.

Objective 6.4 - Provide adequate enforcement of storm water and other water quality regulations and access restrictions (such as for vehicles, dogs, etc.) to protect sensitive habitats from adverse impacts.

Objective 6.5 - When designing restoration/enhancement projects, anticipate hydrological and species displacement/competition impacts associated with new development in the watershed.

Objective 6.6 - Where feasible, ensure that flood control projects benefit habitat and wildlife while also meeting the needs of the watershed's agricultural and urban populations.

Objective 6.7 - Recognize the need for a balance between economic viability and ecosystem protection and restoration in all aspects of watershed planning for the benefit of future generations.

GOAL 7: Watershed stakeholders are engaged as active stewards in the protection and enhancement of ecosystem health.

Objective 7.1 - Include a broad coalition of public and private stakeholders (property owners, educators, special interest organizations, residents, businesses, public agencies, local governments, etc.) in the full range of watershed planning activities, such as community plans, development plans, and ecosystem restoration plans, and in the implementation of these plans.

Objective 7.2 - Encourage citizen-based participation wherever feasible such as for water quality monitoring or removal of non-native invasive species.

Objective 7.3 - Encourage a wide variety of watershed advocacy organizations that reflect the age, cultural and economic diversity of watershed interests.

Objective 7.4 - Develop a public education and outreach strategy to identify specific watershed stewardship opportunities and to engage stakeholders in these opportunities. Stewardship opportunities should be diverse ranging from community sponsored events focused on public lands to voluntary changes in land management practices by individuals on private residential and agricultural property.

Objective 7.5 - Make information about watershed resources and conditions readily available to stakeholders through a variety of methods including the media, libraries, the internet, educational programs, events, local governments, and special interest organizations.

Objective 7.6 - Continue the Pleasant Grove Curry Creek Watershed Council or a comparable forum to regularly convene stakeholders to address

watershed issues and collaborative problem solving.

Objective 7.7 - Seek and obtain funding and other resources as needed to support implementation of the education/outreach strategy, dissemination of watershed information and coordination/facilitation of the watershed stakeholder forum.

Objective 7.8 - Collaborate with other watershed planning and stewardship efforts in the region to optimize resources and to identify and implement projects with mutually beneficial outcomes.

Objective 7.9 - Implement at least one publicly accessible project within the watershed that can be used to educate stakeholders on watershed resource values and highlight the role of stakeholder stewardship in ecosystem preservation and restoration.

GOAL 8: Water quality meets or exceeds the standards established by the Central Valley Regional Water Quality Control Board's Water Quality Plan (the Basin Plan) for Inland Surface Waters.

Objective 8.1 – Control discharges into and human activities adjacent to the creeks to prevent unhealthy levels of anthropogenic bacteria.

Objective 8.2 – Implement measures to prevent discharge of urban runoff containing contaminants (e.g., herbicides/pesticides, nutrients, and hydrocarbons) from both existing and new developments and roads.

Objectives 8.3 – Prevent excess sediment by controlling upland and channel erosion associated with increased runoff due to development or loss of stabilizing vegetation.

1.2 EXISTING CONDITIONS

The ERP analysis of existing conditions presents the current state of habitat, water quality and hydrology within the watershed. Habitat is examined for select sensitive flora and fauna species chosen based upon occurrence or likelihood of occurrence within the watershed. Species included in the study are listed in Table 1-1.

Table 1-1 Pleasant Grove / Curry Creek ERP Species of Concern

Plants	Birds	Reptiles and Amphibians	Invertebrates
• Bogg's Lake hedge-hyssop • Dwarf downingia • Legenere • Red Bluff dwarf rush	• Swainson's hawk • California burrowing owl • Yellow-breasted chat • Loggerhead shrike	• Western spadefoot toad • Tiger salamander • Giant Garter Snake • California red-legged frog	• Vernal pool fairy shrimp • Vernal pool tadpole shrimp • California linderiella • Valley elderberry longhorn beetle

While conservation of habitat in the watershed for all of the ERP species is important, it may be more important for those that are very rare or for whom a significant amount of remaining habitat is located in the watershed. For example, existing high quality habitat for very rare species that only exist within the watershed would be a relatively more important conservation goal than preserving habitat for species that occur in multiple locations outside of the watershed. The relative conservation value of existing habitat in the watershed for these species was classified using a composite rating based upon occurrences of the species in western Placer County from the California Natural Diversity Database (CNDDB), and the suitability of the habitat in the watershed to support that species. This approach provides a perspective on how important the specific habitat within the watershed is to the overall persistence of the species. The relative conservation value of existing habitat ranges from low for California burrowing owl, tiger salamander, red-legged frog and spadefoot toad to high for vernal pool fairy shrimp. The remaining species were rated at medium.

Water quality within the watershed is generally good. Five samples were collected during this study: spring, summer, and first-flush in 2004 and winter and spring in 2005. Of the constituents sampled, only bacteria and specific conductance consistently exceeded water quality standards. Benthic macroinvertebrate sampling was also conducted on Pleasant Grove, Kaseberg and Curry Creeks. Of the sites sampled, Kaseberg had the lowest species richness and Pleasant Grove had the highest.

Channel condition within the watershed is generally degraded. All of the major creeks are incised or have reaches that are incised. This incision grows in magnitude further down the watershed, with lower Pleasant

Grove Creek showing cut banks of six or more feet, and lower Curry Creek five feet or more. This problem will likely get worse as the watershed continues to urbanize. It is recommended that as new projects are brought forward in the watershed, incision and bank stability surveys be required using a common rating method (i.e., Rosgen). These requirements will help establish current conditions, identify trouble areas, and document changes over time.

1.3 LIKELY FUTURE CONDITIONS

Likely future conditions for the watershed were projected using a GIS-based model to evaluate land use and the Soil Water Assessment Tool (SWAT) software to evaluate water quality within the watershed at build-out.¹ Build-out is defined as the time at which all available land has been developed to its planned land use in the various general, community and specific plans currently proposed, approved or in the planning stages. The plans used for this study included Placer County, City of Rocklin, and City of Roseville General Plans; the Placer Vineyards Specific Plan, of which a small portion is in the watershed; the West Roseville Specific Plan and Remainder areas, the Regional University Specific Plan², the yet-to-be-developed Curry Creek Community Plan, and the Placer Ranch Specific Plan.

Development of these planned areas will result in an increase in urbanization of 11,600 acres, or approximately twenty eight percent of the watershed. This is more than twice the existing urbanized area and will bring the total urbanized portion of the watershed to approximately 21,500 acres or 52 percent of the total watershed acreage (an increase of 28 percent). Residential land uses experiences the greatest increase from existing condition to build-out, increasing by approximately 8,000 acres. The greatest loss is to grasslands, which decline from 15,400 acres to less than 5,500 acres. Agricultural lands are expected to decline by more than 2,600 acres. Over 500 acres of wetland, 240 acres of riparian habitat, and over 700 acres of woodland are lost in conversion of land from rural to urban uses. Approximately 1,944 acres will be preserved as open space which is less than 15% of those areas with open space value that will be lost.

It is not surprising that these changes in land use patterns will reduce the habitat available to the ERP species of concern, primarily through impacts

¹ SWAT is a public domain model supported by the USDA to assess the impact of land management practices in a watershed.

² The Regional University Specific Plan was formerly identified as the De La Salle Specific Plan.

to riparian areas, other woodlands, grasslands and wetlands. Habitat for grassland species (Swainson's hawk, California burrowing owl, loggerhead shrike, and tiger salamander) will be the most significantly impacted. Species using vernal pools or other wetlands as habitat (Bogg's Lake Hedge-hyssop, vernal pool fairy shrimp, vernal pool tadpole shrimp, dwarf downingia, legenere, Red Bluff dwarf rush and California linderiella) will also lose habitat. Reductions in riparian and/or woodland acreage may limit habitat for valley elderberry longhorn beetle, yellow-breasted chat, western spadefoot toad, and California red-legged frog.

Without significant actions to preserve habitat, the level of development that the watershed will undergo in moving towards build-out has a high likelihood of impacting sensitive species within the Pleasant Grove and Curry Creek watersheds.

The SWAT water quality modeling suggests that a general degradation of the watershed's water quality will likely occur as a result of the future build-out scenario. The model results indicate a substantial increase in nutrients, sediment, and organic material within the creeks. Additionally, a likely decrease in dissolved oxygen may also be seen as a result of the current build-out plans. These changes will occur primarily during the rainy season, a condition expected in an ephemeral drainage.

The population of the watershed at build-out was estimated at 171,900 people. This figure was developed based upon average densities for residential land use types. Total population of the watershed in the 2000 census was approximately 60,000 people, indicating almost a tripling of the population in the build-out condition. These additional people will need housing, sanitary sewer, food products, potable water, electricity, schools, fire and police protection, parks and recreation facilities and all of the other services that support the population. Local jurisdictions must be prepared to meet these demands without degrading water quality in the local creeks, destroying valuable habitat, severely impacting creek hydrologic/geomorphic regimes, and degrading the natural systems that have attracted many residents to Placer County.

1.4 RESTORATION STRATEGIES AND PROJECTS

The ERP includes restoration recommendations in five categories that support the attainment of the ERP Vision, Goals and Objectives (Table 1-2). Appendix H contains a table that shows which ERP goals and objectives each recommendation supports. The first three categories

address ecosystem restoration across the three spatial scales of Watershed/Region, Community, and Site. These scales may be thought of as "nested" with the broad vision of the Watershed/Region recommendations gaining in specificity as the focus moves down to the Community scale, and then down to the scale of specific Sites. Strategies at all scales should support and reinforce each other. The remaining two categories are Mapping/Monitoring and Stakeholder Education. Recommendations in these categories are potentially relevant at all three scales of restoration activity (Figure 1-1).

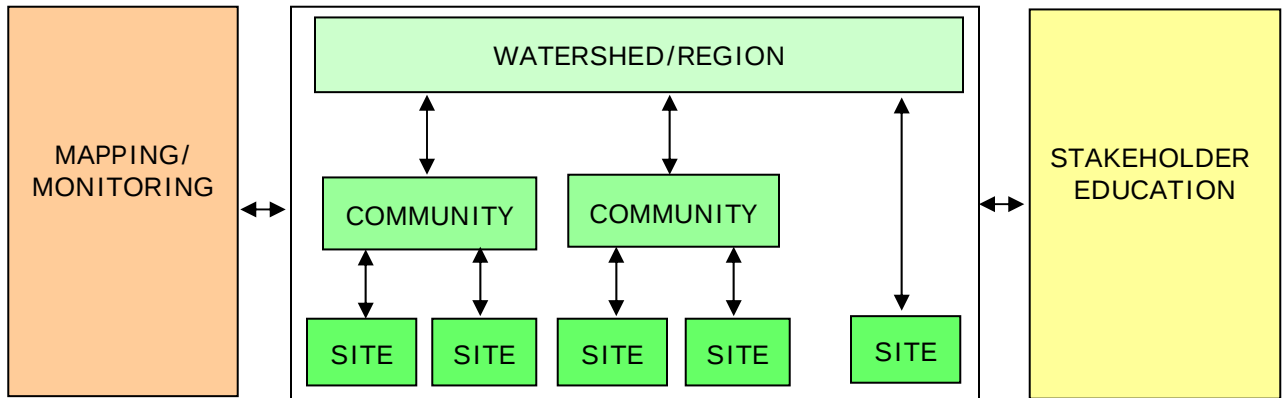


Figure 1-1 Organization of ERP Strategies

The ERP recommendations in each of these categories are summarized as follows. Detailed descriptions of each are included in Chapter 6 of the ERP.

Watershed/Region

Watershed/Regional scale strategies comprise comprehensive planning approaches that need to be executed in a coordinated effort that involves multiple local jurisdictions, agencies, and special districts. These include expanding riparian buffers, creating a network of designated open space corridors, habitat conservation, beaver management and control of non-native invasive species.

Community

The Community scale recommendations include a series of Low Impact Development concepts that should be adopted by local jurisdictions in the planning review and approval process as new development occurs within the watershed. The potential benefits of implementing these techniques

are modeled and show a meaningful increase in habitat and water quality preservation over the likely future build-out scenario.

Site

Based on a generalized assessment of specific sites within the watershed, recommendations are provided for approximately two dozen restoration projects. For each site, the specific restoration objectives are described along with recommended techniques.

Mapping and Monitoring

Recommendations for Mapping/Monitoring address the need for a publicly accessible, comprehensive database to house all of the various data that will be generated as part of implementing the ERP. The Federal Emergency Management Agency (FEMA) is currently conducting detailed floodplain mapping of the Pleasant Grove Creek main stem, including updated hydrology and hydraulic models. These models will become the PCFCWCD's future design base models for this watershed. However, additional assessment of baseline hydrology in reaches not included in the FEMA study, water quality, and erosion conditions and continued monitoring for change detection related to watershed development are also recommended.

Stakeholder Education

ERP stakeholder education strategies emphasize programs for homeowners since impacts related to future development pose the most obvious threats to ecosystem conditions in the watershed. However, agricultural land owners will continue to have a major influence in the watershed and their stewardship also needs to be encouraged. Better coordination among the various watershed jurisdictions for more efficient use of educational resources is also recommended.

Table 1-2 - ERP Strategies and Projects

Strategy / Project	Relative Priority	Potential Lead Stakeholder(s)
Watershed / Regional Strategies		
Riparian Buffer Preservation and Enhancement	High	Placer Co., Sutter Co., Roseville, Rocklin
Open Space Corridors/Network	High	Placer Co., Sutter Co., Roseville, Rocklin
Coordinated Habitat Conservation	High	Placer Co., Sutter Co., Roseville, Rocklin
Invasive Species Management	High	Placer Co., Sutter Co., Roseville, Rocklin
Erosion Management Strategy	Medium	Placer Co., Sutter Co., Roseville, Rocklin
Beaver Management	Medium	Placer Co., Sutter Co., Roseville, Rocklin
Community Strategies		
Low Impact Development On-site Storm Water Management Road Design Mixed-use Town Centers Schools & Parks Adjacent to Open Space Recreation Facility Design Industrial Zone Buffers Landscape Transition Zones Parking Lot Storm Drain Filters Incentive Programs	High	Placer Co., Sutter Co., Roseville, Rocklin
Site Specific Restoration Projects (See Figure 3-11)		
PG6	High	Sutter Co.
PG39	High	Placer Co.
SP20	High	Roseville
KA3,4	High	Roseville
KA9	High	Roseville
KA-A4	High	Roseville
CC-10	High	Placer Co.
PG32,33	Medium	Roseville
PG41	Medium	Placer Co.
PG44-45	Medium	Placer Co.
PG-A4	Medium	Roseville
Pleasant Grove Canal	Medium	Sutter Co
SP7	Medium	Roseville
SP12	Medium	Roseville
SP15,16	Medium	Roseville
SP22	Medium	Roseville

Pleasant Grove/Curry Creek Ecosystem Restoration Plan

Strategy / Project	Relative Priority	Potential Lead Stakeholder(s)
KA5	Medium	Roseville
KA-A6-8	Medium	Roseville
KA-A5	Medium	Roseville
KA-B4	Medium	Roseville
PG-D2, PG-D7	Low	Placer Co.
SP19	Low	Roseville
KA12	Low	Roseville
CC15-18	Low	Placer Co.
CC1, CC4-6	Varies	Sutter Co.
CC13, CC-B1, CC-C1, CC-C3	Varies	Placer Co.
Mapping & Monitoring		
Water Quality Monitoring	High	Placer Co., Roseville, Dry Creek Conservancy
Hydrologic Mapping/Monitoring	High	Placer Co., Sutter Co., PCFCWCD
Restoration Project Mapping/Monitoring	Medium	All stakeholders implementing restoration projects
Mapping/Monitoring Database	Medium	TBD by Watershed Group
Stakeholder Monitors	Medium	TBD by Watershed Group
Public Education and Stewardship		
Stewardship Coordination	Medium	TBD by Watershed Group
Private Property Preservation Incentives	Medium	Placer Co., Sutter Co., Placer Land Trust
Water Quality Stewardship Training for Homeowners	Medium	Roseville, Rocklin, Placer Co. Dept. of Public Works
Interpretive Programs	Medium	TBD by Watershed Group
Agricultural Lands Management	Medium	Placer Co., Sutter Co., Placer Co. Agricultural Commission, Farm Bureau, NRCS
Stewardship Directory	Low	TBD by Watershed Group
Landscape Guidelines for Homeowners	Low	Roseville, Rocklin, PCFCWCD
Homeowner Stormwater Retention Program	Low	Roseville, Rocklin, PCFCWCD
Impervious Surface Retrofit Program	Low	Placer Co. Dept. of Public Works
Storm Drain Labels	Low	Placer Co., Sutter Co., Roseville, Rocklin

1.5 IMPLEMENTATION FRAMEWORK

Implementation of the Pleasant Grove/Curry Creek ERP will be a long-term process and will require extensive collaboration among watershed

stakeholders. It is anticipated that many strategies will be pursued simultaneously based on stakeholders' interests and availability of resources. Relative implementation priorities are provided based on expected benefits or strategic significance of the different strategies and projects. Lead stakeholders area also recommended for implementing each strategy or project based on their interest area and/or jurisdictional or regulatory oversight responsibility.

It is important to recognize that participation in ERP implementation by all stakeholders including the multiple jurisdictions and agencies with regulatory and land use authority in the watershed is voluntary. The ERP does not supplant local planning policies or ordinances, but serves as a suggested framework for watershed ecosystem protection and enhancement.

In order to estimate the total cost for ERP implementation it will be necessary to further refine all of the recommended strategies and projects to a degree of specificity than is beyond the scope of the initial ERP development effort. Availability of funding is expected to be one of the major constraining influences on ERP implementation. Watershed stakeholders will need to aggressively seek grants, donations, and other resources in order to make progress on many of the recommended strategies. Recommended strategies and projects are assigned a relative priority to assist stakeholders with identifying those that should be pursued first.

Given the limitation of financial resources, volunteerism will play a crucial role in ERP implementation. Stakeholder participation at present is limited mainly to the local jurisdictions and agencies, and the Dry Creek Conservancy. These lead stakeholders should aggressively work to expand the visibility of ERP activities and to bring a broader base of stakeholders to the Watershed Group, including more private land owners, businesses, and educators.

Much of the success of the ERP will depend on the sustained support for a Watershed Coordinator position to guide and promote implementation. Several options for meeting this need have been identified. These include hiring an independent contractor using grants or contributions from local jurisdictions, rotating responsibility for the position on a periodic basis among the various jurisdictions in the watershed, or using permanent staff position from a local jurisdiction that is funded by commitments from other jurisdictions and stakeholders.