

7.1 Purpose and Intent

The purpose of this chapter is to describe the Landform Restoration and Grading Plan for the Project. This chapter includes exhibits and text describing and illustrating the proposed master grading concept for the Project, including bluff/slope restoration, preliminary earthwork quantities for cut and fill, and contours and grades, at generally one-foot contour intervals, for all graded areas of the Project Site, including remedial grading for geotechnical purposes.

7.2 Existing Conditions

The existing topography of the Project Site is composed of the Lowland and Upland. The Lowland is generally 0 feet to 10 feet above Mean Sea Level (MSL) and includes degraded wetlands, oil facilities, and access roads. The Upland ranges in elevation from 10 to 110 feet above MSL, and includes the transitional slopes, bluffs, and arroyos that rise to the Upland, which begins at approximately 50 feet above MSL. The Upland is bounded by existing development in the cities of Costa Mesa and Newport Beach to the east. The Southern Arroyo divides the Upland into two areas. The existing slopes and bluff edges have historically been adversely impacted by oil operations and water erosion.

7.3 Master Grading Plan

Master grading for the Project will occur within the primary development envelope and includes grading for the public roadways and infrastructure, and private development within the Villages and Colonies and Parklands. The master grading plan includes both landform grading and corrective/remedial grading requiring the over-excavation and recompaction of soils as recommended in geotechnical/soils reports prepared for the Project.

Master grading for development of the Project Site is illustrated in Exhibit 7-1, "Master Grading Plan." Areas of cut and fill within the Project Site are illustrated in Exhibit 7-2, "Cut and Fill Map." Approximately 1,100,000 cubic yards of landform grading will be required for the Project. Cuts may vary from one foot to 10 feet across the Project Site, but may be up to 25 feet in localized areas. Fills may vary from one foot to 30 feet, but may be up to 60 feet in limited areas that require erosion repair and removal of alluvium.

Approximately 1,500,000 cubic yards of additional corrective/remedial grading is necessary to implement geotechnical/soils recommendations and structurally stabilize the Project Site. This corrective/remedial grading shall not change the landform of the Project Site. Corrective/remedial grading may occur from three feet to 30 feet below the proposed landform elevations. Corrective/remedial grading recommendations are described in detail in the geotechnical reports prepared for the Project.

Subsequent to remediation activities, all grading shall balance on-site and may be phased using borrow and spoils procedures as needed. An agronomist approved by the City Engineer shall evaluate soil chemistry for selective placement of the fill to ensure that the best soils are placed for habitat restoration and community landscape planting.

7.4 Bluff/Slope Restoration

Bluff/slope restoration shall occur along the south and west-facing slopes and bluffs to restore areas historically impacted by erosion and soil degradation. Restored bluffs and slopes shall match the existing bluff/slope edge elevations to preserve the bluff/slope massing and create a natural appearance.

In several areas, the bluff/slope edge has been eroded due to years of oil operations and uncontrolled drainage through the Project Site. These areas shall be graded to restore and revegetate the bluff/ slope edge and limit further degradation. As part of the restoration of bluffs and slopes, existing uncontrolled stormwater flows across the bluff/slope edge shall be intercepted and redirected to bioswales, community water quality basins, and other features described in Chapter 9, "Water Management Plans."

The bluff/slope restoration areas are illustrated in Exhibit 7-3, "Bluff and Slope Restoration Plan." For ease of discussion, bluff/slope restoration can be characterized as falling into the following four categories.

7.4.1 Natural Bluff – No Erosion Features

In instances where there is no evident erosion damage to the existing bluff/slope, invasive plants and the asphalt-like material shall be carefully removed and the area replanted. Storm flows shall be directed away from the slope/bluff.

7.4.2 Case 1 Restoration– Significant Erosion

Case 1 Restoration is required where significant areas of the bluff/slope have been impacted by uncontrolled erosion and/or oil operations. In cases where the impacted area is greater than 30 linear feet (LF) of bluff/slope edge, conventional grading techniques and equipment shall be utilized to restore the impacted area. Finished slope gradients shall be a maximum of 1.5:1 without terrace drains in order to match the existing character of the bluff. Fabric or equivalent methods may be used, based upon a soils engineer's recommendations and as approved by the City, for additional slope stability. Smaller equipment and/or hand labor shall be used, as necessary, at locations where the bluff/slope restoration adjoins stable natural bluff/ slope areas.

7.4.3 Case 2 Restoration – Moderate Erosion

In Case 2 Restoration Areas, the bluff/slope edge projection is apparent and the erosion damage has moved 20-50 feet towards the Lowland area. In these locations, sloughed areas shall be cleaned out, and the bluff/slope fully restored to match the existing neighboring condition. Repair techniques shall include small equipment operating from the bluff/slope top, use of fabric and soil

MASTER DEVELOPMENT PLAN

cement to allow for the steeper than 2:1 slopes, and redirection of storm runoff into the appropriate water quality feature.

7.4.4 Case 3 Restoration – Minor Erosion

Case 3 Restoration Areas are areas where minor erosion features have appeared. In these areas, runoff shall be redirected away from the area and hand labor shall be utilized, as necessary, to stabilize the top of bluff/slope prior to habitat restoration.

7.5 Structural Setbacks from Faults and Bluffs

To avoid future problems related to geotechnical conditions on the Project Site, habitable buildings shall be set back a minimum of 60 feet from the tops of bluff edges, as required in the NBR-PC. Habitable buildings shall not be constructed within identified fault setback zones. Fault setback distances meeting the mandates of the Alquist Priolo Earthquake Fault Zoning Act shall be confirmed, as appropriate, upon the completion of additional trenching investigations. There are no Alquist Priolo faults on the Project site and thus it does not fall under the Alquist Priolo Earthquake Fault Zoning Act.

7.6 Disposition of Remediated Soils

Soils impacted by oil production and similar related activities shall be remediated to comply with State and local laws. Hydrocarbon-laden soils shall be treated, tested, and placed or removed in accordance with the Project's Remedial Action Plan (RAP).

As part of oil facility consolidation activities, existing oil wells and facilities within development and habitat restoration areas shall be abandoned and remediated. Most remediated soil will be properly treated and placed in deep fills or outside the limits of residential, commercial, and resort building areas. Deep fills are defined as fills 10 feet or greater from the proposed finished surface. The primary location for placement of the treated soil will be in the deeper over-excavation areas located within the North Family Village and Urban Colony.

Some percentage of the soil/material from the oil remediation and oil well closure process may not be recyclable or suitable for use within the Project Site. Approximately 25,000 cubic yards of this material may be exported off-site to an appropriate landfill.

7.7 Limited/Selective Grading within Open Space Preserve

Limited/selective grading is allowed in the Open Space Preserve to create interpretive trails for public access, to prepare habitat restoration and mitigation areas, to implement bluff restoration, to provide for open space maintenance access, and to create water management areas. Earthwork volumes associated with this grading shall be minimal in order to minimize impacts to open space resources.

Exhibit 7-4, "Soil Disturbance Map," identifies the areas of soil disturbance within the Project Site. Limited/selective grading is allowed in the Open Space Preserve to allow for the following five types of improvements:

7.7.1 Public Interpretive Trails

Minor grading is allowed to ensure a safe public trail network within the Open Space Preserve. To the extent possible, trails shall be located on top of existing oil roads to minimize grading. Minor grading may be required in these areas to create a pedestrian-safe trail surface and provide localized drainage conveyances to minimize the need for trail maintenance.

7.7.2 Habitat Mitigation and Restoration Areas

In areas where habitat mitigation or restoration will occur, minor grading to repair localized erosion features or compact loose soil is allowed as part of the restoration effort. This work effort may be conducted utilizing hand tools and/or with small equipment.

7.7.3 Water Management Areas

Grading will be required to create the two water management areas within the Lowland: the Water Quality Basin in SPA 4a; and the Diffuser Basin/Habitat Area in SPA 4b. Grading for these areas may include cuts of up to 8 feet and fills of up to 6 feet.

7.7.4 Infrastructure and Utilities

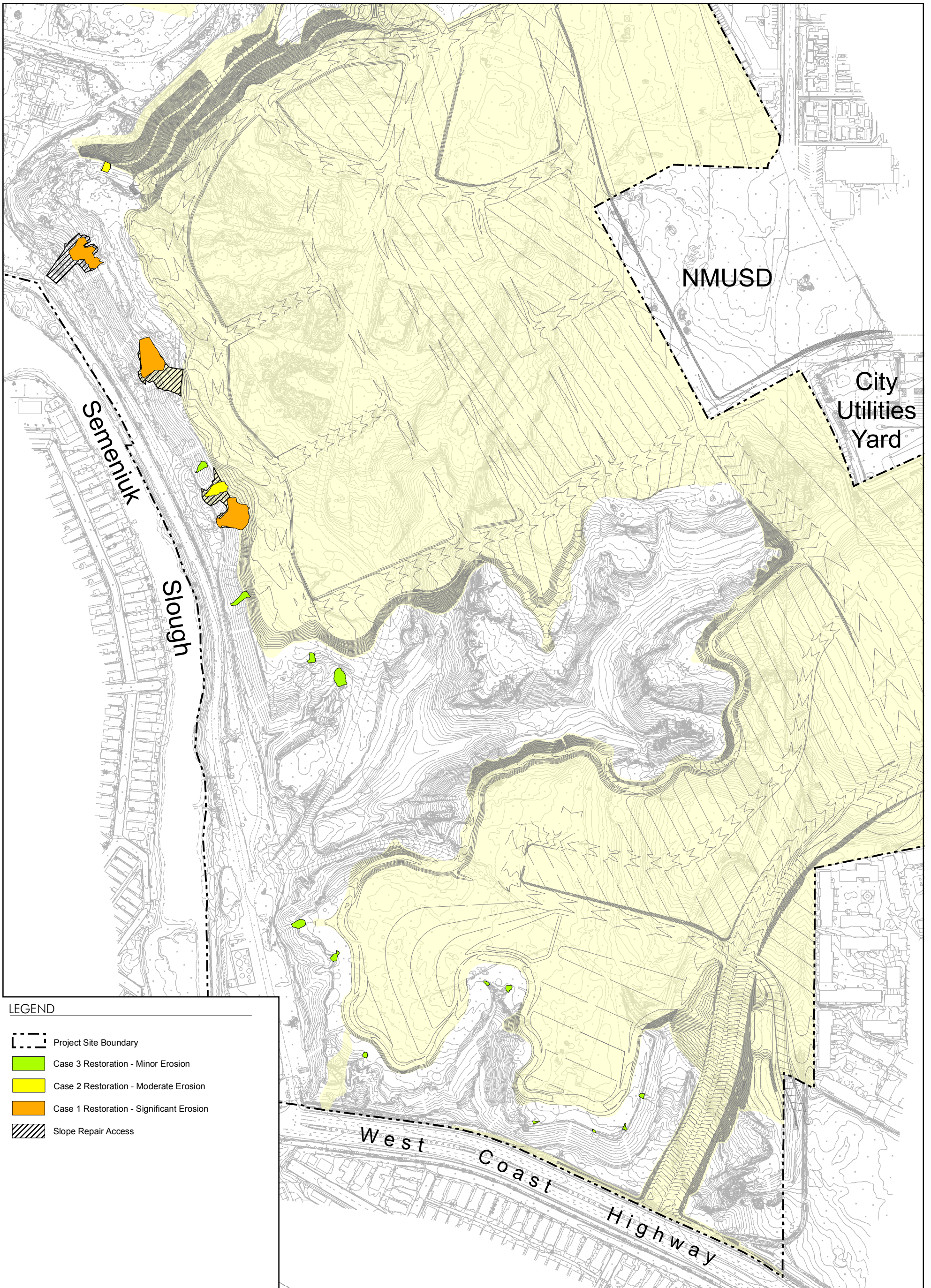
Exhibit 7-4 identifies the limited grading areas where infrastructure and utilities will be placed underground within the proposed Open Space Preserve. To the extent feasible this grading shall be coterminous with grading for public roadways and trails.

7.7.5 Oil Site Buffers






Limited and selective soil disturbance will be allowed to plant native landscape and/or install screen fencing as a visual buffer adjacent to the two Oil Operation Sites (SPA 5a and SPA 5b) where existing surface oil operations will be consolidated prior to the Project's land use development.







LEGEND

-  Project Site Boundary
-  Case 3 Restoration - Minor Erosion
-  Case 2 Restoration - Moderate Erosion
-  Case 1 Restoration - Significant Erosion
-  Slope Repair Access

