

## Oil Drilling and Production

### Background

The oil and gas industry has existed in Southern California for over a hundred years. This industry, which includes oil drilling and production, has hundreds of facilities that are subject to various requirements from city agencies, local air districts (e.g. South Coast AQMD), and state agencies (e.g. CARB and the California Department of Conservation, through its Division of Oil, Gas, and Geothermal Resources (DOGGR)).

South Coast AQMD has specific regulations on oil wells, including Rule 1148 series, and other rules that reduce emissions of volatile organic compounds (VOCs).<sup>1</sup> CARB recently adopted an Oil and Gas Regulation<sup>2</sup> to reduce methane emissions from oil and gas production, processing, storage, and transmission compressor stations, which accounts for four percent of methane emissions in California.<sup>3</sup>

There are 242 facilities operating approximately 4,320 onshore oil and gas wells in the District.<sup>4</sup> Due to the geography of the region, these wells are often located in urban areas, and sometimes located within close proximity to residential and other sensitive receptors, as is the case within the Wilmington, Carson, and West Long Beach community.

DOGGR requires owners and operators of oil and gas facilities to report the status of their wells. The data are available through a database of active, idle, and abandoned wells throughout the state of California.<sup>5</sup> Based on

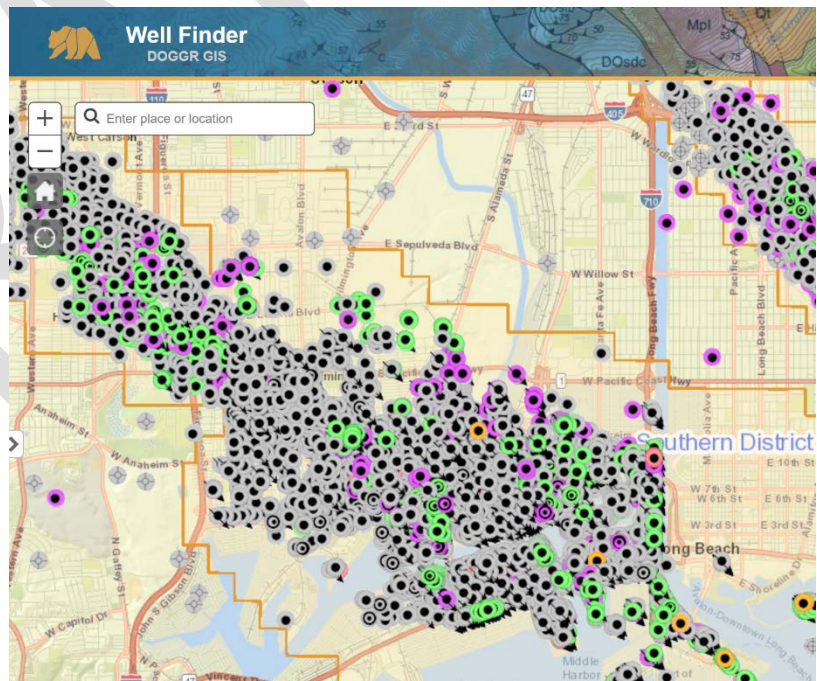


Figure 5-1. Example of DOGGR Well Finder map information in the Wilmington, Carson, West Long Beach area

<sup>1</sup> Rule 1173 (VOC leaks-<http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1173.pdf>) and Rule 1176 (wastewater systems-<http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1176.pdf>)

<sup>2</sup> California Air Resources Board. "Oil and Gas Regulation." CARB, accessed April 2019.

<https://www.arb.ca.gov/regact/2016/oilandgas2016/oilandgas2016.htm>

<sup>3</sup> California Air Resources Board. "Oil and Natural Gas Production, Processing, and Storage." CARB, accessed April 2019. <https://ww2.arb.ca.gov/our-work/programs/oil-and-natural-gas-production-processing-and-storage/about>

<sup>4</sup> Based on an evaluation of records associated with the South Coast AQMD's Rule 222 - Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II filing requirements for the "Oil Production Well Group" category in 2015

<sup>5</sup> Division of Oil Gas and Geothermal Resources. "Well Finder". DOGGR, accessed June 2019.

<https://www.conservation.ca.gov/dog/Pages/WellFinder.aspx>

records from DOGGR's database (updated in 2015), there are approximately 6,100 oil, gas, and geothermal wells that are active or idle in the Los Angeles, Riverside, San Bernardino, and Orange County regions. DOGGR's program includes idle, abandoned, geothermal and water injection wells, which are not registered by South Coast AQMD.<sup>6</sup> Active oil wells are the only ones actively withdrawing oil, and this process has the potential to develop leaks (fugitive emissions).

In 2015, South Coast AQMD staff conducted a five-week long project to characterize and quantify emissions from small stationary sources, including oil wells, in the Los Angeles Basin using multiple Optical Remote Sensing (ORS) techniques. The findings from this measurement study are available in the final report.<sup>7</sup>

### Community Air Quality Priorities – Targeted Monitoring and Inspections to Address Leaks and Odors, Improved Outreach and Notifications, Establish a Baseline of Emissions, Zero-Emission Technology On-Site

Four main air quality priorities related to oil drilling and production were identified by the Wilmington, Carson, West Long Beach CSC: (1) targeted near-facility monitoring and inspections to address leaks and odors from oil drilling and production, (2) improved public outreach and notifications, (3) additional requirements for oil production sites to submit annual reports to develop an accurate inventory of emissions and chemicals used, and (4) require zero emission technology at drilling sites. Details for these actions are described below.

**Targeted Monitoring and Inspections to Address Leaks and Odors** –Many homes in this community are located close to oil and gas facilities, which may include drilling, production, and well sites. Residents have identified odors and leaks from these facilities as concerns. The CSC requested increased air monitoring efforts pertaining to these wells and facilities, particularly when drilling activities are occurring. The CSC also requested that this information be made available to the public to establish a baseline for tracking emissions reductions. The CSC identified both operating and abandoned oil wells as concerns because both can have leaks and odors. Utilizing air monitoring technologies to identify potential leaks, and conducting follow-up investigations and collaborative efforts with other agencies would help reduce emissions from these facilities. Because VOCs are the main air pollutants from petroleum-based sources, VOC measurements would help to identify potential leaks. In addition, the drilling activities at these sites can generate fugitive dust, which could impact the nearby community. Community-led air monitoring efforts can help provide real-time data on particulate matter levels in the community when drilling activity is occurring at a nearby facility.

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<sup>6</sup> South Coast AQMD. "Amend Rule 1148.2 - Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers (Staff Report)." *South Coast AQMD*, accessed April 2019. <http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2015/2015-sep4-038.pdf>

<sup>7</sup> South Coast AQMD. "Project #2 Quantification of Gaseous Emissions from Gas Stations, Oil Wells, and Other Small Point Sources." *South Coast AQMD*, accessed April 2019. <http://www.aqmd.gov/fenceline-monitoring/project-2>

Improve Public Outreach and Notifications – CSC members stated that the current South Coast AQMD notifications for oil wells (Rule 1148.2<sup>8</sup>) could provide more useful information to the community. The CSC requested that the South Coast AQMD program provide more efficient notifications with improved outreach to the public to explain the chemicals, toxicity, and health impacts related to oil drilling activities. The CSC requested that outreach materials include letters, flyers, lists, or infographics, since not all community members have access to computers to look at digital information.

Establish Baseline of Emissions from Reporting – CSC members requested a better inventory of emissions from this industry, beyond the current reporting requirements in South Coast AQMD Rule 1148.2. Members suggested requiring a chemical survey or annual reports on a facility's oil production, chemicals used, and emissions inventories to provide information that is relevant to community air pollution exposures.

Zero-Emissions Technology at Drilling Sites – CSC members recognized that these sites use diesel-powered equipment on-site, and would like to see electrification of this equipment and/or requirements for using cleaner fuels for on-site operations.

### Ongoing Efforts

South Coast AQMD staff continue to conduct regular inspections and respond to complaints around oil drilling and production facilities. South Coast AQMD regulates oil and gas facilities through several Rule 1148 rules which pertain to oil wells (Rule 1148<sup>9</sup>, Rule 1148.1<sup>10</sup>, Rule 1148.2), Rule 1173 (VOC leaks)<sup>11</sup> and Rule 1176 (wastewater systems).<sup>12</sup> There are over 30 facilities with multiple wells on site that are inspected annually under existing regulatory programs.

The California Air Resources Board (CARB) is implementing the Study of Neighborhood Air near Petroleum Sources (SNAPS) program to better understand potential impacts of criteria pollutants and toxic air contaminants in neighborhoods near oil and gas activities. The program includes limited-term, intensive air quality monitoring with a particular focus on production facilities.<sup>13</sup> Although the SNAPS program is not currently conducting monitoring in the

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<sup>8</sup> South Coast AQMD. "Rule 1148.2 - Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers." *South Coast AQMD*, April 2019. <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1148-2.pdf>

<sup>9</sup> South Coast AQMD. "RULE 1148. THERMALLY ENHANCED OIL RECOVERY WELLS." *South Coast AQMD*, April 2019. <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1148.pdf>

<sup>10</sup> South Coast AQMD. "RULE 1148.1. OIL AND GAS PRODUCTION WELLS." *South Coast AQMD*, April 2019. <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1148-1.pdf>

<sup>11</sup> South Coast AQMD. "Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants." *South Coast AQMD*, April 2019. <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1173.pdf>

<sup>12</sup> South Coast AQMD. "VOC Emissions from Wastewater Systems." *South Coast AQMD*, April 2019. <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1176.pdf>

<sup>13</sup> California Air Resources Board. "Study of Neighborhood Air near Petroleum Sources." *CARB*, April 2019. <https://ww2.arb.ca.gov/our-work/programs/study-neighborhood-air-near-petroleum-sources/about>

Wilmington, Carson, West Long Beach community, the information from the SNAPS effort from other communities may be informative for this community.

**Opportunities for Action**

In addition to the ongoing efforts described in this chapter, the CSC identified specific actions to address community priorities related to addressing the committee’s concerns at oil drilling and production sites. The actions are described below.

<b>Action 1: Reduce Air Pollution Leaks from Oil Wells and Associated Activity at these Facilities</b>	
<b>Course of Action:</b>	
<ul style="list-style-type: none"> <li>• Use data from South Coast AQMD and the DOGGR to identify active, inactive and abandoned oil wells in this community.</li> <li>• Work with the CSC to identify priority locations for monitoring, and aim to conduct monitoring at these locations during well workover events.</li> <li>• Conduct mobile monitoring around active, idle, and abandoned oil drilling sites (or fenceline and more traditional monitoring activities, if necessary) to identify potential leaks.</li> <li>• Make monitoring data from these actions available online in a user-friendly format on the South Coast AQMD website (<a href="http://www.aqmd.gov">www.aqmd.gov</a>). Share monitoring data with partner agencies to help inform their efforts.</li> <li>• If persistent elevated levels are detected at locations through monitoring activities, conduct follow-up investigations at those locations using appropriate field measurement equipment. Monitoring of active and abandoned oil wells will be prioritized based on proximity to sensitive receptors, repeat violations, or complaints received. If elevated levels found around abandoned wells, make a referral to DOGGR.</li> <li>• Respond to odor complaints and update complainants on an expedited basis. Provide CSC with periodic summaries of findings, such as whether odors were confirmed and traced back to a specific site/source, and any enforcement actions taken. Note that specific or detailed information from ongoing enforcement investigations will not be able to be shared until Notices of Violation, if any, are settled or closed.</li> </ul>	
<b>Strategies:</b>	
<ul style="list-style-type: none"> <li>• Air Monitoring</li> <li>• Enforcement</li> <li>• Collaboration</li> </ul>	
<b>Goals:</b>	
<ul style="list-style-type: none"> <li>• Conduct screening measurements around all accessible active, idle and abandoned oil wells to identify leaking wells</li> <li>• Identify the highest priority locations in the community for monitoring during a well workover event</li> </ul>	

<ul style="list-style-type: none"> <li>• Conduct follow-up inspections if persistent elevated levels are found through monitoring, and enforcement action where appropriate</li> <li>• Make monitoring data publicly available</li> <li>• Provide quarterly or biannual updates to the CSC on progress and findings</li> </ul>	
<b>Estimated Timeline:</b>	
<ul style="list-style-type: none"> <li>• Fourth quarter of 2019, use data from DOGGR to identify the active, idle, and abandoned wells in this community</li> <li>• First quarter of 2020, work with CSC to identify the top priority oil drilling and production locations in this community</li> <li>• Second quarter of 2020 - Begin mobile monitoring around the oil drilling and production locations, prioritizing the locations identified by the CSC. Post data on a dedicated webpage on the South Coast AQMD website within [<i>specify timeframe</i>].</li> <li>• Third quarter of 2020, begin providing CSC members quarterly or biannual updates on efforts for monitoring and inspection or complaint investigations on fugitive emissions and odors from oil drilling and production sites</li> </ul>	
<b>Implementing Agency, Organization, Business or Other Entity:</b>	
<b>Name:</b>	<b>Responsibilities:</b>
South Coast AQMD	Conduct mobile monitoring around active, idle, and abandoned oil drilling sites to identify potential leaks, and screen for elevated ambient air levels in nearby communities. Perform inspections, and respond to complaints. Provide monitoring data and periodic updates to CSC.
CSC Members	Prioritize oil drilling and production locations in the community that are the top concerns.
City of Los Angeles	May conduct follow-up inspections of oil drilling and production sites. Refer appropriate issues identified at these sites to South Coast AQMD.
Division of Oil, Gas, and Geothermal Resources (DOGGR)	Refer appropriate issues identified at these sites to South Coast AQMD. Follow up on referrals from other agencies to DOGGR.
[Community Organizations]	Conduct community air monitoring that is complementary to South Coast AQMD community monitoring efforts.
<b>References:</b>	
(Empty space for references)	

## Action 2: Improved Public Information and Notifications on Activities at Oil Drilling and Production Sites

### Course of Action:

- Develop fact sheets or info-graphics summarizing findings from monitoring data, complaint response, and inspections of oil drilling and production facilities in this community
- Work with local public health departments to include information about the risks posed by these oil drilling and production facilities (e.g. water pollution, hazardous waste storage, etc.) and measures to reduce exposure to risks from oil drilling and production sites.
- Work with stakeholders to identify and implement key areas for improvement for the Rule 1148.2 information and notifications. Work with local public health departments on health-related messaging on risks and how to reduce exposures.
- Provide community workshops and training on how to subscribe to and use notifications

### Strategies:

- Public information and outreach
- Collaboration

### Estimated Timeline:

- First quarter of 2020, begin working with stakeholders to identify improvements for Rule 1148.2 notifications
- Third quarter of 2020, begin working with public health departments to develop fact sheets, info-graphics and messaging for notifications
- 2021, implement improvements to notifications and organize community workshops and training

### Goals:

- Develop informational fact sheets and info-graphics that provide guidance on reducing exposure to oil drilling and production site activities, and summaries of the findings from monitoring and inspection activities
- Improve Rule 1148.2 notifications based on stakeholder input
- Hold [*specify number*] of community workshops to provide training on how to use notification systems
- Provide quarterly or biannual updates to the CSC on progress

### Implementing Agency, Organization, Business or Other Entity:

Name:	Responsibilities:
South Coast AQMD	Work with Public Health to develop outreach materials and improvements to notifications. Work with stakeholders to improve notifications. Organize and host public workshops and training.
[Public Health Departments]	Collaborate with South Coast AQMD to develop outreach materials for communities to distribute at key locations, such as

	schools, civic and activity centers, and other locations to provide public information.
References:	

### Action 3: Evaluate Feasibility to Amend Rule 1148 Series to Reduce Emissions and Require Additional Reporting

#### Course of Action:

- Utilize monitoring data from CAMP efforts and CARB’s SNAPS program to identify possible additional emissions reductions or areas where annual reporting would be beneficial for establishing a more accurate emissions inventory
- Evaluate additional methods and practices to further reduce leaks, and whether additional chemicals should be added to the required list for reporting
- Consider amendments to Rule 1148 series and Rule 1173 to reduce emissions and improve emissions reporting from oil drilling and production sites. Examples of additional requirements that could be considered are:
  - Leak detection technologies and programs
  - Lower-emission or zero-emission equipment for on-site operations
  - Annual reporting of emissions
  - Improved reporting of chemicals used on-site
  - Additional requirements to conduct root-cause analysis and implement odor minimization plans when odors are traced back to a facility

#### Strategies:

- Regulation

#### Estimated Timeline:

- Second half of 2020 – initiate rule development activities and hold first working group meeting

#### Goals:

- If a rule amendment is determined to be feasible, pursue rule development to reduce emissions from leaks and operations and enhance reporting requirements
- Work with stakeholders to gather input on elements to incorporate in reporting
- Provide quarterly or biannual updates to the CSC on progress

#### Implementing Agency, Organization, Business or Other Entity:

Name:	Responsibilities:
South Coast AQMD	Evaluate the feasibility of amending requirements for reducing emissions, reporting emissions, and reporting chemicals used at oil drilling and production sites.
CSC Members	Participate in the rule development process.

#### References:

Details about the requirements for the Rule 1148 Series are available at:

- Rule 1148: <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1148.pdf>
- Rule 1148.1: <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1148-1.pdf>
- Rule 1148.2: <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1148-2.pdf>

Details about the requirements for Rule 1173: <http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1173.pdf>

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