matrix OIL CORP
104 W. Anapamu Street, Suite C
Santa Barbara, CA 93101
Tel: (805) 884-9000
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April 5, 2011

Mr. Jeffrey W. Collier
Assistant City Manager
Whittier Redevelopment Agency
13230 Penn Street
Whittier, CA 90602

Re: Matrix Oil Corporation
Whittier Main Oil Field Development Project

Dear Mr. Collier:

Matrix Oil Corporation ("Matrix") is pleased to submit herewith an amended Conditional Use Permit ("CUP") application for the Whittier Main Oil Field Development Project ("the Project"). The CUP application is being amended to revise the Project Description to be consistent with the Consolidated Central Site Alternative discussed in the Whittier Main Oil Field Draft Environmental Impact Report ("Draft EIR").

The amended application is being submitted because Matrix agrees with the conclusion reached by the City's independent environmental consultants that the Consolidated Central Site Alternative, coupled with the Landfill Road, is the environmentally preferred alternative and the best and safest choice for additional oil and gas development in the City. This alternative moves operations farther away from residences, minimizes the amount of disturbed area within the Habitat Preserve, and significantly reduces the number of unavoidable adverse project impacts.

Based upon advice from its legal, technical and environmental consultants, Matrix is requests the preparation of a Revised Draft EIR that will substitute the Consolidated Central Site, with the Landfill Road, for the project currently proposed. While Matrix believes that the Consolidated Central Site Alternative and Landfill Road are described in sufficient detail in the Draft EIR, some commentors have expressed a desire for more detailed information and analysis of these alternatives. Although preparation of a Revised Draft EIR will result in significant additional costs and will delay a decision on the proposed development, Matrix is willing to accept these burdens in order to ensure that the citizens of Whittier have available to them the most comprehensive, focused and well-organized environmental document.

In order to ensure a completely transparent review process and fully comply with the California Environmental Quality Act ("CEQA"), Matrix advises that it would support the issuance of a Notice of Preparation of the Revised Draft EIR, to be followed by a Scoping Meeting during which responsible agencies and interested individuals will have an opportunity to identify areas for more detailed study. We anticipate that publication of the Revised Draft EIR will be followed by a second public comment period, after which a Final EIR including responses to all comments will be prepared.

Matrix appreciates the City's consideration of the amended CUP application and request for preparation of a Revised Draft EIR.

Sincerely,

Michael McCaskey
Executive Vice President
Matrix Oil Corporation

City of Whittier

PLANNING DIVISION

13230 PENN STREET
WHITTIER, CALIFORNIA 90602-1772
PHONE (562)464-3380 FAX (562)464-3509
www.cityofwhittier.org

CONDITIONAL USE PERMIT APPLICATION

CASE NO: ☐ C ☐ ZA

_______ - _______

ASSOCIATED CASES: __________

1. PROJECT INFORMATION

PROJECT ADDRESS	ASSESSOR'S PARCEL NUMBER
Whittier Main Oil Field	**Various**

LEGAL DESCRIPTION (I.E. LOT AND TRACT NUMBER)

This CUP Application is an Amendment to the original application No. CUP 09-004 dated April 24, 2009.

Please refer to original application No CUP 09-004 for parcel number and legal description.

I/WE THE UNDERSIGNED, REQUEST A CONDITIONAL USE PERMIT FOR THE ABOVE PROPERTY. THE CONDITIONAL USE PERMIT IS TO ALLOW*:

See attached Amended Project Description

**Note: Complete the Business / Activity Description sheet that follows the signature page of this form*

2. APPLICANT INFORMATION*

If the applicant is not the property owner, the owner must complete the **Owner's Affidavit in Section 4*

NAME	PHONE
Matrix Oil Corporation	(805) 884-9000
STREET ADDRESS 104 W. Anapamu, Suite C	FAX (805) 884-9600
CITY, STATE, ZIP Santa Barbara, CA 93101	E-MAIL (OPTIONAL) mmccaskey@matrixoil.com
RELATIONSHIP OF APPLICANT TO PROPOSAL (BUSINESS OWNER, CONSULTANT, ETC.) Michael McCaskey, Vice-President of Matrix Oil, Co-Lessee of the Property	

3. REQUIRED FINDINGS

State law requires Planning Commissions or Zoning Administrator to make certain findings before granting a conditional use permit. It is the applicant's responsibility to provide evidence to the Planning Commission or Zoning Administrator that these findings can be made. Each of the findings are listed below, with a space for you to provide supporting evidence. The Planning Commission or Zoning Administrator will consider your responses, as well information on your plans, business description, and other sources in determining whether the findings can be made.

- **The site is adequate in size, shape and topography for the proposed use, as evidenced by:**

  Please See Attached Amended Project Description

- **The site proposed for the use has sufficient access to streets which are adequate, in both width and pavement type, to carry the quantity and quality of traffic generated by the proposed use because:**

  Please See Attached Amended Project Description

- **The activities proposed will not interfere with the use, possession and enjoyment of surrounding or adjacent properties for the following reasons:**

Please See Attached Amended Project Description

- **The proposed use will be compatible with existing and permitted uses of surrounding and adjacent properties in the following ways:**

Please See Attached Amended Project Description

- **The use will be consistent with the General Plan, any applicable specific plan and the Whittier Zoning Regulations, with regard to location, operation and design of the use, in the following ways:**

Please See Attached Amended Project Description

APPLICANT'S SIGNATURE AND DATE
Michael McCauley Date: 4/5/11

4. OWNER'S AFFIDAVIT

This affidavit allows the applicant identified in the box above to act in the owner's stead. The Planning Division will assume that the applicant will represent the proposal at any required public hearings. Although the owner will receive notice of any public hearings, all correspondence will be sent to the designated applicant.

I/We, the owner of the subject property, hereby authorize

_______________________ to:
APPLICANT'S NAME

- ☐ Make application for a Conditional Use Permit for the subject property and/or;
- ☐ Act for me in my place and stead at any and all meetings connected with this application, either before the Planning Commission or the City Council, and to take such action as deemed advisable in connection with this application.

Owner's Signature: _______________________ Date: _________

OWNER'S NAME	PHONE
STREET ADDRESS	FAX
CITY, STATE, ZIP	

CASE NO: ___________

TO BE COMPLETED BY CITY STAFF

SPECIFIC PLAN AREA:

- ☐ W.T.C.S.P. ☐ UPTOWN
- ☐ WHITTIER BOULEVARD SPECIFIC PLAN
- ☐ REDEVELOPMENT PROJECT AREA

ISSUED BY: ___________

RECEIVED BY: ___________

DATE: ___________

FEE: $_________ (ACT: PL-452)

Conditional Use Permit

Business / Operational Description

PLANNING DIVISION
13230 PENN STREET
WHITTIER, CALIFORNIA 90602-1772
PHONE (562)464-3380 FAX (562)464-3509

Please provide a comprehensive description of your proposed business or operation below. Spaces for basic information are provided, however, please use the large space below to provide other details which describe other relevant aspects of your operation.

PROJECT ADDRESS	APPLICANT'S NAME
Whittier Main Oil Field	Matrix Oil Corporation

TYPE OF OPERATION
Crude Oil and Natural Gas Drilling and Production Operations

HOURS OF OPERATION (WEEKDAY / WEEKEND)	NUMBER OF PERSONS EMPLOYED, AND MAXIMUM NUMBER ON SITE
Please see Attached Amended Project Description	Please see Attached Amended Project Description

NUMBER AND TYPE OF VEHILCLES USED IN THE OPERATION, AND WHERE STORED
Please see Attached Amended Project Description

PROVIDE A FULL DESCRIPTION OF THE PROPOSED OPERATION:
Please see Attached Amended Project Description

Project Description

The proposed Whittier Main Oil Field Development Project (Project) would involve drilling wells and producing oil and gas from the Project site, which comprises approximately 7 acres of the property owned by the City of Whittier that is part of the Puente Hills Landfill Native Habitat Preserve (Preserve).

As proposed, the fully developed Project would consist of well pads with wells, an oil processing facility, a gas plant, and an oil-truck loading facility all located within portions of the 1,290-acre City-owned Whittier Main Oil Field, now part of the Preserve. The wells, oil and gas production and processing facilities would be located at a single site (Central Site) within the Whittier Main Oil Field. A sales crude oil pipeline and a gas pipeline would be installed underneath existing Preserve roads between the Central Site and Colima Road. This crude oil and gas pipeline would continue south under Colima Road to transport crude oil and gas to markets (See Figure 1). Table 1 summarizes Project design parameters.

Table 1 Proposed Project Design Parameters

Parameter	Value
Crude production	Up to 10,000 bpd
Gas production	Up to 6 million cubic feet per day
Produced water injection	Up to 7,200 bpd
Maximum number of wells	60
Number of production wells	Up to 52: all at the Central Site
Number of injection wells	Up to 8, all at the Central Site
NGL production	Up to70 bpd, mixed with crude oil
Pipeline length and tie-in, gas	1.8 miles, Colima Road to Lambert
Pipeline length and tie-in, crude	2.8 miles, Colima Road to La Mirada to Leffingwell Avenue
Water use, during construction	2,000 gallons per day during grading and earthmoving Up to 10,000 gallons per day during pipeline installation 1,000 gallons per month during facility construction
Water use, during drilling	Up to 4,500 gallons per day
Water use, during operations and maintenance	Up to 1,300 gallons per day
Electrical use, operations	3,700 kW peak, 2,500 kW average
Well workovers	Up to 52 per year
Well re-drills, peak	Up to 3 per year

Notes: bpd = barrels per day; kW = kilowatts; estimated peak values and maximums shown

The Central Site would contain up to three well pads consisting of well cellars, well test stations, and liquid and gas separating equipment. In addition, the Central Site would house the oil processing facility and gas plant (See Figure 2). The total area required for the well pads, oil and gas production and processing, and truck loading facility is approximately 6.9 acres. An additional 6.0 acres may be temporarily disturbed for construction and grading the site (See Figure 3). Further, the County of Los Angeles Fire Department (LACoFD) may require a fuel modification zone (FMZ). An FMZ is a strip of land where combustible native or ornamental vegetation is modified or partially or totally replaced with drought-tolerant, low-fuel-volume plants.

Roads, pipelines, and power poles would be constructed. Electrical and pipeline interconnections would be made to the Southern California Edison (SCE) grid and the City of Whittier Sewer and Water District systems. Access to the Project would be both from Catalina Avenue and from Penn Street through the landfill property and through the Preserve to the Central Site. For vehicles two tons and under, the Central Site would be accessed through Catalina Avenue. For vehicles larger than two tons, the Penn Street entrance and the landfill road would be used to access the Central Site. Approximately 3 miles of the landfill roadway would have to be aligned, stabilized and widened to safely accept vehicles. In addition, approximately 700 ft of new roadway would have to be built to access the well pad area located within the Central Site and approximately 1,800 ft of existing asphalt road within the Preserve adjacent to the Central Site would have to be realigned.

Two methods for transporting the marketable crude oil are proposed by Matrix. One method would be via Truck Loading Facility located inside the Central Site area, where the oil would be loaded onto oil tanker trucks and transported through the landfill road to a nearby receiving terminal and then be transferred into the Crimson Pipeline System. This oil transportation method would be used during the testing phase of the Project until the permanent sales oil pipeline is constructed and during rare periods when the pipeline system is shut down.

The second oil transportation method would transfer the marketable crude oil by pipeline from the Central Site to the existing Crimson Pipeline System. This would involve building sales oil pipeline from the Central Site under existing roadways through the Preserve to Colima Road and then a new 2.8-mile pipeline connecting to a tie-in point at Leffingwell Road and La Mirada Boulevard. The Crimson Pipeline System would transport the crude to the ConocoPhillips Refinery in Wilmington. This pipeline would be constructed at the same time and in the same trench as the natural gas sales line, which would follow the same route to tie into the SCGC line at the intersection of Colima and Lambert Roads. Oil transportation via pipeline would occur for the duration of the project except for brief and rare periods when the pipeline or refinery are temporarily shut down for maintenance, in which case oil would be temporarily transported via truck.

A new gas pipeline would also be built next to the oil pipeline from the Central Site under existing roadway through the Reserve to Colima Road. From Colima Road the gas pipeline would follow the oil pipeline to the SCGC line interconnection at Lambert Road. In addition, during the Drilling and Testing Phase and during the Design and Construction Phase a gas pipeline could be constructed above ground next to the landfill road from the Central Site to the landfill to be connected to the City of Whittier pipeline system.

The proposed Project would involve three distinct development phases. The first phase, the Drilling and Testing Phase, would involve drilling three test wells at the Central Site and assessing the quality and quantity of oil and gas produced. Assuming successful testing, the second phase, the Design and Construction Phase, would involve the installation of gas and oil processing and crude transportation facilities as well as the drilling of additional wells.

The third phase, the Operations and Maintenance Phase, would involve drilling of the remaining wells (total of up to 60 wells), as well as the operation and maintenance of the gas and oil facilities and the wells, which would involve well workovers and occasional well re-drilling. The following sections discuss each of these phases.

1 Drilling and Testing Phase

The initial step of the Project would be the Drilling and Testing Phase to determine the potential productivity and economic viability of the Project. During this phase, up to three test wells would be drilled from the Central Site to vertical depths between 1,000 and 10,000 feet. These wells would utilize horizontal drilling technology, which enables the wells to be drilled long distances laterally, such that the bottom-hole locations may be several thousand feet from the surface locations of each well.

Catalina Avenue would provide the only access to the site during the Drilling and Testing Phase; Mar Vista Street and other area roadways would provide access to Catalina Avenue. Parking and staging would take place immediately inside the Catalina Avenue gate and at the Central Site.

Prior to start of the Drilling and Testing Phase, portions of the Central Site would be cleared to accommodate the drilling equipment, which includes the drilling rig, temporary liquid storage tanks, pumps, gas handling equipment, and pipe racks. All clearing equipment would be delivered to the well sites by trucks designed to transport such equipment. Clearing each site would require approximately 10 people operating earth-moving and support equipment for 10 hours per day, 5 days per week up to 4 weeks. Clearing would include removing brush and obstructions from an area smaller than the area disturbed during the Design and Construction Phase site grading. Disturbed areas associated with site clearing would be approximately equal in size to the final facility area.

Access roads (Catalina Avenue within the Preserve) would also be improved during this phase to provide access for emergency firefighting equipment. Utility crews would also be working to bring water and electricity to the drill sites, necessary precursors to drilling activities. Water would be obtained from the City of Whittier via its existing hydrant at the entry gate at Catalina Avenue. Matrix would use temporary aboveground piping to pipe the water from the existing hydrant to the drill sites. During the Drilling and Testing Phase, SCE would provide a temporary service meter and poles would be installed to distribute power to the well sites as needed. Poles, approximately 30 feet high and spaced approximately every 200 feet, would connect to the SCE service at the north end of Ocean View Avenue.

After the Central Site is sufficiently prepared, the drilling rig and associated equipment would be brought to the site and assembled. During set up, tear down and drilling operations, it is estimated that an average of 20 workers would be participating in the work. Each well is estimated to take up to 30 days to drill. Drilling would be conducted on a continuous schedule of

24 hours per day, seven days per week. While drilling is continuing, temporary oil, water and gas handling equipment, such as tanks, vessels, pumps, and compressors, would be installed on the well pad. The three test wells would be drilled one after another, utilizing the same rig and support equipment, which would remain on the property for approximately 90 days. When the last well is complete, the rig and associated equipment would be moved off of the property while monitoring and sampling of the test wells continues.

Continuous monitoring would be performed 24 hours per day, for up to 120 days. Up to 5 five workers (e.g., pumpers, pipefitters, electricians), working 10 hour shifts, would be present during the testing. In addition, tanker trucks would transport the produced liquid (oil and water) offsite up to six times per day during daylight hours only.

Drilling of the test wells would require a large drilling rig (approximately 137 feet tall) that would drill 24 hours per day until planned depths and bottom-hole locations are reached. It is anticipated that diesel-fueled generators would power the drilling rig and other necessary equipment. The surface equipment would be screened from view and appropriate temporary fencing and soundproofing would reduce noise.

Approximately 0.4 acre-feet (130,000 gallons) of water would be consumed while drilling each well. During the Drilling and Testing Phase, a temporary fire hydrant would be installed to provide water for fire protection. Water for drilling and fire protection would be served from the existing fire hydrant located on Catalina Avenue. If sufficient pressure is not available booster pumps may be required. As a byproduct of drilling operations, liquid slurry of drilling "mud" would be collected onsite within Baker-type enclosed tanks or bermed basins that are protected by impermeable membranes. Approximately 1,800 barrels of this mud would be collected for each well drilled. Most of the drilling mud would be reused and properly disposed offsite at an appropriate landfill after the third well is completed.

During the Drilling and Testing Phase, a 15-foot high noise blanket would be installed around the perimeter of the drill site to minimize noise and shield views into the sites. Any additional wells drilled before construction is complete would also be shielded by perimeter noise blankets.

Once test well drilling is complete, the wells would be cased off, wellheads would be installed, and all the drilling equipment would be removed. A down-hole pump would be installed on each productive well for the purpose of pumping oil and water to the surface for testing. Volumes of liquids would be measured and samples taken to determine composition. These liquids would be temporarily stored in onsite tanks and then transported offsite by trucks. The gas produced would also be measured and tested and would be clean-burned or "flared" adjacent to the wells. The flare would be installed after the initial test wells are drilled and would be removed after the permanent facilities are constructed and the gas is pipelined to the gas plant. Gas flaring would continue until the gas plant is constructed as part of the Construction and Drilling Phase of the Project.

The information obtained from the test wells would provide valuable data that would enable Matrix to determine the economic viability of the Project. If deemed economic, the information would also be used to determine the quantity and depths of wells required to maximize oil and gas recovery and to optimize the capacity of oil processing, gas plant, and oil loading facilities.

If the Project delineation and exploratory phases do not produce the level of production that Matrix deems economically feasible, then decommissioning of the installed equipment would take place. Decommissioning would involve removal of the temporary test equipment and the drilling equipment, if not previously removed. The number of truck trips and associated level of effort would be approximately equal to those required to install the equipment.

Decommissioning would include abandonment of wells as per DOGGR requirements. Matrix, under its lease with the City, is required to restore the site to its original condition, including filling sumps, remediation of contamination, regrading, and revegetation.

1.1 Drilling and Testing Phase Personnel and Equipment Requirements

During test drilling, drilling equipment would be delivered to the site initially, would remain at the site until the end of drilling, and then be removed from the site. In addition, for the initial site clearing, three 70-foot flatbed trailers would deliver the site clearing and grading equipment to the Central Site, which would be the staging area for construction. In addition, one 4,000-gallon water truck and one dump truck would be driven to the site. All site clearing activities would be performed consecutively; therefore, this equipment would only be delivered and removed once.

Oil and water brought to the surface would be briefly stored in temporary tanks and then removed daily by 58-foot tanker trucks. Temporary tanks, approximately 12 feet tall by 40 feet long, would hold up to 500 barrels. Up to six truck trips would be made per day for removal of both crude oil and water; these truck trips would occur during daylight hours.

Approximately ten workers would drive to and from the site daily in conventional vehicles during the clearing phase. This includes survey crews driving standard survey pickup trucks.

During the drilling phase up to 20 workers would drive to the site daily in conventional vehicles. On average, two to five workers (e.g., pumpers, pipefitters, electricians), working 8-hour shifts.

1.2 Drilling and Testing Phase Schedule

Earth-moving and grading activities would take up to 4 weeks. Each test well would take up to 30 days to set up, drill, and then take down and move the drill rig and drilling equipment. With three test wells, this would be a total of approximately 90 days of drilling.

Each of the three test wells would be monitored for as many as 120 days after the wells have been drilled and completed.

2 Design and Construction Phase

If the Project Drilling and Testing Phase yields the level of production that Matrix deems economically feasible, then the Project would proceed to the Design and Construction Phase.

During the Design and Construction Phase, the following facilities would be constructed:

- Stabilize and upgrade the existing landfill road:
- Oil and gas processing facilities including truck loading facility;
- Sales gas and crude oil pipelines;
- Well cellars and associated equipment.

Matrix plans to provide sufficient well cellar and supporting oil and gas processing capacity to handle daily maximum production volumes of 10,000 barrels (bbls) of crude oil and 6 million standard cubic feet per day (mmscfd) of natural gas.

2.1 Stabilize and Upgrade Existing Landfill Road

To accommodate large construction equipment, heavy trucks, future drilling rigs and equipment, oil transport trucks, and other vehicles larger than two tons, the existing landfill road would be stabilized and upgraded during the Design and Construction Phase. This would alleviate the need for such traffic to enter the Preserve via Catalina Avenue. All vehicles two tons and smaller will continue to use the Catalina Avenue entrance.

Considerable stabilization, upgrading and other construction work would be required of the existing landfill road to make it safe and usable for large vehicles.

2.2 Sites Construction

The Central Site would contain up to three well cellars, well test stations, and associated liquid and gas separating equipment. In addition, the Central Site would house the oil processing facility and gas plant. The total area required for the well pads, oil and gas production and processing, and truck loading facility is approximately 6.9 acres. During grading and earth-moving activities, a temporary 12,000-gallon elevated water tank would be provided and located onsite. This water would be used to moisten soil during compaction and for dust suppression. It is anticipated that earth-moving activities would last approximately 6 month and that the water tank would be refilled from the temporary piped water connection up to five times during a month, for an average water use of 2,000 gallons per day (gpd).

After the earth-moving activities conclude, water would be used only for concrete curing, hydro testing of pipes, and general construction activities. During this period, it is anticipated that an average of 1,000 gallons of water would be used each month during the well pad and facilities construction.

At the Central Site up to three well cellars would be constructed. Each well cellar would be approximately 12 feet wide and 8 feet deep, with metal stairs at each end and covered with expanded metal grating for safety. The distance between wells would be approximately 8 feet; accordingly, the maximum number of wells accommodated would determine the length of each cellar. Matrix estimates they may require up to 60 wells. Drilling subsequent wells would involve the same activities as those during the Design and Testing Phase.

The liquid pumped to the surface would be an emulsion of oil, gas, and water. Up to six well test stations would be constructed to separate the emulsion and measure the respective quantities of oil and water produced by each well. The well test stations would be composed of one or more vessels, for handling liquids, along with piping and valves from each well, which would allow the production from each well to be routed separately through the well test station where individual well production data could be compiled. The liquids would then be pumped to the oil processing facility. Gas would be collected and piped to the gas plant, also constructed at the Central Site.

All wastewater generated during construction would be stored onsite within bermed basins, protected by an impermeable membrane. This would include water from washing down trucks, equipment, and concrete construction pads. These temporary basins would store all wastewater and vacuum trucks would periodically haul it away from the site.

Grading the Central Site would include cut and fill. It is anticipated that approximately 131,000 cu yards of soil would have to be cut and approximately 43,500 cubic yards of soil would have to be used as fill and approximately 87,500 cubic yards of soil excavated during site grading would be transported off site. The soil would be tested for contamination and, if none is found, the clean soil would be trucked to the Savage Canyon Landfill within the city limits of Whittier, less than 2 miles from the Project Site. If the Savage Canyon Landfill does not require additional soil, then the excavated soil would be trucked to another location for sale or disposal.

Each dump truck would carry 16 cubic yards of soil. This soil would be exported during the 6-month of earth moving activities period.

Any contaminated soil would be shipped to the Kettleman Hill Facility for treatment and ultimate disposal in a Class I landfill near Kettleman City, California.

2.3 Utilities Construction

Permanent water supply pipeline would be constructed under existing road from the fire hydrant located on Catalina Avenue to the Central site.

Electrical power would be routed via power poles to the Central Site from the electrical meter provided by SCE. Matrix would construct a new 4-inch cast iron sewer pipeline from the new facility office within the Central Site to the sewer manhole on Catalina Avenue at the entrance to the Whittier Main Oil Field. The sewer pipeline would service restrooms at the Central Site offices. The office would be 30 by 80 feet and would contain two restrooms.

The Central Site would have a comprehensive fire protection system as required by the LACoFD. Fire hydrants and automated alarm systems would be installed.

The access roads from Catalina Avenue would be used as emergency entrance and emergency site access would be designed in accordance with LACoFD requirements.

2.4 Gas and Crude Pipeline Construction

A crude oil sales and natural gas sales pipeline would be built under existing Reserve roads from the Central Site to Colima Road. A small Gas Company meter building would be constructed prior to the pipeline entering Colima Road.

From where the natural gas and crude oil pipelines enter Colima Road, the pipelines would be built to connect the proposed Project site to the high-pressure natural gas pipeline that runs along Lambert Road and to the crude pipeline that runs along Leffingwell Avenue. The crude oil would be at approximately 100 psig of pressure and the natural gas would be at approximately 500 psig of pressure. The pipelines would be installed together in the same trench along Colima Road south to Lambert Road. The crude pipeline would then continue south along Colima Road and La Mirada Boulevard to Leffingwell Avenue.

The gas pipeline would tie in to the existing SCGC transmission and distribution pipeline system that extends throughout Southern California. Of the estimated 500 miles of transmission pipelines in Los Angeles County, the pipeline that runs along Lambert Avenue is the closest to the Project Site. This system serves the natural gas system that supplies natural gas to residences, business, and industry throughout the area.

The crude oil pipeline would tie in to the existing crude oil pipeline system owned and operated by Crimson California Pipeline Company, headquartered in Long Beach. This system collects crude oil from several production locations (wells and processing in Brea, Montebello, and Santa Fe Springs) and supplies the crude oil to area refineries for the eventual production of gasoline, diesel fuel, and jet fuel.

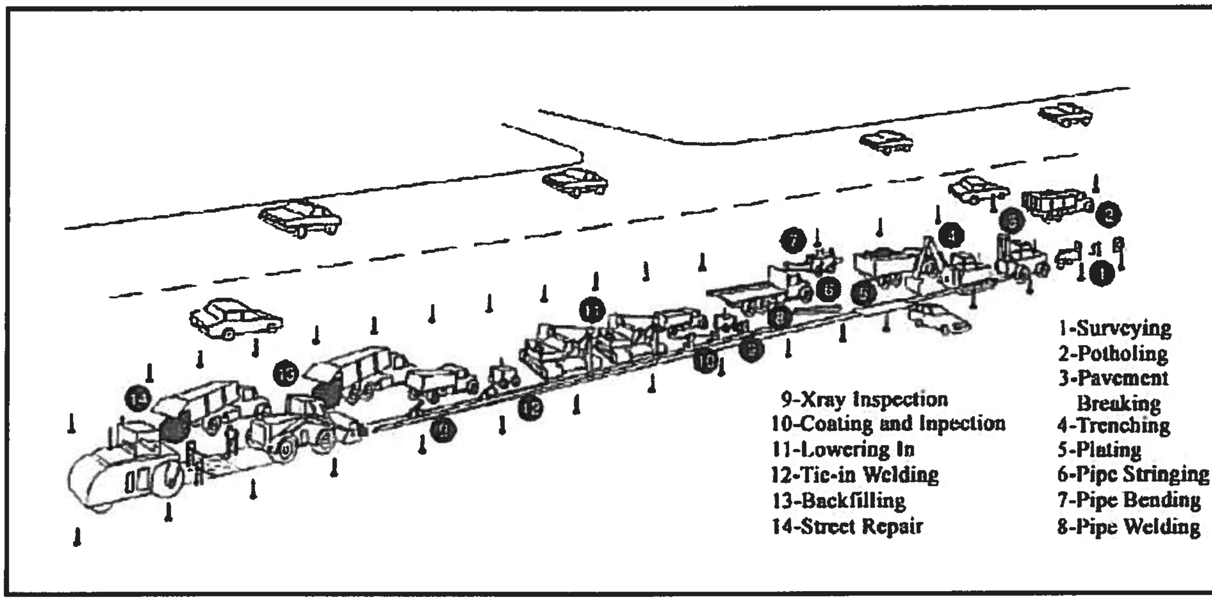
The entire gas pipeline route would be within the City of Whittier (the city boundary runs along Lambert Road) and entirely within existing streets.

The crude pipeline would cross into the unincorporated area of Los Angeles County, south of Lambert Road, between the City of Whittier and the City of La Mirada.

From the Colima Road entrance the proposed gas pipeline would be 6 inches in diameter and be approximately 1.8 miles in length. The crude pipeline would be 8 inches in diameter and approximately 2.8 miles in total length. The gas pipeline would be built to SCGC specifications and the crude oil pipeline would be manufactured in accordance with API specification 5L. The crude oil pipeline coating would be fusion-bond epoxy with polyethylene outer wrap tape covering the epoxy. The gas pipeline corrosion protection would be specified by SCGC. Landowners and tenants adjacent to the rights-of-way would be notified in advance of construction in their area. A Traffic Plan would be prepared and construction would occur as approved by the local jurisdictional agency. Temporary alternative vehicle and pedestrian access would be established.

The use of a construction spread is anticipated to accomplish most aspects of construction along the alignment. A construction spread is a group of construction equipment that moves along the pipeline route, sequentially removing asphalt roadway, trenching, laying in pipe, filling, and re-paving and cleaning up. The Figure below shows a typical construction spread.

Typical Pipeline Construction Spread



Note: All activities may not occur simultaneously.

A pipeline construction spread of several units would be organized to proceed with the work in the following order:

- Pre-construction activity;
- Asphalt removal and ditching;
- Pipe handling;
- Pipe coating;
- Pipe lowering, backfilling, and street repair;
- Pipe testing and inspection; and
- Metering, pigging and odorant station installation.

Pre-Construction Activity

The right-of-way for the pipelines would include roads or land in existing paved streets. Approval to construct and operate a pipeline would be obtained, or authorized, by franchise agreements or permits from the agency with jurisdiction over the streets along the proposed route and from affected property owners. After a right-of-way is obtained and the Project is permitted, landowners, permittees, and business owners along the right-of-way would be notified in advance of construction activities that could affect their business or operations. Tenants would be notified in person ahead of construction. Notification would also be made by various means, including signs at road crossings prior to construction.

Emergency response providers near the proposed route would be notified prior to construction of construction locations, road closure schedules, and potential alternate routes. Directly affected businesses and residents would be given ample notice and information to plan alternative ingress and egress routes. Signage would be provided to direct motorists to alternate routes. Contractors would work with local police and traffic engineers to plan appropriate access alternatives for temporary street closures and traffic disruptions. Traffic control requirements from Caltrans, the County and the City would be followed.

Underground Service Alert would serve to notify service providers of construction to avoid conflicts with existing utilities and disruptions of service to utility customers. Since construction would occur almost exclusively within paved streets, extensive grading is not proposed. Preparation for in-street work would include breaking and removing pavement with concrete saws, pavement breakers, and jack hammers where necessary. Dump trucks would haul the broken debris to approved landfill sites or to a crusher plant.

Asphalt Removal and Ditching

Once traffic control measures are in place, ditching operations would begin. Typically, a 6-foot deep and 24-inch wide ditch (single pipe) or 36-inch wide ditch (double pipes) would be excavated (varying depths, depending on the conditions encountered). The total construction would be a maximum of 50 feet at a time. Backhoes and track hoes would excavate the ditch. However, hand digging would be necessary to locate buried utilities, such as other pipelines, cables, water mains, and sewers.

Fugitive dust emissions at the construction site during earthmoving operations would be controlled by water trucks equipped with fine spray nozzles. Approximately 10,000 gallons per day of water would be used for dust suppression.

Spoils from cuts, including cuts in streets, would be saved for backfill or would have to be removed and the ditch would have to be backfilled with slurry material as approved by the local jurisdictional agency. An effort would be made to minimize the amount of excess material. Materials unsuitable for backfill and not economically useful for other purposes would be disposed of in available landfills according to local and county guidelines.

When used for backfill, spoils from the trenches would be hauled to previously disturbed sites, determined by the construction contractor.

Pipe Handling

Special trucks handling large spools of gas piping and pipe-stringing trucks would transport the pipe in 40- to 80-foot lengths from the shipment point or storage yards to the pipeline installation point. Where sufficient room exists, trucks would carry the pipe along the roadway and sideboom tractors would unload the joints of pipe from the stringing trucks and lay them end to end beside the ditch-line for future line-up and welding.

A portable bending machine would bend the pipe to fit the ditch contour both vertically and horizontally. Construction right-of-way conditions could occasionally require pipe bends that could not be accomplished in the field. In these cases, manufactured or shop-made bends would be used and pipe would be bent prior to the application of coating.

While laying the pipe, line-up clamps would hold the pipe sections in position until 50 percent of the first welding pass is completed. Following the line-up crew, the welding crew would apply the remaining weld passes to bring the thickness of the weld to more than the thickness of the pipe by approximately 0.0625 inch. All pipeline welds would be inspected with x-rays.

Pipe Coating

Protecting the pipe from moisture and air helps prevent corrosion, thereby preventing cracks, breaks, and leaks in the pipe. The pipeline would be coated externally with fusion-bond epoxy and covered with polyethylene outer wrap tape. Pipeline coating would be applied at the mill before delivery to the construction site. However, field coating would be necessary on all field weld joints to provide a continuous coating along the pipeline. After the pipe has been welded and x-ray inspected, either heat shrink polyethylene sleeves or polyethylene tape and tape primer would be applied.

Pipe Lowering, Backfilling, and Street Repair

The pipe would be lifted and lowered into the ditch by two side-boom tractors spaced so that the weight of unsupported pipe would not cause mechanical damage. Cradles with rubber rollers or padded slings would allow the tractors to lower the pipe without damage as they travel along the ditch line. Additional welds could be required whenever the ditch line is obstructed by other utilities crossing the pipe ditch. These welds would typically be made in the ditch at the final elevation. In addition to normal welding and weld inspection, each weld would require pipe handling for line-up, cutting to exact length, coating, and backfilling.

Backfill material would be obtained from the ditch spoils or would be imported, as per local Agency requirement depending on soil properties. Spoils would be screened as the material is returned to the ditch using standard construction screening equipment. The sides of the pipe would be covered with a maximum of 6 inches of native fill, free of rocks, and then covered on top with a minimum of 12 inches of fill, free of rocks or a slurry would be used. This zone is referred to as the pipeline "padding and shading." In certain areas where abrasive soils might damage the pipe coating, clean sand, earth backfill or slurry would pad the pipeline. Any required padding material would be obtained from local commercial sources. The backfill in the remainder of the trench above the padding would be native material excavated during trenching, or a slurry as required by local Agencies.

The area would be repaved if it was previously paved in existing streets. In areas where the pipeline would be in previously unpaved areas, the backfill would include topsoil preserved from the excavation for revegetation where needed. At the time of backfilling, a colored warning tape would be buried approximately 18 inches above the pipeline to indicate the presence of a buried pipeline to third-party excavators. The backfilled earth would be compacted using a roller or hydraulic tamper. The trench would be filled with slurry where required by local regulations.

The slurry would be purchased from a local slurry plant and transported to the site. Steel plates would cover any open trench at the end of each workday.

Pipe Testing and Inspection

All field welding would be performed by qualified welders that meet the Applicant's specifications and in accordance with all applicable ordinances, rules, and regulations, including API 1104, the Standard for Welding Pipe Lines and Related Facilities, and the rules and regulations of the U.S. Department of Transportation found in the Code of Federal Regulations.

All welds would be visually and x-ray inspected. All rejected welds would be repaired or replaced as necessary and x-rayed again. The x-ray reports and a record of the location of welds would be maintained for the life of the pipeline.

In addition to standard mill testing of all pipe and fittings, hydrostatic testing would be performed after construction and prior to startup. Federal regulations mandate hydrostatic testing of new, cathodically protected pipelines prior to placing the line into operation. This test involves filling a test section of the pipe line with fresh water and increasing pressure to a predetermined level. Such tests are designed to prove that the pipe, fittings, and weld sections would maintain mechanical integrity under pressure without failure or leakage.

Cathodic protection controls the corrosion of a metal surface by making it work as a cathode of an electrochemical cell. This is achieved by placing the cell in contact with the metal surface and another more easily corroded metal to act as the anode of the electrochemical cell. The cathodic protection system consists of power sources called rectifiers, buried anodes, and test stations along the pipeline.

Metering and Pigging Station Installation

A gas-metering station would be required for the gas pipeline at a location where the pipeline enters Colima Road to measure and record gas volumes and provide custody transfer of the gas to SCGC. The metering station would require an approximate 30 by 20 foot building. In addition, a pigging station would be installed, as required by SCGC for the gas pipeline and by Crimson Pipeline Company for the crude oil pipeline, to send and receive maintenance pigs into and from the pipelines to clean or inspect the pipeline.

2.5 Gas and Oil Processing Plants

The gas plant would be located at the Central Site and would be approximately 1.5 acres in area. All produced gas from the wells, tanks and vessels would be sent to the gas plant via pipeline for removal of liquids and impurities. The gas plant would have compressors, pumps, vessels, tanks, an odorizing system, a fire protection system, an automatic emergency shutdown system and an emergency flare. Sales quality gas would be sold directly to SCGC via a connecting pipeline from the Central Site to the nearest SCGC connection on Colima Road and Lambert Road.

The oil processing facility would also be located at the Central Site and would be approximately 3 acres in area. This facility would include tanks and vessels for oil and water separation, air compressors for control purposes, pumps for moving oil and water, tanks for temporary storage of oil and water, and supporting vessels, controls and metering equipment. All vessels, tanks, and critical equipment would be surrounded by berms or containment walls to contain any spills. The oil processing facility would separate water and solids from the oil, then the oil would be temporarily stored in tanks prior to shipment. The separated water would be accumulated in tanks, filtered, and then pumped back into subsurface oil-producing sands with high-pressure injection pumps. The injection wells would be lined with steel casing until the well reaches the prescribed injection depth. Trucks would ship solids offsite to appropriate landfills.

Construction of the gas and oil processing facilities would involve the following activities:

- Grading and earthwork;
- Cement pad construction;
- Vessel and tank erection; and
- Piping, electrical, controls and equipment installation.

2.6 Construction and Drilling Waste

Both drilling and construction would generate waste; the following subsections describe the different types of waste that could be generated by the Project during the different phases and the planned disposal methods.

Construction Waste

During the grading process, branches and leaves that are encountered would be collected, shredded, and turned into mulch. If desired, the mulch material would be taken to a location within the Preserve designated by the Habitat Authority or otherwise would be disposed of offsite.

Wet concrete for pads, vaults, and foundations would be trucked to the site. Once the concrete is used, the truck shoots and concrete pumps would be washed down at the site. The concrete and water slurry would be collected in lined, bermed ponds for the water to evaporate. The residue concrete would periodically be collected and shipped offsite for proper disposal.

As part of the construction process, pallets, cardboard boxes, papers, plastics, banding materials, scrap steel, scrap aluminum, scrap wire, and rubbish would be collected. Recyclable waste would be recycled at an appropriate facility and other waste would be disposed in a landfill. Matrix estimates that up to 80 tons of this material would be recycled and disposed of during the 30-month construction phase.

Portable construction toilets would be provided for domestic waste.

Drilling Waste

Materials used in the drilling process would come packaged in paper bags, cardboard boxes, plastic containers, and on wooden pallets. Recyclable materials (e.g., empty containers, pallets, bags) would be taken to an offsite recycling center. Remaining trash would be stored in conventional trash bins and, when full, disposed of in a landfill. Matrix estimates that one 40-cubic yard container of such trash would be generated and disposed of for each well drilled.

Drill cuttings from each well would contain soil, sand, crushed rocks, gravel, and other materials. Matrix estimates that approximately 660 cubic yards of this material would be generated during drilling of each well. This material would be properly disposed of in an appropriate landfill.

2.7 Design and Construction Hazardous Materials

During the grading operations, earth-moving equipment would be refueled daily by service trucks carrying diesel fuel and lubricating oil. This service would be provided in the late afternoon while the equipment is idle.

During construction, service trucks would maintain and refuel machinery and equipment daily, delivering diesel fuel, gasoline, oils, and lubricants in the late afternoon. Welding and cutting gasses such as acetylene, oxygen, and argon would be stored in cylinders. Solvents would be stored in 55-gallon drums and paint would be stored in 5-gallon containers.

2.8 Design and Construction Phase Personnel and Equipment Requirements

Table 2 lists the equipment required for grading and earthwork, construction of well cellars, the truck loading facility, and the oil and gas processing facilities.

In addition, during this period an average of 40 workers would drive to the job site in standard vehicles 5 days per week.

Equipment installed at the facilities includes vessels, tanks for storing and processing the oil and gas, pumps, compressors, controls, electrical and mechanical systems .

Table 2 Equipment Requirements for Grading, Earthwork and Facility Construction

Name	Fuel Type	Horsepower	Quantity	Hours per Day[a]
Grading				
Grader[b]	Diesel	250	1	6
Bulldozer[b]	Diesel	400	1	6
Scraper[b]	Diesel	700	1	6
Backhoe[b]	Diesel	108	1	5
Loader[b]	Diesel	350	2	8
Water Truck[b]	Diesel	300	1	6
Dump Truck	Diesel	250	5	8
Roller[b]	Diesel	120	1	4
Tamper[b]	Diesel	120	1	4
Facility Construction				
Crane[b]	Diesel	120	2	6
Welding Machines[b]	Diesel	45	4	7
Forklift/Reach All[b]	Diesel	120	4	6
Backhoe[b]	Diesel	108	1	4
Manlift[b]	Diesel	120	1	6
Air Compressor Truck[b]	Diesel	-	1	6
Concrete Truck	Diesel	300	2	2
Water Truck[b]	Diesel	300	1	4
Dump Truck	Diesel	250	1	4
Flatbed Truck	Diesel	250	1	6
Paver	Diesel	-	1	6
Welder Trucks[b]	Diesel	-	10	6
Vacuum Trucks	Diesel	-	1	6
Work Trucks	Diesel	-	3	6
Pickup Trucks	Gasoline	250	3	4

a. Hours per day is during peak construction periods only and is not representative of the entire construction interval and all equipment would not be operating at the same time.
b. This equipment would be delivered to the site once at the beginning of the phase, then removed at the end of the phase. The remaining equipment would make multiple trips to the site from offsite locations.
Source: Matrix Application Data Request #1

2.9 Gas and Crude Oil Pipelines, Personnel, and Equipment Requirements

During the facility construction phase, the gas and crude pipelines would be built under existing Reserve roads to Colima Road and south along Colima Road to tie in to a SCGC transmission pipeline on Lambert Road and to an existing crude oil pipeline along Leffingwell Road. The same crew that constructs the Central Site would also construct the pipelines within the Reserve from the Central Site to Colima Road. No additional personal or equipment would be required. For pipeline construction from Colima Road to Lambert Road and then to Leffingwellen Road, a crew of approximately 15 equipment operators, pipe fitters, welders, laborers, and others would drive to the pipeline location each day. Two trenchers, two backhoes, two to four dump trucks, two 1-ton welding trucks, two pipe fitter trucks, and other trucks carrying materials would be used to construct the pipeline.

2.10 Design and Construction Phase Schedule

Final grading of the Central Site would take up to 6 months. It would take an additional 3 to 4 months to complete well cellars and equipment foundations. The design and construction of the gas and oil processing plant facilities would take approximately 2 years. Table 3 shows the schedule for construction of the Project with the exception of the wells.

Table 3 Gas and Oil Processing Plants Construction Schedule

Activity	Duration (weeks)
Grading and Earthwork	24
Foundations and Retaining walls	16
Vessels and tanks construction/installation	32
Piping	32
Electrical	24
Preparation and painting	8
Instrumentation and controls	8
Start up and commissioning	12

Note: Several activities would occur concurrently with one another.

Construction of the oil and gas pipelines and stabilizing the landfill road would take up to 9 months, concurrent with the construction of the gas and oil processing plant facilities.

3.0 Operations and Maintenance Phase

The Operations and Maintenance Phase of the Project would consist of drilling the remaining wells and operating and maintaining the oil processing, gas processing, and oil loading facilities. The facilities would be physically located at the Central Site within the Whittier Main Oil Field.

3.1 Drilling Activities

Drilling up to 57 additional wells would take up to 30 days per well, including drilling rig set-up, tear-down, and drilling operations. This would total up to 5 years of drilling.

Production wells would be drilled with a single drilling rig. The production wells would use down-hole electric pumps to move the production fluids to the surface since the reservoir is not anticipated to produce enough pressure for sufficient free flow of fluids to the surface. Injection wells would inject the produced water back into the oil producing formations. As many as eight injection wells would also be drilled at the Central Site.

Drilling a well involves several distinct steps. Once the drilling derrick and structure are established, the drilling process begins. The first step is to drill a shallow, large-diameter hole and install a conductor pipe with a flange welded on top with diverter valves. The diverter valves allow any subsequent flow of fluids into the wellbore (well hole) to be diverted and controlled. Then a large diameter drill bit, slightly smaller than the conductor diameter, is placed into the conductor hole and drilling begins. Starting to drill the well is referred to as "spudding" a well.

In order to drill downwards through soil and rock, the drill bit requires downward force, which is provided by the weight of thick-walled pipe screwed on top of the drill bit. A single, 30-foot long drill pipe for a larger diameter drill bit weighs approximately 3 tons. As the drill bit drills deeper, more drill pipe is placed on top, thereby increasing the downward force to drill.

The drill bit turns clockwise as the weight of the drill pipe column forces it downward. The rotary table on the drill rig floor produces the turning; the table then grips the drill pipe with teeth and turns it, obtaining power from the drill motors.

As the drill bit turns, it generates rock cuttings. These must be removed from the wellbore by pumping fluids, or "mud", down the hollow drill pipe, out of the holes at the bottom of the drill bit, and then back up the space between the wall of the hole and the drill pipe (the annulus). The mud equipment at the surface separates the mud from the cuttings and re-uses the mud. Cuttings are analyzed and then hauled offsite.

Once the wellbore is drilled to a predetermined depth, the drill pipe is pulled out of the hole and the hole is "cased." The installation of wellbore casing is an integral part of drilling a well. Well casing is piping that is placed down a wellbore to stabilize the hole and prevent the entry of unwanted fluids, rock cuttings, or sand into the wellbore or the exit of mud and fluids out of the wellbore.

Once casing is placed in the hole to the given depth, cement is forced down the casing middle and out the bottom of the casing and back up the annulus until the annulus is full of cement. Right behind the cement is mud, separated by a rubber "plug," which wipes the cement from the insides of the casing. When the plug reaches the bottom, it stops and allows the driller to know when the cement has reached the bottom of the wellbore. The cement is then allowed to dry to seal the outside of the casing to the wellbore sides.

At this point, a second, smaller diameter drill bit is placed into the wellbore and the well is drilled deeper. This process continues, with subsequently smaller drill bits and smaller diameter casing placed into the wellbore and cemented, until the target depth is reached. At this point, the casing is "perforated" with holes to allow production fluids to flow into the well and tubing is placed down the well and production fluids are pumped from the bottom of the well through the production tubing to the surface.

Matrix indicates that they would follow their currently used approach at the West Whittier field operation which includes methods of straight perforations of well casing into a oil/gas zone (OG Zone) or the use of a slotted liner across an OG Zone to which a tube with slots/holes as a liner is used which allows fluids to enter from a selected formation or a method of perforation across a

OG Zone with an injected resin or "Limited Entry Sand Control Method" which helps keep sand from flowing into a well. The Los Angeles Basin consists mostly of very soft oil-saturated formations; fracturing with multi-stage operations like the Mid-Continent approaches is not used in this type of formation.

A number of tests are performed at various stages during drilling, including pressure tests to ensure that the cement is solid and can hold pressure, and well logs and core samples are taken to understand the well design and drilling program.

The drilling rig would utilize diesel-powered electric generators.

Water consumption during drilling would be approximately 130,000 gallons of water per well drilled, for an average water use of 4,500 gpd over 30 days per well. A fire hydrant near the drill site would be installed during the Design and Construction Phase.

During drilling operations, liquid slurry of drilling "mud" would be collected onsite within Baker-type enclosed tanks or bermed basins that are protected by an impermeable membrane. Much of the mud can be reused for the drilling of subsequent wells and the remainder would be collected and disposed offsite.

During the testing phase, a 15-foot tall noise blanket would be installed around the perimeter of the drill sites to minimize noise and to shield the sites during drilling operations. Additional wells, drilled before construction is complete, would also be shielded by perimeter noise blankets.

Table 4 lists additional equipment necessary during drilling. Note that the equipment shown is representative for a typical drilling operation of the type expected; the exact equipment list and layout may vary depending on the specific well.

Mud Handling Program

Two basic mud systems are anticipated for the proposed Project: a fresh water and clay-based system approved by the U.S. Environmental Protection Agency and a low-toxicity mineral oil system.

During drilling, cuttings and drilling fluid wastes would be processed by a chemically enhanced de-watering system and an onsite solidification process. The waste generated onsite would be transported in plastic lined bins (solidified solids) and vacuum trucks (liquid) and taken to an approved disposal site.

A mud handling program would be used for drilling the wells with the mineral-oil-based mud. Liquid oil, calcium chloride, water, and the associated additives would be combined at a mud mixing plant in Bakersfield, California. The mixed-oil-based drilling fluids would be pumped into vacuum trucks and transported to the drilling rig site. The drilling fluid would then be pumped from the vacuum trucks into the drilling rig pit system.

Prior to moving the oil-based fluid to the drilling rig, the pits would be emptied of water-based drilling fluids and cleaned. After the pits are cleaned, the fresh water used on the drilling rig would be disconnected. The pollution pan placed under the rig floor at the beginning of the drilling operation, and used throughout the water-based mud section of the well, would be inspected. The drill-pipe, mud-catch pans on the rig floor would also be inspected, as well as the mud buckets. This equipment would catch and collect any oil-based mud that may be on any of the equipment as it is pulled out of the well.

As required, additional oil-based mud would be made to specification and vacuum trucked to the well site. The mud would be pumped into the pits. When drilling is completed, the oil-based drilling mud would be pumped into vacuum trucks and transported back to Bakersfield for recycling. The rig and mud pits would be cleaned and the wash fluid hauled to an approved disposal site.

Table 4 Other Drilling Equipment

Description	Size
Mud Pump 1	20 ft L x 7 ft W
Mud Pump 2	20 ft L x 7 ft W
Active Mud Tank	39 ft L x 10 ft W x 9 ft H
Mud Dock and Storage	15 ft L x 8 ft W x 10 ft H
Reserve Mud Pit	42ft L x 10 ft W x 9 ft H
Top Drive Control House	12 ft L x 8 ft W x 8 ft H
SCR House	26 ft L x 9 ft W x 10 ft H
Generator/Radiator/Cable Tray	21 ft L x 9 ft W x 8 ft H
Gel Storage Tank (1,000 cubic feet)	10 ft L x 10 ft W x 13 ft H
Barite Storage Tank (1,000 cubic feet)	10 ft L x 10 ft W x 13 ft H
Cutting Conveyor	22 ft L x 2 ft W x 2 ft H
Cuttings Box 1	8 ft L x 5 ft W
Cuttings Box 2	8 ft L x 5 ft W
Mud Logging Unit	15 ft L x 10 ft W
Shaker 1	11 ft L x 5 ft W
Shaker 2	11 ft L x 5 ft W
Mud Cleaner	11 ft L x 5 ft W

Notes: ft = feet; L = length; W = width; H = height

Drilling Site Spill Containment

A pollution pan installed under the rig floor would catch any oil-based drilling mud that may spill on the rig floor. The catch pans installed under the drill pipe would catch any oil-based drilling mud left on the inside or outside of the drill pipe. The wash water would be disconnected once the oil-based drilling mud is in use and the rig floor would be cleaned with rubber squeegees. During routine drilling operations, some oil-based mud would be spilled on the rig floor. This would be captured and contained in the pollution pan and returned to the active mud pit. The drilling pad would be constructed to allow any fluids spilled directly around the rig to flow into the well cellar. In addition, a 6-inch berm would be placed around the entire drilling rig after the drilling rig is installed. In the event that a leak should occur in the mud handling system, it would be contained directly around the rig and flow into the cellar. A cellar pump would then pump the fluid out of the cellar and back into the active mud pit.

Rainwater and accumulated runoff within the bermed area around the rig would flow into the well cellar and be pumped into the active mud pit.

A spill trailer at the drilling site would be equipped with absorbent material, small spill booms to contain and direct flow, plastic sheets, personal protective equipment, and rakes, shovels, and hand tools. This equipment is designed for use in the event of an oil spill.

Blowout Prevention Equipment

A blowout occurs when unexpected high pressure and flow levels at the wellhead cause a release of oil and gas from the well. Blowout prevention (BOP) systems are safety systems used during drilling operations in oil and gas fields to prevent uncontrolled release of reservoir fluids and shut off the flow to prevent spills and releases of materials that could cause fires and explosions. BOP systems are composed of a stack, actuation systems, a choke manifold, stop systems, and other equipment. A BOP system would be placed on each wellhead during drilling and removed after the well was established. Wellhead pressures (pressure at the wellhead where the BOP is situated) would be a maximum of 2,500 pounds per square inch, gauge (psig).

Hydrogen Sulfide Contingency Planning

The status of the field in terms of hydrogen sulfide (H_2S) in the gas and oil is unknown at this time, although it is expected that the composition of the gas would be similar to the adjacent reservoirs at Honolulu Terrace and Sycamore Canyon, which are both devoid of any significant levels of H_2S. A contingency plan would be developed to address issues such as safety equipment, personnel responsibilities, first aid, and evacuation. This plan would address employee safety and issues in the event of H_2S exposure.

Hydrogen sulfide is a colorless, toxic, flammable gas with a characteristic foul odor of rotten eggs. Gas that contains hydrogen sulfide is called "sour" gas. DOGGR publication M10 requires special precautions for well-drilling operations that could expect to encounter gas with hydrogen sulfide concentrations above 20 parts per million (ppm).

Hydrogen sulfide can also be dissolved in the crude oil be liberated into the vapor space of storage tanks at significantly higher concentrations than the crude oil, according to DOGGR publication M10.

In the event that gas intended for production is found to be sour, or hydrogen sulfide levels in the gas are greater than 20 ppm or a crude hydrogen sulfide concentration, which could produce vapors above 100 ppm, the well would be shut in and either abandoned or the Project would be changed, including all necessary permits, to handle sour gas. Should gas containing low levels of H_2S be encountered during drilling, no additional changes would be made to the drilling operations, since the drilling operations are already designed to protect against the release of production gases. Current plans indicate that permanent H_2S gas detection is not proposed as part of the Project.

Temporary H_2S detection equipment would be included as part of a contingency plan associated with drilling. H_2S detection equipment would monitor the drilling rig environment during the drilling of the test wells, but it would be removed after the test wells are installed, assuming that the same formations would be penetrated. This temporary equipment would include H_2S monitors on the drilling rig and breathing air packs at the rig and in the safety trailer.

Noise Abatement

Noise reducing mitigation efforts incorporated into the Project include using wood timbers and sleepers on pipe racks and at the pipe V-door ramp to minimize metal-to-metal contact. In addition, wood timbers would also be used on the rig floor and on the pipe racks to minimize metal-to-metal contact. The use of hydraulic tongs, as proposed by the Project, rather than chain or pneumatic tongs, would also minimize metal-to-metal contact. High sound levels from other equipment (e.g., pumps, compressors, generators, winches, auxiliary engines) would also be mitigated as necessary (e.g., enclosure, vibration reducing mounts, mufflers). The drilling area would be surrounded by a 15-foot tall sound barrier.

Diesel-powered electric generators would power the drilling rig and most of the associated drilling equipment. The crane and well-logging unit would operate approximately 20% of the time, both during the day and the night, depending on the drilling requirements. The well-logging unit, cementing equipment, coil-tubing unit, and slickline engines are truck-mounted and operate from the main truck engines. The well-logging unit contains the surface hardware necessary to make well measurements; the cementing equipment used to pump cement down the well; the coil-tubing unit used to run tubing down the well hole, and the slickline, a thin cable used to control and retrieve well-hole equipment.

Lighting and Shielding

The lighting for a mast and derrick generally consists of two light strings (i.e., two of the four corners of the mast have lights). Safety guidelines specify "luminance" for different safe working conditions.

For a rig, the guidelines include:

- Derrick: 30 foot candles;
- Rig Floor: 70 to 100 foot candles; and
- Pipe Racks: 50 foot candles.

Derrick light fixtures would typically be approximately 12 feet apart on the two corners of the mast holding the lights. The derrick light fixtures would be recessed and shielded to reduce glare.

The top of the derrick would have a red beacon light for airline identification. High intensity mercury arc lighting would be used on the rig floor and pointed at the specific work area. These lights would be inside the rig floor area.

Odor Abatement

Dust from cement, barite, and other mud chemicals would be controlled with dust filters and ventilation. Use of volatile materials onsite (e.g., paints, solvents) would be minimized. The Applicant indicates that water-based mud would have no appreciable odor and that the oil-based mud under consideration would have no appreciable odor beyond the drill site.

Drilling Materials

Table 5 lists the materials that would be used during drilling operations. The amounts listed are the estimated quantities consumed per well drilled. These materials are packaged by the manufacturer for shipping and would be delivered to the job site by conventional delivery or flatbed trucks. Only trained personnel would handle these materials.

Table 5 Drilling Materials Usage

Name	Material	Container	Amount per Well
Gel	Wyoming Bentonite	100-pound sack	525 sacks
DMA	Sodium Polyacrylate	50-pound sack	82 sacks
Benex	Anionic Acrylamide	2-pound sack	75 sacks
GEOZan	Xanthan Gum	25-pound sack	40 sacks
Omniopol	Sodium Polyacrylate	Liquid	380 gallons
CFR	Fatty Acid	Liquid	600 gallons
Bicarb	Sodium Bicarbonate	50-pound sack	40 sacks
Citric Acid	Citric Acid	50-pound sack	11 sacks
Walnut	Walnut Hulls	50-pound sack	48 sacks

All of the products listed in Table 3.1B are generically listed on the California Department of Health Services-approved Drilling Mud Additives List. In these concentrations, the drilling fluid is considered a non-hazardous material.

In addition, diesel fuel, lubricating oils, and cleaning solvents would be stored and used during the drilling operations. Table 6 lists the estimated quantities that would be consumed per well during drilling.

Table 6 Drilling Diesel and Oils Materials Usage

Name	Consumption	Storage
Diesel Fuel	1,200 gallons per day	12,500-gallon fuel tank
Lubricating Oils	10 gallons per day	52-gallon drums
Miscellaneous Oils & Solvents	Varies	5-gallon drums & 1-gallon containers

3.2 Operations

Once constructed, the Project would be operated and maintained as an oil and gas field, designed to current oil field technology standards, including automated alarms and shut downs for abnormal conditions. Operations would be designed to utilize automated equipment for emergency shutdowns of major equipment and system malfunctions, as well as for earthquakes or fires. Oil field operators would be present 24 hours per day to monitor activity and check for safety and security of operations.

Water use during operations would be associated with personnel, landscaping, and general cleaning. Monthly water use is estimated at 39,000 gallons, or 1,300 gpd.

All produced water re-injected into the ground would be pumped into one of the several oil producing sands located below the fresh water aquifer. Water separated from oil would be injected into oil sands between 1,000 and 10,000 feet deep. Steel casing, cemented in place, would insure that produced water cannot inadvertently permeate the much shallower groundwater aquifer.

At peak projected production rates, it is anticipated that eight water-injection wells at the Central Well Site would inject a maximum of 7,200 bpd of produced water into deep zones.

Upon construction completion, a permanent chain link, masonry block or concrete wall would be constructed surrounding each site. Native plants would be planted outside the wall for decoration and screening. Subsequent wells would be drilled within the Central site, and additional soundproofing and shielding would be provided as necessary.

The operations phase would include appropriate shielded lighting at night, and around-the-clock security cameras would survey the perimeter and the interior of the sites.

Gas Plant Operations

Incoming gas from the wells, tanks and vessels would be received at the gas plant via one or more pipelines that enters the plant. The maximum design flow rate would be 6 mmscfd. The incoming pressure of the gas would typically be approximately 55 psig. The gas would be received through a liquid slug catcher and intake scrubbers that capture any liquid condensate that may be present.

Downstream of the intake scrubbers, the gas would be compressed during first stage compression to approximately 150 psig prior to entering the gas sweetening plant, which removes any H_2S and CO_2 from the gas stream, if necessary. Tests at nearby operating wells indicate that less than 1 ppm of hydrogen sulfide is in the gas. Small quantities of hydrogen sulfide encountered would be removed from the gas.

If small levels of H_2S are encountered, the gas plant would be able to remove it to sweeten the gas to the levels required by SCGC. In the gas sweetening process, the gas would pass through a pair of heat exchangers and then flow through gas sweetening towers, which remove H_2S and CO_2 compounds and residual sulfur elements. A pump would circulate the gas sweetening solution (Amine), which is the primary method for removing the sulfur compounds. The gas stream outgoing from the sweetening towers would be routed to a water wash tower, where the gas sweetening solution would be recovered, and the gas would then be directed through a filter and separator for final liquid separation.

At this point, the gas would be compressed again to approximately 500 psig in the second-stage compression system. The gas would then be ready for dehydration, or the removal of water vapors. A conventional glycol system would remove the water from the gas. Gas would be routed to a glycol contactor tower that would initially dehydrate the gas. Downstream of this gas tower, the gas would be routed through a glycol separator, and then through a heat exchanger that would provide for some cooling of the gas prior to entering the gas chiller and associated low temperature separator. The chiller would provide low temperature separation (LTS) of the gas stream, which would chill the incoming gas and remove natural gas liquids (NGL) from the gas stream. Non-flammable refrigerant would be the working refrigerant of the LTS plant.

After second stage compression, dehydration, and LTS, the gas would enter the pipeline for connection to the gas pipeline installed along existing Reserve roads and on to Colima Road to connect to the existing natural gas pipeline along Lambert Avenue.

Vapor would be recovered throughout the plant in a near-atmospheric-pressure vapor header. The vapors would be compressed to 55 psig using a vapor recovery compressor. The gas would then be mixed with the gas coming from producing wells and would go to the gas plant with the produced gas.

The gas plant would separate NGL from the gas stream and mix these into the crude oil for transportation to the crude pipeline. At the maximum design rate of 10,000 barrels crude and 6 mmscfd of gas per day, the gas plant would yield between 50 to 70 bpd of NGL.

A total of approximately 30 pressure relief valves throughout the system would relieve to a header system piped to a gas flare, which would be enclosed in its own housing and inside the walls of the gas plant.

Truck Loading Facility

The truck loading facility would be designed to load a single truck at a time. Each truck would be able to load 150 barrels or more, depending on the crude properties. It would take approximately half an hour to position and load a truck. At this rate, a maximum of 24 trucks can be loaded during a twelve hour period. The truck loading facility would only be utilized when the crude oil pipeline is not functioning. This is anticipated to happen infrequently.

Table 7 lists the approximate number and size of tanks and vessels proposed at the sites.

Table 7 Tanks and Vessels at the Proposed Project Site

Number of Vessels	Description	Orientation	Size	Working Volume
Well Pad				
Up to 3	Gross Separator	Horizontal	5 ft 0 in X 27 ft 0 in L	1,840 gallon
Up to 6	Automatic Well Test Station	Horizontal	3 ft 0 in X 10 ft 0 in L	280 gallon
Up to 3	Blowcase	Vertical	1 ft 6 in X 3 ft 0 in H	20 gallon
Up to 3	VRU Suction Drum	Vertical	2 ft 6 in X 10 ft 0 in H	80 gallon
Up to 3	VRU Discharge Scrubber	Vertical	1 ft 8 in X 5 ft 0 in H	30 gallon
Gas Plant				
1	Walnut Shell Filter	Vertical	7 ft 0 in X 7 ft 0 in H	2,440 gallon
1	Wash Tank	Vertical	40 ft 0 in X 24 ft 0 in H	5,368 barrels
Up to 2	Shipping Tank (Primary)	Vertical	50 ft 0 in X 40 ft 0 in H	11,184 barrels
1	Reject Tank	Vertical	30 ft 0 in X 24 ft 0 in H	2,416 barrels
1	Clarifier	Vertical	20 ft 0 in X 24 ft 0 in H	1,074 barrels
1	Filtered Water Tank	Vertical	42 ft 0 in X 40 ft 0 in H	7,892 barrels
1	Skim/Drain Tank	Vertical	30 ft 0 in X 24 ft 0 in H	2,416 barrels
1	Free Water Knockout Drum	Horizontal	10 ft 0 in X 36 ft 0 in L	9,450 gallon
1	Induced Gas Flotation Cell	Vertical	6 ft 0 in X 6 ft 0 in H	1,390 gallon
Gas Plant				
1	Inlet Gas Filter	Vertical	1 ft 8 in X 5 ft 0 in H	82 gallon
1	DEA Reboiler	Horizontal	2 ft 6 in X 8 ft 0 in L	200 gallon
1	EG Regenerator	Horizontal	3 ft 6 in X 11 ft 0 in L	400 gallon
1	Absorber	Vertical	3 ft 0 in X 50 ft 0 in H	800 gallon
1	Amine Regenerator	Vertical	3 ft 6 in X 40 ft 0 in H	880 gallon
1	1st Stage Suction Drum	Vertical	3 ft 0 in X 9 ft 0 in H	50 gallon
1	1st Stage Discharge Drum	Vertical	2 ft 6 in X 7 ft 6 in H	30 gallon
1	2nd Stage Suction Drum	Vertical	2 ft 0 in X 6 ft 0 in H	20 gallon
1	2nd Stage Discharge Drum	Vertical	3 ft 0 in X 9 ft 0 in H	50 gallon
1	Flash Tank	Horizontal	3 ft 6 in X 11 ft 0 in L	400 gallon
1	Reflux Accumulator	Vertical	2 ft 0 in X 6 ft 0 in H	70 gallon
1	Cold Separator	Vertical	1 ft 8 in X 5 ft 0 in H	40 gallon
1	3-Phase Separator	Vertical	1 ft 4 in X 5 ft 0 in H	40 gallon
1	Ko Drum	Vertical	1 ft 0 in X 4 ft 0 in H	5 gallon

Oil Processing Plant Operations

A mixture of incoming oil and water from the well site would be received at the oil processing plant. This mixture would pass through a water knock-out drum and wash tanks to remove any water and then would be stored in oil shipping tank. This tank has a storage capacity of 11,184 barrels, or slightly more than 1 day's worth of oil production at full capacity. NGL from the gas plant would be mixed with this oil, metered through a Lease Automated Custody Transfer (LACT) station, and then shipped by pumps into the crude oil pipeline. A LACT station is a sophisticated meter that measures the quantity of oil and samples water percentages. The LACT station is also the point in the process where custody (i.e., ownership) of the oil passes from the oil operator to the pipeline company.

Water Treatment and Injection

Water produced by the proposed Project would be cleaned of contaminants and injected back into the reservoirs at an estimated pressure of 1,000 psig. Produced water from the oil processing operations would pass through a clarifier and a skim tank and would then be gathered in a filtered water tank with a capacity of 7,892 barrels. The tank would operate at atmospheric pressure.

From the filtered water tank, the water would be pumped directly to injection. Each injection pumps would be operated from an electric drive motor. The discharge of the pumps would then go to the water injection wells. There would be as many as eight water injection wells.

All well cellars would be designed to collect stormwater from the surrounding area within the well cellars. From the well cellars, the collected stormwater would be pumped into the oil processing water handling system. Where no well cellars are located nearby, stormwater would be collected in a bermed area and allowed to percolate into the ground. No stormwater would be allowed to drain from the Central Site into the surrounding area.

Gas Odorant and Metering Operations

Natural gas, used for heating and cooking in homes and as fuel for natural gas vehicles, is a colorless and odorless gas. The gas can be harmful if inhaled and can cause suffocation, fire, and explosion. Law requires that natural gas is odorized before entering the gas distribution system to allow for detection of gas leaks and prevention of hazardous consequences. Typically, the odorants used are sulfur compounds that have the classic "rotten egg" smell. The odorant tetrahydrothiophene would be used, which is similar to another commonly used natural gas odorant, methyl mercaptan.

The gas pipeline would require the delivery of odorant to the Central Site gas plant to odorize the natural gas before introducing it into the natural gas pipeline. Based on 6 mmscfd and a 500-gallon odorant tank, there would be a total of two deliveries of odorant per year.

Well Maintenance, Workover, and Re-Drill Operations

Well maintenance and workover operations are periodically necessary to sustain production from the wells. A portable unit conducts routine maintenance, such as replacing gas lift valves or servicing sub-surface safety valves. A portable coiled tubing unit cleans out sand from the wells. A workover rig removes production tubing from a well to repair tubing or other leaks.

A workover rig is also used to set cement isolation plugs or bridge plugs in the wellbore to isolate non-productive intervals of the reservoir. A workover rig can be used to workover, recomplete, abandon, and sidetrack an existing well.

Matrix estimates an average of one workover per year per well, or a maximum of 52 workovers per year. Depending upon the level of maintenance required, a workover of a well typically takes anywhere from 1 to 7 days. Workover rigs used for these operations typically operate up to 12 hours per day during weekdays. They do not operate at night or on weekends. Well workover rigs are generally truck mounted with up to a 90-foot tall mast (to service a 10,000 foot deep well) with a work platform near the top and an approximately 300-horsepower diesel power drive package.

Well re-drills involve similar operations as the initial drilling of the well with a similar sized drill rig and associated equipment and schedule (24 hours per day). Matrix estimates an average of three well re-drills annually for the life of the proposed Project once full field development is achieved.

Operational Waste

During operations, waste such as pallets, cardboard and paper boxes, paper, and plastics would be taken to an offsite recycling center. Scrap steel, scrap aluminum, and scrap wire would also be collected and recycled at an appropriate facility. Other trash and rubbish would be collected in waste bins and disposed of by a local waste hauler. On average, a 10-cubic yard bin would be disposed of each week.

The office sewer would be connected to the local sanitation district and portable construction toilets would be provided at strategic locations.

At some locations, sand and other solid particles are trapped in the oil and water emulsion that is brought to the surface by the deep well pumps. These solids would be separated from the oil and water and disposed of offsite at a hazardous waste landfill by a licensed contractor hired by Matrix. The quantities are unknown, but could range up to two trucks per month.

Periodically, a deep well pump would require repairs. When this occurs, the pump would be brought to the surface, accompanied by approximately 3 tons of soil and other solids. This material would be hauled to a landfill. It is unknown how often this would occur, but it is estimated as many as four times per year for the entire field.

Operation Phase Personnel and Equipment Requirements

As many as 15 to 20 operators and maintenance technicians would drive to the site each day (24 hr period) in standard vehicles (not including drilling personnel). Periodically, 1- and 2-ton delivery trucks would bring parts to the facility site. Welding trucks, cranes, and other maintenance equipment and associated personnel would drive to the site as maintenance activities warrant. One 3,000-gallon vacuum truck would drive to and from the facility three to four times per week. Other equipment, such as well workover rigs and trucks, would drive to and from the job site periodically as maintenance activities require. Any heavy equipment would approach the Project Site via the new access road from Colima Road.

Drilling activities would commence after the construction of the well pads and oil and gas processing facilities is completed. Vehicle traffic for drilling would be the same as for the test wells.

Vehicle Trips Summary

Tables 8 summarizes all round trips associated with the phases of the Project.

Table 8 Proposed Project Vehicle Visits by Phase (round trips)

			All Vehicles - Trucks and Autos/PU		Trucks Only		Autos/PU Only	
Activity	**Duration (Days)**	**Total Trips**	**Peak Day**	**Average Day**	**Peak Day**	**Average Day**	**Peak Day**	**Averag e Day**
Drilling and Testing Phase								
Pad Clearing/Utilities	25	266	18	11	8	1.4	10	10
Drilling	90	2,394	40	27	20	6.6	20	20
Testing	120	840	10	7	6	4	5	5
Construction Phase								
Landfill Road	180	720	20	4	10	2	10	5
Grading, Earthwork	120	1,228	24	10.2	14	0.2	10	10
Facility Construction	520	26,280	69	51	29	10.5	40	40
Off Site Pipelines	180	4,165	28	23	13	8.1	15	15
Operations and Maintenance Phase								
Operations, no drilling	365	7,768	29	21	6	1.9	25	22

Note: Trips will be to different locations.

Hazardous Materials

All consumed materials, hazardous and non-hazardous, would be transported to the site by trucks; the materials would be in the original manufacturer's packaging or containers. Tanker trucks designed to haul and transfer hazardous liquids would transport materials such as diesel fuel and consumable lubricants. Throughout the drilling, construction, and operational phases of the Project, materials such as WD-40, starting fluids, pipe dope, antifreeze, fire extinguisher chemicals, hand cleaners, silicone, oils, greases, and lubricants would be safely stored and used onsite.

Operations Hazardous Materials

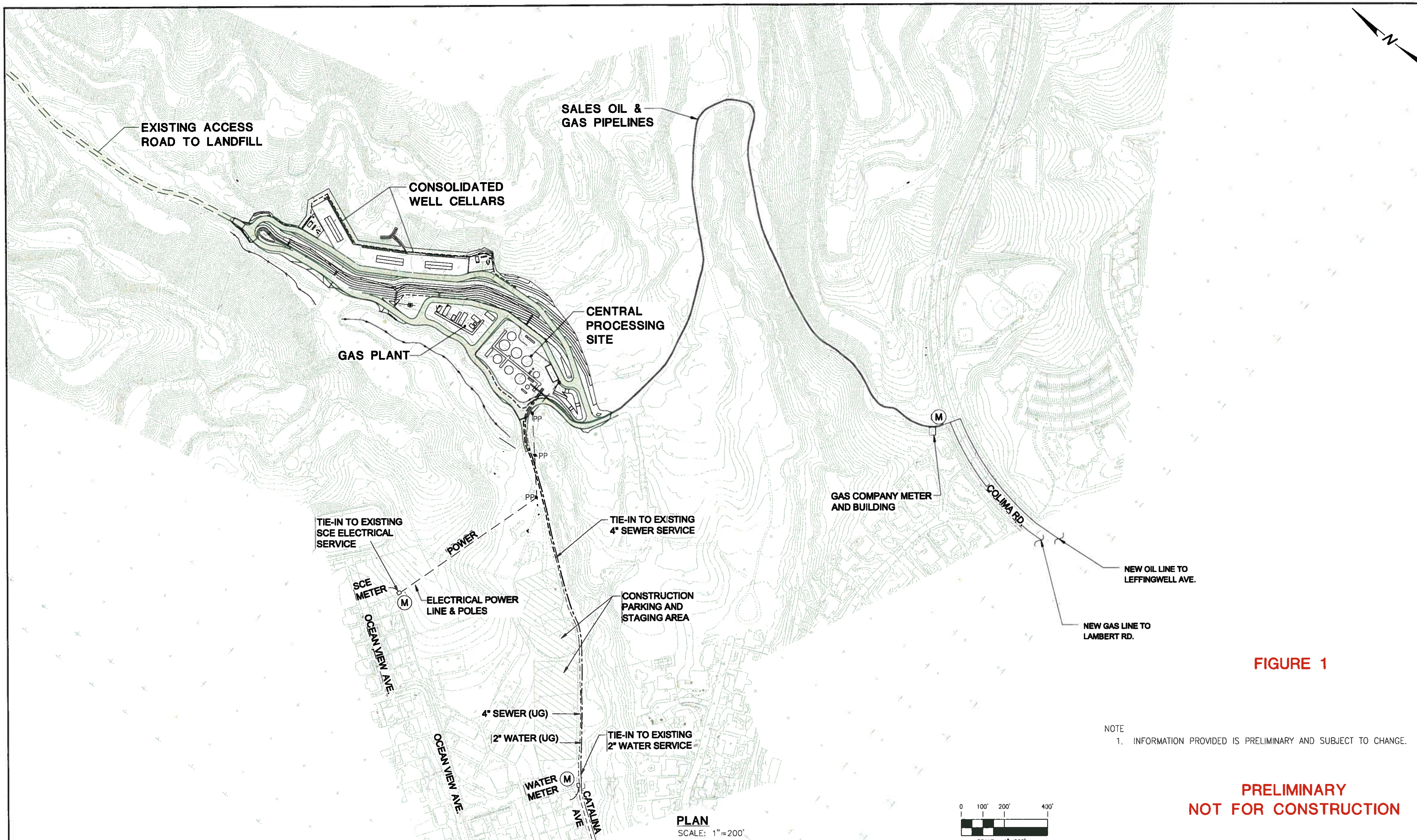
During ongoing producing operations, the chemicals listed in Table 9 would be stored for usage.

Table 9 Operations Hazardous Materials

Chemical Common Name	Trade Name	Container Volume
Scale Dissolver	Techni Solve 1780	55 gallons
Scale Inhibitor	Techni Hib 7621	120 gallons
Emulsion Breaker	Techni Hib 6671	500 gallons
Emulsion Breaker	REB 1322	120 gallons
Glycol	TEG	55 gallons
Corrosion Inhibitor	Techni Hib 3743	120 gallons
Amine	DEA	110 gallons
Methanol	Methanol	55 gallons

These materials would be stored in addition to any drilling materials listed above, which might be use for re-drilling or workovers.

In addition, numerous types of oils used to lubricate moving parts, such as Morlina Oil, hydraulic oils, lube oils, and other similar oils would be stored onsite in 55-gallon or smaller containers. Various paints and cleaning solvents would also be stored onsite in 1- and 5-gallon containers.



PLAN
SCALE: 1"=200'

FIGURE 1

NOTE
1. INFORMATION PROVIDED IS PRELIMINARY AND SUBJECT TO CHANGE.

PRELIMINARY
NOT FOR CONSTRUCTION

NUMBER	REFERENCE DRAWINGS

PROCESSES UNLIMITED International, Inc.

DCN: 4202-000

REV. NO.	DATE	REVISED	REV. BY	CKD. BY	APP'D
A	4/05/11	ISSUED FOR AMENDED CONDITIONAL USE PERMIT	AB	ECV	LT

matrix OIL CORP
104 W. ANAPUMU ST.
SANTA BARBARA, CA 93101

DRAWN BY:	ECV	DATE:	4/20/09
DESIGN:		DATE:	
CHECK:		DATE:	
ENGINEER:		DATE:	
APPROVED:		DATE:	
APPROVED:		DATE:	
APPROVED:		DATE:	

PRELIMINARY SITE LAYOUT
AMENDED PROJECT DESCRIPTION
WHITTIER LEASE DEVELOPMENT
WHITTIER, CALIFORNIA 90602

SCALE:	DWG NO:	SHT:	REV. NO.
AS NOTED	4202-000-1030	1	A

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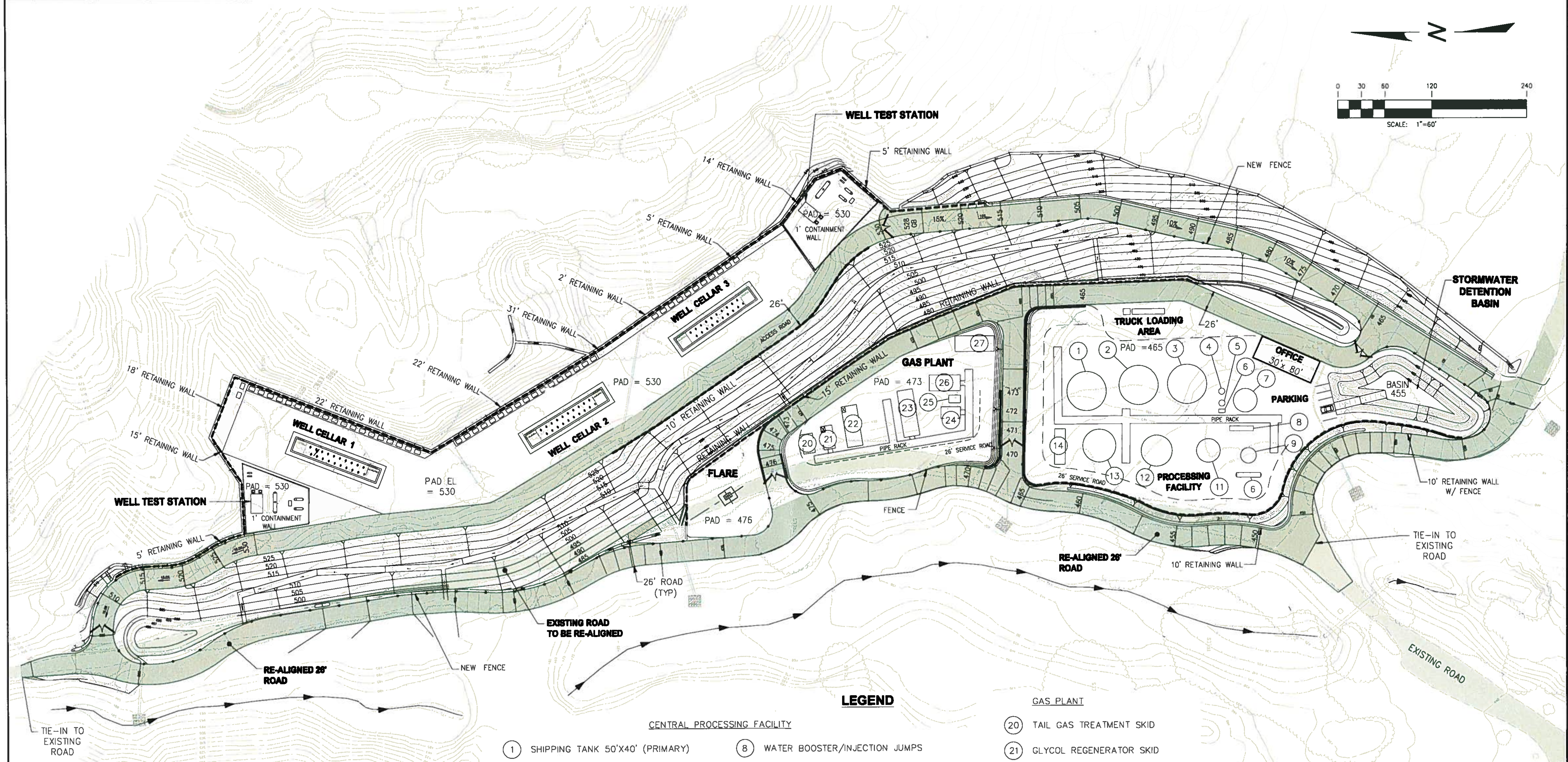

LEGEND

CENTRAL PROCESSING FACILITY

1. SHIPPING TANK 50'X40' (PRIMARY)
2. SHIPPING TANK 50'X40' (PRIMARY)
3. SHIPPING TANK 50'X40' (PRIMARY)
4. WALNUT SHELL FILTER
5. INDUCED GAS FLOTATION CELL (IGFC)
6. IGFC PUMP
7. SKIM DRAIN TANK 30'x24'
8. WATER BOOSTER/INJECTION JUMPS
9. CLAIFIER
10. FWKO DRUM
11. REJECT TANK 30'x24'
12. WASH TANK 40'x24'
13. FILTERED WATER TANK 42'x24'
14. PRIMARY OIL & PIPELINE PUMPS/LACT SKID

GAS PLANT

20. TAIL GAS TREATMENT SKID
21. GLYCOL REGENERATOR SKID
22. AMINE REGENERATOR SKID
23. LTS SKID
24. AMINE CONTACTOR SKID
25. REFRIGRATION SKID
26. METERING & ODER CONTROL SKID
27. COMPRESSOR\AIR COOLER SKID

FIGURE 2

PRELIMINARY
NOT FOR CONSTRUCTION

NUMBER	REFERENCE DRAWINGS

PROCESSES UNLIMITED International, Inc.

DCN:

REV. NO.	DATE	REVISED	REV. BY	CKD. BY	APP'D
A	04/05/11	ISSUED FOR AMENDED CONDITIONAL USE PERMIT	ECV		LT

matrix OIL CORP

104 W. ANAPUMU ST.
SANTA BARBARA, CA 93101

DRAWN BY: ECV
DESIGN:
CHECK:
ENGINEER: LT
APPROVED:
APPROVED:

WELL CELLARS & PROCESSING FACILITIES
AMENDED PROJECT DESCRIPTION
WHITTIER LEASE DEVELOPMENT
WHITTIER, CALIFORNIA 90602

SCALE:	DWG NO:	SHT:	REV. NO.
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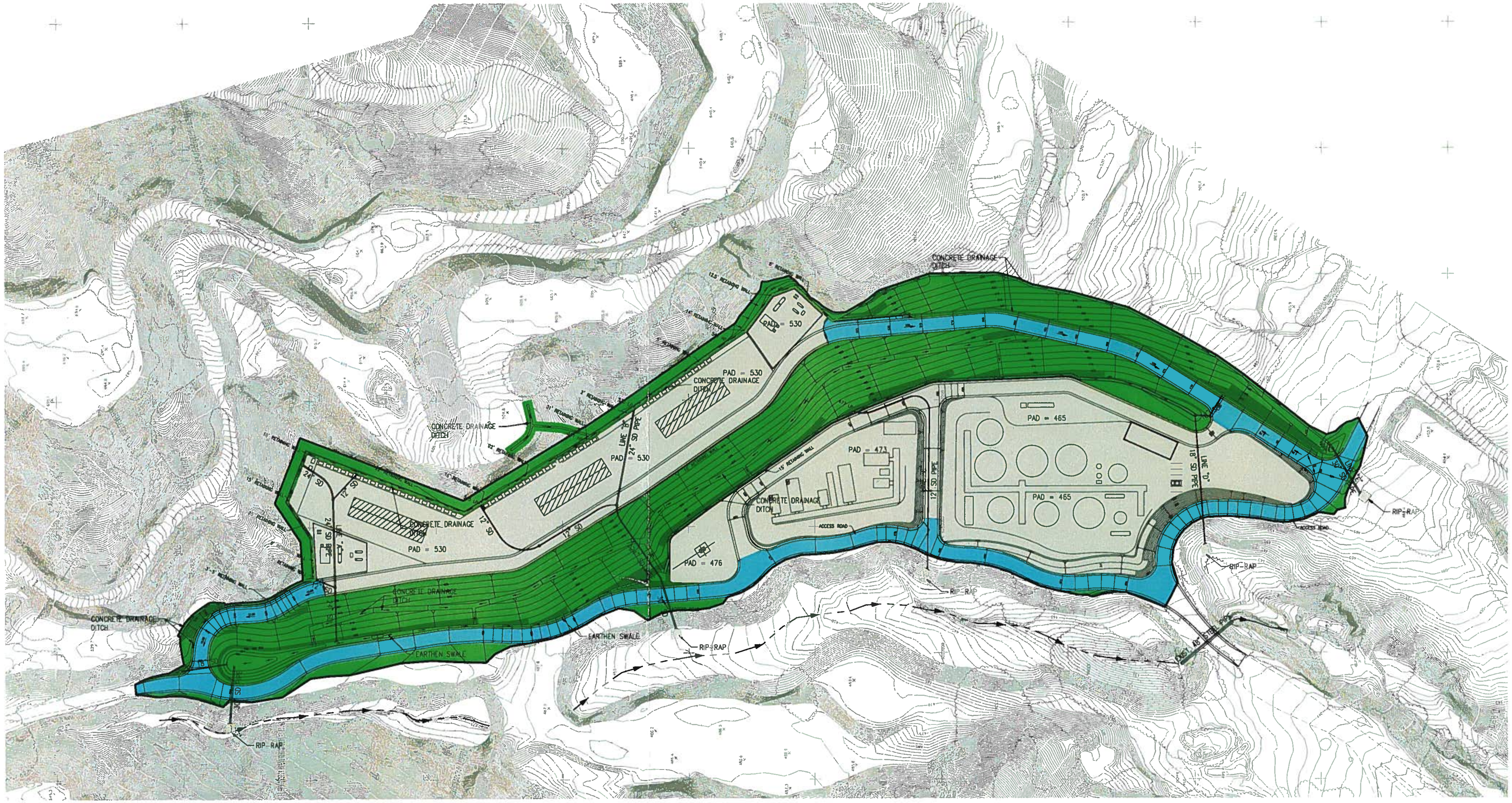

FIGURE 3

PRELIMINARY
NOT FOR CONSTRUCTION

ESTIMATED EARTHWORK QUANTITIES	
RAW CUT	: 131,000 cu.yd.
RAW FILL	: 43,500 cu.yd.
NET EXPORT	: 87,500 cu.yd.

* NOTE : THESE QUANTITIES DO NOT INCLUDE ANY ADJUSTMENTS DUE TO SHRINKAGE OR CLEARING OR ANY REMEDIAL GRADING.

LEGEND

- PROCESSING FACILITY AND WELL PAD AREA — 6.9± AC
- ACCESS ROADWAY AREA OUTSIDE OF PROCESSING FACILITY AND WELL PAD FENCING — 2.1± AC
- DISTURBED AND RE-VEGETATED AREA (WITH RETAINING WALL OPTION ALONG EAST SIDE OF WELL PADS) — 5.4± AC

PREPARED BY:
Adams · Streeter
CIVIL ENGINEERS INC.
15 Corporate Park, Irvine, CA 92606
Ph:(949)474-2330 Fax:(949)474-0251

80' 60' 40' 20' 0' 80' 160'
GRAPHIC SCALE: 1"=80'

PROCESSES UNLIMITED International, Inc.

DCN: 4202-000-1032a

NUMBER	REFERENCE DRAWINGS

REV. NO.	DATE	REVISION	REV. BY	CHKD. BY	APP'D
A	04/05/11	ISSUED FOR AMENDED CONDITIONAL USE PERMIT	ECV		LT

matrix OIL CORP
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SANTA BARBARA, CA 93101

PRELIMINARY LIMITS OF GRADING
AMENDED PROJECT DESCRIPTION
WHITTIER LEASE DEVELOPMENT
WHITTIER, CALIFORNIA 90602

SCALE:	DWG NO:	SHT:	REV. NO.
1"=80'	4202-000-1032	1	A

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