

APPENDIX J

North Little Johns Creek Concept Restoration Plan

NORTH LITTLE JOHNS CREEK CONCEPT RESTORATION PLAN



EDAW | AECOM

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Prepared for

Gerry N. Kamilos, LLC
7540 Shoreline Drive, Suite D
Stockton, CA 95219

Prepared by

EDAW-Sacramento
2022 J Street
Sacramento, California, 95814

and

EDAW-Seattle
815 Western Avenue, Suite 300
Seattle, WA 98104

Debra Bishop
Concept Restoration Plan Project Manager
916-414-5800

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1 PROJECT INTRODUCTION AND CONTEXT

This North Little Johns Creek Concept Restoration Plan (CRP) was prepared to evaluate the effects, as required by CEQA, of restoration activities as part of the development of Phase 1 of the Mariposa Lakes Specific Plan (MLSP). It also will guide the development of a final restoration plan that will include a grading plan, planting plan, irrigation plan, erosion and sediment control plans, and specifications. The MLSP establishes a plan for development of approximately 3,810 acres of new residential, industrial, commercial, and other related urban land uses within the Specific Plan Area (SPA), and calls for the implementation of a stream restoration plan to create and restore the freshwater marsh wetland and riparian habitats associated with North Little Johns Creek. Figure 1 shows the location of North Little Johns Creek within Phase 1 of the MLSP.



FIGURE 1
PHASE 1 of the MLSP
(Source from PACE)

Many of the proposed residential development areas would be oriented around approximately 193 acres of man-made lakes and interconnecting canals. These lakes would contribute to the aesthetic value of the project and

would provide storm water detention and water quality treatment needs. Proposed land uses include 312 acres of open space; project development would also include the restoration and improvement of habitat values along the waterways that traverse the site.

Portions of the SPA are subject to flooding in a 100-year flood event. The MLSP includes stream channel modifications that will increase stream flow capacity while providing habitat improvements. The MLSP defines an array of parks and open space lands totaling 561 acres for the overall project. Total proposed park and open space acreage would be distributed approximately as follows:

Community Parks	119 acres
Neighborhood Parks	77 acres
Sports Parks	52 acres
Open Space, including creeks	312 acres

The North Little Johns Creek lake network would consist of two small lakes that would collect surface runoff from planned residential developments on either side of North Little Johns Creek; this network would spill into North Little Johns Creek during times of high runoff.

Surface runoff from proposed urban areas would be collected in standard urban drainage facilities and delivered to the lakes; these same systems would collect dry-weather, or “nuisance” flows and deliver them to the lakes, eliminating potential dry-weather discharges to natural surface waters in the area. Once in the lakes, water would be continually treated by a system of underwater bio-filters, constructed wetlands, in-lake circulation, aeration, and carefully managed lake vegetation. This system would be designed to maintain the highest possible level of water quality in the lake for the sake of both the environment and the aesthetics of the lake.

Within the SPA, North Little Johns Creek is currently a trapezoidal channel varying in width from approximately 15-25 feet. The creek is in a degraded condition due to adjoining intensive agricultural use. Creek modifications have included channel realignment and elimination of vegetation and floodplains. The channel bottom is dominated by *Typha latifolia* (common cattail) and *Quercus lobata* (valley oak) dot the channel banks. The MLSP includes the proposed restoration and expansion of this channel and adjacent floodplain. Proposed open space corridors would also accommodate low-impact recreational uses, including landscaped bicycle and pedestrian trails on both sides of the creek. In accordance with City standards for Class I bike paths, they would be a minimum of 12 feet wide. Planned creek improvements will likely require permits from the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, the State Reclamation Board, the California Department of Fish and Game and the San Joaquin County Flood Control District, the State Regional Water Quality Control Board, and local entities.

2 CONCEPT RESTORATION PLAN GOALS AND OBJECTIVES

Following are specific goals and objectives of the CRP for Phase 1 of the MLSP. The goals and objectives have been developed based upon review of the site conditions, consultation with and review of project team consultant's reports, and anticipated environmental effects associated with development of the MLSP. Plan and section views of the CRP (Figures 1-4) are based on these goals and objectives.

1. Create additional wetland acreage in the channel bottom, add floodplain terraces, and flatten side slopes to recreate and encourage channel sinuosity.
2. Establish sustainable native riparian and wetland vegetation communities.
3. Protect, preserve and enhance the health of the valley oak community along the channel.
4. Provide for a minimum riparian and wetland corridor width of 130 feet, with an average wetland width of 30 feet and an average riparian width of 100 feet.
5. Provide suitable habitat conditions for giant garter snake, Swainson's hawk, burrowing owl and western pond turtle.
6. Implement a sustainable restoration design, by specifying a salvage effort to re-use native logs removed during construction and develop a phased collection program to harvest desirable native wetland and riparian plant species, native rocks, and boulders.
7. Mimic natural micro-topographic complexity and habitat type diversity, to improve conditions for both flora and fauna.
8. Re-establish flood terraces for low recurrence interval, storm events and provide additional channel capacity for the 100 year, 48-hour design storm.
9. Accommodate flows from the stormwater and lakes system.
10. Meet the environmental objectives and requirements of the MLSP EIR and develop the foundation for future federal and state permit submittals and approvals.

3 CONCEPT RESTORATION PLAN MEASURES

It is recommended that the following measures be incorporated into the design, planning, and implementation phases of the final restoration plan.

SURVEY

During the design phase, the project biologist and restoration ecologist will conduct field surveys to delineate ‘Heritage Oaks’ to be protected and other native vegetation to be salvaged including native trees.

A certified arborist will complete an assessment of heritage oaks relative to health, vigor, and maintenance needs. The assessment will provide direction regarding tree saves and salvage efforts. Written documentation provided by the arborist will be included in a salvage plan. Trees to be saved will be delineated with numbered wood stakes and be included in the arborist’s inventory.

SALVAGE PLAN

The salvage plan will incorporate the arborist’s assessment and recommendations. It will include a map of the delineated tree save areas and details of tree protection measures. Desirable native plants to be salvaged and relocated within the project area will be drawn on the map with a conservative estimate of plant quantities to be relocated. Salvaged trees will be used as habitat logs, wildlife snags, and log crib walls. The final restoration plan will include methods for transplanting, healing-in of plant materials, stockpiling, and erosion and sediment control as necessary.

EARTHWORK AND LANDFORMS

The CRP reflects a minimum total riparian/wetland corridor width of 130 feet, with a wetland/channel width of 30 feet. The design intent is that the 30 feet wetland/channel would meander within the 130 feet wide riparian/wetland corridor to mimic a natural morphologic form to the extent possible within the allowable corridor width. The meandering will also provide topological diversity. Field adjustments may occur to protect heritage oaks.

The 30-foot wetland/channel will contain a low flow channel for its entire length. Within the corridor, micro-topographic features will include meander scrolls, side channel, sloughs, and low elevation berms. The side channel and slough features will likely retain standing water most months and provide giant garter snake and/or western pond turtle habitat during the active season. Sand beds may also be included in areas of potential western pond turtle habitat.

Micro-topographic features will be graded into the floodplain terraces and slope transitions between the benches. They will be indicated on the plan and in construction details. Specifications will detail a frequency of occurrence and a range of sizes. Field adjustment may occur at the direction of the biologist and/or restoration ecologist.

REVEGETATION

Native species delineated for salvage will be healed-in until planting. Native tree, shrub, and herbaceous plants will be planted in accordance with future design and construction documents. Commercially purchased plant materials will be from stock within 50 miles of the project site with similar climatic and soil conditions. The nursery shall be a reputable and licensed business.

Valley Oak Woodland, Mixed Riparian Forest, and Freshwater Marsh Wetland are the three community types proposed for the project. A detailed plant list will be prepared as part of the design and construction documents that will include implementation details, quantities, and specifications. The plant palette will include species associated with the above mentioned plant communities and will be suitable to the specific hydrologic and soil conditions of the project site. These communities are designed to provide habitat for giant garter snake, Swainson's hawk, burrowing owl and western pond turtle, as well as other native wildlife species. Seed mixes will be primarily comprised of native grasses and forbs, or emergent species in the wetland/channel area.

HABITAT LOGS, WILDLIFE SNAGS

Logs over 15" in diameter and 118" in length, will be salvaged and stockpiled for use as habitat logs, wildlife snags, and log crib walls. Habitat logs will be anchored to flood terraces, installed as rootwads, and/or included in log crib walls as deadmen. They will provide potential basking habitat for the western pond turtle, and cover for amphibians. Wildlife snags will provide bird and raptor roosting habitat. Log crib walls will be utilized for grade breaks, to create micro-topographic features and to adjust grade at tree saves. Habitat logs may also function as nurse logs for new or transplanted salvaged plants.

IRRIGATION

An irrigation system will be needed to help establish vegetation during the first three to five years following project implementation. Design of this system will occur as part of the final design phase.

PLANT ESTABLISHMENT & MAINTENANCE

Planting plans and specifications will provide implementation methods, plant species, quantities, and planting locations. Maintenance recommendations will include detailed measures such as mulching, weeding, watering, and contingency actions.

4 CONCEPTUAL RESTORATION BENEFITS

Figure 2 below represents CRP design criteria including project goals and objectives.

MEASURES	FUNCTION/VALUE	Wetland Creation	Wetland Restoration	Riparian Creation	Riparian Restoration	Swainson's Hawk Habitat	Burrowing Owl Habitat	Giant Garter Snake	Western Pond Turtle	Raptors	Amphibians	Oak Preservation	Aesthetic Treatment-Bridges, Pipes, Screening, etc.
Herbaceous Plantings		✓	✓					✓	✓		✓		
Container Trees and Shrubs		✓	✓	✓	✓	✓				✓			
Hydro- Broadcast- Native Seeding		✓	✓	✓	✓		✓			✓	✓		
Wildlife Snags					✓	✓	✓			✓			
Habitat Logs		✓	✓	✓	✓				✓		✓		
Log Cribbing				✓	✓				✓		✓	✓	
Salvage-Plants, Logs & Rocks		✓	✓	✓	✓	✓			✓	✓	✓	✓	
Micro Topography		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Deep Water Creation		✓	✓					✓	✓				
Channel Meander		✓	✓	✓	✓			✓	✓		✓		
Native Grassland Restoration				✓	✓	✓	✓	✓	✓	✓			

**FIGURE 2
RESTORATION MEASURES SELECTION MATRIX**

The CRP intent is to provide habitat for the giant garter snake, Swainson’s hawk, burrowing owl and western pond turtle. It will also restore native Valley Oak Woodland, Mixed Riparian Forest, and Freshwater Emergent Marsh communities. These goals will be obtained through implementation of the CRP measures, which include preconstruction surveys; salvage operations; earthwork and landform construction; revegetation of native species; placement of habitat logs; wildlife snags and log crib walls; and irrigation installation.

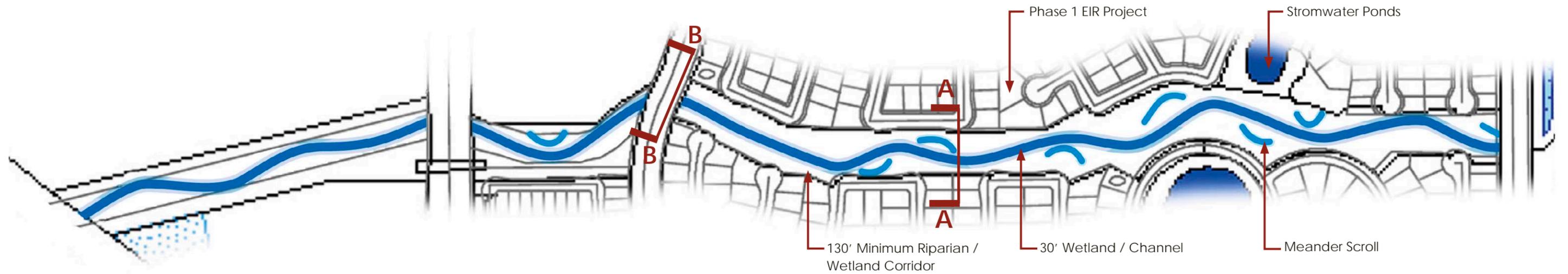
Creation of giant garter snake habitat will be achieved by providing freshwater emergent marsh and slough features with permanent inundation, and planting native emergent plant species. Habitat logs and wildlife snags will provide cover, basking and/or roosting habitat for birds, hawks and amphibians. Micro-topographic features will provide diversity in landform and species (both flora and fauna) occupation. Removal of non-native and invasive plant species will provide better opportunities for establishment of a more diverse, native plant community that will provide higher quality habitat for wildlife. The native plant species will provide cover, roosting, rearing, and browsing opportunities. Establishing native grasslands will provide habitat for food source

species for the target animal, mammalian, and avian species. Log crib walls will provide an option to protect valley oaks in areas where not enough space exists to realign the corridor(s). They will also provide landform diversity by acting as grade breaks.

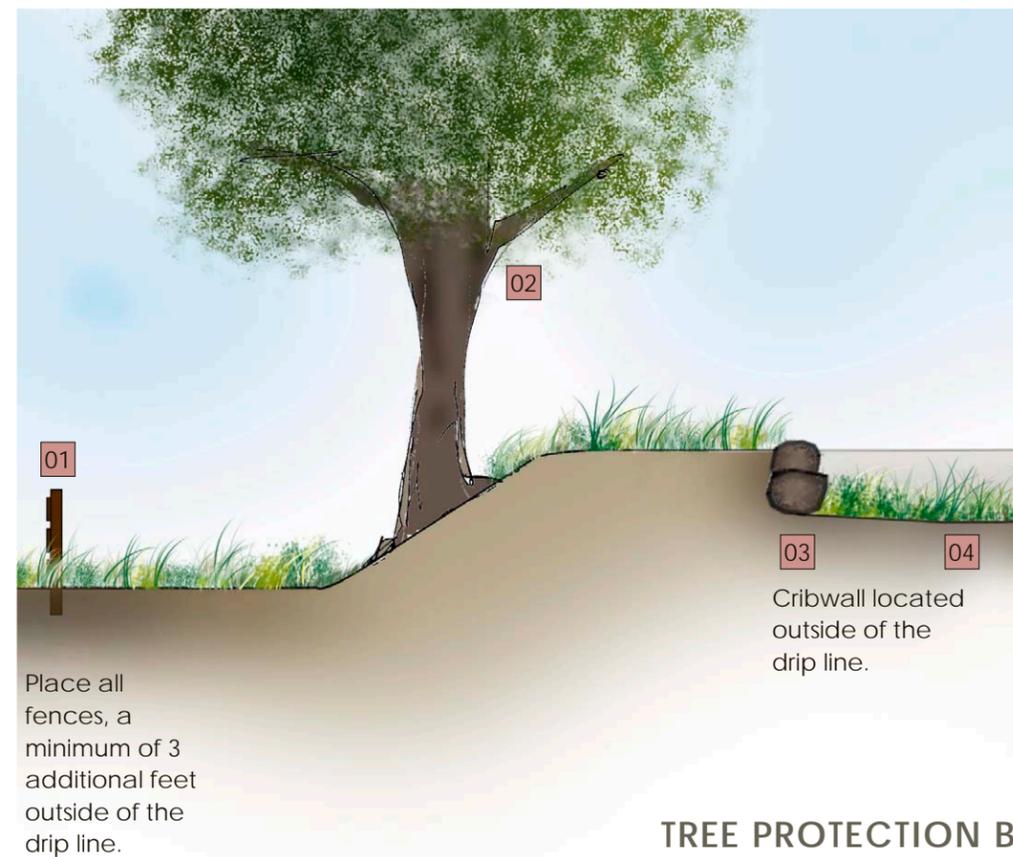
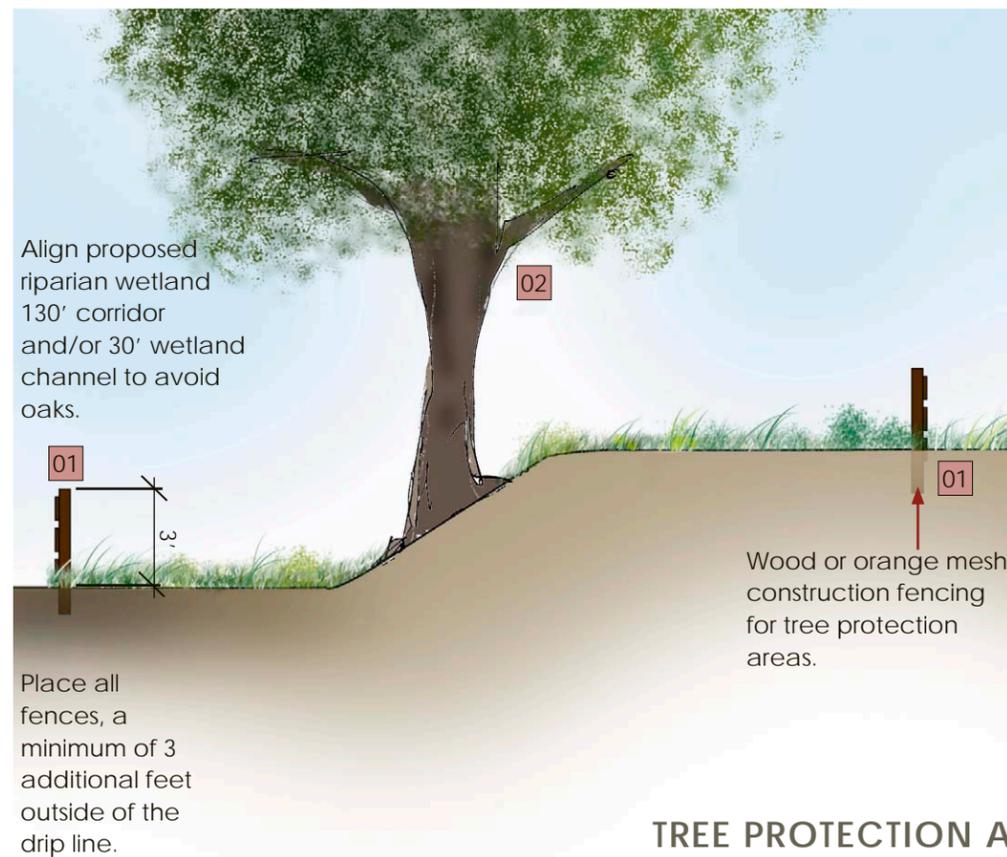
Measures proposed to protect and enhance the Valley Oak Woodland Community include inventory and assessment during the survey and salvage phases of work. Corridor realignment is proposed to save large specimens, and tree protection measures are proposed where grading will occur near the drip line of trees. Seedlings will be collected from impact areas and transplanted within the CRP area to increase the numbers of valley oaks. Enhancement of the Valley Oak Woodland community will occur through supplemental native plantings of associate trees, shrubs, and grasses.

The increased cross sectional area and flow conveyance of the wetland/channel corridor will increase conveyance during flood flows as water is released from the lake systems. The corridor will be designed in accordance with hydraulic and water quality design criteria, set forth in the EIR.

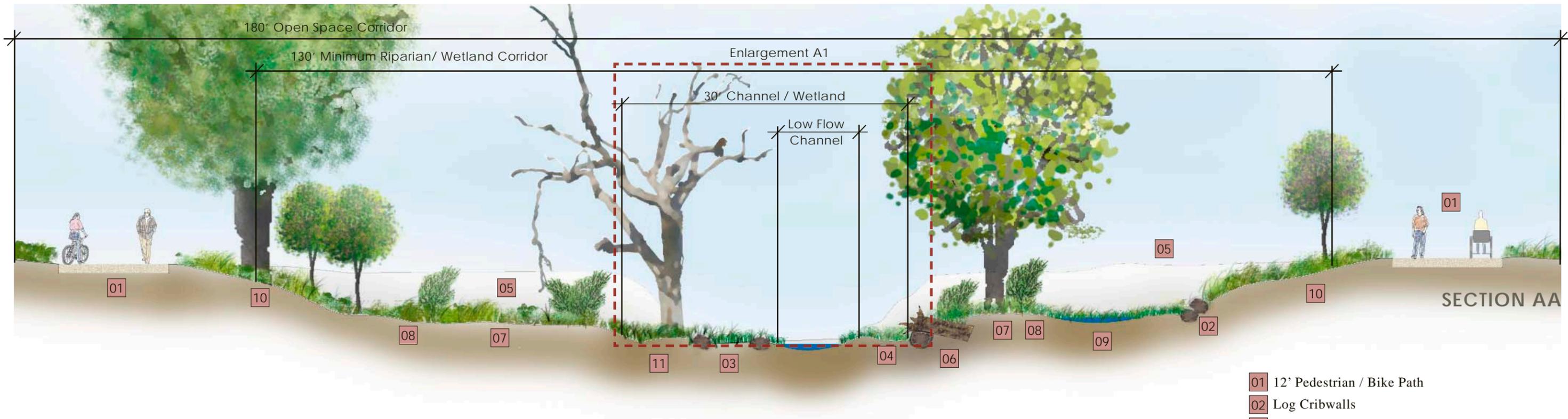
While the revegetation effort focuses on wildlife habitat enhancement, it would also provide aesthetic values. Users of the path system and those viewing the riparian/wetland corridor will witness seasonal color, varying textures of plant profiles, bark and leaf texture. They will likely view increased wildlife usage of the corridor due to the restoration efforts.



OVERALL CREEK PLAN



- 01 Tree Protection Fencing
 - 02 Existing Valley Oak to be Protected
 - 03 Log Cribwalls / Grade Break
 - 04 2nd Flood Terrace
- Surveys shall be conducted by Biologist and/or Restoration Ecologist to delineate salvage areas and tree protection areas.
 - The 30' channel / wetland meanders within the 130' riparian / wetland corridor. The low flow channel meanders within the 30' channel / wetland
 - No construction impact shall occur within 3' of the dripline of heritage oaks and other vegetation delineated to be salvaged.

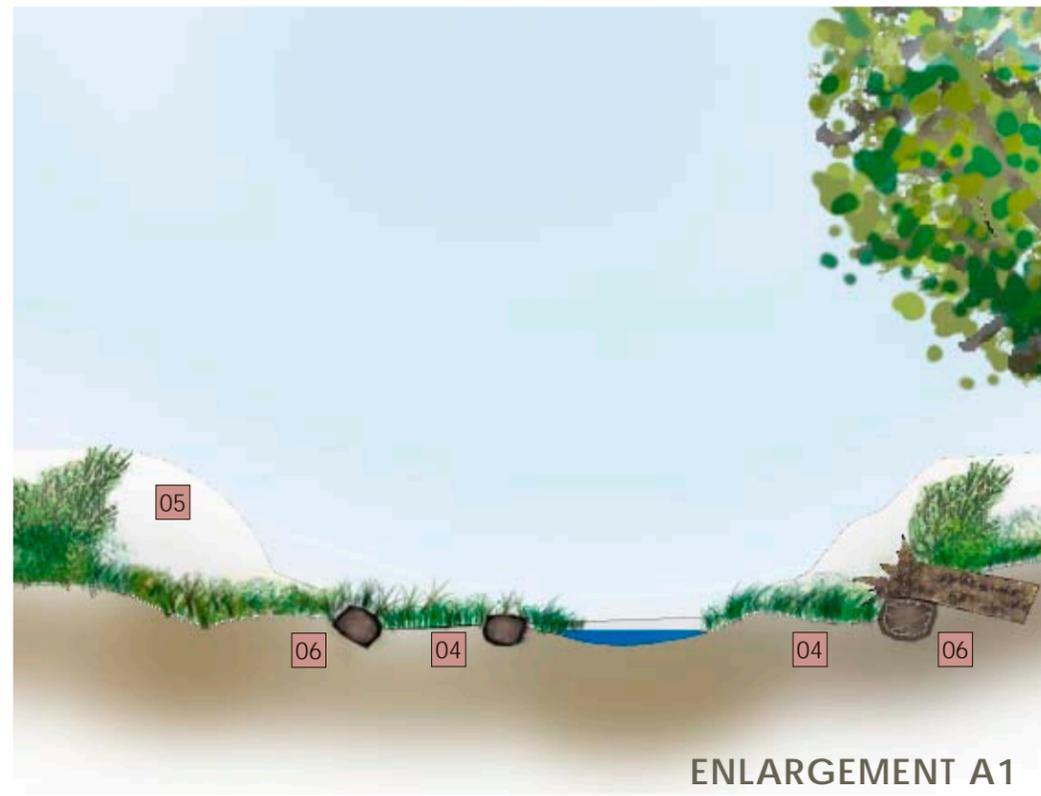


- 01 12' Pedestrian / Bike Path
- 02 Log Cribwalls
- 03 1st Flood Terrace
- 04 Freshwater Marsh Wetland Plantings
- 05 Existing Trapezoidal Channel
- 06 Basking / Habitat Logs / Grade Break
- 07 2nd Flood Terrace
- 08 Mixed Riparian Forest Plantings w/ Micro-topographic Land Forms
- 09 Depressional Wetland w/ Micro-topographic Land Forms
- 10 Valley Oak Woodland Plantings
- 11 Wildlife Snag

•Surveys shall be conducted by Biologist and/or Restoration Ecologist to delineate salvage areas and tree protection areas.

•The 30' channel / wetland meanders within the 130' riparian / wetland corridor. The low flow channel meanders within the 30' channel / wetland

•No construction impact shall occur within 3' of the dripline of heritage oaks and other vegetation delineated to be salvaged.



ENLARGEMENT A1



ALTERNATE A1



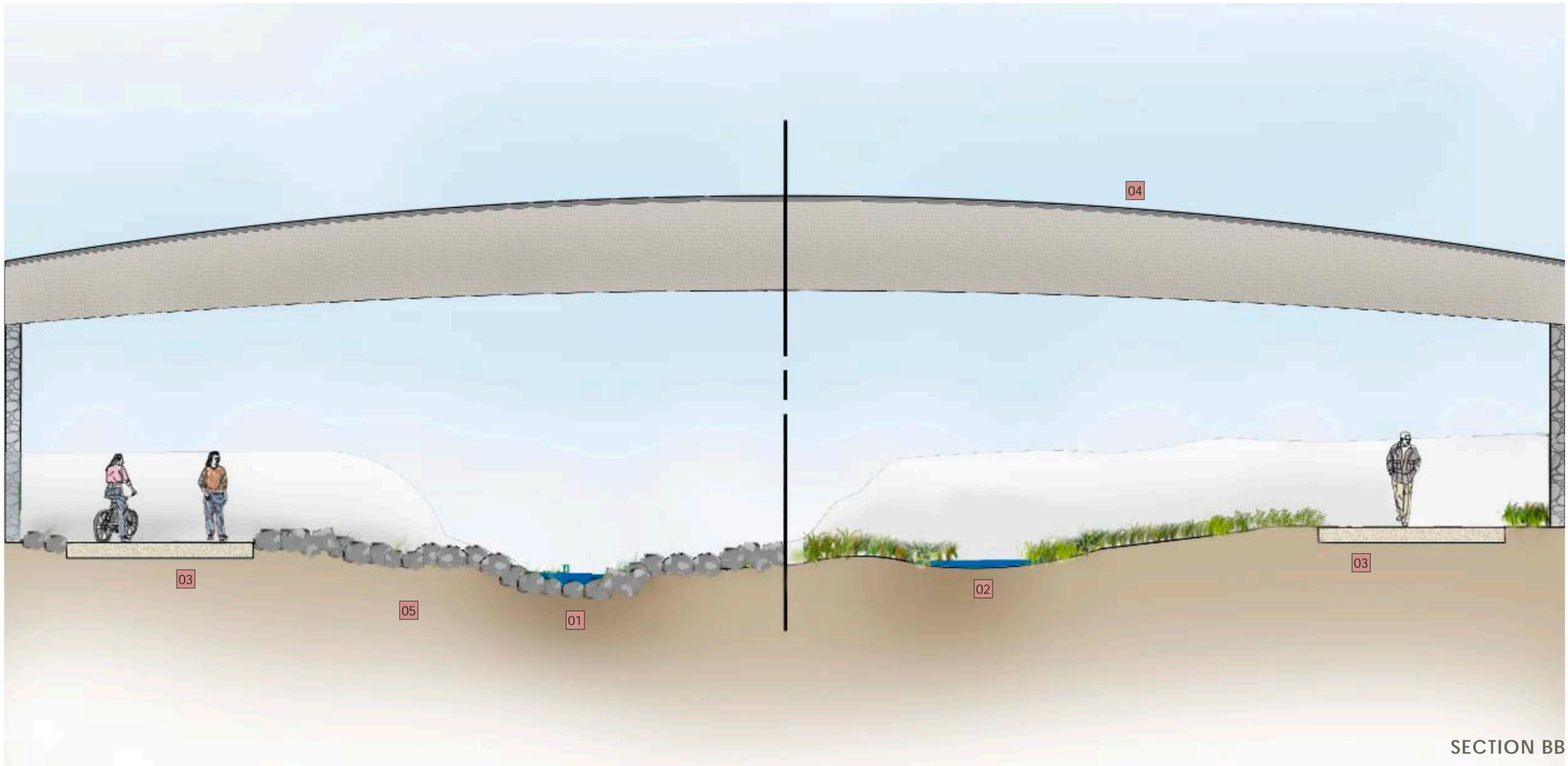
PLAN A

- 01 Native Riparian Seed Mix
- 02 Valley Oak Woodland Plantings
- 03 Wildlife Snag
- 04 Basking / Habitat Logs / Grade Break
- 05 Depressional Wetland w/ Micro-topographic Land Forms
- 06 Freshwater Marsh Wetland Plantings
- 07 Mixed Riparian Forest Plantings w/ Micro-topographic Land Forms



NORTHLITTLE JOHNS CREEK » CONCEPT RESORTATION PLAN

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SECTION BB

- 01 Low Flow Channel
- 02 Side Channel / Slough Feature
- 03 12' Pedestrian / Bike Path
- 04 Vehicular Bridge
- 05 Granulated River Cobble (if Determined by Engineer)