

33. Irreversible or Irretrievable Resource Commitments

33.1 Introduction

The California Environmental Quality Act (CEQA) *Guidelines* requires a discussion of the significant irreversible environmental changes that would be caused by the proposed Project if it is implemented. *CEQA Guidelines* §15126.2(c) states that “Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified” (AEP, 2011).

The National Environmental Policy Act (NEPA) (Section 101(2)(c)(v) and 40 CFR 1502.16) requires that the environmental analysis identify “any irreversible and irretrievable commitment of resources which would be involved in the proposed action should it be implemented.” The Act, Council on Environmental Quality (CEQ) NEPA regulations, and NEPA guidance, however, do not define “resources” or describe how this requirement should be applied.

The U. S. Bureau of Reclamation (Reclamation) and other federal agencies have interpreted irreversible and irretrievable commitments to mean the use of nonrenewable resources and the effects this use would have in the future. Reclamation defines the irreversible commitment of resources to be the result of the use or destruction of a specific resource (e.g., minerals extraction or the destruction of cultural resources) that cannot be replaced or, at a minimum, restored over a long period of time and possibly at great expense. Reclamation also defines the irretrievable commitment of resources to the loss of production or use of natural resources, indicating that it represents opportunities that are foregone for the period of time that a resource cannot be used (e.g., land conversion to new uses or the construction of levees preventing the natural flooding of floodplains). Reclamation also indicates that the analysis shall, for each alternative, identify those commitments of resources that are irreversible and irretrievable (Reclamation, 2012).

The following discussions identify those commitments of resources that are irreversible and irretrievable, as well as the uses in which irreversible damage could result from a potential environmental accident associated with any of the proposed Project’s three action alternatives.

33.2 Commitments of Resources by the Proposed Project’s Action Alternatives

The commitment of resources would be similar for all of the proposed Project’s action alternatives. Therefore, the following discussions of the proposed Project’s commitments of resources apply to Alternatives A, B, and C. The proposed Project would result in the irreversible and irretrievable commitment of the following resources during Project construction, operation, and maintenance:

- Construction materials, including such resources as wood, rocks, soil, and metal

- Energy expended in the form of electricity, gasoline, diesel fuel, oil, and lubricants for construction equipment and vehicles, and construction worker vehicles that would be needed for Project construction, operation, and maintenance
- Construction labor
- Permanent changes in land use, including the conversion of prime agricultural land to other uses, at Project facility locations due to land that would be committed to new and modified Project facilities and land areas inundated with water
- Changes in the visual resources and landscape character of lands where Project facilities would be located
- Effects on biological and cultural resources located at Project facility locations

Some of the materials that would be used for the proposed Project are nonrenewable resources and are considered irretrievably and irreversibly committed because reuse is not possible or is highly unlikely. Nonrenewable resources are expected to account for a minimal portion of the region's resources; any of the proposed Project's action alternative's use of nonrenewable resources would not affect the availability of these resources for other needs within the region. These resources are discussed in further detail below.

33.2.1 Construction Materials

Construction of the proposed Project facilities would result in the use of construction materials, including wood, cement, sand, gravel, other rock and earthen materials, and metal materials, all considered to be non-renewable or slowly renewable resources. These materials would be irretrievably committed toward the construction of the proposed Project facilities. Most of these materials would be obtained from within the proposed Sites Reservoir Inundation Area, and some materials would be imported to the proposed Project facility sites from nearby commercial sources.

33.2.2 Energy Consumption

Construction of the proposed Project facilities would result in the consumption of energy (considered a commitment of nonrenewable energy resources), primarily in the form of fossil fuels including fuel oil, natural gas, and gasoline for automobiles and construction equipment. In addition, nonrenewable energy resources would be required to manufacture and transport many of the Project equipment components that would be assembled at the proposed Project facility sites. Project construction activities are not expected to result in the inefficient use of energy because DWR and Reclamation would require that Project construction contractors use best available engineering techniques, construction and design practices, and equipment operating procedures during construction of the proposed Project facilities.

Long-term Project operation and maintenance would require the long-term consumption of electricity that could otherwise be available to other power customers, and would add to the overall electrical demand in California. The proposed Project would produce energy from the additional water storage capacity, and would require power to pump the water as far south as southern California.

33.2.3 Construction Labor

Human effort would be irretrievably committed during the construction of the proposed Project. The proposed Project is expected to require an estimated average of 95 construction workers on an annual basis during the Project construction period.

33.2.4 Land Use Changes

The proposed Project (depending on alternative) would permanently affect up to approximately 26,500 acres of land from its existing land use (including the conversion of prime agricultural land to other uses) to a Project facility land use and/or open space buffer. In addition, Project implementation would require the relocation of human graves. The commitment of land would not necessarily be irreversible or irretrievable because the removal of the proposed Project facilities and the restoration of disturbed areas could return that land to Existing Conditions. However, the substantial costs and the loss of energy, recreational, and socioeconomic benefits from decommissioning and removing the proposed Project facilities would make removal of the Project facilities unlikely in the foreseeable future. Therefore, for the purposes of this discussion, the change in the land use at the proposed Project facility sites is considered irreversible and irretrievable. The relocation of graves that would be necessary to implement the Project is considered irreversible (i.e., although the graves would be relocated and buried in new locations, their connection with their existing setting would be irreversibly changed).

33.2.5 Landscape Character Changes

Implementation of any of the proposed Project's action alternatives would result in a change in the existing landscape character of the areas surrounding each Project facility site. This change in landscape character would not necessarily be irreversible or irretrievable because removal of the proposed Project and the restoration of disturbed areas could return the Project facility sites to Existing Conditions. However, as mentioned above, the substantial costs and the loss of energy, recreational, and socioeconomic benefits from decommissioning and removing the proposed Project facilities makes it unlikely that it would happen. Therefore, for the purposes of this discussion, the change in the landscape at the proposed Project facility sites is considered irreversible.

The permanent conversion of a vegetated landscape to the proposed Sites Reservoir, its associated facilities, and up to five campgrounds would be a major change to the landscape, and the reservoir would introduce a new permanent source of daytime and nighttime glare in the area. The proposed South Bridge across the new reservoir would introduce urban infrastructure in an area that is largely characterized by its rural open space, thus altering the visual character of the area. The proposed Terminal Regulating Reservoir would cover approximately 200 acres of existing agricultural land. The new waterbody would also be distinct to the area due to its height approximately six feet above the existing surrounding lands. The proposed Holthouse Reservoir would result in a major enlargement of the existing Funks Reservoir. All other associated proposed Project facilities would also change the landscapes at the individual facility locations.

In addition, new sources of permanent nighttime light would be required for safety purposes at most of the proposed Project facilities, including along the South Bridge and in the Recreation Areas. Vehicles traveling on the proposed South Bridge and the new roads, as well as visitors to the new campgrounds at Sites Reservoir, would also create a new source of nighttime light in the area.

33.2.6 Biological and Cultural Resources Impacts

The proposed Project would result in the removal and/or disturbance of vegetation at Project facility sites, with associated impacts on wildlife species that inhabit those areas. The proposed Project would affect existing wetlands at Project facility sites, and would also result in effects to aquatic biological species.

The proposed Project also would disturb cultural resources, including those that are eligible for the California Register of Historical Resources and the National Register of Historic Places, that currently exist within the footprints of the proposed Project facilities.

These effects to biological and cultural resources are all considered irreversible and irretrievable commitments of those resources.

33.3 Potential Environmental Accidents

The *CEQA Guidelines* also require a discussion of the potential for irreversible environmental damage caused by an accident associated with a project (AEP, 2011). Construction of the all of the proposed Project's action alternatives would result in the use, transport, storage, and disposal of hazardous wastes. DWR and Reclamation would require all construction, operation, and maintenance activities to comply with applicable federal, State, and local laws related to hazardous materials, which would significantly reduce the likelihood and severity of accidents that could cause irreversible environmental damage as a result of Project construction, operation, and maintenance.

In addition, because the potential exists for dams to fail, DWR prepared a potential dam break inundation map that reflects the inundation scenario associated with the proposed Sites Reservoir and its dams. The flood wave that would result from a hypothetical breach of Golden Gate Dam or Sites Dam has a small probability of occurring, but would present a significant hazard to both occupied and non-occupied structures downstream of the proposed Sites Reservoir.

The proposed Sites Reservoir dams would be designed and constructed pursuant to conservative guidelines and criteria designed to prevent failure. The design would incorporate multiple lines of defense or design redundancy. As required by the Division of Safety of Dams (DSOD), the dam would be designed to withstand the largest and strongest earthquake (Maximum Credible Earthquake), as well as the largest possible flood (Probable Maximum Flood). The proposed Sites Reservoir would include an emergency spillway to release flows with an elevation set to the potential probable maximum flood water surface elevation. Operation of Golden Gate and Sites dams would be monitored by instrumentation measuring such parameters as seepage, settlement, and earthquake-induced accelerations, which could provide early warning signs of potential dam failure. With modern design criteria and construction practices, combined with DSOD review, the probability of dam failure is extremely small. In addition, DSOD requires that large reservoirs, such as Sites Reservoir, have facilities capable of allowing rapid emergency drawdown of the water in the reservoir in the event of an unsafe condition at the dam. The proposed Sites Reservoir would accomplish this drawdown via the outlet tunnel in the proposed Sites Reservoir Inlet/Outlet Structure, which could discharge emergency release flows directly into Funks Creek; some of this drawdown could be attenuated by the proposed Holthouse Reservoir or released via the proposed Delevan Pipeline, the existing T-C Canal, or the existing GCID Canal.

33.4 Commitment of Future Generations to Similar Uses

As indicated previously for the impacts to existing graves within the footprint of the proposed Sites Reservoir and the landscape character of the proposed Project facility sites, the impacts of implementation of any of the proposed Project's action alternatives on these resources are considered irreversible. Similarly, the changes in land use and the impacts on biological and cultural resources from the implementation of any of the proposed Project's action alternatives are considered irreversible and irretrievable. These impacts are considered irreversible and irretrievable because once the proposed Project facilities are constructed and operational, it is not expected that the facilities would be decommissioned and demolished, and the land recontoured and restored to its existing condition, prior to the end of the proposed Project's lifespan (100 years). The proposed Project is expected to operate until the end of the Project lifespan due to the monetary investment that would be made to construct, operate, and maintain the Project, as well as the benefits that the Project would provide.

For these same reasons, implementation of any of the proposed Project's action alternatives would commit future generations to similar uses at the proposed Project facility sites. This proposed long-term commitment of lands for Project purposes is a change from Existing Conditions, but is not necessarily adverse. DWR and Reclamation would comply with all federal, State, and local laws, ordinances, regulations, and standards to minimize impacts on the environment during the proposed Project's construction, as well as during its long-term operation and maintenance.

33.5 References

- Association of Environmental Professionals (AEP). 2011. 2011 California Environmental Quality Act (CEQA) Statute and Guidelines.
- U. S. Bureau of Reclamation (Reclamation). 2012. Reclamation, Managing Water in the West. Reclamation's NEPA Handbook. February. Page 8-21.