

4.5 GEOLOGY AND SOILS

4.5.1 Introduction

This section describes the geology and soils characteristics of the proposed Ontario Gateway Specific Plan area in the City of Ontario. The discussion of soils within this section is based on the *Report of Geotechnical Investigation Proposed Commercial Development Vicinity of Interstate 10 and Haven Avenue Ontario, California*, prepared by Kleinfelder on October 15, 2002. Information used to prepare this section also came from the City of Ontario General Plan. The geotechnical study is included as Appendix E in this EIR.

4.5.2 Environmental Setting

The Specific Plan area consists of approximately 41.29 acres in the City of Ontario. The area is generally bounded to the north by I-10 Freeway, to the west by Haven Avenue, to the east by light industrial uses and to the south by Union Pacific railroad (UPRR).

The project site is located in the Chino Valley portion of the upper Santa Ana River Drainage of the Perris Block, within the peninsular Ranges geomorphic province of California. Locally, this area lies near the transition zone between the transverse Ranges geomorphic province to the north and the Peninsular Ranges geomorphic province on the south. The Peninsular Ranges are a northwest-southeast oriented complex of mountain ranges and valleys formed by sub-unit blocks that are separated by similarly trending strike slip faults.

The project site has been regionally mapped to be underlain by surficial sediments including minor amounts of surficial fills (unmapped), wind blown sand, and younger (Holocene) lower alluvial fan deposits. These younger alluvial fan deposits include materials locally derived from the San Gabriel Mountains to the north via Deer and Etiwanda Creeks. The fan deposits consist of mixtures of unconsolidated sands, silty sands and gravelly silty sands with cobbles. The wind blown deposits consist of fine sands. The soils encountered during the field investigation also consisted of mixtures of these soils. Beneath the younger alluvial fan deposits are the older alluvial fan materials both of which are estimated to be at combined thickness of least 400 feet thick.

The Specific Plan area is in a seismically active area of Southern California. In California, faults are categorized by the California Geological Survey (CGS) as active, potentially active, or inactive. Active faults are those that show evidence of displacement within the last 11,000 years; potentially active faults are those that show evidence of displacement during the last 1.6 million years. Faults showing no evidence of displacement within the last 1.6 million years are considered inactive for most purposes.

As shown on Figure HA-1, Regional Faults of the Ontario General Plan, the City of Ontario is almost completely surrounded by known active, or potentially active earthquake faults. These faults are the San Jacinto, Chino, Cucamonga, San Andreas, Red Hill and Central Avenue faults. The closest known active faults are located less than ten miles from the City, but no known

active faults are known to cross the City boundary. The Cucamonga Fault Zone is located approximately 9.3 miles north of the project site.

As stated in the City's General Plan, the City of Ontario is situated on an alluvial fan composed of unconsolidated coarse to medium-grained soil. This loosely compacted, silty, sandy, alluvial soil has properties that would magnify the effects of ground shaking. Therefore, an earthquake could potentially cause considerable damage to structures, pipelines and roadways in Ontario. Faults identified by the State as being active or potentially active are not known to be present on the project site. The project site is not expected to experience liquefaction since it usually occurs where the groundwater table is within 50 feet of the surface; and the groundwater level in the project area is estimated to be at depths of 250 feet to 300 feet.

A hazard that is unique to the alluvial plain on which the City of Ontario is located is blowsand, or loose topsoil blown fast and far by the Santa Ana winds that come from the high desert beyond the San Gabriel Mountains. The City of Ontario is subject to high winds between September and April and at unexpected times throughout the year. Airborne loose topsoil, especially sandy material, impairs visibility and becomes a general nuisance to residents. As shown on Figure HA-3, Soil Erosion Control Area of the Ontario General Plan, the project site is within a designated "Soil Erosion Control Area."

Applicable Policies and Regulations

Federal

NPDES (General Construction Activity Stormwater Permit)

As explained in further detail in Section 4.7 (Hydrology and Water Quality) of this EIR, a Stormwater Pollution Prevention Plan (SWPPP) prepared in compliance with a National Pollutant Discharge Elimination System (NPDES) Permit application would be required. The SWPPP would detail the specific construction site; the existing and proposed construction erosion and sediment controls; the existing and proposed systems for monitoring runoff water quality; means of waste disposal; implementation of approved local plans; proposed program and methods to control post-construction sediment, erosion, and maintenance responsibilities; and construction and post-construction non-stormwater management controls. Dischargers are required to inspect construction sites before and after storms to identify stormwater discharge from construction activity, and to identify and implement controls where necessary.

State

Seismic Hazards Mapping Act

The CGS provides guidance with regard to seismic hazards under Seismic Hazards Mapping Act. Seismic hazard zones are identified and mapped by the CGS to assist local governments in land use planning. The intent of the Act is to protect the public from the effects of strong groundshaking, liquefaction, landslides, ground failure, or other hazards caused by earthquakes. In addition, CGS Special Publication 117, Guidelines for Evaluating and Mitigating Seismic

Hazards in California, provides guidance for the evaluation and mitigation of earthquake-related hazards for projects within designated zones of required investigations.

City of Ontario General Plan

The following are policies adopted by the City of Ontario to protect the safety of citizens and to assure the correct implementation of planning policies:

Goal 4.0: Reduce damage to life and property from dust, wind and blowsand.

Policy 4.1: Require new development to demonstrate permits from the Agricultural Commissioner's Office and comply with their provisions before issuing permits for new construction within the Soil Erosion Control Area.

Policy 4.2: Support County enforcement efforts by requiring city inspectors to monitor construction sites for adherence to dust control programs.

Policy 4.3: Incorporate mandatory dust control measures similar to those required by the County into the City Development Code:

- Pre-watering and 24 hour sprinkler irrigation on jobsites;
- Vegetative cover with temporary irrigation on idle lands after grading is complete;
- Watering with reclaimed water is encouraged.

4.5.3 Impacts and Mitigation Measures

Thresholds of Significance

Significant impacts related to geology and soils would result from implementation of the Specific Plan if the project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;
 - Strong seismic ground shaking;
 - Seismic-related ground failure, including liquefaction;
 - Landslides
- Result in substantial soil erosion or the loss of topsoil;

- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in the Uniform Building Code (1994), creating substantial risks to life or property;
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Impacts Determined to Have no Impact

Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:

- Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**
- Strong seismic ground shaking?**
- Seismic-related ground failure, including liquefaction?**
- Landslides?**

Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

According to the City of Ontario General Plan Hazards Element, no active fault traces are known to cross Ontario's City limits. The nearest fault delineated on the Alquist-Priolo Earthquake Fault Zoning Map is the Red Hill Fault, located approximately six miles northwest of the project site. Future development proposed within the Specific Plan will comply with the Uniform Building Code seismic design standards to reduce geologic hazard susceptibility. No impacts are anticipated.

The project site lies in a region that is seismically active. In the event of an earthquake, some seismic ground shaking can be experienced on the project site. However, this is typical of all development in the Southern California region. Future development proposed within the Specific Plan will be in compliance with the Uniform Building Code (UBC), the Ontario Municipal Code, the City of Ontario General Plan and all other ordinances adopted by the City related to construction and safety. Less than significant impacts are anticipated.

Based on the Environmental Site Assessment Phase I report, prepared by Tri/Con Engineering Inc., dated July 15, 2005, the project site is located within the Chino Hydrologic Subunit of the Upper Santa Ana Hydrologic Unit. Liquefaction normally occurs where the groundwater depth is

at 50 feet or less. Groundwater at the project site reportedly occurs at depths of 250 to 300 feet. Therefore, the potential for liquefaction does not exist. Moreover, the site has been developed with structures since 1968 that have suffered no known effects from liquefaction.

According to the City of Ontario General Plan, the potential for landslides is low for the entire City. Moreover, the project site is characteristically flat and surrounded by relatively flat topography and therefore, is not susceptible to landslides. No impacts are anticipated.

Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

The majority of Ontario, including the project site, is located on alluvial soil deposits. These types of soils are not considered to be expansive. Therefore, no impacts are anticipated.

Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

A sanitary sewer system is currently serving the facilities that are on the project site. The proposed development would be served by the City's sewer system and no impacts are anticipated.

Impacts Determined to be Potentially Significant

Result in substantial soil erosion or the loss of topsoil

Impact GS-1

The City of Ontario is subject to high winds between September and April. The project site lies within a designated "Soil Erosion Control Area." This could be a potentially significant impact.

Existing regulation and mitigation measures to minimize the loss of soil via water-induced erosion is discussed in Section 4.7, Hydrology and Water Quality of this document. The loss of soil from wind-induced erosion is discussed herein. Earth-disturbing activities associated with construction projects in the Specific Plan area have the potential to increase erosion if proper sedimentation and erosion control methods are not in place at the construction project sites. Impact of windblown sand originating from any construction area within the project site could be a potentially significant nuisance and/or hazard to surrounding land uses

According to the City of Ontario General Plan Hazards Element, grading, plowing or other soil disturbance within the Soil Erosion Control Area is regulated by County ordinance and requires a permit from the San Bernardino County Department of Agriculture. Non-agricultural projects larger than 15 acres must submit a comprehensive dust control plan before issuance of building permits. Under the County-sponsored strengthening of its enforcement program, the Department of Agriculture will authorize Ontario grading and building inspectors to monitor compliance within the City.

Because one of the major effects of loss of topsoil is sedimentation in receiving waters, erosion control standards are set by the Regional Water Quality Control Board (RWQCB) through administration of the National Pollution Discharge Elimination System (NPDES) permit process for storm drainage and construction site discharge. The NPDES permit requires implementation of nonpoint source control of runoff through the application of a number of Best Management Practices (BMPs). These BMPs are meant to reduce the amount of constituents, including eroded sediment, that enter streams and other water bodies. A Storm Water Pollution Prevention Plan (SWPPP) for individual projects greater than 1 acre, as required by the RWQCB, is required to describe the stormwater BMPs (structural and operational measures) that would control the quality (and quantity) of stormwater runoff.

Mitigation Measure GS-1

Prior to issuance of grading permits, the applicant shall submit a detailed Dust Control Plan in compliance with the City of Ontario Building Department and obtain all required permits from necessary agencies.

Level of Significance After Mitigation

Implementation of Mitigation Measure GS-1 would reduce impacts to soil erosion to a less than significant level.