3.7 EROSION AND SEDIMENTATION

3.7.1 AFFECTED ENVIRONMENT

The geology of the San Gabriel Basin is dominated by unconsolidated to semi-consolidated alluvium deposited by streams flowing out of the San Gabriel Mountains. These deposits include Pleistocene and Holocene (10,000 years ago to the present) alluvium and the lower Pleistocene San Pedro Formation. The Upper Pleistocene alluvium deposits form alluvial fans along the San Gabriel Mountains. The San Pedro Formation is characterized by its interbedded marine sand, gravel, and silt. The primary native soil types in the San Gabriel Basin area are sandy loam, silt loam, and clay loam.

The sublease boundary contains both impervious areas, such as parking lots and buildings, and pervious open space. Surface runoff from the site drains along natural courses towards the San Gabriel River, which runs northeast-southwest south of the sublease boundary. The sublease boundary is currently developed with the WNNC, a police substation, outbuildings, an outdoor classroom, and a 33-car surface parking lot. Approximately 0.9 acre (or roughly 8 percent) of the sublease boundary is currently developed with impervious surfaces. Paved and impervious surfaces, including buildings, contribute greater quantities of runoff to storm water systems than landscaped surfaces. Water cannot permeate compacted and impervious surfaces as easily as landscaped areas, and consequently, rain is converted to runoff, removed from the site by culverts or channels which would ultimately reach the San Gabriel River. An increase in impervious surface area reduces the amount of rainfall absorbed through soils, while also preventing contaminants from being trapped and neutralized in the soil.

Soil erosion is the process whereby soil materials are worn away and transported to another area by either wind or water. Rates of erosion can vary depending on the soil material, structure, and placement by human activity. Soil containing high amounts of silt can be susceptible to erosion, while sandy soils are more resistant. Excessive soil erosion can eventually lead to damage of building foundations, roadways, and embankments. Erosion is most likely to occur in sloped areas with exposed soils, especially where unnatural slopes are created by cut and fill activities (LACDPW 2005).

3.7.2 REGULATORY FRAMEWORK

The National Pollutant Discharge Elimination System (NPDES) storm water permitting program, under Section 402(p) of the Federal Clean Water Act, is administered by the Regional Water Quality Control Board (RWQCB) on behalf of the U.S. Environmental Protection Agency (EPA) (Clean Water Act 2002). Because construction activities associated with the proposed action would result in the disturbance of more than one acre, compliance with the statewide NPDES storm water general permit for construction activity would be required. The NPDES storm water permit would require the following (EPA 2006):

- elimination or reduction of non-storm water discharges to storm water systems and other waters of the United States;

- development and implementation of a storm water pollution prevention plan (SWPPP) for temporary construction activities;
- consideration of permanent post-construction water quality best management practices; and
- inspections of storm water control structures and pollution prevention measures.

3.7.3 Criteria for Significance of Effects

The action would be considered to have a significant effect on erosion and sedimentation if it would:

- Result in substantial soil erosion or loss of topsoil; or
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river in a manner which would result in substantial erosion or siltation on- or off-site.

3.7.4 Project Effects on Erosion and Sedimentation

3.7.4.1 No Action Alternative

Because no action would be taken, no ground disturbance would occur at the site. The No Action Alternative would not alter the existing drainage pattern of the site or the surrounding area. There would be no direct, indirect, or cumulative effects on erosion and sedimentation.

3.7.4.2 18,230 SF Alternative

Soil disturbance during construction would increase the potential for wind and water erosion within the sublease boundary. Exposed soils during operation would also be subject to erosion. As required by the EPA, the construction contractor would develop and implement a SWPPP during construction for various project components. Storm water best management practices would be undertaken to control runoff and erosion from earth-moving activities. Best management practices and design measures would minimize the amount of runoff and associated pollutants leaving the construction site by containing runoff on-site, containing the sediments on-site, or minimizing the potential for storm water to come into contact with pollutants. Accordingly, effects related to erosion and sedimentation would be not result in a substantial direct, indirect, or cumulative adverse effect.

Drainage patterns would be altered by site layout and the increase in impervious surface area over existing conditions. However, the 18,230 sf Alternative includes the collection of storm water runoff as part of the design. The constructed wetland/riparian area, vegetated swales in the parking lot, and a detention basin south of the parking lot are features of the 18,230 sf Alternative that involve storm water collection and would ensure that the amount of storm water pollutants discharged off-site would not increase over existing conditions. Runoff from the interpretive center and parking lot would be channeled

to these drainage features and be used to keep a portion of the constructed wetland/riparian area wet. The proposed drainage features would not lead to erosion or sedimentation on- and off-site. No substantial direct, indirect, or cumulative adverse effect would occur.

3.7.4.3 14,000 SF ALTERNATIVE (PROPOSED ACTION)

Soil disturbance during construction would increase the potential for wind and water erosion within the sublease boundary. During construction, the 14,000 sf Alternative would comply with applicable storm water regulations that require implementation of storm water pollution prevention measures as specified under NPDES permit requirements. During operation of the 14,000 sf Alternative, the long-term erosion and sedimentation impacts would depend upon the adequacy of the drainage structures (e.g., inlets, outlets, swales, culverts, riprap velocity dissipaters, and debris, retention, or detention basins). As with the 18,230 sf Alternative, potential effects to water quality from storm water runoff would not create a substantial direct, indirect, or cumulative adverse effect. Federal requirements would ensure the adequacy of these designs to prevent drainage on-site and off-site drainage effects and reduce long-term erosion and sedimentation.

3.7.4.4 10,000 SF ALTERNATIVE

Soil disturbance during construction would increase the potential for wind and water erosion within the sublease boundary. During construction, the 10,000 sf Alternative would comply with applicable storm water regulations that require implementation of storm water pollution prevention measures as specified under NPDES permit requirements. During operation of the 10,000 sf Alternative, the long-term erosion and sedimentation impacts would depend upon the adequacy of the drainage structures (e.g., inlets, outlets, swales, culverts, riprap velocity dissipaters, and debris, retention, or detention basins). Potential effects to water quality from storm water runoff would not create a substantial direct, indirect, or cumulative adverse effect. Federal requirements would ensure the adequacy of these designs to prevent drainage on-site and off-site drainage effects and reduce long-term erosion and sedimentation.

3.7.4.5 2,800 SF ALTERNATIVE

Soil disturbance during construction would increase the potential for wind and water erosion within the sublease boundary. During construction, the 2,800 sf Alternative would comply with applicable storm water regulations (even though the construction impact area would be less than one acre in size) that require implementation of storm water pollution prevention measures as specified under NPDES permit requirements. Similar to the 18,230 sf Alternative, adherence to these requirements would reduce sediment-laden runoff, prevent the migration of contaminants from construction areas to surface waters, and ensure storm water discharges do not violate applicable water quality standards. During operation of the 2,800 sf Alternative, the amount of new impervious surfaces at the site would only be slightly increased compared to the existing conditions. This additional runoff could be accommodated by existing

on-site features and would not result in erosion or sedimentation on- or off-site. No substantial direct, indirect, or cumulative adverse effect would occur.

3.7.5 MITIGATION MEASURES

No mitigation measures are required.

3.7.6 SIGNIFICANCE SUMMARY

3.7.6.1 NO ACTION ALTERNATIVE

Because no action would be taken, there would be no direct, indirect, or cumulative effects from erosion and sedimentation.

3.7.6.2 18,230 SF ALTERNATIVE

See Section 3.7.6.5 below.

3.7.6.3 14,000 SF ALTERNATIVE (PROPOSED ACTION)

See Section 3.7.6.5 below.

3.7.6.4 10,000 SF ALTERNATIVE

See Section 3.7.6.5 below.

3.7.6.5 2,800 SF ALTERNATIVE

Compliance with localized erosion control measures during construction and operation would ensure no substantial direct, indirect, or cumulative adverse effect from erosion and sedimentation.