



Oil Drilling in Los Angeles

A Story of Unequal Protections

Introduction

The land of sunshine, celebrities, and world-famous beaches is also home to 5,000 active oil and gas wells.ⁱ These wells are spread across 10 oil fields and 70 different sites embedded in neighborhoods, parks, and commercial districts throughout Los Angeles City.ⁱⁱ More broadly, 1 in 3 Los Angeles County residents live within one mile of an oil drilling site; more than half a million live within a quarter-mile.ⁱⁱⁱ For those living in close proximity, oil and gas production is not only disruptive with noisy equipment, truck traffic, and unattractive rigs, but also potentially harmful with dangerous air pollution and the use of large amounts of toxic chemicals. Though science and impacted communities have long documented these health and quality of life threats, the City of Los Angeles has never conducted a full environmental review of the potential risks and necessary safeguards.

Despite these risks, oil and gas production in Los Angeles is expected to continue into the foreseeable future. The number of active wells has increased by 16% over the last 10 years, and the Los Angeles Basin may have another 5 billion barrels of recoverable oil.^{iv} This expected trend is disconcerting because although oil drilling has occurred in LA for over a century, regulatory loopholes and gaps have allowed health and welfare issues to arise in surrounding neighborhoods. Some oil-related pollution is exempt from key laws like the Clean Air Act and Safe Drinking Water Act while locally the Los Angeles Department of City Planning recently reported city regulations have failed to adapt to the changing nature of oil production and the urban environment in which drilling occurs.^v As result, communities are placed at risk whenever drilling and oil extraction occurs near their homes and schools. The nature of oil extraction is also changing - further fueling concern about the impacts to surrounding neighborhoods. Technologies like hydraulic fracturing and acid treatments have been around for decades but their frequency and intensity of use has increased.^{vi} As the nature of acid treatments and hydraulic fracturing changes, the potential risks also change. With oil production continuing and technology rapidly evolving, it's important for decision-makers, issue-stakeholders, and the general public to understand where and how oil drilling is occurring and to assess whether Los Angeles City neighborhoods are equally protected from oil drilling risks.

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Background

With easily accessible petroleum disappearing, companies are turning to well stimulation treatments and unconventional extraction to tap into more challenging oil and gas reserves. Until recently, oil and gas came from underground pools that would send fluid upward once drilled into.^{vii} This is known as conventional oil production. After decades of drawing from these conventional sources, the number of large pockets of petroleum sources has shrunk. New technologies, however, have allowed oil companies to access “unconventional” petroleum resources that were previously inaccessible. These unconventional petroleum resources are very small pockets of oil and gas that are trapped between or attached to sand or rock. The low permeability of the underground formation prevents the petroleum from easily flowing to the surface through a well.^{viii} Acidization and hydraulic fracturing are well stimulation treatments that increase the amount of petroleum flowing to the surface.^{ix} With acidization, acids and other fluids dissolve the sediment in the underground formation. Small bubbles of oil then break away from rock and flow upward into the well.^x Acid is also used to maintain or clean out a well. In California there is a debate about the distinction between an acid maintenance activity and acidization treatment that increases the underground formation’s permeability. Because both activities involve large amounts of hazardous chemicals, increase petroleum production, and present a risk to communities’ health and safety, they are classified as acid treatments in this paper. Hydraulic fracturing, also known as fracking, involves pumping large volumes of water and chemicals into the ground at high pressure to cause fractures in the underground geological formations. Gravel packing is another well stimulation activity that involves placing a liner wrapped in gravel in the well to keep sand from the underground formation out of the wellbore.^{xi} Well stimulation occurs in Los Angeles County and its use allows companies to continue operations at wells that may otherwise be facing the end of their productive life cycle.¹ Though present day discourse often focuses on the risks associated with well stimulation activities, all oil and gas activities present a public health risk when occurring without adequate safeguards such as a large separation between oil production and sensitive populations and emissions control measures.

L.A. City Wells - 380 Feet From Our Homes & Schools

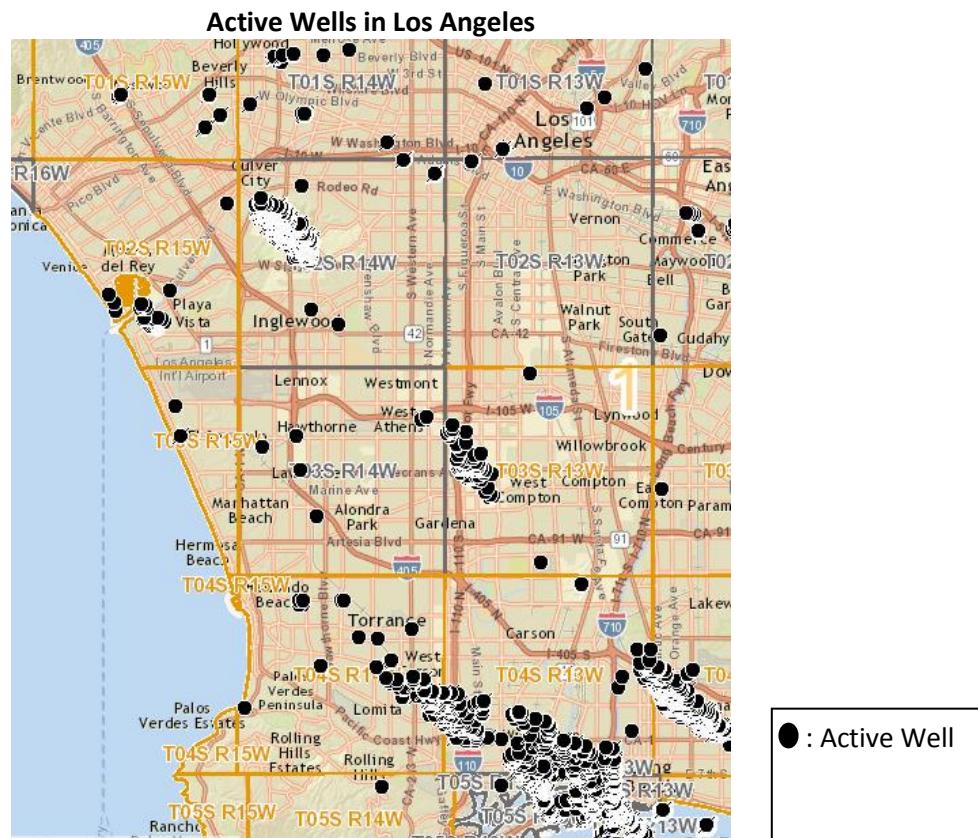
Citywide there are at least 17 sites with wells dangerously close to homes, schools, and other sensitive population centers.² A new South Coast Air Quality Management District rule requires companies to report activities like drilling new wells, using acid to clean out wells, or using chemicals to increase oil production. The new rule, 1148.2, also requires companies to determine whether these activities are within 1,500 feet of sensitive populations such as a school or home. Because of 1148.2, we know approximately **86 wells were drilled, acidized, gravel packed, or underwent a related measure within 1,500 feet of a vulnerable population center like a school, home, or daycare center** between June 2013 and September 2014. Of the 17 sites with wells within 1,500 feet of a sensitive population, the **average separation was only 380 feet**.

Petroleum air toxics pose a significant risk when within 1,000 feet of people and oil-related smells can permeate the air for up to 3,000 feet.^{xii} Not only are there 86 instances of oil-related activities occurring hazardously close to homes and schools in Los Angeles, but air quality rules also fail to adequately protect against potential hazards. When creating rule 1148.2, the Air Quality Management District

¹ Using Air Quality Management District’s Rule 1148.2 definition of a well production stimulation activity.

² Based on the Air Quality Management District’s Rule 1148.2 staff report, wells within 1,500 feet of sensitive population centers like homes, schools, and daycare centers present a health risk and may release detectable odors.

reported regulatory gaps with controlling emissions from oil drilling, well completion, and well reworking activities with particulate matter, hydrocarbons, and toxic emissions potentially posing a risk to surrounding communities.^{xiii} Drilling occurs across the city, as the map below shows, yet local regulations are not protecting against a range of risks.



Source: Division of Oil Gas & Geothermal Resources

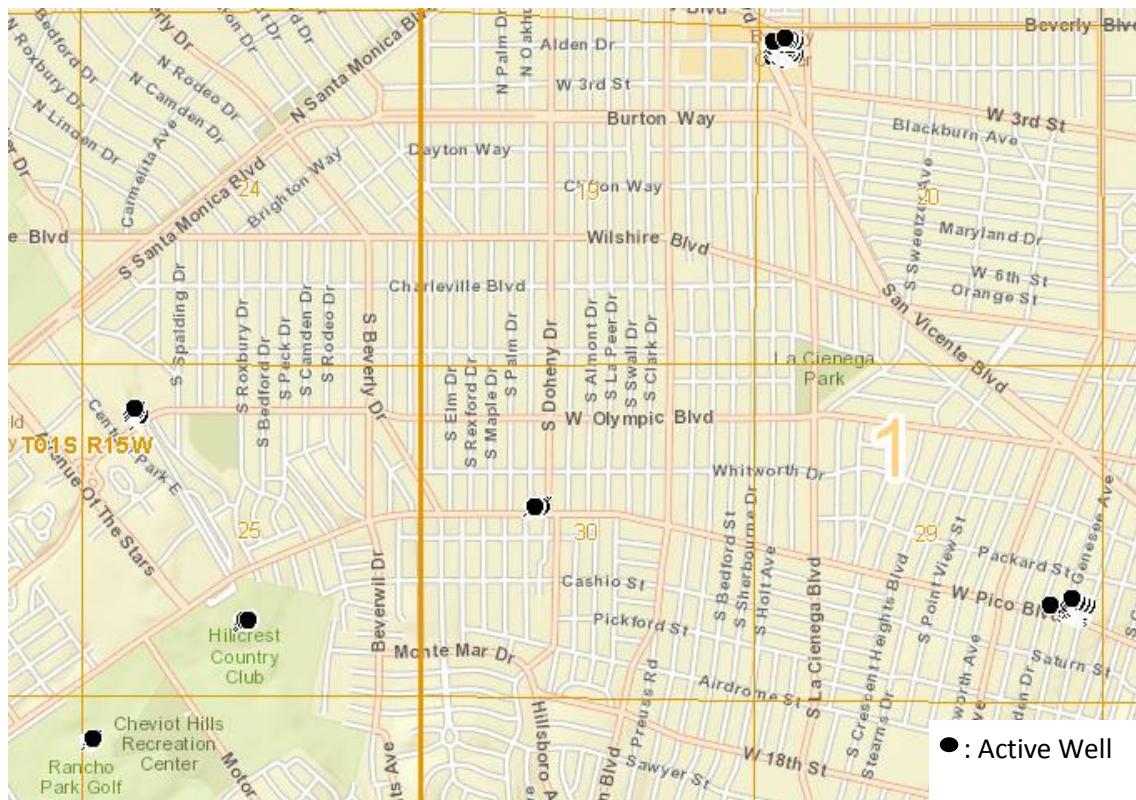
Comparing Drilling Across Disparate Communities

Although oil drilling occurs in diverse neighborhoods ranging from affluent Cheviot Hills to pollution-burdened Wilmington, not all communities are equally protected from the risks associated with oil production. To determine whether disparities in treatment exists, we compared oil drilling intensity (i.e. number of wells), type of well stimulation activities (i.e. acidization), violations of rules, and average separation of sites from sensitive uses in oil drilling sites across South Los Angeles, Wilmington, and Harbor City in contrast to sites in the Wilshire and West Los Angeles Community Plan Areas. We looked at all four active sites in the Wilshire and West LA Community Plan areas, all three active sites in South LA,³ and three randomly selected sites in the Wilmington and Harbor City areas. The West LA and

³ Two sites, Jefferson and Murphy, are currently producing. The third site in University Park and operated by Allenco Energy Corporation (Allenco) is not currently operating. It voluntarily shut down in November 2013 due to community concerns and remains shut down until U.S. Environmental Protection Agency mandated upgrades are completed. Allenco is currently implementing the mandated equipment updates.

Wilshire sites (pictured below) have a median household income of \$78,700 compared to the South Los Angeles and Wilmington/Harbor City site areas' median income of \$33,000.⁴

West LA & Wilshire Community Plan Oil Drilling Sites⁵



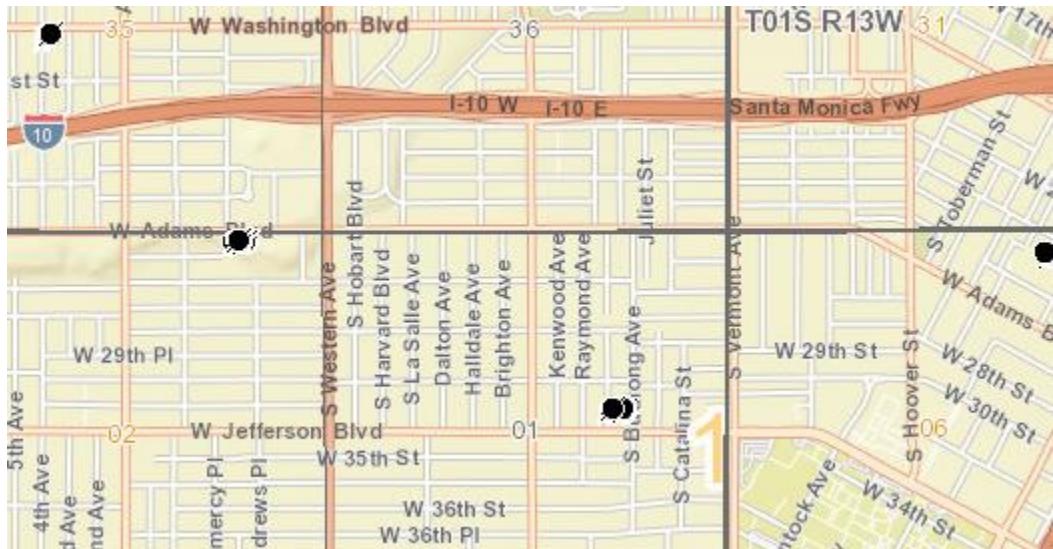
Source: Division of Oil Gas & Geothermal Resources

Over 90% of the residents in the South Los Angeles and Wilmington site neighborhoods, pictured below, are people of color while the West LA and Wilshire sites are located in neighborhoods that are 69% white.

⁴ Compared income and racial composition at the census tract level.

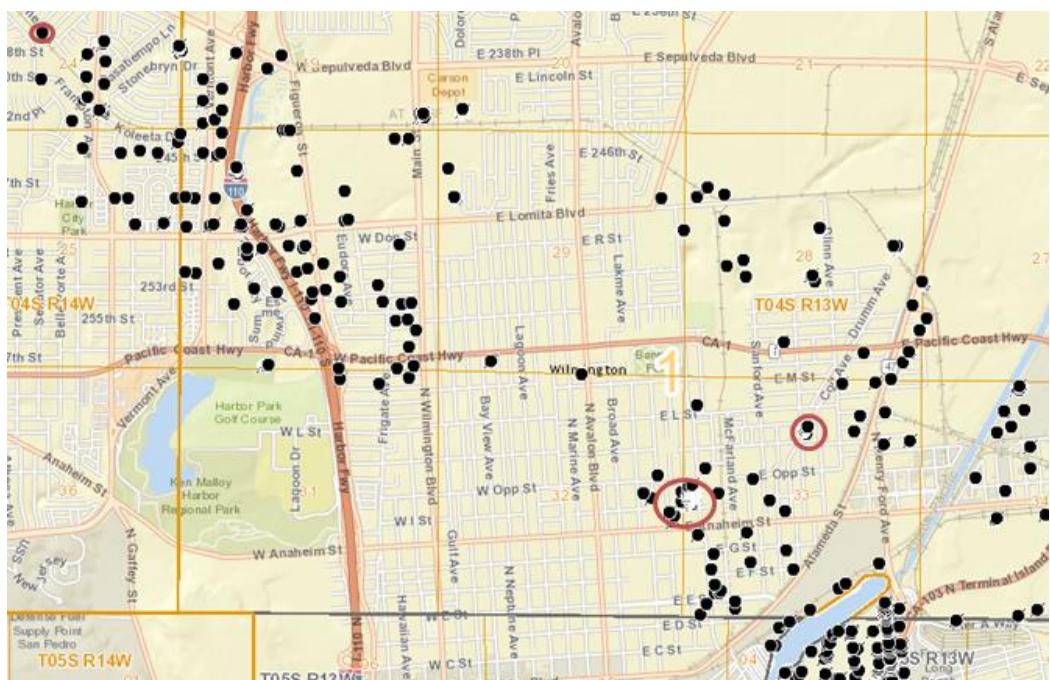
⁵ The site on Olympic was not examined because it is in Beverly Hills rather than the city of Los Angeles. The two groupings of rigs in the Hillcrest Country Club and Rancho Park Golf Club were considered one site because that was how the Planning Department classified the site.

South Los Angeles Oil Drilling Sites⁶



Source: Division of Oil Gas & Geothermal Resources

Wilmington and Harbor City Sites⁷



Source: Division of Oil Gas & Geothermal Resources

⁶ The site on Washington was not examined because it has not produced oil since 2010.

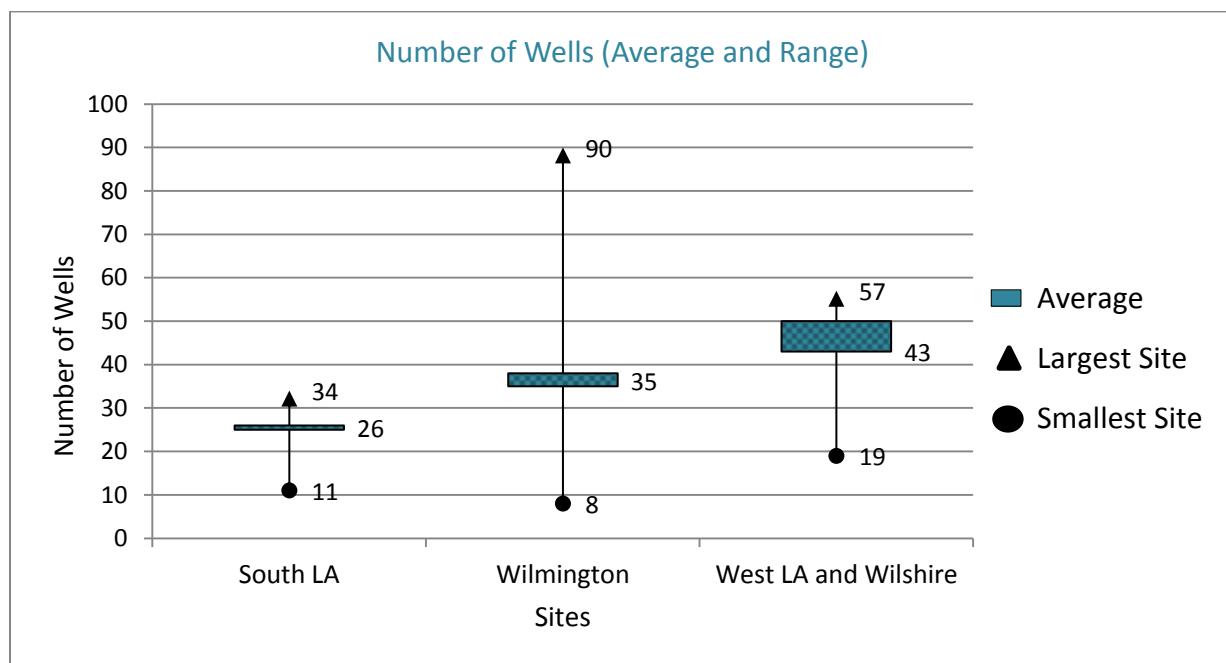
⁷ Sites examined circled in red.

Oil Production Intensity

The size of operations at a site is one dimension of potential risk. A larger site may handle more oil, use more toxic chemicals, or run more polluting equipment like drilling rigs or diesel trucks. Furthermore, an AQMD report identified three potential sources of pollution that are inadequately regulated by AQMD rules: emissions of drilling fluids pumped into the ground, fluids flowing back to the surface during the production process, and pollution coming from equipment run during drilling and well treatments (i.e. acidization).^{xiv} The number of wells and the frequency and type of oil activities (i.e. frequency of drilling or acidizing) are used as an approximate estimate of how intense oil production is at a site.

Number of Wells

As the *Number of Wells* table shows, the West LA and Wilshire sites have on average 17 more wells than South LA sites and 8 more wells than Wilmington sites. The largest site overall, however, is in Wilmington with 90 wells.



Frequency of Drilling and Other Well Treatments

The type and frequency of activities occurring at a site is another dimension of potential risk. The South Coast Air Quality Management District found Los Angeles-area companies use at least 13 air toxic chemicals when drilling, acidizing, gravel packing, and hydraulic fracturing. Well stimulation treatments use tens of thousands of pounds of toxic substances like silica, hydrofluoric acid, and hydrochloric acid (on average, acidization uses 11,000 pounds and hydraulic fracturing uses over 88,000 pounds) that pose a health threat if individuals are exposed.^{xv}

Amounts of Key Air Toxics Used in Well Activities⁸

	Drilling	Acidizing	Gravel Packing	Hydraulic Fracturing
Number of Events	177	254	155	14
Air Toxic	Average Use per Activity (lb)			
Crystalline Silica	1,943	7,240	42,883	86,947
Ethylbenzene	Not Used	209	Not Used	Not Used
Ethylene Glycol	.2	2.2	19	74
Formaldehyde	.2	<0.05	.2	Not Used
Glutaral	212	Not Used	221	Not Used
Hydrochloric Acid	Not Used	3,461	Not Used	Not Used
Hydrofluoric Acid	Not Used	411	197	
Methanol	2	80	14	1,003
Naphthalene	.2	1	.1	Not Used
Phosphoric Acid	125	Not Used	Not Used	Not Used
Sodium Hydroxide	Not Used	.05	21	58
Toluene	Not Used	27	Not Used	Not Used
Xylene	Not Used	109	Not Used	Not Used

The public may not only be exposed to air toxic chemicals, but also breathe harmful pollutants including nitrous oxide, particulate matter, and organic compounds that are released during drilling, acidization, gravel packing, and hydraulic fracturing. These compounds can cause cancer, respiratory issues, and cause damage to kidneys, the nervous system, the liver, brain, and heart.^{xvi} Furthermore, the Los Angeles Basin in general has unsafe levels of particulate matter and ozone (a byproduct of nitrous oxide reactions),⁹ so any additional releases add to the potential harm towards immediate communities. When taking air samples at a subset of recent rule 1148.2 activities, the Air Quality Management District found drilling, for example, releases over 7 pounds of nitrous oxide and nearly 4 pounds of particulate matter per day while also increasing concentrations of dangerous compounds including hydrocarbons.^{xvii} Acidization, gravel packing, and hydraulic fracturing all also released multiple harmful pollutants. With particulate matter and ozone traveling a hundred miles or more, oil and gas emissions have the potential to harm surrounding communities.^{xviii}

⁸ Based on the South Coast Air Quality Management District's Rule 1148.2 disclosure rule. This report only measured non-trade secret information. "Not used" is based on whether that chemical was disclosed in the chemical report.

⁹ Los Angeles exceeds the Clean Air Act's designated safe emissions levels for particulate matter and ozone.

Estimates of Average Emissions per Type of Activity^{10,xix}
 June 2013 – June 2014

Well Activity	Nitrous Oxide (lbs/day)	Particulate Matter (lbs/day)	Organic Compounds Detected
Drilling	7.5	3.8	Increase in Alkanes & Hydrocarbons
Acidizing	.5	.4	Increase in Hydrocarbons
Gravel Packing	1.6	5	Mostly static
Hydraulic Fracturing	8.4	.6	Increase in Alkanes & Hydrocarbons

Well Activities Results

There are significant differences in activities across the sites. Expansion is occurring most rapidly in Wilmington with one site drilling 22 new wells in 15 months. One well was drilled in South LA and none in the West LA and Wilshire areas.

In terms of well stimulations, the West LA and Wilshire sites averaged around 4 well stimulations per site while the South LA and Wilmington sites averaged 2 stimulations per site. There were no hydraulic fracturing events at the sites studied. One West LA site alone accounted for 10 acidizations, and if removed, the other West LA and Wilshire sites would average around 2 stimulations per site.

Wilmington was the only place where gravel packing was used and it was done six times. It also involved large quantities of silica, which when sufficiently small and inhaled, can lead to sometimes terminal lung diseases like lung cancer and silicosis.^{xx}

Total Number of Well Activities in Each Area
 June 2013 – October 2014

	Wells Drilled	Total Well Stimulations (acidization, gravel packing, etc)	Acidizing (including acid maintenance)	Fracturing
South LA	1	6	6	0
Wilmington	22	6	0	0
Wilshire & West LA CPs	0	17	17	0

¹⁰ Nitrous oxide and particulate matter emission estimations based on equipment information such as engine tier and hours of operation. Organic compounds and hydrogen sulfide based on random, limited air sampling done during those activities.

Community Protections

Regardless of whether acidization occurs or wells are newly drilled, a community's health and welfare may be at risk wherever oil and gas is produced near people's homes and schools. As described above, oil has hazardous emissions like carcinogenic benzene and drilling can also create noxious disruptions like smells, noise from pipes clanking, or vibrations from trucks driving into the site. The University Park neighborhood living across the street from the AllenCo operations experienced this first hand. Data from 2013 suggests AllenCo only used conventional oil production techniques, yet for years residents were reporting unusual health symptoms like headaches and nosebleeds. Faulty equipment leaking emissions up to 1,200 times the legal limit seemed to have been the issue. A site's proximity to homes, use of protective barriers, and adherence to rules may minimize or amplify the risk of allowing oil production in a dense urban environment.

Oil Well Proximity

South LA and Wilmington sites are on average 260 to 315 feet closer to sensitive uses than oil sites in the West LA and Wilshire areas. In many cases, oil is being produced within 140 feet of homes, schools, health care facilities, and parks. At the West LA and Wilshire sites, there are two types of structures – outdoors and completely/partially enclosed structures. The outdoor sites are an average of 570 feet from homes. The enclosed sites, either entirely within a building or rigs and trucks enclosed, are on average 150 feet away from homes.

Average Distance to Closest Sensitive Use	
South LA	85 feet
Wilmington	139 feet
West LA and Wilshire	400 feet
West LA Indoor Sites	150 feet
West LA Outdoor Sites	570 feet

This distance measures the separation between a sensitive use and wells, but other hazardous activities occur even closer to residents' homes. As the picture of the Jefferson site shows, large amounts of chemicals are stored and handled very near a home.

Jefferson during an "Acid Maintenance" Job



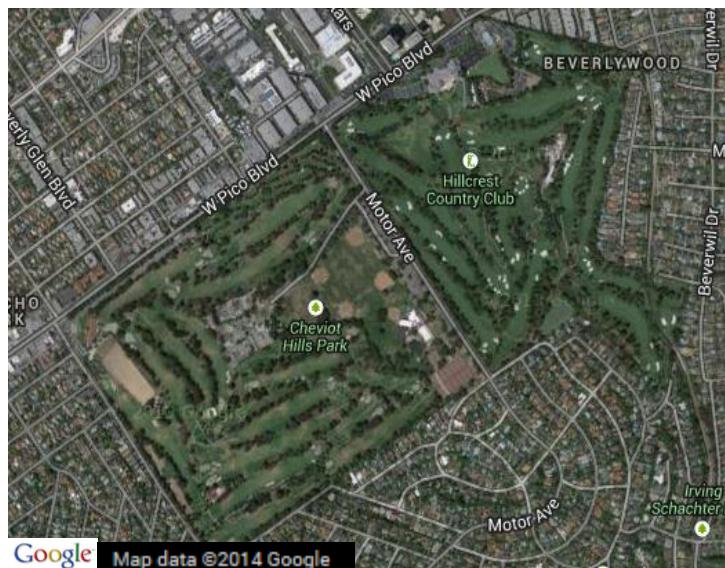
Photo Credit: Richard Parks

Site Profiles

Community protections, or the lack thereof, vary on a site by site basis. Each site profile below describes the features and precautions that either enhance or undermine protections to the surrounding neighborhood's wellbeing. The West LA and Wilshire sites have a variety of design features and operation restrictions, many imposed by a Zoning Administrator, that protect the surrounding communities to a greater degree than the South LA and Wilmington sites.

Cheviot Hills Sites (West LA Community Plan Area)

The Hillcrest Country Club and the Cheviot Hills Recreation Center house two oil drilling sites in the Cheviot Hills community. The Hillcrest site is 700 feet from homes and housed on a 138 acre property.



The Cheviot Hills Recreation Center site is surrounded by 200 acres.^{xxi} The Recreation Center and Country Club grounds create a naturally large buffer between residences and operations. The buffer and trees also screen the machinery. When a Planning Department Zoning Administrator first created drilling conditions in 1957 for the Hillcrest Site, the administrator noted the sites are “near the quality residential neighborhood known as Cheviot Hills... so all features of oil drilling and production must be strictly controlled to eliminate any possible odor, noise, hazards, unsightliness, or extensive truck traffic.” The Zoning Administrator noted a

potential visual impact and required the operator to use a shorter drilling derrick that was to blend in with the surrounding trees and landscaping using expertly designed camouflage. The Zoning Administrator’s conditions were appealed by residents in 1957, and the Board of Zoning Appeals required the drilling derrick be better screened by transplanting taller trees (at least 60 feet) around the equipment and placing equipment at lower elevation than was previously required. One acidization has occurred here.

Packard Site (Wilshire Community Plan Area)

The Zoning Administrator and City Council has placed design features and operation restrictions on the Wilshire site to protect the neighboring residents. In 2002, the Los Angeles City Council passed a motion restricting the hours of operations for non-drilling activities to the hours of 7 am to 7 pm just for the Packard site. The Zoning Administrator also required the operator post a 24 hour hotline number on the building walls and use electric equipment, rather than diesel, to reduce noise and pollution.



The non-descript building enclosing the Packard Site oil activity is perhaps the most striking and unique feature of this 1.5 acre site. Aside from signs listing a hotline phone number and warning of dangerous chemicals, a passer-by would not know what is right behind the multistory walls. The building was required in 1966 when the Zoning Administrator first created terms and conditions for drilling in this neighborhood. The Zoning Administrator indicated the dense residential community was not appropriate for drilling stating **“due to the intensive nature and quality of the adjacent residential development, the subject site is certainly not the most appropriate for a controlled drilling site such as those previously approved in industrial zones or a large open area such as a golf course.”** Because the Zoning Administrator could not find a more appropriate, safer site, drilling was permitted as long as rigorous precautions were taken including constructing an expensive building to house the site. As the administrator said, **“in recognition ...of the proximity of the site to the quality district in which located and at considerable increased expense, [the operators] have had designed a most attractive soundproofed building for construction on the site** which would not only house a drilling rig and drilling equipment but the loading and unloading operations of pipe and supplies needed in connection there, as well as the future portable equipment needed in servicing the wells on occasion after completed. [emphasis added]” It appears oil operations were considered by city officials to be incompatible with residential areas even in the 1960s. Interestingly, this precaution was not applied to other active oil sites in residential centers like South LA. There are around 55 active wells and five acid maintenance-related activities occurred at the Packard site between June 2013 and September 2014.

San Vicente Drill Site (Wilshire Community Plan Area)

This 1.5 acre site is tucked behind the Beverly Center Shopping Center and is across the street from Cedars Sinai Hospital. It is around 200 feet from the hospital and approximately 500 feet from the nearest residence. This site lacks the protective features provided to the Packard site likely in part because the Zoning Administrator determined residences were hundreds of feet away and the immediate area was used for commercial or industrial purposes when the Administrator designated the property a controlled drill site.^{xxii}

New restrictions were added to operations in an August 2014 Zoning Administrator case (ZA 19139 (PA 10)) where the operator requested to re-drill three wells. New conditions include providing a 24 hour hotline with the number posted on the premise's exterior walls, requiring complaints and concerns be addressed within a 24 hour window, prohibiting hydraulic fracturing or acid well stimulation treatments, and allowing the Zoning Administrator to impose additional corrective conditions if the Administrator considers it necessary to protect the neighborhood. This was the only City Planning file reviewed that directly addressed well stimulation treatments. There are around 57 active wells on the site and 10 acidization or maintenance activities occurred here since implementation of AQMD's 1148.2 rule.



Doheny Site (West LA)

The 0.76 acres site is immediately adjacent to homes that are 190 feet away. Conditions originally imposed by the Zoning Administrator, coupled with community member and council member engagement, an environmental impact review process, and a lawsuit, have created some of the strongest restrictions on an LA City site. The

1965 Zoning Administrator case that initially authorized drilling conditions required the drilling derrick be fully enclosed in a sound proofed structure that was painted blue to blend with the sky. The Zoning Administrator stated the derrick enclosure measure was taken “to integrate the development into the well developed residential section to the north.” Drilling derricks can be a significant source of pollution, noise, and unsightly equipment and this condition sought to reduce those impacts. The operator was also required to maintain a portion of the site bordering homes as a buffer between oil operations and homes with only landscaping treatment and employee parking. The derrick enclosure was removed in the mid-1980s.



In the late 1990s, the oil company wanted to overturn a previous condition that allowed use of a temporary diesel rig that could only be operated 10 days a month. The company proposed switching to a permanent rig. To offset the impacts of more constant drilling, the oil company offered some compromises. They would switch from a diesel rig to an electric one which is quieter and releases considerably fewer air toxics. The company also raised the surrounding walls from a height of 12 feet to 25. Finally, the drilling derrick was again enclosed and much of the operations, including truck deliveries, were moved indoors.

An environmental impact report was done on this proposal. Restrictions on oil production came from the environmental review process and a related lawsuit settlement, which include the following conditions:

- Weekly odor monitoring for a two year period with reports sent to the Zoning Administrator and the operator required to make corrections to any issues.
- Noise levels are capped.
- Continuous noise monitoring equipment and video system with noise reports sent to the Zoning Administrator monthly. When site exceeds the permissible noise level, the video system was reviewed to determine what activity caused the problem.
- Methane and hydrogen sulfide early detection system with notifications sent to the Los Angeles County Fire Department.
- Tests for other air emissions done weekly.
- Designated community liaison available 24 hours a day with number posted on signs.

- Vehicles enter and exit off main neighboring street and must turn engines off immediately after entering or shortly before exiting. Vehicles cannot rev their engines.
- Potential fumes are vented up through top of the derrick enclosure which may reduce odors by a factor of 1,000.

There are 43 active wells on the site and one acid-related activity occurred here recently.

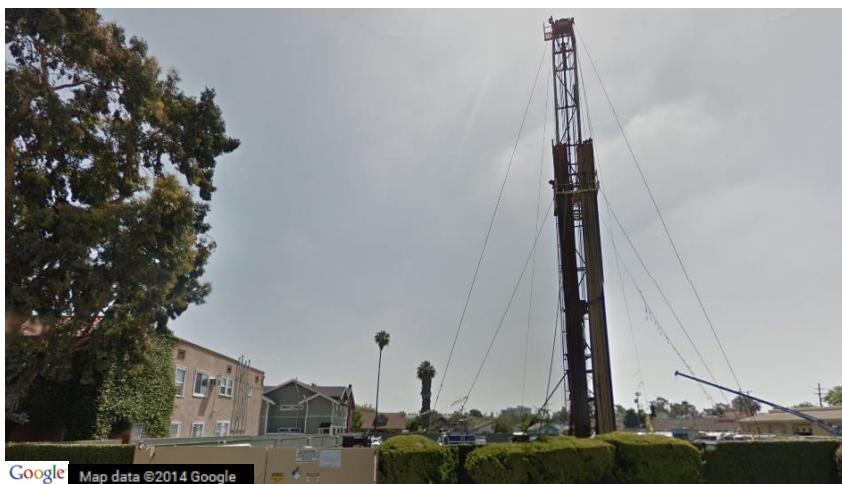
South LA and Wilmington Sites

In the Wilshire and West LA area, all of the sites are either relatively far from homes or, if they are near homes, the operations are partially or completely enclosed. While rendering their decisions for the Wilshire and West LA areas, Zoning Administrators uncharacteristically noted the adjacent “quality” residences and enacted requirements that protected these homes. As we mentioned above, these Zoning Administrators were not shy about their opinion that oil drilling was an activity that was more suited for industrial zones, and only allowed drilling in Wilshire and West LA after a strict set of precautionary measures were enacted.

South LA and Wilmington Sites, however, not only have far fewer protections, but are closer to sensitive populations. And in some cases, what protections were in place have weakened over time. Four of six Wilmington and South LA sites are examined below.

Jefferson Site (South LA Community Plan)

With wells only 60 feet from homes, the Jefferson drill site is closer to sensitive sites than any other LA City oil drilling site.^{xxiii} Homes are immediately adjacent to and across the street from the 1.86 acre site.



Unlike the Doheny site where protections increased over time, the Jefferson neighborhood has seen protections weakened and suggested restrictions abandoned. The Zoning Administrator's 1965 decision noted the site's proximity to a densely developed residential neighborhood and stated oil operations must be strictly controlled to protect people living in close proximity. The oil company agreed to maintain

two immediately adjoining lots to provide a buffer between oil production and residential development on the same block as operations. The Planning Department has since removed the buffer requirement.

The Zoning Administrator also believed all undesirable features of oil drilling could be mitigated except disguising the aesthetically unattractive oil rig. The administrator recommended future administrators consider covering equipment with a “permanent type of attractive soundproof enclosing fixture giving the derrick more the appearance of a monument.” In 1971, the Zoning Administrator reserved the right to order enclosed drilling machinery if noise from operations bothered surrounding residents. Despite

present day issues with noise, the Zoning Administrator has not exercised that right. The rig remains unenclosed. The site houses 34 active wells and four acid related jobs occurred here between June 2013 and September 2014.

Murphy Drill Site (South LA Community Plan)

Drilling at the Murphy Drill site occurs less than 100 feet from a clinic for HIV patients and within a couple hundred feet of apartments and senior citizen housing. As with West LA sites, the Zoning



*Photo Credit: flickr user facesoffracking
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Administrator originally prescribing conditions for drilling in 1961 noted the site's proximity to "quality" residential improvements and prescribed mitigations such as soundproofing equipment and camouflaging the drilling derrick. The Administrator determined the site's unattractive equipment would be an objectionable impact, but as seen in the Jefferson site, a "more rigid permanent type of attractive soundproof enclosing fixture" resembling a monument for the drilling rig was recommended but does not exist. In 2006, the area's neighborhood council requested protections seen at the Doheny site such as noise and emission monitoring and a 24-hour

attended phone number, but the Zoning Administrator did not grant the request.¹¹ The Murphy site has around 34 wells and two acid-related activities occurred in 2014.

AllenCo site in University Park (South LA Community Plan)

The site's oil company, AllenCo, produces oil approximately 100 feet from a multi-unit residential housing development, a high school for developmentally disabled youth, and borders Mount St. Mary's College. In January 2014, the U.S. Environmental Protection Agency (EPA) charged AllenCo with discharging hazardous substances, failing to keep operations safe and putting residents' health and safety at risk.^{xxiv} Around the same time, Los Angeles City Attorney filed a suit against AllenCo for refusing to repair many defects and ignoring regulatory standards. From 2010 to its temporary shutdown in 2013, the site likely caused acute health symptoms like headaches, nosebleeds, nausea, and respiratory ailments. Due in part to education by the *People Not Pozos Campaign*, community members filed complaints for three years before U.S. Senator Barbara Boxer noted the community's concerns and requested an EPA investigation. On a short investigative site visit, EPA investigators became ill with sore throats, headaches, and coughing. The agency levied a \$99,000 fine and required AllenCo implement \$700,000 in equipment upgrades.^{xxv} Although residents' health symptoms diminished once AllenCo temporarily halted productions in 2013, occasional odors continue to burden the community and the company plans on resuming oil production once the equipment is updated. Based on reports to the Air Quality Management District and public statements, it appears no unconventional extraction such as acidization occurred at the site and conventional production and associated fumes caused the health issues. There were 11 active wells when the site was in production in 2013.

¹¹ Zoning Administrator Case 15227(O)(PA3) for terms and conditions for redrilling three wells.

Warren E & P Site (Wilmington Community Plan)

With 90 active wells, the site operated by Warren Energy & Power is the largest case study site examined. In 2006, the operator proposed a 540 well drilling project at a site in which 9 wells had previously existed. Despite the huge increase, the City required only a limited review of the potential impacts of the project and **refused to conduct a complete environmental review process before allowing the additional wells.**^{12xxvi} Organizing and community outreach by Communities for a Better Environment uncovered broad dissatisfaction over the site's disruptive operations. As of their 2009 report, CBE found that the neighborhood was kept awake at night due to noise, dust made breathing difficult, trucks were often in the residential streets, and gas was frequently burned off in "flares" that were operated contrary to the Air Quality Management District's rules.¹³ Residents expressed irritation and concern about noxious smells, loud noises both day and night, and the many other problems resulting from this operation. During a community survey, people referred to their experience of living next to Warren E & P during construction and operation as "a living hell".^{xxvii} This site is expanding rapidly with 22 wells drilled between June 2013 and September 2014 and another 6 wells undergoing gravel packing.

Other Wilmington and Harbor City Sites

Oil production is widespread in the Wilmington and Harbor city areas. Two other sites in Wilmington and Harbor City were also randomly selected and reviewed. One each site sits 8 wells within 150 feet of a home. Although these were the smallest sites studied, they still produced 12,000 to 25,000 barrels of oil in 2013. Well stimulation treatments were not used at these sites.

Wilmington Site



Harbor City Site



Complaints & Violations

Many regulations are designed to protect the public's health, and violations may mean that a surrounding neighborhood was put at risk. A violation may also indicate a company is unable or indifferent to protecting the surrounding community. Complaints can also further illustrate the public's awareness and dissatisfaction with a site's operations.

¹² The City only required the limited analysis required by a California Environmental Quality Act project designation of "negative declaration".

¹³ A profile on the site by Communities for a Better Environment in the report "Cumulative Impacts: Changing Regulatory Culture to Address Environmental Injustice & Environmental Racism".

Comparing the violations and complaints for the sites operating in South LA and Wilmington to those in wealthier, whiter neighborhoods, there is a significant difference. South LA site had 41 more violations and 300 more complaints than their West LA counterparts. Twenty-seven violations were issued for the AllenCo site, 8 at the Jefferson site, and 7 at the Murphy site. In comparison to the AllenCo site, the operations at Murphy and Jefferson have far fewer violations. However, when compared to the violations in West LA, the sites have 7 and 8 times as many, respectively.

The number of violations in and of itself is startling, but the nature of the violations raises additional concerns. Violations include improper flaring (Warren E&P), vapor leaks greater than the legal limit of 500 parts per million (Jefferson, Murphy, AllenCo), and volatile organic compound leaks 100, 200, and 1,200 times greater than the legal limit (AllenCo). The AllenCo site case study provides a sense of how detrimental operation failures can be to a surrounding community's health.

Complaints and Violations Between 2007 - 2012

	Division of Oil Gas & Geothermal Resources		Air Quality Management District		LA City Dept. of Building & Safety
	Complaints	Violations	Complaints	Violations & Notice to Comply	
South LA	1	5	333	35	3
Wilmington	0	0	9	13	0
West LA and Wilshire	0	1	1	2	0

Conclusion

Whenever oil and gas is produced near homes, schools, daycare centers, and other sensitive population centers, residents are put at risk. With 17 sites across the City of Los Angeles operating hazardously close (within 1,500 feet) to these kinds of sensitive population centers, oil and gas operations present a significant citywide risk to public health that decision-makers have failed to effectively address. Although oil and gas production occurs citywide, the relative risk is significantly higher in lower-income communities of color. Oil drilling occurs closer to homes, has fewer protective features such as air monitoring and enclosed operations, and is subject to more regulatory violations and complaints. By swiftly implementing citywide standards fully protective of human health, Los Angeles can not only correct this environmental injustice but also ensure that all Angelenos are protected from oil and gas operations.

- ⁱ 5,000 wells in LA County. 3,750 producing oil and gas wells in 2013 according to ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2013/2013%20County%20Production.pdf and 1,480 injecting wells as of 2009 according to ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2009/PR06_Annual_2009.pdf
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