4.6 GEOLOGY AND SOILS

INTRODUCTION

This section focuses on various geological characteristics of the Wheatland General Plan Update study area. This chapter's discussion of geology and soils evaluates the extent to which implementation of the proposed project could be affected by seismic hazards such as ground shaking and liquefaction soil characteristics. The analysis also addresses potential effects of the proposed project on erosion. Information for this analysis was drawn from the *General Plan Update Background Report*[1] *(2004), Yuba County General Plan Environmental Setting and Background Report*[2].

ENVIRONMENTAL SETTING

The City of Wheatland is located within the northeastern portion of the Sacramento Valley, which is within the Great Valley geomorphic province. The Great Valley, an elongated lowland, extends 500 miles north and south, separating the Sierra Nevada from the Coast Ranges. This elongated asymmetric structural basin or trough was formed by the westward tilting of the Sierra Nevada block against the eastern flank of the Coast Ranges. The basement rock complex of the Sierra extends westward, beneath the valley, on a gentle slope reaching points near the Coast Ranges. Elevation in the valley is generally several hundred feet above sea level, but ranges from a low point below sea level to approximately 1,000 feet above sea level.

The Great Valley is filled with thick sedimentary rock sequences or strata, which began deposition approximately 200 million years ago. Large alluvial fans have developed on each side of the Valley. The larger and more gently sloping fans are located on the east side of the Valley and overlie metamorphic and igneous basement rocks. This basement rock is exposed in the Sierra Nevada Foothills and consists of metasediments, volcanics, and granites. The sediments that form the Valley floor were largely derived by erosion of the Sierra Nevada. The smaller and steeper slopes on the west side of the Valley overlie sedimentary rocks more closely related to the Coast Ranges.

Seismic Features

Regional Seismicity

A fault is defined as a fracture or zone of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side. A fault zone is a zone of related faults that commonly are braided and subparallel, but may be branching or divergent. Movement within a fault causes an earthquake. When movement occurs along a fault, the energy generated is released as waves which cause groundshaking.

Groundshaking intensity varies with the magnitude of the earthquake, the distance from the epicenter, and the type of rock or sediment the seismic waves move through.

The Alquist-Priolo Special Studies Zone Act of December 1972 (AP Zone Act) regulates development near active faults so as to mitigate the hazard of surface fault rupture. The AP Zone Act requires that the State Geologist (Chief of the California Department of Mines and Geology [CDMG]) delineates "special study zones" along known active faults in California. Cities and counties affected by these zones must regulate certain development projects within these zones. The AP Zone Act prohibits the development of structures for human occupancy across the traces of active faults. According to the AP Zone Act, "active faults" have experienced surface displacement during the last 11,000 years. "Potentially" active faults are those that show evidence of surface displacement during the last 1.6 million years. A fault may be presumed to be inactive based on satisfactory geologic evidence; however, the evidence necessary to prove inactivity sometimes is difficult to obtain and locally may not exist.

The Great Valley is generally considered less seismically active than other areas of California. The majority of significant, historic faulting (and ground shaking) within the City of Wheatland has been generated along distant faults, within a one-hundred-mile radius of the project site. Minor seismicity has been noted along the Foothills Fault System east of the site that may align with that fault system to some degree. The nearest, significant earthquake was the Oroville earthquake of 1975. The epicenter for this earthquake (Richter magnitude of 5.7) was located approximately 30 miles north of the site and is generally associated with the Cleveland Hill fault, a portion of the Foothills Fault System.

Local Seismicity

The proposed project is not located within an Alquist-Priolo Special Study Zone (AP Zone) nor is any active fault near the City. The closest AP Zone is the Bangor Quadrangle, including the AP Zone for the Cleveland Hill Fault to which the 1975 Oroville earthquake is attributed. This zone is located 27 miles north of the City. The next nearest active fault is the Dunnigan Hills fault, located 35 miles southwest of the City.

The closest branches of the seismically active San Andreas Fault system are the Green Valley and Rodgers Creek faults located approximately 60 to 70 miles southwest of the City. The San Andreas Fault is located approximately 100 miles to the west.

Faults typically considered inactive in the vicinity of the project area include the Willow fault zone, which traverses Yuba County from north to south and is located approximately 12 miles to the west of Wheatland, and the Spenceville fault in the Foothill Fault System (located in eastern Yuba County) approximately 10 miles east of Wheatland.

Seismic and Geological Hazards

Groundshaking

Groundshaking is motion that occurs as a result of energy released during an earthquake. Much of southwest Yuba County (referred to as the Valley portion of the County), which includes the City of Wheatland, is located on alluvium. In areas characterized by loose, water-saturated materials, such as alluvium, energy waves are amplified, extending the intensity and duration of groundshaking beyond that which occurs on solid rock. Though documented faults do not exist within the City, the region has experienced instances of groundshaking originating from faults located to the west and east.

The City of Wheatland is located in an area rated as a low-intensity earthquake zone (Seismic Zone II). A low-intensity zone is defined by the United States Geological Survey (USGS) as an area that is likely to experience an earthquake measuring a maximum of 5.0-5.9 in magnitude on the Richter scale, and a maximum intensity of VII or VIII on the Modified Mercalli scale. The Richter scale measures the amplitude of seismic waves recorded by a seismograph. The Modified Mercalli scale measures the intensity of an earthquake by the way it is felt and responded to by humans, and by the amount of damage it does to buildings and structures. A VII reading on the Modified Mercalli scale represents general fright among the public, pictures thrown off walls, and books thrown off shelves. An VIII on the Modified Mercalli scale represents difficultly standing, waves on ponds, and slides or cave-ins on sand and gravel banks. The Modified Mercalli scale is shown in Table 4.6-1.

Liquefaction

Another response to severe groundshaking that can occur in loose soils is liquefaction. This transformation from solid state to liquid state ("quicksand"), as a response to seismically induced groundshaking, can cause structures supported on the soils to tilt or settle (sometimes very violently and rapidly) as the supporting capabilities of the soils diminish. Water-saturated, clay-free sediments in the most recent Holocene unit are generally expected to have a high susceptibility to liquefaction. Notably, soils having a high clay content may also be considered to have moderate-to-high liquefaction potential. As identified in the *Yuba County General Plan Environmental Setting and Background Report*, the portion of the County that includes the Wheatland area is potentially susceptible to liquefaction because the area is underlain by unconsolidated sands and finer grained materials.

Other Geologic Hazards

Primary hazards associated with seismicity include surface rupturing and groundshaking. The major secondary effect of groundshaking is landslides; other potential effects include liquefaction, settlement; and lateral spreading. The study area is mostly level and would not be subject to landslides.

Subsidence is downward settling of surface materials caused by natural or artificial removal of underlying support. Land subsidence would occur from one or more causes, including withdrawal of fluids (oil, gas, or water) or the application of water to moisture-deficient unconsolidated deposits. The potential for collapsible soils exists in areas underlain by silt and fine sand, particularly where these have been deposited solely, or in part, by wind. The valley portion of Yuba County, which includes the Wheatland area, has a low-to-moderate potential for ground surface subsidence due to the withdrawal and extraction of groundwater in the Wheatland area.

Table 4.6-1
Modified Mercalli Scale of Earthquake Intensity

Scale	Effects
I.	Earthquake shaking not felt.
II.	Shaking felt by those at rest.
III.	Felt by most people indoors; some can estimate the duration of shaking.
IV.	Felt by most people indoors. Having objects swing, windows and doors rattle, wooden walls and frames creak.
V.	Felt by everyone indoors; many estimate duration of shaking. Standing autos rock. Crockery clashes, dishes rattle, and glasses clink. Doors close, open, or swing.
VI.	Felt by everyone indoors and most people outdoors. Many now estimate not only the duration of the shaking, but also its direction and have no doubt as to its cause. Sleepers awaken. Liquids disturbed, some spilled. Small unstable objects displaced. Weak plaster and weak materials crack.
VII.	Many are frightened and run outdoors. People walk unsteadily. Pictures thrown off walls, books off shelves. Dishes or glasses broken. Weak chimneys break at roofline. Plaster, loose bricks, unbraced parapets fall. Concrete irrigation ditches damaged.
VIII.	Difficult to stand. Shaking noticed by auto drivers, waves on ponds. Small slides and cave-ins along sand or gravel banks. Stucco and some masonry walls fall. Chimneys, factory stacks, towers, elevated tanks twist or fall.
IX.	General fright. People thrown to the ground. Steering of autos affected. Branches broken from trees. General damage to foundations and frame structures. Reservoirs seriously damaged. Underground pipes broken.
X.	General panic. Conspicuous cracks in ground. Most masonry and frame structures destroyed along their foundations. Some well-built wooden structures and bridges are destroyed. Serious damage to dams, dikes, and embankments. Railroads bent slightly.
XI.	General panic. Large landslides. Water thrown out of banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flatland. General destruction of buildings. Underground pipelines completely out of service. Railroads bent greatly.
XII.	General panic. Damage nearly total, the ultimate catastrophe. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.

Data Source: *California Division of Mines and Geology, 1973.*

Soil Conditions

The U.S. Soil Conservation Service (SCS) has recently identified and mapped soils in Yuba County; however, detailed soil information was not available at the time of this analysis. The following information regarding site soils for the Project site was summarized from the *Yuba County General Plan Environmental Setting and Background Report.* Each identified soil complex has characteristics that affect soil behavior. Soil characteristics may or may not make the soils suitable for accommodating uses such as shallow excavations, levees, and berms, and local roads and streets. Soil limitations can

include slow or very slow permeability, limited ability to support a load, high shrink-swell potential, moderate depth to hardpan, low depth to rock, and frequent flooding. Each soil has characteristics that affect soil behavior. Characteristics discussed include:

- *Shrink-swell potential:* the potential for volume change in a soil with a loss or gain in moisture. If the shrink-swell potential is rated moderate to high, damage to buildings, roads, and other structures can occur.

- *Erosion*: the susceptibility of soil to water or wind transport.

Soil complexes identified for the project site include:

- *Columbia-Hollilipah-Shanghai association, 0-2% slopes:* a very deep, poorly and somewhat excessively drained soil found on stream terraces. Characteristics include a slight erosion and a low-to-moderate shrink-swell potential.

- *Conejo-Kilaga association, 0-2% slopes:* very deep, well drained alluvial soils found on stream terraces. Characteristics include a slight erosion and moderate to high shrink-swell potential.

- *San Joaquin soils, 0-2%:* Moderately deep, well drained alluvial soils that have a dense clay subsoil on low fan terraces. Characteristics include a slight erosion and moderate to high shrink-swell potential.

- *Redding-Corning-Pardee association, 0-2%:* Moderately deep, well drained alluvial soils with a dense clay subsoil on low alluvial terraces. Characteristics include a slight erosion and moderate to high shrink-swell potential.

REGULATORY CONTEXT

National pollutant Discharge Elimination System (NPDES)

As required under the federal Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources, such as construction sites, that discharge pollutants into waters of the United States. In California, NPDES permit issues are overseen by the nine individual Regional Water Quality Control Boards. For further discussion of NPDES, please refer to Section 4.8 (Hydrology, Water Quality, and Drainage) of this EIR.

California Building Standards Code / Uniform Building Code

Site development and design are regulated in the State of California by the California Building Standards Code (CBC), based on the Uniform Building Code (UBC) and suited to the unique sensitivity of the state's geology and fault lines. CBC and UBC regulations must be adhered to with regard to expansive soils, drainage, erosion, earthquake resistance, and required safety measures during on-site development.

City of Wheatland General Plan Update

The project involves establishment of goals and policies aimed at minimizing risks associated with geological hazards in Wheatland. These applicable goals and policies have been included in the following impact discussions, where appropriate, in order to mitigate potential impacts.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

The proposed project could have a significant effect on the environment if it would:

- expose people or structures to substantial adverse effects as a result of strong ground-shaking, seismic-related ground failure, liquefaction, lateral spreading, landslides, or lurch cracking;
- result in substantial erosion or unstable slope soil conditions through alteration of topographic features, dewatering, or changes in drainage patterns;
- expose people, structures, or infrastructure components to increased risk of injury or damage due to the presence of expansive soils, soil settlement/compaction, or other geotechnical constraints;
- 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 lateral spreading, subsidence, liquefaction or collapse;

Method of Analysis

Determinations of geological impacts were based on information from the *Yuba County General Plan: Environmental Setting and Background*, and the City of Wheatland *General Plan Background Report*.

Project-Specific Impacts and Mitigation Measures

4.6-1 Development associated with the proposed General Plan Update would expose people or structures to potential seismic events and related ground shaking.

The Wheatland General Plan Update Background Report (page 7-2) states that active faults have not been identified in the Wheatland region and that historical records verify the lack of earth movement in the area. In the period from 1900-1976, five events with a Richter magnitude of 5 or greater occurred in the Wheatland area, but structural damage was not observed in any event. In addition, surface faulting and rupture exposure in the area appears remote by virtue of the absence of identified faults in the area, and depth of alluvial deposits above bedrock-like material. Groundshaking, both in terms of recurrence and severity,

appears to be similarly low due to the distance from the relatively few moderate or greater earthquakes experienced within the past 75 years. The majority of significant, historic faulting (and groundshaking) within the City of Wheatland has been generated along distant faults, within a one hundred-mile radius of the project site.

The City of Wheatland is located within the northeastern portion of the Sacramento Valley, which is within the Great Valley geomorphic province. Wheatland is not located within an Alquist-Priolo Special Study Zone (AP Zone) nor is any active fault near the study area. The closest AP Zone is the Bangor Quadrangle, including the AP Zone for the Cleveland Hill Fault to which the 1975 Oroville earthquake is attributed. This zone is located 27 miles north of the study area. The City of Wheatland is located in an area rated as a low-intensity earthquake zone (Seismic Zone II). A low-intensity zone is defined by the United States Geological Survey (USGS) as an area that is likely to experience an earthquake measuring a maximum of 5.0-5.9 in magnitude on the Richter scale, and a maximum intensity of VII or VIII on the Modified Mercalli scale.

The City of Wheatland requires that all construction comply with the CBC, which would help ensure that seismically induced groundshaking would not have an adverse effect on future development. However, the City of Wheatland has identified other measures related to groundshaking.

The General Plan Update includes the following goals and policies applicable to geology issues:

Goal 9.A To protect the community from injury and damage resulting from natural catastrophes and hazardous conditions.

Policy 9.A.1. The City shall prepare and regularly update emergency services plans.

Policy 9.A.4. The City shall consider safety hazards in formulating capital improvements.

Policy 9.A.5. The City shall incorporate safety provisions in City ordinances whenever applicable.

Policy 9.A.6. The City shall permit development only in areas where the potential danger to the health and safety of people can be mitigated to an acceptable level.

Policy 9.A.7. The City shall ensure that during natural catastrophes and emergencies the City can continue to provide essential emergency public services.

Policy 9.A.8. The City shall update building, fire, and other codes to address earthquakes, fire, and other hazards.

Policy 9.A.9. The City shall coordinate disaster preparedness planning with other public agencies and organizations

Goal 9.B To minimize the loss of life, injury, and property damage due to seismic and geological hazards.

Policy 9.B.1. The City shall require the preparation of a soils engineering and geologic-seismic analysis prior to permitting development in areas prone to geological or seismic hazards (i.e., groundshaking, liquefaction, expansive soils).

Policy 9.B.2. The City shall require that new structures intended for human occupancy be designed and constructed to minimize risk to the safety of occupants due to groundshaking.

Policy 9.B.3. The City shall require that new structures intended for human occupancy be designed and constructed to minimize risk to the safety of occupants due to ground-shaking.

Policy 9.B.4. The City shall require that new structures and alterations to existing structures comply with the current edition of the Uniform Building Code.

Policy 9.B.5. The City shall develop evacuation routes and a disaster plan in the remote event that an earthquake does occur, especially in the Camp Far West Dam inundation area.

Policy 9.B.6. The City shall require that new structures intended for human occupancy, public facilities (i.e., treatment plants and pumping stations, major communication lines, evacuation routes, etc.), and emergency/disaster facilities (i.e., police and fire stations, etc.) are designed and constructed to minimize risk to the safety of people due to ground shaking.

Policy 9.B.7. The City shall require all proposed developments, reconstruction, utilities, or public facilities situated within areas subject to geologic-seismic hazards as identified in the soils engineering and geologic-seismic analysis to be sited, designed, and constructed to mitigate the risk associated with the hazard (e.g., expansive, liquefaction, etc.).

Policy 9.B.8. The City shall require that alterations to existing buildings and all new buildings be built according to the seismic requirements of the Uniform Building Code.

Policy 9.B.9. The City shall support and encourage seismic upgrades to older buildings that may be structurally deficient.

Policy 9.B.10. The City shall inventory unreinforced masonry structures, including emergency facilities and other critical facilities constructed prior to 1948, used for human occupancy (excluding single family residential structures), and evaluate the facilities for seismic safety. If found below acceptable standards, the City shall implement a program to mitigate potential hazards.

Implementation of the goals and policies above would reduce the impact to a ***less-than-significant*** level.

Mitigation Measure(s)
None required.

4.6-2 Development associated with the proposed General Plan Update could place buildings on expansive soils, thus potentially causing structural damage.

All soils have properties and characteristics such as erosion potential, shrink-swell behavior, and permeability that determine their suitability and constraints for building sites, grading, infrastructure, and drainage systems. As such, soils require special engineering attention to design to ensure the safety of any buildings or improvements.

As mentioned above, four soil complexes are identified for the Wheatland area. Three out of four soil complexes are considered to have a moderate to high shrink-swell potential. The remaining complex has a low-to-moderate shrink-swell potential. If a structure is constructed on an area that is underlain with expansive soils, the structure may suffer damage from the expansive activities.

More specifically, if buildings are placed on expansive soils, foundations may rise each wet season and fall each dry season. Movements may vary under different pads of the building or street, cracking foundations and street surfaces, distorting various structural portions of a building, and wrapping doors and windows so that they do not function properly.

The adverse effects of expansive soils may be avoided through proper drainage and foundation design. The California Building Code (CBC) requires that soil testing be done on all graded building sites. In accordance with the CBC, specifications necessary to design buildings and roads to address potential soil

limitations need to be included in construction plans submitted to the City Engineer for review and approval.

The General Plan Update includes the following goals and policies applicable to geology issues:

Goal 9.A To protect the community from injury and damage resulting from natural catastrophes and hazardous conditions.

Policy 9.A.1. The City shall prepare and regularly update emergency services plans.

Policy 9.A.4. The City shall consider safety hazards in formulating capital improvements.

Policy 9.A.5. The City shall incorporate safety provisions in City ordinances whenever applicable.

Policy 9.A.6. The City shall permit development only in areas where the potential danger to the health and safety of people can be mitigated to an acceptable level.

Policy 9.A.7. The City shall ensure that during natural catastrophes and emergencies the City can continue to provide essential emergency public services.

Policy 9.A.8. The City shall update building, fire, and other codes to address earthquakes, fire, and other hazards.

Goal 9.B To minimize the loss of life, injury, and property damage due to seismic and geological hazards.

Policy 9.B.1. The City shall require the preparation of a soils engineering and geologic-seismic analysis prior to permitting development in areas prone to geological or seismic hazards (i.e., groundshaking, liquefaction, expansive soils).

Policy 9.B.2. The City shall require submission of a preliminary soils report, prepared by a registered civil (geotechnical) engineer and based upon adequate test borings, for every major subdivision.

Policy 9.B.4. The City shall require that new structures and alterations to existing structures comply with the current edition of the California Building Code.

Policy 9.B.7. The City shall require all proposed developments, reconstruction, utilities, or public facilities situated within areas subject to geologic-seismic hazards as identified in the soils engineering and geologic-seismic analysis to be sited, designed, and constructed to mitigate the risk associated with the hazard (e.g., expansive, liquefaction, etc.).

Implementation of the goals and policies above would reduce the impact to a ***less-than-significant*** level.

Mitigation Measure(s)
None required.

4.6-3 Liquefaction could occur in the study area, subjecting structures or people to harm and/or damage.

Liquefaction is a phenomenon whereby loose, saturated, granular soil deposits lose a significant portion of their shear strength due to excess pressure buildup such as that caused by an earthquake. Among other effects, liquefaction can result in densification of such deposits (and hence settlements of overlying deposits) after an earthquake as excess pore water pressure is dissipated. The primary factors affecting liquefaction potential of a soil deposit are: (1) intensity of anticipated seismic ground motions; (2) soil type and consistency; and (3) depth to groundwater.

Areas found throughout the City of Wheatland may be more susceptible to liquefaction during seismic events if perched ground water conditions are present. The degree of liquefaction shall in part depend on groundwater conditions at specific sites.

Additionally, the Wheatland General Plan Background Report states that a portion of the County, which includes the Wheatland area, is potentially susceptible to liquefaction because it is underlain by unconsolidated sands and finer grained materials. Water-saturated, clay-free sediments in the most recent Holocene unit are generally expected to have a high susceptibility to liquefaction.

The General Plan Update includes the following goals and policies applicable to geology issues:

Goal 9.A To protect the community from injury and damage resulting from natural catastrophes and hazardous conditions.

Policy 9.A.4. The City shall consider safety hazards in formulating capital improvements.

Policy 9.A.5. The City shall incorporate safety provisions in City ordinances whenever applicable.

Policy 9.A.6. The City shall permit development only in areas where the potential danger to the health and safety of people can be mitigated to an acceptable level.

Goal 9.B To minimize the loss of life, injury, and property damage due to seismic and geological hazards.

Policy 9.B.3. The City shall require that new structures intended for human occupancy be designed and constructed to minimize risk to the safety of occupants due to ground-shaking.

Policy 9.B.4. The City shall require that new structures and alterations to existing structures comply with the current edition of the California Building Code.

Policy 9.B.6. The City shall require that new structures intended for human occupancy, public facilities (i.e., treatment plants and pumping stations, major communication lines, evacuation routes, etc.), and emergency/disaster facilities (i.e., police and fire stations, etc.) are designed and constructed to minimize risk to the safety of people due to ground shaking.

Policy 9.B.7. The City shall require all proposed developments, reconstruction, utilities, or public facilities situated within areas subject to geologic-seismic hazards as identified in the soils engineering and geologic-seismic analysis to be sited, designed, and constructed to mitigate the risk associated with the hazard (e.g., expansive, liquefaction, etc.).

Policy 9.B.8. The City shall require that alterations to existing buildings and all new buildings be built according to the seismic requirements of the Uniform Building Code.

Implementation of the goals and policies above would reduce the impact to a ***less-than-significant*** level.

<u>Mitigation Measure(s)</u>
None required.

4.6-4 Development associated with the proposed General Plan Update could result in soil erosion.

Adoption of the proposed General Plan Update would allow for increased development within the Wheatland study area. Surface grading and earth-moving activities associated with construction projects would create temporary exposed earth surfaces. Once the protective vegetative cover is removed and the soil is broken into easily transported particles, exposed earth surfaces are susceptible to wind and water erosion. In addition, artificially steepened slopes created during grading are prone to erosion, as soils tend to settle into a natural angle of repose.

Though erosion potential of the soils in the Wheatland study area are not a significant problem due to the predominant flat topography and the cohesive nature of the soils, construction activities would create a potential for soil erosion. During future development, topsoil would be moved and graded, leading to disturbed soils that do not have as much connectivity to the ground as undisturbed soils. These disturbed soils are likely to suffer from erosion from a variety of sources, such as wind and rainfall.

The General Plan Update includes the following goals and policies applicable to geology issues:

Goal 5.E To collect and dispose of stormwater in a manner that protects the city's residents and property from the hazards of flooding, manages stormwater in a manner that is safe and environmentally sensitive, and enhances the environment.

Policy 5.E.4. The City shall prohibit grading activities during the rainy season, unless adequately mitigated, to avoid sedimentation of storm drainage facilities.

Implementation of the goals and policies above would minimize impacts related to erosion; however not to a *less-than-significant* level. The resultant impact would therefore remain ***potentially significant***.

<u>Mitigation Measure(s)</u>

Implementation of the following mitigation measure would reduce the potential impacts to a *less-than-significant* level.

4.6-4 For future development projects, applicants shall prepare, submit to the City Engineer for approval, and implement an erosion control plan prior to grading permit issuance. The erosion control plan shall utilize standard construction practices to limit the erosion effects during construction. Measures could include, but are not limited to the following:

- *Hydro-seeding;*
- *Placement of erosion control measures within drainageways and ahead of drop inlets;*
- *The temporary lining (during construction activities) of drop inlets with "filter fabric" (a specific type of geotextile fabric);*
- *The placement of straw wattles along slope contours;*
- *Directing subcontractors to a single designation "wash-out" location (as opposed to allowing them to wash-out in any location they desire);*
- *The use of siltation fences; and*
- *The use of sediment basins and dust palliatives.*

Endnotes

[1] City of Wheatland, Wheatland General Plan Update Background Report, July 2004.
[2] Yuba County General Plan, Volume 1: Environmental Setting and Background, Section 2.4. May 1994