

**COMSTOCK HOMES DEVELOPMENT AND
ELLWOOD MESA OPEN SPACE PLAN FEIR**

4.5 HAZARDS AND HAZARDOUS MATERIALS

Section 4.5

*Hazards and
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This section focuses on potential hazards including hazardous materials that may be present in the proposed residential and Open Space Plan areas under the jurisdiction of the City of Goleta. The potential hazards are described by location and type, potential project-related impacts are assessed, and mitigation measures are proposed to reduce impacts.

The baseline information presented in this section is based primarily on a Phase I Environmental Site Assessment (ESA) of the Ellwood Devereux Joint Proposal Area prepared in December 2003 (URS, 2003b), previous investigations and reports covering the project region, interviews with agency personnel, and a review of relevant regulatory agency records.

4.5.1 Existing Conditions

4.5.1.1 Overview

The portion of the Joint Proposal Area under the City of Goleta's jurisdiction, including the proposed Comstock Homes Development, the Coronado Butterfly Preserve, the Phelps Ditch Trail, and the proposed Ellwood Mesa Open Space Plan area, is located in an area of past and present oil and gas development. The Ellwood oil field was once one of the most productive oil fields in the area. The discovery well for the area, test well Luton-Bell #1, was drilled in 1928 and produced clean, high-grade oil. Oil drilling activities in the area subsequently flourished, especially to the west of the City of Goleta's jurisdiction. In order to develop a larger portion of the field, drilling expanded to tideland areas through the construction of piers and a coastal access road. According to the California Division of Oil, Gas and Geothermal Resources (DOGGR) approximately 50 wells were drilled in the Ellwood field. The peak productive life of the field was reportedly between 1928 and 1931. Oil and gas produced from the wells was stored in aboveground tanks until ready to be processed.

Petroleum hydrocarbon and petrochemical contaminants are likely to be associated with past oil drilling activities. Potential impacts to soil and groundwater could have resulted from historic oil wells, tanks, flowlines or sumps, and other oil field-related equipment. Sumps were typically excavated dirt ditches or depressions and were used from the 1920s through the 1940s. Sumps are associated with the oil well for the purpose of holding drilling fluid, cuttings, and oil generated during the initial drilling of the well. Records of exact locations of sumps were not maintained as a practice. In addition, the cleanup practice during this time frame was usually to cover the sump over with topsoil.

Abandonment of some of the onshore wells in the project region may have occurred as early as the 1930s. The California DOGGR has specific requirements for abandonment or re-abandonment of historic oil wells. These oil wells may or may not have been abandoned in accordance with the standards of the time, which were not as strict as current standards.

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Section 4.5 Areas with known historic hazardous materials contamination are shown on Figure 4.5-1.

Hazards and Hazardous Materials

4.5.1.1.1 Regulatory Definitions. Definitions of hazardous materials and hazardous waste follow:

- **Hazardous Material:** Any material that because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering regulatory agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. A number of properties may cause a substance to be considered hazardous, including toxicity, ignitibility, corrosivity, or reactivity.
- **Hazardous Waste:** A waste or combination of waste which because of its quantity, concentration, or physical, chemical, or infection characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitation-reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of or otherwise managed (Title 22, California Code of Regulations, Section 66084). The term hazardous waste includes extremely hazardous waste and acutely hazardous waste.

4.5.1.1.2 Subsurface Impacts to Soil and Groundwater. Federal and state site remediation regulations are enforced by the Central Coast Regional Water Quality Control Board (RWQCB) and the Santa Barbara County Fire Department's Fire Prevention Division, Site Mitigation Unit (FPD). The FPD is the lead agency for the area and has instituted a Site Mitigation Program responsible for the supervision of cleanup at sites located throughout the County. The County will grant closure of an impacted site when confirmatory samples of soil and groundwater taken reveal that levels of contaminants are below the standards set by FPD and the RWQCB.

4.5.1.2 Venoco's Quantitative Risk Assessment of Platform Holly and Ellwood Facilities

Venoco operates Platform Holly, the Ellwood Onshore Facility, and the Ellwood Marine Terminal to produce, process, and treat oil and gas. Platform Holly is located offshore. The Ellwood Onshore Facility is located west of the Sandpiper Golf Course, approximately 600 feet from the Pacific Ocean. Oil and gas produced from Platform Holly's 30 wells are separated and sent through separate oil and gas pipelines to the Ellwood Facility. The Ellwood Marine Terminal is located on the University's South Parcel, approximately 800 feet east of the Ellwood Mesa property (Figure 4.5-1). A crude oil pipeline connects Ellwood Onshore Facility to Ellwood Marine Terminal (Refer to Section 4.5.1.6.2).

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Figure 4.5-1

Areas with Potential Impacts from Hazardous Materials

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A Qualitative Risk Assessment was prepared (Arthur D. Little, Inc., 2000) to assess the acute risk of serious injuries or fatalities to the public due to accidental releases from the operation of Platform Holly and the Ellwood Facility, and to develop mitigation measures to reduce such risks. Only gas, gas liquids, and dihydrogen sulfide-rich streams were assessed. Risks to offsite receptors including residential areas, roads, and public areas were assessed. The Qualitative Risk Assessment used hazards and operability studies to identify potential hazards. The results were used to develop various release scenarios for Platform Holly and the Ellwood Facility. Fault and event trees were used to evaluate the likelihood of these hazards occurring. Consequence modeling was used to evaluate the threat to the public in the areas surrounding the Ellwood Facility and Platform Holly. The data from these three steps were combined to generate risk profiles and risk contours for Platform Holly and the Ellwood Facility.

The results of the Qualitative Risk Assessment concluded that the main risk to the population from the Ellwood Facility is due to the separation and storage of liquefied petroleum gas and natural gas liquids. These gas liquids have the potential to produce large flame jets or boiling liquid expanding vapor explosions that, if released, can affect a large area. The toxic risk was considered unacceptable based upon the County's Environmental Thresholds for public safety. A number of risk reducing measures were developed to reduce the overall risk from the Ellwood Facility. With the implementation of these measures, the public risk from the Ellwood Facility would be considered acceptable. These measures included items such as fire proofing the liquid petroleum gas and natural gas liquids tanks to reduce the rate of vessel failures due to fire impingement and the installation of remotely operated flow valves and flow orifices to reduce flows in the event of an equipment leak or rupture (Arthur D. Little Inc., 2000). According to the Santa Barbara County Planning and Development Department Energy Division, implementation of these measures has taken place over the past three years with only two outstanding items. These items include a supplemental foam system for the EMP and the completion of ultrasonic testing of the high-pressure gas line at the EOF. These items are in the process of being implemented and are anticipated to be completed in 2004 (Drude, Kevin 2003). Based upon implementation of the mitigation measures required as part of this analysis, the resulting risk contours would not effect the Comstock Homes Development or the Ellwood-Devereux Open Space Plan area.

Platform Holly does not store large quantities of flammable gas liquids and, therefore, has smaller hazard zones than the Ellwood Facility. This, combined with low populations in the vicinity (boats only), produced a Qualitative Risk Assessment finding of an acceptable level of risk. None of the serious injury or fatality hazard zones associated with Platform Holly extend onshore.

A risk assessment of the onshore components of the Ellwood Marine Terminal was prepared by PLG Engineers, Applied Scientists, and Management Consultants in 1996 to assess the potential risk of fire, explosion, and release of toxic gas from the Ellwood Marine Terminal (Wallace, Roberts & Todd, 1997). The PLG analysis concluded that no explosion hazards exist at the Ellwood Marine Terminal. Fire-based thermal radiation hazards exist at the Ellwood Marine Terminal facility and represent a potential hazard to nearby areas. Although no ignition sources

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were identified at the Ellwood Marine Terminal, the potential was reported for crude oil to spill, ignite, and burn. PLG reported no scenarios that would lead to a catastrophic release of hydrogen sulfide gas from the Ellwood Marine Terminal facility. However, evaporation of hydrogen sulfide gas from a pool of spilled crude oil could be expected at a concentration of 30 parts per million (ppm) in air at distances up to 355 feet of the Ellwood Marine Terminal. While 30 ppm is not life threatening, it is higher than the 20 ppm acceptable ceiling established by OSHA. The Ellwood Marine Terminal facilities are located approximately 800 feet from the eastern boundary of the Ellwood Mesa property. This study did not include the possibility of ground rupture and shaking from seismic activity generated by the north or south branches of the More Ranch fault (see Section 4.2).

4.5.1.3 Comstock Homes Development

Potential subsurface impacts by hazardous materials were not identified on this sub-area. However, the area has not been thoroughly evaluated. Based on the Phase I ESA of the Joint Proposal area conducted by URS in 2003 and a letter from the FPD dated August 11, 2003 (FPD, 2003), this area will require assessment prior to development.

4.5.1.4 Coronado Butterfly Preserve

Existing studies did not identify potential subsurface impacts from hazardous materials in this sub-area. Based on DOGGR records, an abandoned well, referred to as Bishop-Evans #1, is located under a concrete slab of a private residence in the neighborhood west of Coronado Butterfly Preserve.

4.5.1.5 Phelps Ditch Trail

Existing studies did not identify potential subsurface impacts from hazardous materials in the area of Phelps Ditch Trail. However, additional studies may uncover such impacts. Based on the Phase I ESA of the Joint Proposal Area conducted by URS in 2003 and discussions with the FPD, this area will likely require assessment prior to grading, depending on the nature of the work (e.g., trail upgrades).

4.5.1.6 Ellwood Mesa Open Space Plan Area

4.5.1.6.1 Santa Barbara Shores. Historic oil field operations were located on the Santa Barbara Shores sub-area. An oil and gas plant built and operated by Barnsdall Oil Company was located on the southwest portion of the area. The plant utilized distillation towers to separate the crude oil from the gasoline by heating the oil and removing the pure products. The vapors were removed and later cooled in cooling panels and condensed to form gasoline. The facility was dismantled in the early 1950s. Much of the facility was reportedly bulldozed and buried onsite. There is no readily available information regarding what was left in place and what was removed from the historic operations. There is remnant piping that has been uncovered throughout the area. Since there are no as-built drawings showing piping, the routes of piping are unknown. According to a Phase I ESA conducted by Ninyo & Moore (2003) for the 36-acre Comstock

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Homes Development site, an inactive pipeline that formerly connected the oil plant to the Rio Grande gasoline station was presumed to be located along the western site boundary. This pipeline was reportedly never discovered.

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Previous environmental investigations of the property identified environmental impacts associated with the abandoned Ellwood Oil Field. Five oil wells were identified on the Santa Barbara Shores sub-area. Oryx Energy Company "Doty" Oil Wells #1, #2, #3, #7, and #8 were identified on DOGGR Maps and historic aerial photos. Based on review of DOGGR files, all of the wells were producing wells. These wells were located on the beveled surface at the top of the Santa Barbara Shores bluff (see Figure 4.5-1 for locations of these wells). Doty Oil Well #6 and Wells 94-1, 95-1, and 96-1 were identified in the tideland area of the beach below.

Preliminary Site Assessment. Staal, Gardner & Dunne, Inc. (SGD) conducted a Preliminary Site Assessment and Corrective Action Plan of the Santa Barbara Shores property in April 1991 (SGD, 1991). The purpose of the assessment was to locate and assess subsurface contamination related to previous oil and gas production operations. Based on the results of the assessment, soil contamination related to all five Doty oil wells and associated mud sumps, as well as the gas processing plant, was present. Hydrocarbon contaminants included benzene, crude oil, waste oil, light petroleum distillates, and elevated levels of metals, particularly lead. The Santa Barbara County Public Works Department, Special Projects Division (SPD), conducted a Supplemental Site Assessment, dated January 1993, in order to further assess impacts to subsurface media related to previous oil and gas production operations. During the assessment, SPD conducted a magnetic survey of the property, abandoned pipe and other oil field materials related to the Ellwood Field, re-abandoned Doty Oil Well #7, installed a groundwater monitoring well and evaluated groundwater in Devereux Creek, and performed subsurface assessment by excavation and backfilling of 83 test pits with a backhoe to evaluate the nature and extent of impacted soils. A total of 65 soil/water samples were collected and analyzed for petroleum hydrocarbon constituents. Samples were analyzed for total petroleum hydrocarbons (TPH) and for benzene, toluene, ethylbenzene, and xylenes. Additional analyses of selected samples were also performed for pH, sulfides, cyanide, Calderon Assessment Manual metals, soluble metals, polychlorinated biphenyls (PCBs), flash point, and aquatic bioassay. During the assessment, five abandoned oil well locations were investigated. Various quantities of hydrocarbon-impacted soil were encountered at each of the five oil wells and/or adjacent sump locations. Hydrocarbon-impacted soils were also discovered beneath the former oil and gas processing plant. An area of hydrocarbon-impacted soil was also delineated beneath the channel of Devereux Creek. The creek reportedly contained buried oil-field waste as a 600 foot-long buried mud sump deposit. The following presents a summary of the SPD Site Assessment.

Devereux Creek. A total of 38 test pits were excavated with a backhoe, and one monitoring well was installed with a drill rig to assess the nature and extent of the buried mud sump. A total of 29 samples were collected and analyzed within the test pits. The TPH was described as a combination of diesel fuel, waste oil, and motor oil. One soil sample contained benzene at 16 parts per million (ppm) and TPH as diesel fuel at 16,000 ppm. TPH at concentrations in excess of 1,000 ppm were detected in 13 other samples located throughout the

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mud sump area. The results of the laboratory analysis were combined with field data to delineate the impacts in Devereux Creek. The impacted area was reported to comprise an area about 700 feet long and 80 feet wide. The impacted soils reportedly extended up to 15 feet along the axis of the creek. Groundwater monitoring well MW-1 was installed in the creek in April 1992, and was monitored for water levels and water quality. Groundwater samples indicated no volatile/semi-volatile organic compounds.

Oil and Gas Plant. The components of the oil and gas plant included distillation towers, cooling panels, and several buildings containing engines and stacks. Thirteen test pits were excavated at in-fill locations within the grid of boring drilled by SGD in their previous assessment. Levels of TPH as crude oil were reported up to 21,000 ppm and TPH as gasoline up to 910 ppm. The volume of impacted soil above 1,000 ppm beneath the oil and gas plant location was estimated to be 1,500 cubic yards.

Doty Oil Well #1. Eight test pits were excavated along the area south of the mud sump associated with Doty #1. A total of four soil samples were collected. TPH, benzene, toluene, ethylbenzene, and xylenes in all samples were below 1,000 ppm.

Doty Oil Well #2. SPD did not conduct an assessment of this area as they considered the previous assessment performed by SGD to be adequate.

Doty Oil Well #3. This location included the wellhead and surrounding basement and nearby percolation pond. A total of six test pits were excavated. Two soil samples were collected and analyzed for TPH, benzene, toluene, ethylbenzene, and xylenes. Impacts to subsurface soil were not identified.

Doty Oil Well #7. The location included the well, which did not contain well casing in its upper portion. The well was reportedly filled with cement under direction of the DOGGR. A mud sump was located approximately 40 feet down-slope to the south of the wellhead. SPD conducted additional assessment as recommended by SGD. Eight test pits were excavated. SPD verified the lateral extent of contamination mapped by SGD. The vertical extent of impacted soil in excess of 1,000 ppm was limited to the upper 4 feet. Impacted soil above 1,000 ppm was reported to be approximately 110 cubic yards.

Doty Oil Well #8. Six test pits were excavated at locations recommended by SGD. One soil sample was collected and analyzed, and was non-detect for TPH, benzene, toluene, ethylbenzene, and xylenes.

Based on the data from their assessment and the SGD assessment, SPD concluded that approximately 15,000 cubic yards of soil was impacted from petroleum hydrocarbons. In addition, approximately 6,000 linear feet of buried pipelines related to Ellwood Field wells (and possibly related to South Ellwood Field production) were located, excavated, stockpiled, and removed for recycling by SPD.

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Remediation Activities. Based on a Remedial Action Implementation Report for the Santa Barbara Shores Park property, Secor International Incorporated (Secor) and OHM Remediation Services Corp. (OHM) conducted remediation of the Santa Barbara Shores Park from July through October 1997. During this time, OHM excavated approximately 60,000 cubic yards of in-situ, overburden, suspect, and hydrocarbon-impacted soil from within Devereux Creek, Doty Oil Well #1, Doty Oil Well #8, and the former processing plant. Of the total volume excavated, approximately 23,000 cubic yards of hydrocarbon-impacted soil was transported offsite and approximately 8 cubic yards of lead-impacted soil was transported offsite (Secor, 1997). The following presents a summary of remedial excavation and backfilling activities at each location.

Devereux Creek. Soil excavation activities occurred between July and October 1997. Excavation activities began west of the access road and proceeded eastward toward the existing earth dam and spillway. Based on survey information provided by OHM and measurements obtained in the field, approximately 40,000 cubic yards of soil was excavated from Devereux Creek. Of the total volume excavated, approximately 20,000 cubic yards of hydrocarbon-impacted soil was transported offsite.

Doty Oil Well #1. Soil excavation activities were conducted at the Doty #1 location in September 1997. Due to the presence of hydrocarbon-impacted soil on the northern sidewall, the excavation was extended to the north and east. Approximately 9,800 cubic yards of soil were excavated from Doty #1. Of this total, an estimated 1,600 cubic yards of hydrocarbon-impacted soil was transported offsite.

Doty Oil Well #8. Excavation in the Doty #8 location began in July 1997. In August 1997, the Doty #8 well casing was successfully located south of the existing excavation using a magnetometer survey. The second excavation yielded approximately 8 cubic yards of lead-impacted soil, which was adequately characterized and transported offsite as hazardous waste. A representative from the DOGGR inspected the top of the well casing and outlined the requirement for closure. The well was reportedly sealed with cement.

Oil and Gas Plant. The former processing plant excavation was conducted in September 1997. The total volume excavated at the processing plant location was approximately 9,600 cubic yards. Of this total, approximately 1,400 cubic yards of hydrocarbon-impacted soil was hauled offsite.

Based on the Remedial Action Implementation Report, between July 22 and October 3, 1997, approximately 23,000 cubic yards of hydrocarbon-impacted soil was excavated and transported offsite. In addition, approximately 8 cubic yards of lead-impacted soil was excavated and transported offsite. As part of the remediation project, a grouted rock spillway and grade stabilizer were constructed within Devereux Creek. Based on visual monitoring of the excavations, hydrogen-impacted soils above approved action levels were removed from the property. In addition, stockpile sampling analytical results indicated that backfilled soil on the site was below established action levels (Secor, 1997).

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Section 4.5 Hazards and Hazardous Materials Soil confirmation testing was not completed in the excavation where hydrocarbon-impacted soils were remediated during the 1997 remediation activities. Verification was based on visual observations. In addition, it is anticipated that the historic oil wells in the Santa Barbara area have not been abandoned according to current DOGGR standards. According to a letter from the County of Santa Barbara FPD dated August 11, 2003 (FPD, 2003), a comprehensive Site Assessment Workplan is required to be completed for the Santa Barbara Shores area where former oil field activities occurred.

4.5.1.6.2 Ellwood Mesa. Potential sources of soil and groundwater contamination were identified during a Phase I ESA of the Monarch Point property prepared by Hoover and Associates (Hoover) in 1986. During the Phase I ESA, crude oil sumps and pipelines were identified onsite. Three oil wells were identified on the property: “Doty” oil wells #4 and #5, and Ellwood #1. Based on review of DOGGR files, Doty #4 and #5 were producing wells and Ellwood #1 was a dry hole. Phase II studies conducted by Hoover confirmed the presence of crude oil and metal in soil. Phase II investigations included 38 test pits and over 60 soil borings. Six potential areas of impact were identified and are discussed below and identified on Figure 4.5-1.

Site #1. The site consists of an oil well sump and drill cuttings stockpile located near Owens & Montgomery “Ellwood” Oil Well #1. Hoover estimated that approximately 300 cubic yards of impacted soil exists at this location. All soils at this site were reported to exceed the 1,000 ppm concentration of TPH. Well #1 has not been properly abandoned according to current DOGGR standards.

Site #2. The site is comprised of a north central ravine where oil field debris (concrete, pipes, and tanks) was dumped, presumably when the oil field was demolished. Hoover estimated that approximately 1,500 cubic yards of debris is located in this area. Soils in this area were reported to have a TPH concentration between 100 and 1,000 ppm.

Site #3. This site consists of crude-oil impacted soil due to a suspected crude oil pipeline located in this area. According to Hoover, the site contains approximately 9,885 cubic yards of impacted soil and covers approximately 0.12 acre.

Site #4. This site has an oil well drilling sump located adjacent to Oryx Energy Company “Doty” Oil Well #4, a producing well. According to Hoover, the site contains approximately 925 yards of contaminated soil. All soils at this site were reported to have a TPH concentration above 1,000 ppm. Well #4 has not been properly abandoned according to current DOGGR standards.

Site #5. A drilling sump and Oryx Energy Company “Doty” Oil Well #5, a producing well, are located on this site. Hydrocarbon impacted soil was identified in this area. All concentrations of TPH were reported below 1,000 ppm. Well #5 has not been properly abandoned according to current DOGGR standards.

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Site #6. An area of petroleum-impacted soil is located adjacent to a suspected crude oil pipeline in the northwestern portion of this sub-area. According to Hoover, the site contains approximately 5,200 cubic yards of impacted soil. All soil at this site was reported to exceed 1,000 ppm for TPH.

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A Remedial Action Plan for the Monarch Point Reserve Project was completed by Hoover in July 1997, including detailed plans to remediate petroleum-impacted soil (Hoover, 1997b). The RAP was approved by the Santa Barbara County Fire Department on May 7, 1998. Remedial activities have not been conducted to date.

Line 96. Line 96 is a 3.1 mile long stainless steel ten-inch diameter petroleum pipeline that runs primarily through the City of Goleta from Venoco Inc.'s Ellwood Onshore Facility (located immediately west of Sandpiper Golf Course and approximately 3,500 feet west of the Santa Barbara Shores parcel) to Venoco Inc.'s Ellwood Marine Terminal, located on University land immediately east of the Ellwood Mesa parcel (Figure 4.5-1). The pipeline is buried in Hollister Avenue adjacent to the proposed Comstock Homes site. The line continues east on Hollister, runs south on Pacific Oaks Road, then west on Phelps Road to the Ellwood Mesa property line. The line enters the Ellwood Mesa property at the terminus of Phelps Road. In the area of Devereux Creek, the line runs approximately 300 feet southwest from the property line (in the projected right-of-way of the Phelps Road extension), and then turns southerly for approximately 300 feet where it crosses Devereux Creek. The line then runs southeasterly for approximately 700 feet until it reaches the top of the mesa on the south side of Devereux Creek. From the top of the mesa, the line runs south for approximately 1,160 feet at a distance of 25 feet from the eastern property line. The line then enters a pipeline valve vault on the Ellwood Mesa parcel. From the valve vault, the line runs east across the property line, and continues east to the Ellwood Marine Terminal facility.

Other Pipelines. Two inactive 4-inch petroleum pipelines follow the Ellwood Mesa property line from the Ellwood Marine Terminal to Phelps Road. Based on limited available data and field investigations, these lines primarily run on the University's land, however portions of these inactive lines likely run on the eastern edge of the Ellwood Mesa property. A historical drawing from California State Lands Commission records indicates that a pipeline may exist on the entire length of Ellwood Mesa bluff and/or blufftop between Sandpiper Golf Course and the Ellwood Marine Terminal. However, the drawing does not provide sufficient detail to determine the precise location of the pipeline, nor does it indicate if the pipeline was buried or above ground. No pipelines have been identified in this area during recent site investigations.

As shown on Figure 4.5-1, a surface water pond exists on the coastal bluff at beach access point E located due south of Santa Barbara Shores Drive. Based on field observations and interviews with area residents, the depression for this pond appears to have been artificially created by grading to extinguish a fire (Baca, 2004). It is not known whether the fire was at a natural tar seep or at the site of an abandoned oil well or pipeline. There are no records of an oil well or pipeline at this site and DOGGR staff has indicated no knowledge or records of this feature (Brunetti, 2004). However, this surface feature is located in close proximity to three historic

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The possibility exists for oil, methane, or toxic gases to migrate up through this subsurface feature and to release into the environment. Therefore, additional onsite investigation (e.g., limited core samples) would be required to ascertain the subsurface features that may have caused the fire, to assess potential public health and safety risks associated with the feature, and to determine what further actions or protective measures, if any, would be warranted (e.g., limited excavation, capping, fencing). In the event that this feature is determined to be an anthropogenic petroleum structure (well, pipeline, sump, etc.), then proper abandonment of the structure or other limited remedial actions would need to be considered, taking into consideration the present vegetated condition of the site. If the additional onsite investigation determines that contamination is present, proper abandonment would be required.

4.5.2 Regulatory Framework

4.5.2.1 Federal Authorities and Administering Agencies

4.5.2.1.1 SARA 42 U.S.C. §11001 et. seq. The Superfund Amendments and Reauthorization Act (SARA) amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 U.S.C. § 9601 et. seq.) on October 17, 1986. SARA reflected EPA's experience in administering the complex Superfund program during its first six years and made several important changes and additions to the program. SARA also required EPA to revise the Hazard Ranking System to ensure that it accurately assessed the relative degree of risk to human health and the environment posed by uncontrolled hazardous waste sites that may be placed on the National Priorities List.

4.5.2.1.2 Resource Conservation and Recovery Act (RCRA) 42 U.S.C. §6901 et seq. RCRA gave EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also set forth a framework for the management of non-hazardous wastes.

The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. RCRA focuses on active and future facilities. However, once hazardous materials have been released to the environment, they are deemed a waste as soon as the material they have impacted is disturbed or moved. Therefore, contaminated soil can be regulated under RCRA. The California Department of Toxic Substance Control implements the RCRA in California and regulations regarding hazardous waste are contained in the California Code of Regulations, Title 26.

4.5.2.1.3 U.S. Department of Transportation. The U.S. Department of Transportation has the regulatory responsibility for the safe transportation of hazardous materials.

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4.5.2.2 State Authorities and Administering Agencies

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4.5.2.2.1 California Office of Emergency Services. The California Office of Emergency Services coordinates the emergency response to an accidental release of acutely/extremely hazardous materials.

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4.5.2.2.2 Central Coast Regional Water Quality Control Board. Federal and state site remediation regulations are enforced by the RWQCB and FPD. The FPD is the lead agency for the area and has instituted a Site Mitigation Program responsible for the supervision of cleanup at sites located throughout the County. The County will grant closure of an impacted site when confirmatory samples of soil and groundwater taken reveal that levels of contaminants are below the standards set by FPD and the RWQCB.

4.5.2.2.3 California Coastal Act §30000 et seq. As described in Section 1.0, the Coastal Act is the only set of policies that applies to development projects within the City of Goleta's Coastal Zone, pending certification of the City of Goleta's Local Coastal Plan. The California Coastal Act includes provisions (§30001) that stipulate the importance of protecting "the ecological balance of the coastal zone and preventing its deterioration and destruction."

4.5.2.2.4 California Division of Oil, Gas, and Geothermal Resources. The DOGGR is mandated by Section 3106 of the Public Resources Code to supervise the drilling, operation, maintenance, and abandonment of oil wells for the purpose of preventing: 1) damage to life, health, property, and natural resources; 2) damage to underground and surface waters suitable for irrigation or domestic use; 3) loss of oil, gas, or reservoir energy; and 4) damage to oil and gas deposits by infiltrating water and other causes.

4.5.2.3 Local Authorities and Administering Agencies

4.5.2.3.1 City of Goleta Coastal Zoning Ordinance. As described in Section 1.0, the County of Santa Barbara's Coastal Zoning Ordinance and other implementing ordinances (including subdivision and grading ordinances) were adopted by the City but have not been certified by the California Coastal Commission. The Coastal Zoning Ordinance provides guidance for those areas of the City of Goleta within the Coastal Zone. Development in the Coastal Zone is regulated by the City of Goleta Coastal Zoning Ordinance. Coastal Zoning Ordinance Section 35-174.3.2.a.2 requires development plans to identify the location of areas of geologic, seismic, flood, and other hazards.

4.5.3 Project Impacts

4.5.3.1 Thresholds of Significance

The County of Santa Barbara Environmental Thresholds and Guidelines Manual has been adopted by the City of Goleta as an administrative guideline for conducting CEQA analysis.

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Section 4.5 Hazards and Hazardous Materials According to the manual, there is a potential for significant impact to public safety from a project if the following conditions exist:

- Oil wells and gas wells and associated production
- Gas and hazardous liquid pipelines
- Oil and/or gas processing and storage facilities

In addition, the following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the proposed project may have a significant adverse impact with respect to hazards and hazardous materials if it would result in any of the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, create a significant hazard to public or environment

As previously discussed, the proposed project is located in a historic oil field. Previous assessments indicate that residual petroleum hydrocarbons and petrochemical contaminants are associated with past oil drilling activities. The primary concern with respect to this assessment is that there is the potential for impact to public safety and health associated with residual contaminants. Potential impacts to other resources (e.g., soil, water, biological resources) are addressed in other sections of this EIR, as applicable.

Crude oil is a complex mixture of hundreds of chemicals, with each compound having its own toxicity characteristics. There are many difficulties associated with assessing the potential health effects of such complex mixtures with regard to in-situ hazardous material exposure and/or hazardous waste site remediation activities. Further, while health information is available on the toxicities of pure products, once a petroleum product is released to the environment changes occur in its composition as a result of weathering and/or dilution. These compositional changes may result in changes in the toxicity of the product. In addition, the assessment activities that have been conducted previously did not analyze for constituents that would indicate the level of public health hazards. Therefore, the actual public health risk from petroleum hydrocarbons and associated constituents in the project area is currently unknown.

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4.5.3.2 Project Impacts

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Existing studies have not identified hazardous material contamination on the Comstock Homes Development site, the Coronado Butterfly Preserve, or the Goleta Unified School District site. However, additional study is recommended on the Comstock sites. Therefore, this impact assessment focuses on areas of known hazardous material contamination on the proposed Ellwood Mesa Open Space Plan area, as well as potential impacts from unknown hazards that could be encountered during construction or during long-term public use of the Ellwood Mesa Open Space Plan area, including Goleta Union School District site.

Impact HM-1: Impacts from abandoned oil wells. Abandoned oil wells were not identified on the Comstock Homes Development site, Coronado Butterfly Preserve, or the Phelps Ditch Trail. However Doty #7 is located to the south of the Comstock Homes Development site. There are eight known abandoned wells in the location of the Ellwood Mesa Open Space Plan area. These wells are labeled as Doty #1, #2, #3, #4, #5, #7, #8, and Ellwood #1 on Figure 4.5-1. The majority of the wells were abandoned between the 1930s and 1950s with the exception of Doty #1, which was abandoned in 1971. Due to the less stringent regulations pertaining to drilling activities in the past, these wells were not abandoned in accordance with current safety standards with the possible exception of Doty 7. Wells Doty #6, 94-1, 95-1, and 96-1 are located in the tidelands area at the base of the bluffs near Santa Barbara Shores and Ellwood Mesa. In addition to these known wells, the surface pond that exists between wells Doty #4, Doty #5, and 95-1 could potentially be the location of past oil and gas operations.

The possibility exists for oil, methane, or toxic gases (aromatic hydrocarbons or hydrogen sulfide) to migrate up through these wells and to release to the environment. Release of methane gas has the potential to result in fire or explosion. Exposure to toxic gases could pose a health hazard to the public and/or workers engaged in construction/well abandonment activities. DOGGR has established standards for well abandonment including re-abandonment of historical wells. The FPD has recommended that all wells located in the Open Space Plan area meet current standards. Historical wells will be reabandoned under the direction of DOGGR and FPD in compliance with California Code of Regulations Title 14, Chapter 4 and Section 3106 of the Public Resource Code. In addition, contaminated soil may be encountered during excavation of these wells and associated sumps or construction activities near the well locations. Potential hazards associated with soil contamination are discussed in Impact HM-2. This impact is considered to be *significant but feasibly mitigated (Class II)*.

Impact HM-2: Impacts from known or potential contaminated soil. Soils in this area have the potential to be impacted by hazardous materials associated with past oil development activities. Contaminants of concern include petroleum hydrocarbons (benzene, crude oil, waste oil, and light petroleum distillates), metals, volatile organic compounds, semi-volatile organic compounds, and polynuclear aromatic hydrocarbons (PAHs). Several areas of impacts from past oil development have been assessed and remediated in the Ellwood Mesa Open Space Plan area and are identified on Figure 4.5-1. However, the work performed in these

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areas is being reviewed by FPD to ensure that it was completed to current standards and for revised land use, and that confirmation samples were analyzed for all appropriate chemicals of concern and levels of sensitivity. Construction activities associated with residential development of the Comstock Homes Development, trail construction within the Ellwood Mesa Open Space Plan area, or remedial activities located throughout the project area could uncover impacted soils and expose construction workers and recreational users of the site to potential health hazards. In addition, remediation activities could result in temporary impacts to recreational use to the Ellwood Mesa Open Space Plan area due to trail closures and traffic from vehicular equipment. These impacts are discussed further in Section 4.10, Recreation. There is a north-south trending incised gully present through site #3. Further erosion of this gully may cause exposure to impacted soils. Exposure to impacted soil (at levels above established regulatory threshold) left in place could present long term health hazards to residents directly exposed on a daily basis and to the public from recreational activities, if assessment and remediation activities are not conducted. Based on current knowledge, this impact is considered to be *significant but feasibly mitigated (Class II)*.

Impact HM-3: Impacts from physical hazards related to oil development equipment and debris. Abandoned oil wells and oilfield debris are present within the Ellwood Mesa Open Space Plan area and pose physical hazards to public health and safety. Debris consists of concrete, steel cables, piping, wood, wire, steel plates, etc. In addition, there are a number of areas throughout the Open Space Plan area that have not been examined at all or have only been evaluated in terms of some parameters.

Debris has not been identified on the Comstock Homes Development site, the Coronado Butterfly Preserve, or the Phelps Ditch Trail. Additional subsurface debris could be uncovered during construction activities associated with residential development or trail construction. Based on current knowledge, this impact is considered to be *significant but feasibly mitigated (Class II)*.

Impact HM-4: Impacts to water quality from contaminated soil leaching to groundwater or migrating in the Devereux Creek or Devereux Slough. Contaminants present in impacted soil located in the Ellwood Mesa Open Space Plan area have the potential to leach into groundwater or migrate in the water bodies located in the overall Open Space Plan area. Water quality data is limited to a single monitoring well (MW-1) located in Devereux Creek, which contained trace levels of TPH. There is the potential for residual TPH to migrate into Devereux Creek, Devereux Slough, or the Pacific Ocean. It is difficult to differentiate between naturally occurring oil seeps impacting surface water and residual TPH associated with historic production. There is no available data indicating an impact significant or otherwise. The RWQCB oversaw the previous remediation conducted in the Ellwood Mesa Open Space Plan area and was satisfied with the cleanup eliminating water quality issues. This impact is considered to be *less than significant (Class III)*.

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4.5.3.3 Cumulative Impacts

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There is the potential for cumulative impacts resulting from increased contaminated soil being disposed of at an offsite disposal facility associated with remediation activities. The amount of contaminated soils generated by this project is expected to be relatively minor and no significant contribution to cumulative effects associated with potential reduced landfill capacity is anticipated. This impact is considered to be *less than significant (Class III)*.

4.5.3.4 Mitigation Measures

Mitigation HM-I. Historic oil wells that require re-abandonment shall be abandoned to current standards. To mitigate methane and toxic gas hazards, DOGGR has established standards for well abandonment, including re-abandonment of historic oil wells. The FPD has recommended that all wells located in the Open Space Plan area meet current standards. Historic oil wells will be re-abandoned under the direction of DOGGR and the FPD in compliance with California Code of Regulations Title 14, Chapter 4 and Section 3106 of the Public Resource Code. The re-abandonment of wells requires the following:

1. File Notice of Intent to re-abandon well.
2. Excavate and expose several feet of well casing.
3. Perform hot tap – a method of drilling a hole into the casing under control in order to deal with possible pressure.
4. Install a wellhead and blow out prevention equipment.
5. Move drill rig into place. Drill out surface cement plug if any as well as any other cement plug to reach a minimum clean-out as required by DOGGR.
6. Place cement plugs of varying lengths as required by DOGGR.
7. All portions of well not plugged with cement are to be filled with inert mud fluid having a density of 70 pounds per cubic foot and a gel strength of 25 pounds per 100 square feet.
8. Move out drill rig.
9. Cut off casing at least 5 feet below finished grade.
10. Weld a steel plate on top of the wellhead.
11. Backfill and compact excavation and clean up location.
12. Survey the center point of the buried well using GPS instrumentation.
13. Place a permanent survey mark at the surface, demarcating a buried, abandoned oil well.
14. Submit the re-abandonment record to DOGGR within 60 days upon completion of work.

Residential development plans and any development plans for improvement within the Open Space Plan area shall comply with setbacks from oil and gas wells as determined by DOGGR

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and FPD. Recommendations by DOGGR and the FPD regarding abandonment procedures shall be incorporated into the final development plans for Open Space area improvements, if applicable.

Plan Requirements and Timing. Prior to issuance of a Land Use Permit for Open Space Plan developments, the applicant shall consult with the FPD and DOGGR to determine the appropriate well abandonment requirements. If well abandonment activities are required by these agencies, then prior to issuance of the Land Use Permit, the applicant shall obtain approval of well abandonment work plans by the FPD and DOGGR. Prior to construction of the Open Space Plan area improvements, the applicant shall perform the necessary abandonment, and receive FPD and DOGGR verification that abandonment has been completed in accordance with the approved plans.

Monitoring. The FPD and DOGGR shall monitor abandonment activities and documentation to ensure compliance with approved plans. Copies of all documentation related to well abandonment shall also be provided to the City of Goleta.

Mitigation HM-2. Additional assessment, and possibly remediation, of the soils at or near the surface in the Ellwood Mesa Open Space Plan area and proposed residential development area shall be conducted as required by the FPD. Previous assessments and remediation conducted within the Open Space Plan area used non-compound specific laboratory test methods based on total petroleum hydrocarbon content only to screen soils. Current oil field assessment standards require a full analytical characterization of specific hydrocarbon compounds contained in crude oil or oil-derived product. In addition, current regulatory standards require that inorganic metals be assessed. Decisions regarding future remediation requirements for the area and the residential areas shall be based on a screening level human health and ecological risk evaluation. Depending on the results of the screening level risk assessments, more detailed quantitative risk assessments may be required by FPD, as necessary.

Additional assessment and/or remediation shall include the following:

1. Preparation of applicable Phase II Environmental Site Assessment Work Plans that describe the proposed approach and methods to be used in characterizing shallow soils. The Work Plans shall include the proposed sampling locations, sample collection procedures, analytical methods, quality control measures, and a site-specific health and safety plan. The Work Plans also should include the proposed methods for conducting a screening level human health and ecological risk assessment based on data from previous investigations. Areas of interest are the trail corridors, remnant oil sumps, former pipeline routes, and areas surrounding the abandoned oil wells. The Phase II ESA(s) shall be submitted to the FPD for regulatory review and approval.
2. Implementation of the Phase II ESA Work Plan(s) with FPD oversight.
3. Screening level human health and ecological risk evaluation shall be conducted to identify chemicals of concern and/or potential concern, exposure pathways, and sensitive receptors. Based on the determined risks, conclusions and decisions will be made identifying those soils

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that can be left in place without engineering controls, those soils that would be eligible for engineering controls (e.g., no ground disturbance), and those soils that will require remediation (e.g., areas along the trails).

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The assessment process presented above incorporates the screening level risk assessments into the Phase II ESA. It is presented this way to streamline the regulatory process, which would otherwise require preparation of separate work plan documents and separate regulatory reviews and approvals.

Plan Requirements and Timing. Prior to issuance of a Land Use Permit for the Comstock Homes Development and/or Open Space Plan area developments, the applicant shall consult with FPD to determine the scope of the Phase II ESA; prepare and submit the appropriate Phase II ESA Work Plan to FPD for review and approval; implement the Phase II ESA Work Plan; submit the report of findings to FPD for review; and receive FPD's concurrence with the Phase II ESA recommendations.

Monitoring. The FPD and City of Goleta shall review the Phase II ESA Work Plan and the completed Phase II ESA to ensure compliance with the above plan requirements.

Mitigation HM-3. As necessary, Site Remediation Action Plans shall be developed. Upon FPD concurrence with the recommendations presented the Phase II ESAs, remedial action plans shall be prepared for submittal to the FPD. The remedial action plans will include the following.

1. Remediation goals and cleanup criteria.
2. Evaluation of corrective action alternatives that compares the effectiveness, feasibility, and cost benefit of each alternative. The remedial action plans shall take into account existing and proposed uses of the Open Space Plan area and the proposed residential developments.
3. Identification of the preferred alternative with consideration of protection of resources within the Open Space Plan area.
4. A detailed description of the access points and haul-out routes for remedial activities; remediation methods and procedures; mitigation of dust; minimization or avoidance of disturbance to sensitive ecosystems; and verification soil sampling and analysis. Included in the discussion shall be information on disposal sites, transport and disposal methods, as well as recordkeeping methods for documenting remediation, regulatory compliance, and health and safety programs for onsite workers.
5. Removal of oil development equipment and debris.

Plan Requirements and Timing. The site Remedial Action Plan shall be reviewed and approved by the FPD prior to issuance of a Land Use Permit.

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Section 4.5 **Monitoring.** FPD and City of Goleta shall review the remediation action plans to ensure compliance with the above plan requirements.

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Mitigation HM-4. Site Remediation shall be implemented and oil field debris will be removed. Once approved by the FPD , the RAPs shall be implemented. Remediation scenarios include, at a minimum, the following:

- Maintain buffer zones around areas containing soils impacted by remnant crude oil, petroleum products or hazardous substances. Fencing shall be constructed in areas that present a health risk and signage will be posted identifying restricted areas.
- Remove soils at or near the surface that exceed the cleanup criteria for open space recreational land use. Regrade and vegetate the disturbed areas consistent with the overall Open Space Plan area.
- Remove oil field debris.
- Maintain GIS coordinates of all areas assessed and/or remediated for future use in the event that land use changes from the current zoning, or more stringent cleanup standards are promulgated.

Plan Requirements and Timing. Remediation at the Comstock Homes Development site, if required, shall be completed in accordance with the approved plans prior to issuance of Land Use Permit for site grading for residential construction. Remediation within the Open Space Plan area, if required, shall be completed in accordance with the approved plans prior to site grading for Open Space Plan improvements in areas of contamination.

Monitoring. The FPD shall monitor inspect remediation activities and documentation to ensure compliance with approved plans and applicable guidelines. Copies of final remediation reports shall be provided to the City of Goleta.

Mitigation HM-5. A Soil Management Plan for the residential development envelopes and trail construction areas shall be developed and implemented, as appropriate. The objective of the Soil Management Plan is to provide guidance for the proper handling, onsite management, and disposal of impacted soil that may be encountered during construction activities (i.e., excavation and grading). The plan shall include practices that are consistent with the California Title 8, Occupational Safety and Health Administration (Cal-OSHA) regulations, as well as FPD remediation standards that are protective of the planned use. Appropriately trained FPD professionals will be onsite during preparation, grading, and related earthwork activities to monitor soil conditions encountered. In order to confirm the absence or presence of hazardous substances associated with former land use, a sampling strategy shall be implemented. The sampling strategy shall include procedures regarding logging/sampling and laboratory analyses. The Soil Management Plan will outline guidelines for the following:

- Identifying impacted soil

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- Assessing impacted soil
- Soil excavation
- Impacted soil storage
- Verification sampling
- Impacted soil characterization and disposal

In the event that potentially contaminated soils are encountered within the footprint of construction, soils will be tested and stockpiled under FPD supervision. FPD will determine whether further assessment is warranted. The FPD shall determine and oversee the handling and disposal of impacted soils.

Plan Requirements and Timing. The Soil Management Plan shall be reviewed and approved by FPD prior to Land Use Permit issuance.

Monitoring. FPD shall monitor and inspect soil management activities to ensure compliance with the approved Soil Management Plan.

4.5.3.5 Residual Impacts

Residual impacts on public safety caused by hazardous materials would be mitigated to a less than significant level with incorporation of mitigation measures HM-1 through HM-5.