Indian Valley Restoration Project

Alternatives

Alternative 1 - **Proposed Action**

The Eldorado National Forest proposes to plug and pond about 6,000 feet of a low-gradient tributary of Deer Creek in Indian Valley. Plug and pond is a process where a ponded area of water is created by plugging the stream channel with a barrier, allowing water to flow over the barrier at an elevation higher than the existing stream elevation. The plug would be partially constructed by material excavated from the upstream channel area. The work would consist of excavating 27-34 borrow areas (ponds) to construct 26-35 plugs. Plugs will be 1 to 4 feet high, which will create ponds from 1 to 4 feet deep. The meadow restoration design for the Indian Valley- Deer Creek Project has been developed remotely using surveyed cross-section data and LIDAR mapping. The actual design implementation must be accomplished in the field and will differ somewhat from the conceptual design. However, the number of features, acres affected, etc. are unlikely to change greatly, as the project has been delineated on the ground, and alteration from this plan would be in the manner of placement of plant material, and small scale changes in plug and pond dimension on the order of 1-5 feet or less per plug, with the overall footprint of the project remaining essentially the same for wetted area and acreage of disturbance.

The design assumes the existing 4-wheel drive trail in the meadow, 19E04, will remain post project. That portion of the trail , (<.25 miles), to be impacted by the restored water table would be filled/surfaced with rock back to existing meadow elevation to reduce resource damage, and would remain serviceable into the future for vehicular traffic. A geologic mudflow formation (lahar) that exists on-site may be used for the plugging material, if the clay composition is determined suitable, otherwise suitable plugging material may be brought in from offsite. Rock and large boulders would also be used as plugging material. Rock and boulders may be obtained locally, from the quarry located at Tragedy Springs quarry.

Additional road fill material would be placed in the existing stream crossings, utilized during project implementation within the meadow. Unauthorized roads and trails would have boulder barricades placed to reduce illegal use by off-road vehicles.

Portions of road 9N03 and trail 19E04 would be rocked within the current alignment to allow access for construction equipment. It may be necessary to use a temporary bridge at the first seasonal stream crossing, road 9N03, to allow construction equipment access to the meadow.

Design Criteria:

Vegetation

Vegetation removed prior to or during construction will be stockpiled, conserved by regular watering, and replanted on bare areas immediately after construction, reducing the potential for erosion from bare soil. Vegetation targeted for replanting will be limited to perennial riparian species such as willows and alders. Native sod mats may also be salvaged when possible. Willow cuttings and transplants will be placed along new flow and pond areas. Transplants should be planted immediately following construction; willow cuttings would be collected and planted in late fall or early/late spring when plants are dormant. Following construction and prior to first snow a site specific seed mix of native species would be applied to bare soils. After the initial construction revegetation may continue as needed.

Sensitive plant occurrences would be flagged and avoided during project implementation to reduce potential disturbance and extirpation from project related activities.

Any new occurrences of sensitive plant species, noxious weed, or unique habitats discovered during pre-project activities would be immediately brought to the attention of the forest botanist and appropriate mitigation measures would be implemented.

All earth-moving equipment, gravel, fill, or other materials would be weed-free. To prevent introduction of noxious weeds, equipment that has been operated in areas known to be infested with noxious weeds would be cleaned prior to entering the project area. Equipment and other materials would be considered free of soil, seeds, and other such debris after a visual inspection, by the project botanist.

Water Quality and Soil Retention

If needed, when heavy equipment is working within stream course standing water may be rerouted by pumping or diverting around the work site. Construction of plugs will start at the upstream end so that the first plug can capture any flow that is present. As construction proceeds downstream, each new plug stops the flow of water reducing the potential for sediment-laden water to leave the project area.

Onsite sand, gravel, rock, or organic matter would be used whenever possible. Vegetation removed from excavation areas would be replaced on completed plugs as soon as feasible to reduce erosion potential.

Project design and erosion control techniques (as specified by the California Regional Water Quality Control Board, Central Valley Region CRWQCB, CVR), Forest Service Best Management Practices (BMPs) and other regulatory agencies will limit the potential for sediment moving off site. Below is a summary of the BMPs that will be used on this project to limit impacts to the stream.

An Erosion Control Plan (**BMP 2.13**) that provides details regarding BMPS will be prepared prior to project implementation and followed during construction.

The proposed project will take place within the Streamside Management Zone (SMZ) along the headwaters of Deer Creek (**BMP 1.8**). The project was designed to restore the stream channel, reconnect the stream channel with its floodplain (BMP 7.2), and raise groundwater elevations (**BMP 7.3**). Construction will take place during low water and proceed from upstream to downstream. The first plug will contain flow as subsequent downstream plugs are being constructed (**BMP 2.8**). Vegetation will be removed from excavated areas, maintained, and replaced on disturbed areas (**BMP 1.19 & 5.4**). Willows and other riparian vegetation will be planted on shorelines (**BMP 5.4**). Rock and CWD will be used as needed to armor disturbed areas (**BMP 2.3**).

Equipment will be cleaned prior to work in the SMZ. Equipment will be inspected daily for leaks or accumulations of grease. Any problems detected will be corrected prior to entering the SMZ (**BMP 2.8**). Parking and staging areas will be location outside SMZs (**BMP 2.10**). Equipment will not be fueled or

serviced within the SMZ (**BMP 2.8**). Fuel and other toxic material will be stored at least 100 feet from the edge of the SMZ. A site-specific spill control plan will be available (**BMP 2.11**).

Water for vegetation maintenance and dust control will be obtained from nearby lakes (**BMP 2.5**) in accordance with procedures in the Water Quality Management Handbook.
Stream crossings in roads needed for access will be rocked or have a temporary bridge installed to reduce impacts to stream channels (**BMP 2.8**). CRWQCB, CVR and Army Corps of Engineers permits have been obtained (**BMP 2.8**).

The existing water crossing of the main channel has been rocked to reduce sediment production. The crossing would be improved by additional rocking of the area inundated by one of the ponds. This will reduce potential sediment production from Forest Service administrative use of the existing road.

All actions implemented within the floodplain of the drainage are permitted through the CRWQCB, CVR and the Army Corps of Engineers. All requirements from these agencies to stop sediment movement will be implemented as required in the permits. These requirements will ensure that implementation of these projects will meet water quality standards.

Following completion of construction activities, the job site would be returned, as much as is reasonably practical, to its original condition. Excavation and river bed disturbance would be done in the dry season (late summer to fall) whenever possible. All environmental mitigation measures stipulated by water quality permits would be implemented in a timely manner. All equipment and surplus materials would be removed from the site. Temporary culverts and/or temporary bridges would be installed to reduce or eliminate short term affects to stream crossings during implementation as needed.

Aquatic and Terrestrial Species
Should any TES species be located before or during implementation, the Amador District Biologist, and/or Forest Aquatic Biologist would be immediately notified. Protection measures/mitigations would be implemented to reduce potential for effects to TES species as recommended by biologists.

Surveys have been, and will be conducted prior to implementation of the project for willow flycatcher within and adjacent to the project area. Should species be detected, timing of implementation may be delayed or other mitigation applied to allow for completion of nesting of this species. Post project monitoring of the site will include surveys for willow flycatcher and other species.

Surveys have been, and will be conducted prior to implementation of the project for Sierra Nevada yellow-legged frogs and Yosemite toads within and adjacent to the project area. Should individuals be detected, the individuals will be moved outside the project area.

Heritage Resources:
The project's vertical Area of Potential Effect (APE) is located below archaeological site deposition. All project activities including, staging, materials storage, travel, and project implementation shall be conducted from within the stream channel to avoid impacts to archaeological deposits. . Site boundaries will be delineated with construction fence prior to project implementation. No excavation of erosion banks shall occur within flagged site boundaries. However, stabilizing materials can be placed within these areas to prevent further erosion. All project work will be monitored by a qualified archaeologist and a Native American representative during construction of plug features near 05-03-51-443. Additionally, post project monitoring shall occur to evaluate the efficacy of the project in stabilizing effects from current erosion.

Should any previously unrecorded cultural resources be encountered during implementation of this project, all work would immediately cease within 66 feet (30 meters) of the find and the District Archeologist would be notified immediately. Work may resume after approved by the District Archeologist. Should any cultural resources become damaged in unanticipated ways by activities proposed in this project, the steps described in the Sierran PA for inadvertent effects would be followed.

Should the project boundaries or activities be expanded beyond the current APE, Section 106 compliance for this project will be incomplete until additional cultural resources review is completed.

Monitoring:

Photo points (an estimated 4-6 photo points along the restoration area, may be able to utilize volunteer labor for monitoring after the initial set up) would be used to monitor the success of the project on vegetation, and habitat changes for species such as Sierra Nevada yellow-legged frogs, Yosemite toads, and willow flycatchers. Photo points would be installed prior to implementation and data would be collected at intervals after implementation.

Monitoring of the project area for willow flycatcher, other bird species, amphibians, trout, sensitive plants, and riparian vegetation will track changes in use and species presence.
Monitoring of the area will occur after the project has been completed. The District Archaeologist will be kept informed of the status of various stages of the project, so that subsequent field work can proceed in a timely fashion. All subsequent inventory monitoring and site monitoring related to this project will be documented in amendments to the Heritage Resources Report, R2008-05-03-10007c, as appropriate.

Groundwater levels would be monitored pre- and post-project using existing piezometers.
Project area would be monitored for noxious weeds following project completion.

Alternative 2 – No Action

No actions would be initiated for treatment of this portion of Indian Valley. Current management practices, such as dispersed camping, hiking, fire suppression, and other recreational use would continue as currently allowed within the valley.