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November 5, 2014
Council of the City of Los Angeles
Los Angeles City Hall
200 North Main Street, Third Floor
Los Angeles, CA 90012

Re: Council Files 13-1152,13-1152-S1
Regulatory Controls Over Well Stimulation

Honorable City Councilmembers:

The Los Angeles Department of City Planning has prepared the attached report on the issue of oil and gas extraction through well stimulation in response to the City Council motion (Koretz-Bonin) adopted on February 28, 2014, and (Parks-Huizar) adopted on March 5, 2014.

Reports of health and safety problems associated with well stimulation have been brought before the City by residents who live, work, and attend schools near oil and gas facilities. For the purposes of this report, 'well stimulation' is a general term used to describe various methods for enhancing oil and gas production or recovery (including hydraulic fracturing, acidizing, and gravel packing). Upon the Council's direction, the Department of City Planning has been working with the City Administrator's Office and the City Attorney's office to prepare the attached report on how to address these concerns.

The report recommends pursuing new land use and zoning regulations with the assistance of an outside technical expert. Developing new regulations on this complex issue requires collaboration with an expert in petroleum and natural gas engineering or geology, and at present, there is no qualified City Staff with this set of expertise. Once hired, the technical expert will work with the Department of City Planning, and all other relevant departments, to identify new zoning and land use performance standards in order to mitigate potential direct and indirect impacts of oil and gas activity.

If you have any questions, please contact Hagu Solomon-Cary of the Department of City Planning by phone at 213.978.1394, or via email at hagu.solomon-cary@lacity.org.

Sincerely,

ALAN BELL
Deputy Director of Planning

Attachment

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SUMMARY

This report has been prepared in response to the City Council motion adopted on February 28, 2014 (Council File No. 13-1152-S1) authored by Councilmembers Koretz and Bonin. It provides an overview for implementing new controls over oil and gas activity within the City of Los Angeles. In summary, the Planning and Land Use Management Committee (“PLUM”) instructed the Department of City Planning (“DCP”), with the assistance of other relevant departments, to review and develop regulatory controls over fracking and prepare and present an ordinance to change the zoning code to prohibit all activities associated with well stimulation.

The DCP’s review and summary of regulations controlling oil drilling districts, oil and gas production/injection/disposal wells, and well stimulation at the local, regional, and State level, aims to provide clarity and insight on the changing regulatory landscape and the procedural and administrative opportunities to implement new controls locally.

Currently, the State of California allows various forms of well stimulation, including hydraulic fracturing and acidizing. Recent statewide legislation (Senate Bill 4) will increase public disclosure of well stimulation activities, however, concerns about the bill’s adequacy to protect human health, safety, and the protection and conservation of water and other natural resources, have been raised by residents, community groups and environmental organizations within the City of Los Angeles.

The State’s authorization to conduct well stimulation does not preempt local jurisdictions from establishing traditional land use and zoning regulations which can dictate *where* oil and gas activity takes place. The oil industry, however, has challenged local government’s authority to regulate or prohibit specific well stimulation activities under principles of field preemption. The oil industry has argued that local jurisdictions have no authority to regulate *how* oil and gas extraction occurs. This issue is the subject of pending litigation in Western States Petroleum Association v. City of Compton et al. (LASC Case No. BC552272). The lawsuit is in response to an ordinance passed in Compton prohibiting hydraulic fracturing, acidizing, and other well stimulation activities. It is unlikely that this legal issue will be resolved anytime soon. As of September 24, 2014, the City Council of Compton rescinded the moratorium at the City Attorney’s recommendation.

In addition to Federal, State, and regional regulations over oil operations, spills, noticing, reporting, and equipment permits, the City of Los Angeles has the following roles and authorities governing oil and gas activity within its jurisdiction:

L.A. Municipal Code	L.A. Municipal Code	L.A. Municipal Code	L.A. Administrative Code	California Uniform Fire Code	L.A. Municipal Code
City Council	DCP-Zoning Administrator	LADBS-Permits/Code Enforcement	CAO-Petroleum Administrator	LADF-Permit/Inspection	LADWP
Adopts oil drilling districts via ordinance (i.e. Supplemental Use Districts).	Issues permit approval for establishing oil drilling districts and entitlements for oil and gas drilling via CUPs and Plan Approvals.	Permits and inspects any structure built to enclose oil and gas activities. Enforcement of authorized activities and restrictive conditions.	Investigates applications, consults with experts and decision makers, awards and executes leases/agreements, sureties, forfeitures, and reservations.	Issues operational permits required to operate an oil well, issues action permits for the drilling, re-drilling, or abandonment of oil wells.	Evaluates plans, roads, and well casings to assure safety of existing water mains/wells. Reviews and inspects methods for protection of public water supply.

As stated earlier, there remains legal uncertainty around the extent of local government authority to regulate or prohibit well stimulation treatments. As such, the Department recommends against pursuing interim or permanent regulations governing well stimulation at this time. Regardless of how this legal issue of field preemption is ultimately resolved, the Planning Department believes that there is significant room for improvement in the way the City currently regulates and administers oil and gas activity. A local example of rigorous land use standards can be found in the County of Los Angeles' Baldwin Hills Community Standards District (CSD) overlay zone (see page 11 for more details). To that end, the Department recommends the retention of a technical expert to: 1) provide further review of legal and regulatory developments regarding well stimulation, and 2) advise the City on how to better implement zoning and land use regulations in order to address potential direct and indirect effects of both conventional and unconventional oil and gas activity.

Technical expertise leading to an update of Section 13.01 of the LAMC, referenced in the chart above, would include specific performance standards and mitigation measures, improvement to the current administrative and regulatory process, and implementation of a proactive code enforcement process to protect public health. In general, new regulation would apply to new oil and gas permits, while the creation of a proactive code enforcement process would monitor and regularly enforce current conditions of compliance of existing oil and gas operations. This proactive approach is similar to the fee-supported Annual Inspection Monitoring (AIM) program for auto related uses, junk yards, and recycling centers, among others uses. This type of fee-based inspection program and overall update to Section 13.01 of the LAMC will be a major undertaking for the City. It would include code amendments, creation of a fee schedule and collection process, citation and revocation process and some environmental clearance.

BACKGROUND

Oil and gas well stimulation is a general term used to describe various methods that enhance oil and gas production. Well stimulation operations differ from region to region nationwide based on geology and other natural factors. In the recent past, specific well stimulation treatments have raised environmental concerns including: 1) air quality as a result of increased truck traffic and fugitive methane emissions; 2) induced seismicity as it relates to waste water injection wells; 3) sensitive receptors (residential, institutional, etc.) in proximity to noxious emissions, noise, and new industrial infrastructure; 4) water quality as it relates to potential contamination of ground water and surface water; and 5) water quantity as it relates to the supply of water, particularly in light of drought conditions. In 2010, Congress ordered the Environmental Protection Agency (EPA) to research the dangers posed to drinking water sources by hydraulic fracturing. The draft assessment will be released in December 2014 for peer review and public comment. Recently, an independent review of scientific and technical information on advanced well stimulation technologies in California was released¹. The research was published on August 28, 2014 and focuses on the direct impacts of well stimulation but did not analyze the long or short term indirect impacts of said activities. A summary of the findings can be found in Exhibit C1 within this report.

Although a number of Federal regulations govern well stimulation processes, States have regulatory primacy. Now that well stimulation treatments have been brought to public attention, issues surrounding State preemption over local authority are being determined. For example, on July 21, 2014, Western States Petroleum Association ("WSPA")—through the law firm of Latham & Watkins LLP—sued the City of Compton, the City Council, and the Mayor for declaratory and injunctive relief challenging an ordinance prohibiting hydraulic fracturing, acidizing, and other well stimulation activities. WSPA alleges that the ordinance is unconstitutional because it purports to regulate a field that is fully occupied by state law—i.e., the method and manner of oil and gas

¹ <http://ccst.us/publications/2014/2014wst.pdf>

extraction—and, therefore, is preempted. “By banning only the well stimulation activities set forth in the Ordinance while continuing to allow oil production activities themselves, the City has purported to regulate the method and manner of oil and gas extraction in the City.” (Compl. ¶ 53.) On September 23, 2014 the City Council of Compton withdrew the moratorium. The Los Angeles City Attorney’s Office is actively monitoring the outcome of this action.

REGULATORY LANDSCAPE

The following is an overview of the relevant State, regional, and local regulations that control oil and gas activity taking place in the City of Los Angeles.

California State Regulations.

In California, where oil production is high and natural gas production is on the rise, there exists no current ban or moratorium on fracking or acidizing. Senate Bill 1132 (Mitchell), which failed to pass through the Senate in May 2014, would have prohibited Division of Oil, Gas and Geothermal Resources (“DOGGR”) from authorizing any well stimulation treatment on or after January 1, 2015 until an in-depth, independent scientific study was completed, opened for public comment, and submitted to the Governor for a positive determination. There are, however, oil and gas drilling regulations (Public Resources Code Section 3000 et seq) and the recently passed Senate Bill 4, which impose additional requirements described in detail below.

Senate Bill 4 (Pavley). SB 4 was approved by Governor Brown on September 20, 2013 and is included in the California Public Resource Code (Section 3150-3161). It requires DOGGR, within the State Department of Conservation, to implement additional requirements over the existing laws that regulate drilling, operation, maintenance, and abandonment of oil and gas wells, tanks, and facilities in order to improve safety and mitigate environmental impacts. In summary, SB 4 will: 1) require DOGGR to study and adopt new regulations, 2) require noticing and publication requirements; and, 3) create new definitions and penalties (see Exhibit C2 for the latest version of DOGGR’s interim regulations, including definitions).

As a result of SB 4, DOGGR released draft regulations on November 15, 2013. Final regulations are expected to take effect on July 1, 2015. According to DOGGR, owners and operators that use well stimulation techniques must act in accordance with current interim regulations. This includes providing notice in the form of an application which is verified for completion by the Division. Once well stimulation is complete, operators must also abide by the disclosure requirement described below. DOGGR has been officially tracking well stimulation notices on their website since January 1, 2014 as a result of the interim rules. Lastly, SB 4 also requires DOGGR to prepare an Environment Impact Report (EIR) by July 1, 2015 to evaluate the potential impacts of the proposed project (fracking, defined broadly) within DOGGR’s six administrative districts. The City of Los Angeles is within District 1: Cypress (see Exhibit A3 for a map of the districts).

DOGGR’s interim regulations are described below and organized by the primary entity responsible for compliance.

Division of Oil Gas & Geothermal Resources

- Define the terms well stimulation treatment, hydraulic fracturing, and hydraulic fracturing fluid,
- Require well owner or operator to record and include all data on acid treatments and well stimulation treatments,
- Require DOGGR, in conjunction with the Department of Toxic Substance Control (DTSC), the State Air Resources Board (ARB), the State Water Resource Control Board (SWRCB), the Department of Resources Recycling, and Recovery (and any other local air district or

regional water quality control board in areas where stimulation may occur) to adopt rules and regulations specific to well stimulation, including governing the construction of well casings and full disclosure of the composition and disposition of well stimulation fluids, and to authorize DOGGR to allow well stimulation treatments if specific conditions are met,

- Prior to performing a well stimulation treatment, operators must apply for a permit with the State Oil and Gas Supervisor or district deputy which prohibits the operator from either conducting a new well stimulation treatment or repeating a well stimulation treatment without a valid, approved permit,
- Prohibit the approval of a permit application that is incomplete,
- Require DOGGR, within 5 business days of issuing a permit to commence well stimulation treatment, to provide a copy to specific boards and entities and to post the permit on a publicly accessible portion of its Internet Web site,
- Require DOGGR to start the process of developing an Internet Web site for operators to report specific information related to well stimulation treatments and require the Internet Web site to be operational no later than January 1, 2016.
- Authorize DOGGR to direct reporting to an alternative Internet Web site and require the Division to obtain the data reported to the alternative Internet Web site and make it available to the public,
- Ensure that a well stimulation treatment permit expires one year from the date on which the permit is issued,
- Require DOGGR to perform random periodic spot-check inspections during well stimulation treatments,
- Provide that, where the Division shares jurisdiction over a well with a federal entity, DOGGR's rules and regulations apply in addition to all applicable federal laws and regulations.

State Regional Water Quality Control Board

- Require SRWQCB, on or before July 1, 2015, to develop groundwater monitoring model criteria to be implemented either on a well-by-well basis or on a regional scale on how to conduct appropriate monitoring on individual oil and gas wells subject to well stimulation treatment.

Secretary of the Natural Resources Agency

- Require the Secretary of the Natural Resources Agency to conduct and complete an independent scientific study on well stimulation treatments, including acid well stimulation and hydraulic fracturing treatments prior to or by January 1, 2015,
- Require the Secretary of the Natural Resources Agency to notify various legislative committees on the progress of the independent scientific study on well stimulation and related activities until the study is completed and peer reviewed by independent scientific experts.

Well Operators and Suppliers

- Require well operators and suppliers to provide a copy of the approved well stimulation treatment permit to specified tenants and property owners at least 30 days prior to commencing a well stimulation treatment,
- Require the operator to provide notice to the Division at least 72 hours prior to the actual start of a well stimulation treatment in order for the Division to witness the treatment,
- Require the supplier of the well stimulation treatment to provide the operator, within 30 days following the conclusion of the treatment, certain information regarding the well stimulation fluid,

- Require the operator, within 60 days of the cessation of a well stimulation treatment, to post on a publicly-accessible web site, specified information on the well stimulation fluid,
- Require a supplier claiming trade secret protection for the chemical composition of additives used in a well stimulation treatment to disclose the composition to the DOGGR, in conjunction with a well stimulation treatment permit application, but with certain exceptions, prohibit those with access to the trade secret from disclosing it.

This bill will generate money for deposit into the Oil, Gas, and Geothermal Administrative Fund from annual charges levied, assessments collected, and violation fees from civil penalties payable to the Treasurer. The bill allows these monies to be used for all costs associated with scientific study required to evaluate treatment, inspections, and any air and water quality sampling, monitoring, and testing performed by public entities. The money will also be used to cover the costs to the State Water Resources Control Board and the Regional Water Quality Control Boards in carrying out specific responsibilities relating to well stimulation and groundwater monitoring. SB 4 requires that by January 1, 2016 (and annually thereafter), a comprehensive statewide report on well stimulation be provided to the Legislature and the public.

Despite these additional requirements, some community groups have raised concerns about transparency, namely because well operators or owners are not required to *publicly* disclose the chemical make-up of the well stimulation fluid prior to the act of injection. They are only required to disclose this information to DOGGR prior to the well stimulation. Public disclosure is required sixty days after the cessation of well stimulation via an Internet Website. Others have expressed concerns surrounding DOGGR's ability to address local impacts caused by well stimulation via a Statewide EIR. It should be noted that the mandated Statewide EIR does not preclude local jurisdictions from conducting their own EIR processes (Public Resource Code Section 3161b1c).

Interim Regulations	Independent Scientific Study	Final Regulations	Statewide EIR
January 1, 2014 – July 1, 2015	January 1, 2015	July 1, 2015	July 1, 2015

Regional Regulations

Air Quality Management District Rule 1148.2. The South Coast Air Quality Management District (“SCAQMD”) covers four counties including urban portions of Los Angeles and is primarily responsible for monitoring and enforcing point, stationary, and area sources of air pollution. Specific to oil and gas activity, SCAQMD developed Rule 1148.2 Notification and Reporting Requirements for Oil and Gas Wells and Chemical Suppliers. This rule was adopted in April of 2013 and preceded SB 4 and the DOGGR's subsequent interim regulations. SCAQMD created this rule in response to the lack of information available on oil and gas well stimulation and to gather air quality-related data on oil and gas well drilling, well completion, and well reworks. There is some redundancy in the notification and reporting requirements now that SB 4 is chaptered and DOGGR's interim regulations have been established. To that end, SCAQMD has a two year window in which it can report back to their Board with recommendations on how to move forward with the reporting guidelines. In addition, DOGGR should be working in conjunction with SCAQMD to establish local standards per the interim regulations resulting from SB 4.

The SCAQMD also regulates production equipment such as flares or gas separation equipment. These are regulated via standard air quality permits which are pulled by operators or suppliers of equipment and are enforced by SCAQMD inspectors. In addition, well equipment does require a registration permit. At present, the SCAQMD standard air quality permits or registration permits are independent of State permitting processes.

Local Regulations

Los Angeles Municipal Code “O” Oil Drilling Districts. Section 13.01 of the Los Angeles Municipal Code (“LAMC”) addresses the creation of oil districts, “where the drilling of oil wells or the production from the wells of oil, gases or other hydrocarbon substances (are) permitted.” This section does not apply to subterranean gas holding areas which are operated as a public utility. In addition, this section does not apply to M3 zones unless oil drilling operations or the establishment of an oil drilling district are within 500 feet of a more restrictive zone. It should be noted that, according to Council File records, the last oil district was established in May of 1990, approximately 24 years ago.

Section 13.01 is written as an applicant-initiated zoning overlay used primarily to establish oil drilling districts, and has comparatively little to do with land use compatibility or potential noxious emissions. Many of the Section 13.01 provisions were established in the Code prior to 1970, and thus do not specifically address requisite State or City environmental review procedures implemented under the California Environmental Quality Act (CEQA). Additionally, most plan approvals have previously qualified for categorical exemptions under State CEQA guidelines (Article II: Exemptions, Class 5: Alterations in Land Use Limitations). Essentially, these categorical exceptions are granted under the basis of there being no change in land use.

As long as the applicant is in compliance with the authorized activities identified under prior plan approvals or conditions, an administrative review process is granted without a public hearing or EIR process. Since there is no mention of extraction methods within Section 13.01, the use of specific well stimulation treatments does not require City clearance or review. Requests to initiate modifications of existing entitlements and/or conditions *would trigger* the appropriate environmental clearance and public hearing as part of the Zoning Administrator’s review process.

A brief summary of Section 13.01 is provided below for context:

- A. **Application** for districts where wells of oil, gases, or other hydrocarbon substances are permitted.
- B. **Definitions** include, but are not limited to, “Class A” and “Class B” wells that distinguish between production and injection wells, respectively.
- C. **Status of Areas** classified as either “Urbanized” or “Non-Urbanized”. Such classifications determine the allowable size of the oil districts and the total drillable land area.
- D. **Requirements for Filing** an oil district that is either in a(n): Urbanized area, Non-Urbanized area, Offshore area, Los Angeles City Oil Field Area, or General-All Areas. The establishment of “General-All Areas” requires a submittal to the authorized person in charge of Petroleum Administration.
- E. **Standard Conditions** within each oil drilling district described in part D.
- F. **Additional Conditions** imposed when establishing an oil district (for example, equipment delivery hours, landscaping and fencing requirements, subsurface production and storage equipment, fire safety precautions, etc.).
- G. **Description of Districts** referenced in maps held in the City Planning Office showing boundaries for each oil drilling district described in Part D (see Exhibit A1 for map).
- H. **Drilling Site Requirements** determined by the Zoning Administrator to drill or deepen a well in an oil drilling district that has been established by ordinance, or to drill or deepen and subsequently maintain an oil well in an M3 zone that is within 500 feet of a more restrictive zone.

- I. **Permits** are required for drilling, deepening or maintaining oil wells, or converting an oil well from one class to another, and are issued by the Zoning Administrator or Area Planning Commission.
- J. **Termination of District** and how to extend the timeline for that process under the discretion of the Zoning Administrator, the City Administrative Office, and the City Planning Commission.
- K. **Maintenance of Drilling and Production Site** for existing and future oil and gas wells within the City.

Zoning Administrator. Under the 'O' Drilling District provisions, the Department of City Planning Zoning Administrator approves permitting activity. However, permit applications for well operations within the oil districts require involvement by the Los Angeles Fire Department ("LAFD"), the Petroleum Administration in the City Administrator's Office ("CAO"), the City Attorney, the Department of Building and Safety ("LADBS"), and the Department of Water and Power ("LADWP").

Fire Department. The Los Angeles Fire Department issues two types of permits to oil and gas well operators. The first is an operational permit known as Division 4. This permit is required to engage in the operation of an oil well. The second is an action permit for the drilling, re-drilling, or abandonment of an oil well. Although this is standard practice, Section 13.01 does not explicitly outline these steps in the permit process.

Petroleum Administration. Under the Los Angeles Administrative Code, the Director of the City Administrative Office serves as the City's Petroleum Administrator. Sections 19.48 -19.50 address the duties of the Director with respect to the management of petroleum matters affecting the City. These include, but are not limited to, addressing all matters related directly or indirectly to petroleum exploration and production and any matters concerning the creation of oil well drilling districts under the Los Angeles Municipal Code. Sections 19.53 -19.71 address duties including referrals, investigations of applications, consultation with experts, recommendations to decision makers, publications, conditions, award of leases or agreements, execution of leases, sureties, forfeitures, and reservations (subject to the State Lands Commission). The City does not currently have a Petroleum Administrator. Due to the intermittent and technical nature of this work, it is difficult to staff one person, full time, to fill this role. In other cities, technical experts are often kept on-call to support staff with certain duties delegated to the Petroleum Administrator.

CHALLENGES AND ISSUES

The following is an overview of the administrative and regulatory challenges that the City of Los Angeles faces in controlling local oil and gas activity under current regulation.

Administrative

The primary issues with administering the City's existing ordinance over oil and gas activity stems from the static nature of the regulation and its compounding implications. Updates to the code section have not kept time with the changing industry, economy, urban environment, or the City's evolving information management strategies. For example, there is no comprehensive way in which to track *all* oil and gas activity, permits, and their subsequent conditions of approval due to changes in record keeping over the past 65 plus years, and the fact that some oil wells predate zoning in the City altogether. Enforcement of existing regulation is complicated by this fundamental issue in addition to the lack of in-house technical expertise that was initially conceptualized at the time the ordinance was drafted. If new regulations are to be approved by the City Council, these issues could inhibit implementation and enforcement unless they are addressed therein.

Regulatory

The current oil and gas regulations that were established in the 1940's, adjusted in the early 1950's, and amended with ad hoc changes in more recent years. The italicized topics below outline the issues and opportunities with the City's current land use regulations -taking into account the external impacts of oil and gas activity. This preliminary overview aims to highlight the need for: 1) a technical expert in petroleum engineering or geology, 2) streamlining regulation with other regulatory entities, and 3) more compatible land use strategy within the oil districts in an effort to protect the comfort, health, safety and general welfare of the public.

Site Preparation. More oil and gas extraction activity within "O" districts will result in more movement of goods, on and off-road diesel equipment, traffic, and increased particulate emissions. These external impacts should be mitigated particularly for those districts that are within or in close proximity to residential zones and other sensitive uses. Additional regulation and/or enforcement on trucking hours, ingress and egress, idling, chemical storage, and circulation should be referenced in the zoning code in accordance to surrounding uses.

Air Quality. Section 13.01 does make reference to providing protection to surrounding properties with regards to odor, dust, and other harmful substances. The 'Additional Conditions' section states that no substances may be produced from any permitted well unless all the equipment is completely enclosed within a building but does not go beyond that to specify performance standards that could be measured to address these impacts. Best Management Practices (BMPs) and prescriptive performance standards for proper enclosure and ventilation should be explicitly defined and required to ensure the reduction of fugitive emission. In particular, fugitive emissions from disposal of the waste gas stream (flaring or venting), equipment leaks, process venting, and accidental failures should be addressed.

Water Quality. In California, underground injection of wastewater is currently the most common method for managing produced water.² Section 13.01 does not provide specificity on injection wells used for either disposal of waste fluids or to maintain oil reservoir pressure after well stimulation. DOGGR requires well operators to maintain data on the performance and safety precautions used in injection wells. Information provided by operators to DOGGR on this issue should be available for review by LADWP for additional oversight. EPA's Safe Drinking Water Act regulates source water quality through its Underground Injection Control (UIC) Program and in the recent past US EPA has been critical of DOGGR's implementation of the UIC Program. Additionally, the US EPA certifies the implementation of a Spill Prevention Countermeasure Control (SPCC) plan, under the Clean Water Act, for larger oil and gas operators to protect against spills that could contaminate ground water. Any new regulation should observe the EPA's revised UIC Class II permitting guidance practices and ensure compliance in accordance with SPCC plan, if applicable.

It is currently unclear if oil and gas operators within the City limits can pull an Industrial Wastewater Permit to discharge into publicly owned treatment facilities. US EPA, also under the Clean Water Act, regulates the Unconventional Extraction in the Oil and Gas Industry as it relates to wastewater. The EPA is currently developing pretreatment standards for release into Publicly Owned Treatment Works (POTWs). Any changes to Section 13.01 should include forthcoming EPA Effluent Limitations Guidelines in order to treat production waters in the municipal system.

² [https://www.law.berkeley.edu/files/ccelp/Wheeler_HydraulicFracturing_April2013\(1\).pdf](https://www.law.berkeley.edu/files/ccelp/Wheeler_HydraulicFracturing_April2013(1).pdf)
<http://www.rff.org/rff/documents/rff-rpt-managingriskssofshalegas-keyfindings.pdf>

Geotechnical. In the ‘Standard Conditions’ portion of Section 13.01, there is mention of subsidence in ground elevation and the Zoning Administrator’s ability to require producer(s) to take corrective action after the subsidence. A proactive approach would include site-specific geotechnical investigation to analyze grading, erosion control, ground movement (vibration), and the potential for seismically induced ground failure resulting from well stimulation and Class B wastewater injection wells. All findings and thresholds should be in accordance with technical experts and DOGGR’s seismic monitoring tracking.

Setbacks/Distancing Requirements. Section 13.01 currently does not require any explicit setbacks from any sensitive uses, such as aquifers, surface water supply, homes, schools, business, places of worship, and hospitals unless well activity is within an M3 zone and within 500 feet of a more restrictive zone. While the Zoning Administrator maintains discretion to impose conditions when supported by findings, adding performance standards to sites that are within close proximity to sensitive uses should be incorporated into any new regulations.

Insurance. Section 13.01 requires liability insurance in the amount of \$100,000 to cover owners, agents, lessees, etc. who are permitted to conduct drilling, production, or incidental operations. These insurance policies are subject to the approval of the City Attorney and should be provided to that office for each application. This coverage amount has not changed since Section 13.01 was enacted in the early 1950’s. The City’s current zoning regulation should either eliminate this type of non-land use related provision from the zoning code and assign it to the appropriate enforcement agency, or keep time with the current standards and coverage for various types of insurance coverage, including accidental contamination or pollution liability.

Monitoring & Mitigation. Section 13.01 does not currently reference any type of monitoring or mitigation plan or practices. Such proactive measures could be used to minimize odor, and ensure the use of best available control technologies (BACTs).

Emergency Response Plan/Procedure. Section 13.01 does not require well operators or owners to prepare an emergency response plan. The City has precedence in this area with regards to hazardous materials under the City’s Certified Unified Program Agency (CUPA) out of the Los Angeles Fire Department. A similar emergency hazardous release plan should be in place and should include the City’s Fire Department and other health professionals from the County Public Health Department, for example.

RECOMMENDATIONS

The Planning Department recommends pursuing permanent regulations that would result in new performance standards and mitigation measures, as well as proactive code enforcement of existing uses to protect the public’s health and safety.

There are two main advantages of new regulations. The first advantage is that Section 13.01 can be expanded to include current and relevant definitions, development standards, procedures, permits, environmental review (where applicable), enforcement, public outreach and a more streamlined implementation processes. The second advantage is that the revision can more closely conform with re:code LA- a five year work program to comprehensively update the Zoning Code. New regulations resulting from this effort would be applied to “new” oil and gas projects. In some cases, “new” projects could include those with major changes to their original conditions under an existing CUP, in addition to a completely new CUP application. Developing new permanent regulations will require analysis and advisement by a technical consultant. In order to draft effective regulation, the City must identify a working group with a lead department to work with the technical consultant to ensure that any new standards have oversight and enforcement.

While the Department does not recommend a moratorium on well stimulation at this time, a technical expert may provide further review of regulations specific to unconventional high-pressure well stimulation, given additional developments in legal cases and Senate Bill 4, in the intervening time.

Technical Expert

To change the zoning code, a technical expert is needed to provide the scientific perspective and analysis from which new performance standards can be established. In addition, the Department of City Planning recommends that a working group, including representatives from all relevant departments, agencies, and bureaus including but not limited to the DCP, the City Attorney, the CAO, the LAFD, the LADWP, and the BOS-Regulatory Affairs Division, come together to discuss and determine roles and responsibilities, procedures, and enforcement of oil and gas related activity within the City. In addition, the working group should consult with relevant outside agencies including SCAQMD, RWQCB and DOGGR.

Scope of Work

The DCP will work with the CAO to draft a Request for Qualifications/Proposals for said technical consultant. The technical expert should provide a comprehensive review and analysis of oil and gas activity in the City including conventional and unconventional highly-pressurized oil extraction methods. The work program for the technical expert, in close coordination with the City working group, could include, but is not limited to the following analysis.

Background:

- Outline the technical issues of conventional and unconventional highly-pressurized oil extraction techniques including hydraulic fracturing, acidizing, gravel packing and related wastewater disposal. Include impacts of each method to human health and the environment. Outline solutions to curb potential direct and indirect impacts.
- Review existing scientific studies on the impacts of well stimulation in urban settings comparable to Los Angeles.

Reconnaissance:

- Review sites/facilities that have garnered public complaints, conduct site visits and cross reference well event data to better understand the chronic or acute nature of impacts. Assess well activity for these site to identify how better to mitigate all impacts.
- Identify site/facilities that have operated without public complaint and conduct site visits to identify what conditions or compliance measures that may be used as best management practices.

Best Management Practices:

- Identify planning and land use best management practices for reducing direct and indirect effects of all oil and gas activity including unconventional highly-pressurized oil extraction techniques. Outline a new land use ordinance and subsequent mitigation measures that could address potential negative impacts.
- Provide a status update on Federal, State, and regional regulation pertinent to oil extraction techniques.
- Advise on potential City regulations to further protect residents from unconventional high pressure extraction techniques.
- Implement a fee-based annual inspection of current oil and gas operations, similar to the AIM program, to ensure existing compliance with current case condition.

Administrative Process:

- Outline existing permit process among City departments and make recommendations on how to coordinate internal permit processes and strengthen oversight.
- Make recommendations on how to interface with other regional and State agencies in order to regularly track permits, maintain a consistent exchange of relevant information, and integrate their oversight into City permit processes and enforcement.

OTHER JURISDICTIONS

City of Carson. The City of Carson, in March 2014, unanimously approved an Interim Control Ordinance establishing a 45-day temporary moratorium on the drilling, re-drilling or deepening of *any* wells within their jurisdiction associated with oil and/or gas operation. In April 2014 the City Council voted against the extension of that moratorium. Under these circumstances, Government Code Section 65858(e) prohibits Carson from adopting another ICO on this issue due to the failed extension. As it was written, the ICO encompassed *all* new oil and gas drilling activities which is significantly more impactful to the oil and gas industry than regulating one or two methods that enhances extraction. In light of the failed ICO extension, the Council has instructed the City's Planning Department to re-write the code section that governs oil and gas activity. The department will start this process by selecting a consultant team with technical expertise in both the fields of petroleum engineering, land use, and zoning. In contrast to the City of Los Angeles, Carson has a limited number of oil and gas exploration and production companies operating within its city limits.

City of Beverly Hills. The City of Beverly Hills passed a prohibition on hydraulic fracturing, acidizing, or any other well stimulation treatment in conjunction with the production or extraction of oil, gas or other hydrocarbon substances from any surface location within the City limits or any subsurface bottom hole in the City. The Ordinance became effective in June 2014 and barring any challenges within the first 90 days, can be found as an amendment to their Municipal Code. Their City Council found that the adoption of this Ordinance was exempt from CEQA pursuant to Section 15308 of the Guidelines for action taken by regulatory agencies to assure the maintenance, restoration, enhancement, or protection of the environment. The City found that the exemption is applicable because the Ordinance is intended to amend the City's regulatory process for permitting oil and gas production in such a way as to better protect the environment. The City does not have as much oil and gas extraction activity as the City of Los Angeles and this action was not in response to any application for hydraulic fracturing but was rather adopted on principle. Enforcement is not a significant concern due to the limited oil and gas activity within city limits.

Los Angeles County Department of Regional Planning. The County's Baldwin Hills Community Standard District (CSD)³ is an example of a comprehensive approach to regulating oil and gas production. It was adopted by the Los Angeles County Board of Supervisors on October 2008 and did not address hydraulic fracturing. It was developed to provide a means for implementing regulations, safeguards, and controls for activities related to drilling for the production of oil and gas within the oil fields located in the unincorporated Baldwin Hills area. The purpose of the CSD is to: 1) help ensure that oil field operations are conducted using best management practices, 2) improve compatibility with adjacent land uses, 3) minimize potential adverse impacts of such operations, 4) regulate operations so they are compatible with surrounding land uses; and, 5) enhance the appearance of the site with landscaping and other property maintenance requirements.

³ http://planning.lacounty.gov/assets/upl/project/bh_20081028-csd-final.pdf

The CSD covers both land use and operational regulations and had a comprehensive EIR. It is said to be the most regulated oil field in the State of California.⁴ The CSD covers the following: intent, purpose, boundaries, definitions, development standards, procedures, permitting, enforcement, public outreach, and implementation processes. This oil field has a significant concentration of wells and activity and is comparable to the City of Los Angeles in terms of its oil and gas drilling and history of petroleum activity.

The CSD includes a periodic review process to determine if provisions are adequately protecting the health, safety, and general welfare of the public (see Exhibit B1 for review process flow chart). In a past review process, the County commissioned a study by petroleum geologists that lasted approximately two years and found that no significant environmental impacts resulted from hydro fractured wells. Based on the findings, a collective decision was made not to amend the CSD to ban or further regulate hydraulic fracturing beyond what is required in the CSD.

ENFORCEMENT

As stated earlier, new regulatory controls will focus on traditional zoning and land use such as performance standards and or mitigation measures. In order for such new land use regulation to be effectively enforced, however, procedures will need to be streamlined and permits will need to be automated for improved tracking and mapping. Cities like Dallas, Texas have relied exclusively on land use controls to regulate oil and gas activities. Their Council adopted a Planning Commission recommendation for a 1500 foot (formerly 300 foot) setback around gas wells. The ordinance prohibits drilling within 1500 feet of “protected uses” including homes, schools, churches, some retail spaces, and water wells. The ordinance requires a two-thirds Council vote on a specific-use permit for each proposed drill to reduce the setback amount for any particular well.

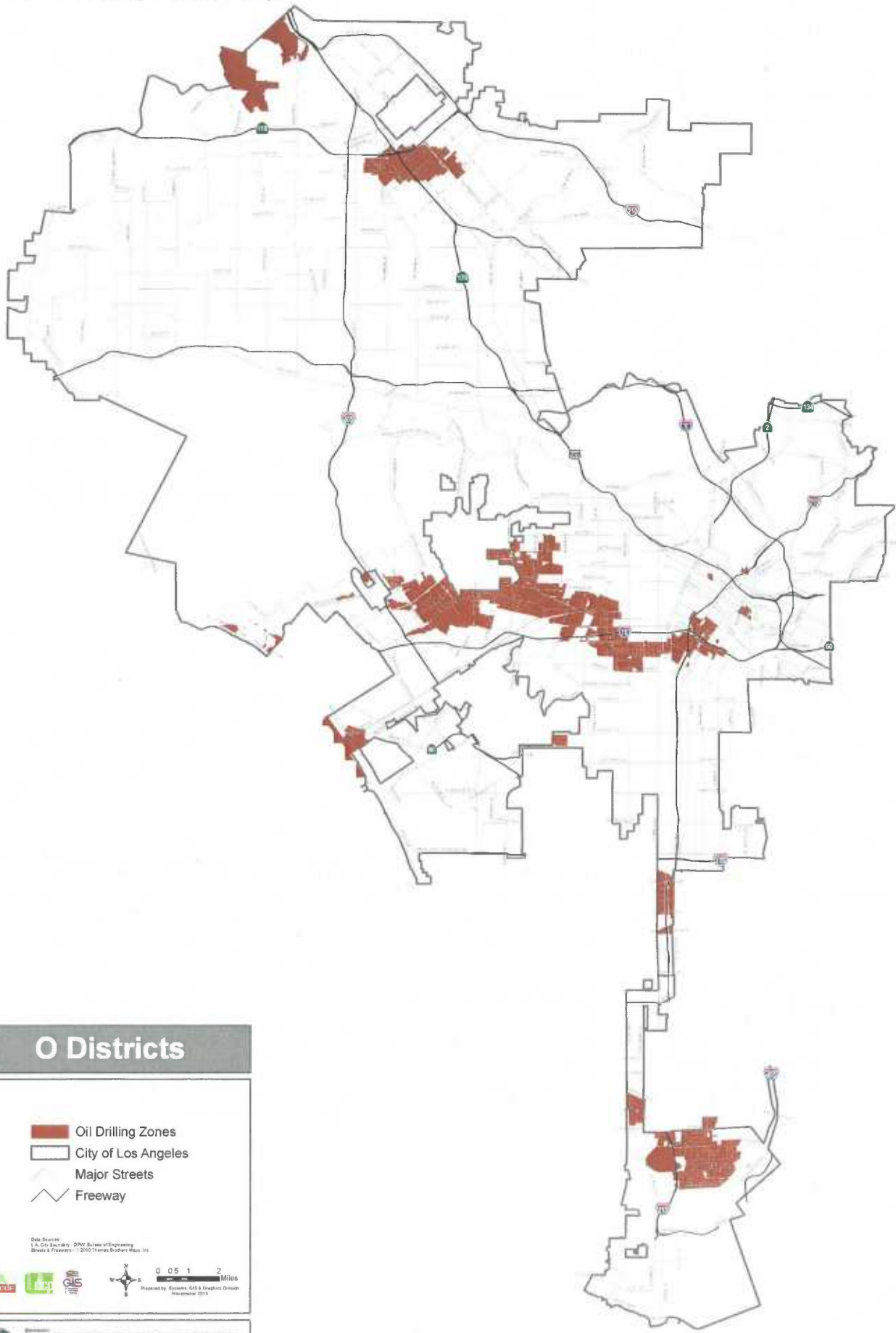
In addition, the City of Los Angeles has executed agreements in the past that can serve as an example for how a private operator can monitor a given aspect of their performance under explicit terms with responsibility to submit performance audits. For example, the City’s Local Enforcement Agency (LEA), and the County has developed a Joint Powers Agreement (JPA) and a Memorandum of Understanding (MOU) with a private owner of a solid waste landfill known as Sunshine Canyon. The referenced JPA was initially executed on May 2008 and is periodically updated by the LEA. This could potentially serve as a model for reporting and documenting oil and gas operations in lieu of public enforcement on the method or manner in which oil and gas is extracted.

CONCLUSION



In conclusion, this report recommends pursuing new land use and zoning regulations upon retention and advisement of a technical expert. The expert, in collaboration with relevant City departments, will identify issues and subsequent performance standards and/or mitigation measures that can alleviate impacts of oil and gas activity broadly throughout the City. As new local land-use approaches are examined and empirical scientific research emerges, the City will be better positioned to address the direct and indirect impacts of well stimulation both in the short and long term.

⁴ <http://www.inglewoodoilfield.com/future-of-inglewood-oil-field/>

Exhibit A1: "O" Drilling Districts-Citywide



O Districts

-  Oil Drilling Zones
-  City of Los Angeles
-  Major Streets
-  Freeway

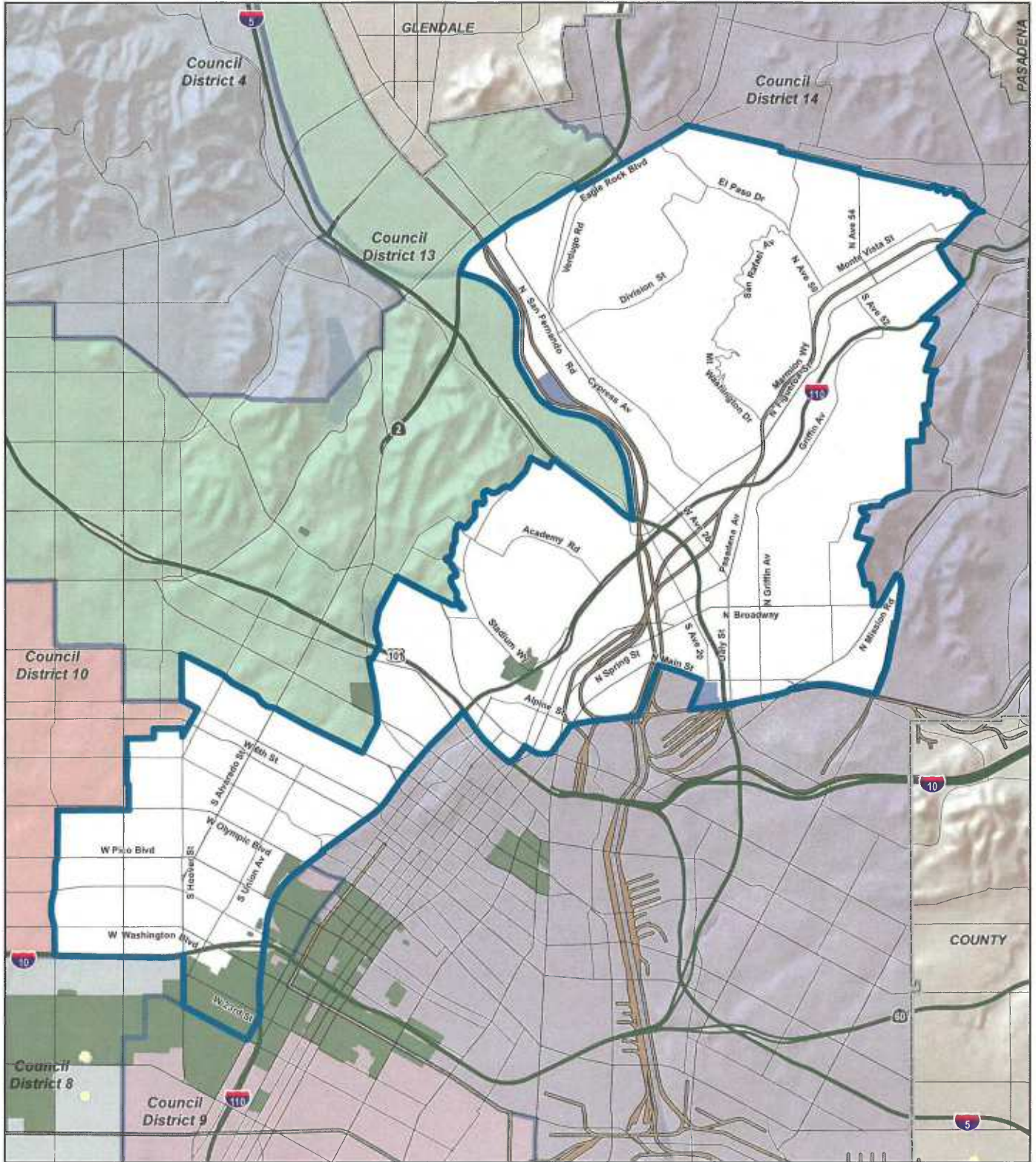
Data Sources:
L.A. City Services - DNO, Bureau of Engineering,
Grants & Franchises - © 2010 Thomas Brothers Maps, Inc.



Prepared by: Systems, GIS & Graphics Division
November 2010

City of Los Angeles





Council District 1 - Gilbert Cedillo AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.

- | | | | | |
|---------------------------|----------------------|-----------------------|------------------|------------|
| -O Zoning District areas | Hydraulic Fracturing | Acidizing | Matrix Acidizing | All Events |
| M3 Zoning Class areas | Acid Fracturing | Maintenance Acidizing | Gravel Packing | |
| Council District Boundary | | | | |
| City Boundary (BOE) | | | | |

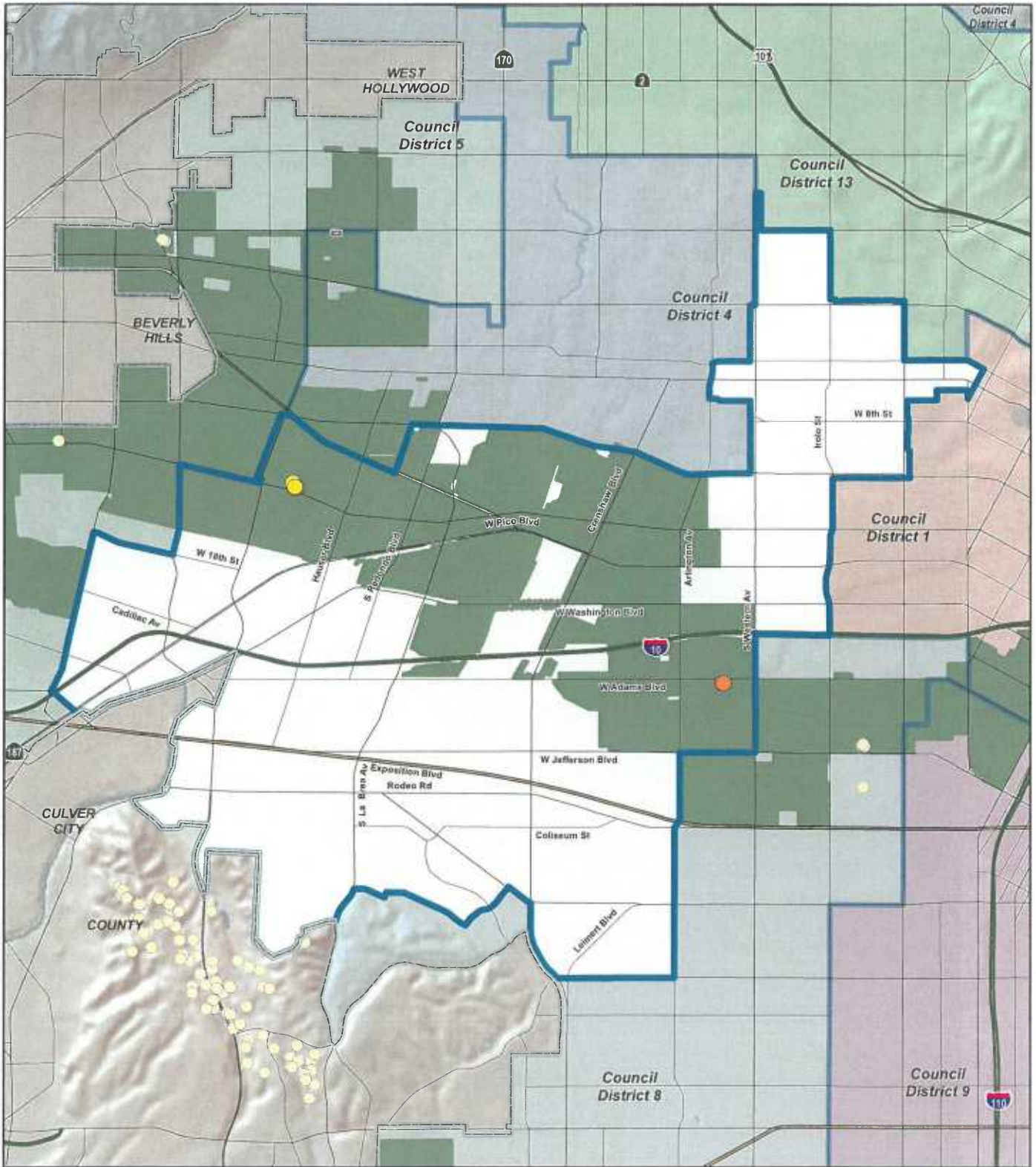
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Data Sources: Zoning, DCP © 2014; City Boundary and CDs, BOE © 2014; Streets, Fwys, and Cities TBM © 2011; Well Data, AQMD Event Notifications © 2014, World shaded relief, ESRI, INC © 2014



1 in = 0.986 mi



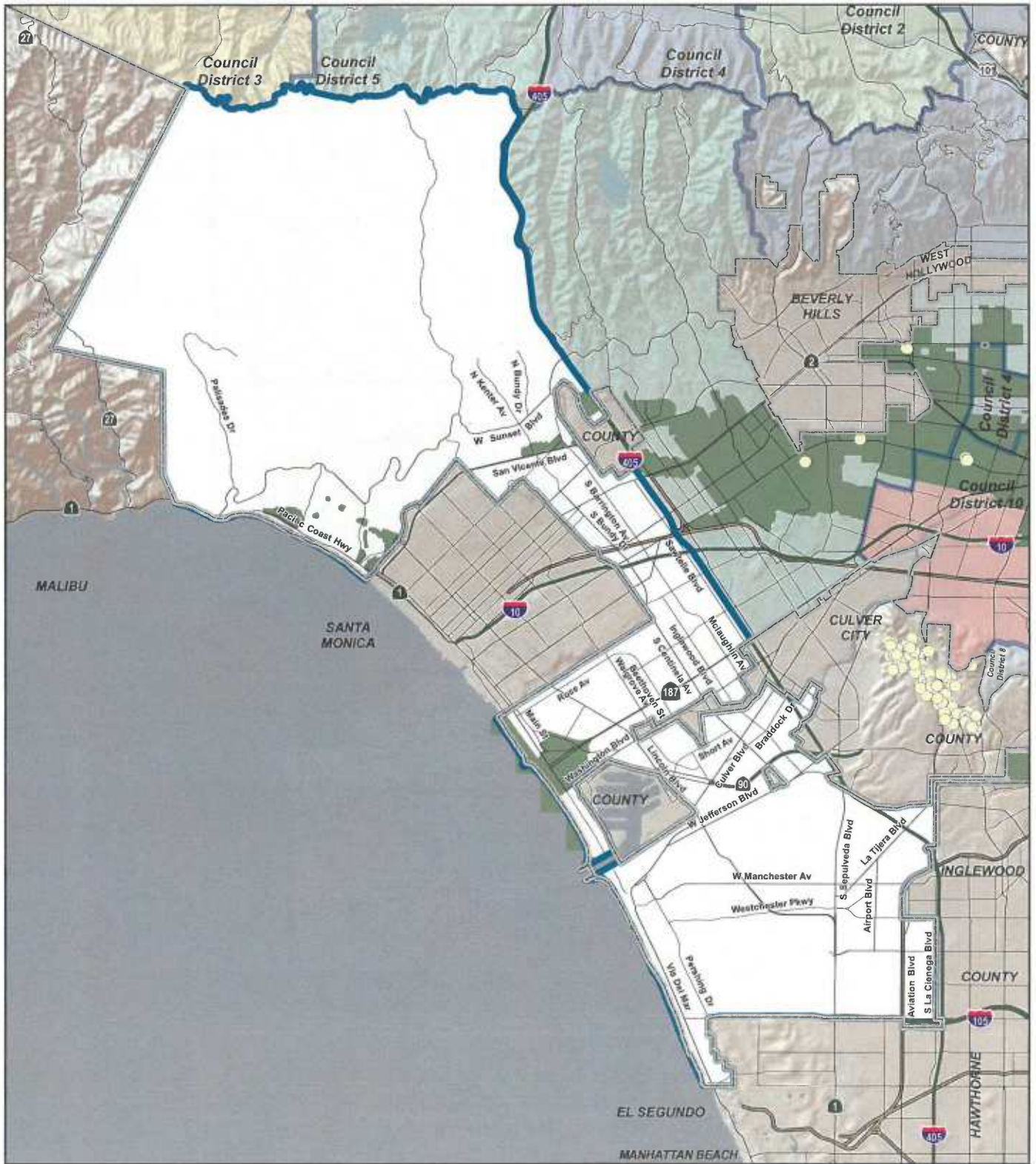


Council District 10 - Herb J. Wesson, Jr. AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.

- | | | | | |
|---------------------------|-----------------------------|------------------------------|-------------------------|-------------------|
| -O Zoning District areas | Hydraulic Fracturing | Acidizing | Matrix Acidizing | All Events |
| M3 Zoning Class areas | 0 Events | 4 Events | 0 Events | 10 Events |
| Council District Boundary | Acid Fracturing | Maintenance Acidizing | Gravel Packing | |
| City Boundary (BOE) | 0 Events | 4 Events | 0 Events | |





Council District 11 - Mike Bonin AQMD Rule 1148.2 Events

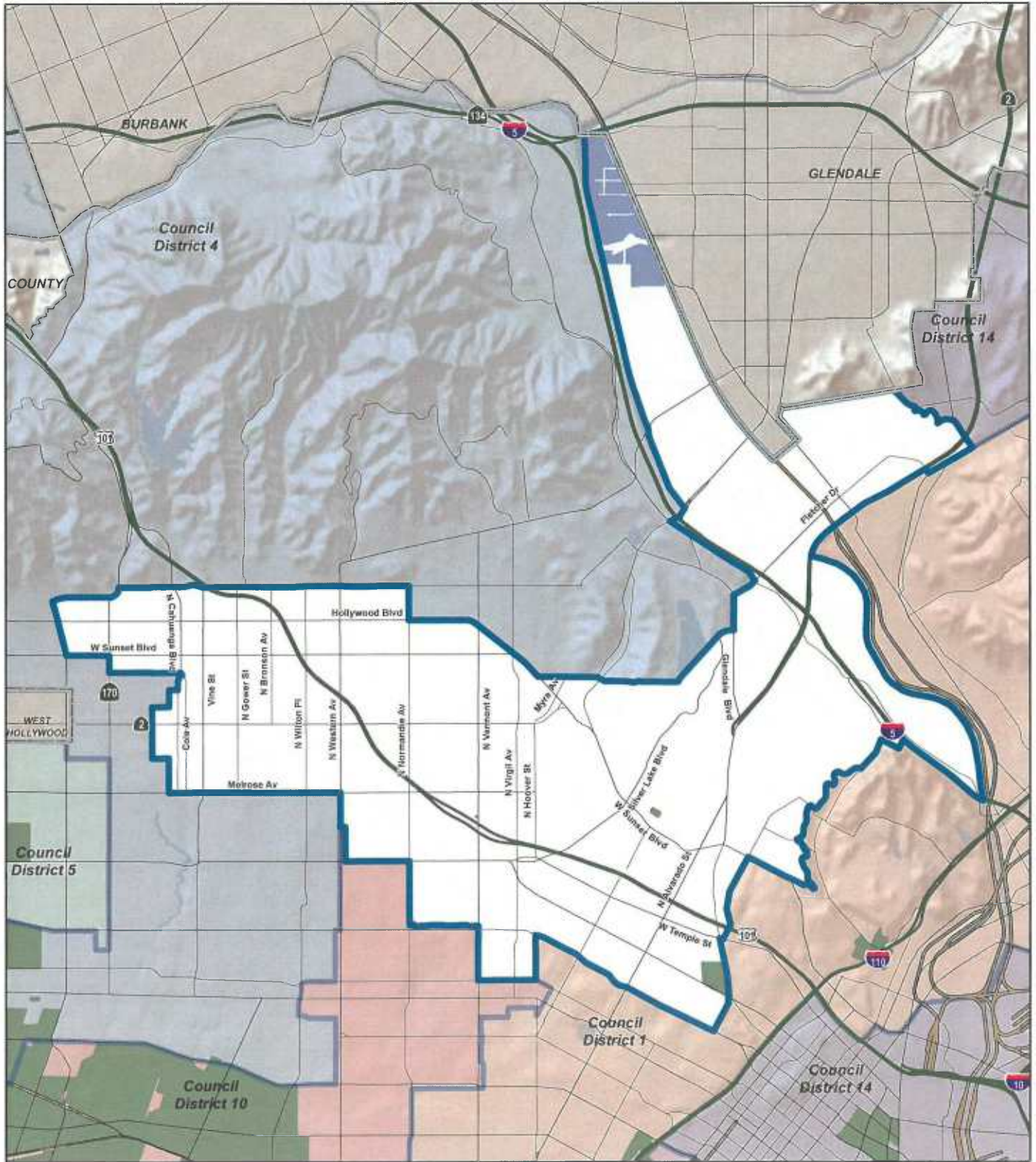
Data showing single events including but not limited to hydraulic fracturing and well stimulation.

- | | | | | |
|---------------------------|-------------------------------|--------------------------------|---------------------------|---------------------|
| -O Zoning District areas | Hydraulic Fracturing 0 Events | Acidizing 0 Events | Matrix Acidizing 0 Events | All Events 0 Events |
| M3 Zoning Class areas | Acid Fracturing 0 Events | Maintenance Acidizing 0 Events | Gravel Packing 0 Events | |
| Council District Boundary | | | | |
| City Boundary (BOE) | | | | |

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1 in = 2.022 mi





Council District 13 - Mitch O'Farrell AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.

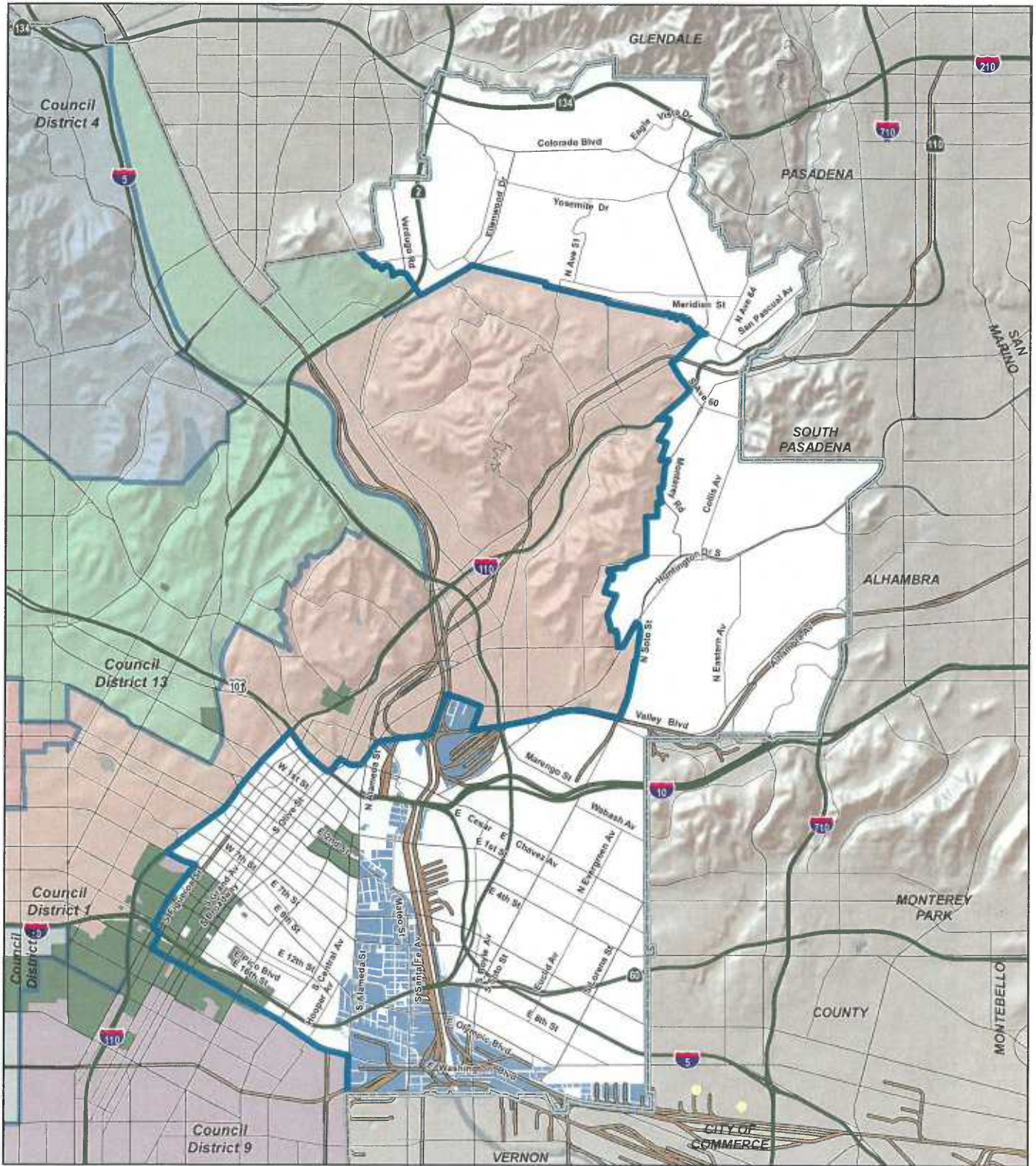
- O Zoning District areas
- M3 Zoning Class areas
- Council District Boundary
- City Boundary (BOE)
- Hydraulic Fracturing
- Acidizing
- Matrix Acidizing
- Acid Fracturing
- Maintenance Acidizing
- Gravel Packing
- All Events

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1 in = 0.994 mi





Council District 14 - Jose Huizar AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.

- O Zoning District areas
- M3 Zoning Class areas
- Council District Boundary
- City Boundary (BOE)
- Hydraulic Fracturing 0 Events
- Acidizing 0 Events
- Matrix Acidizing 0 Events
- Acid Fracturing 0 Events
- Maintenance Acidizing 0 Events
- Gravel Packing 0 Events
- All Events 0 Events

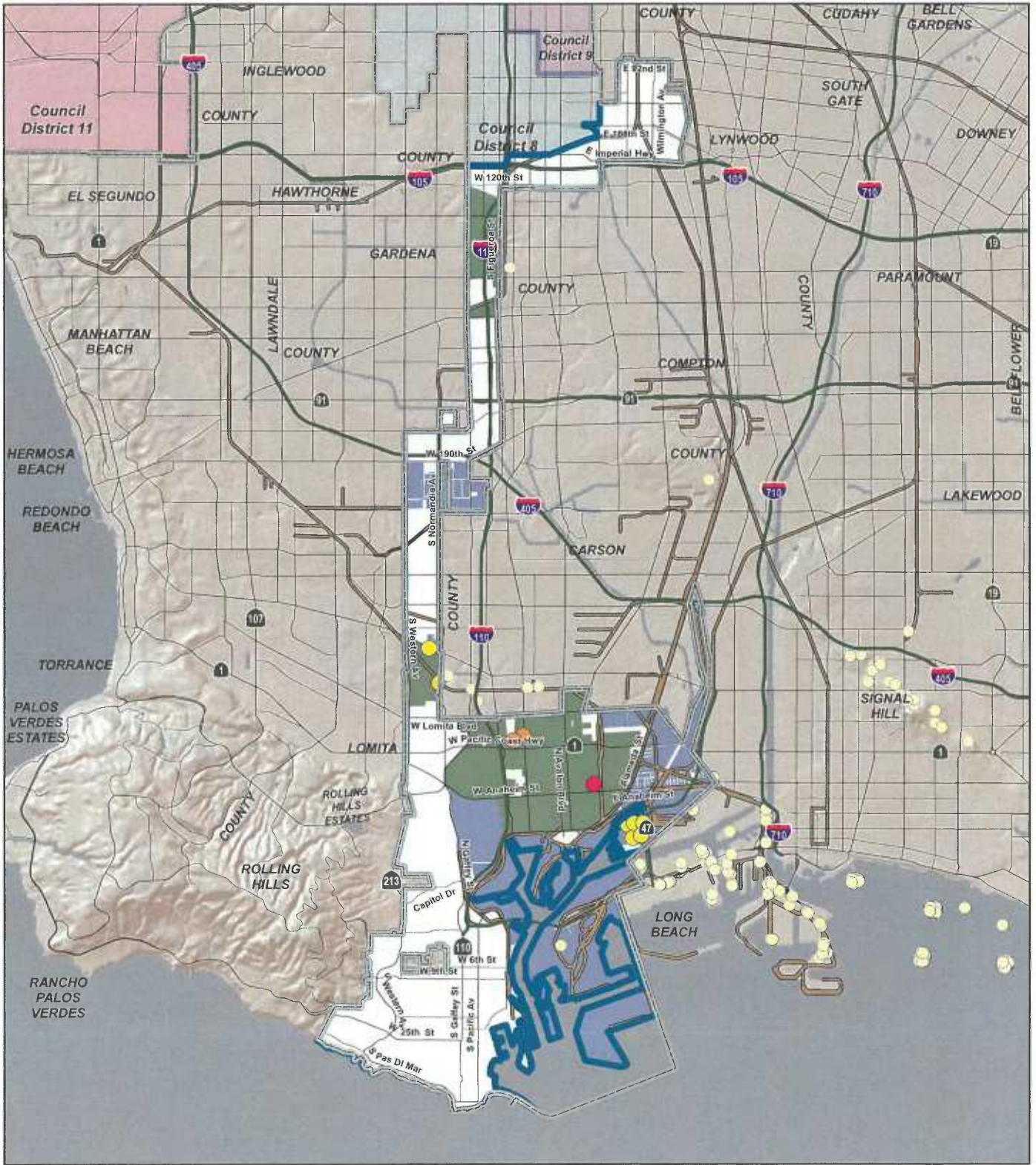
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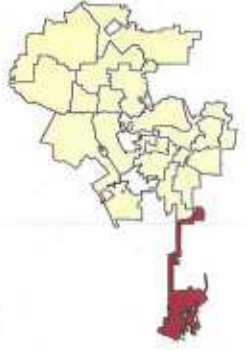
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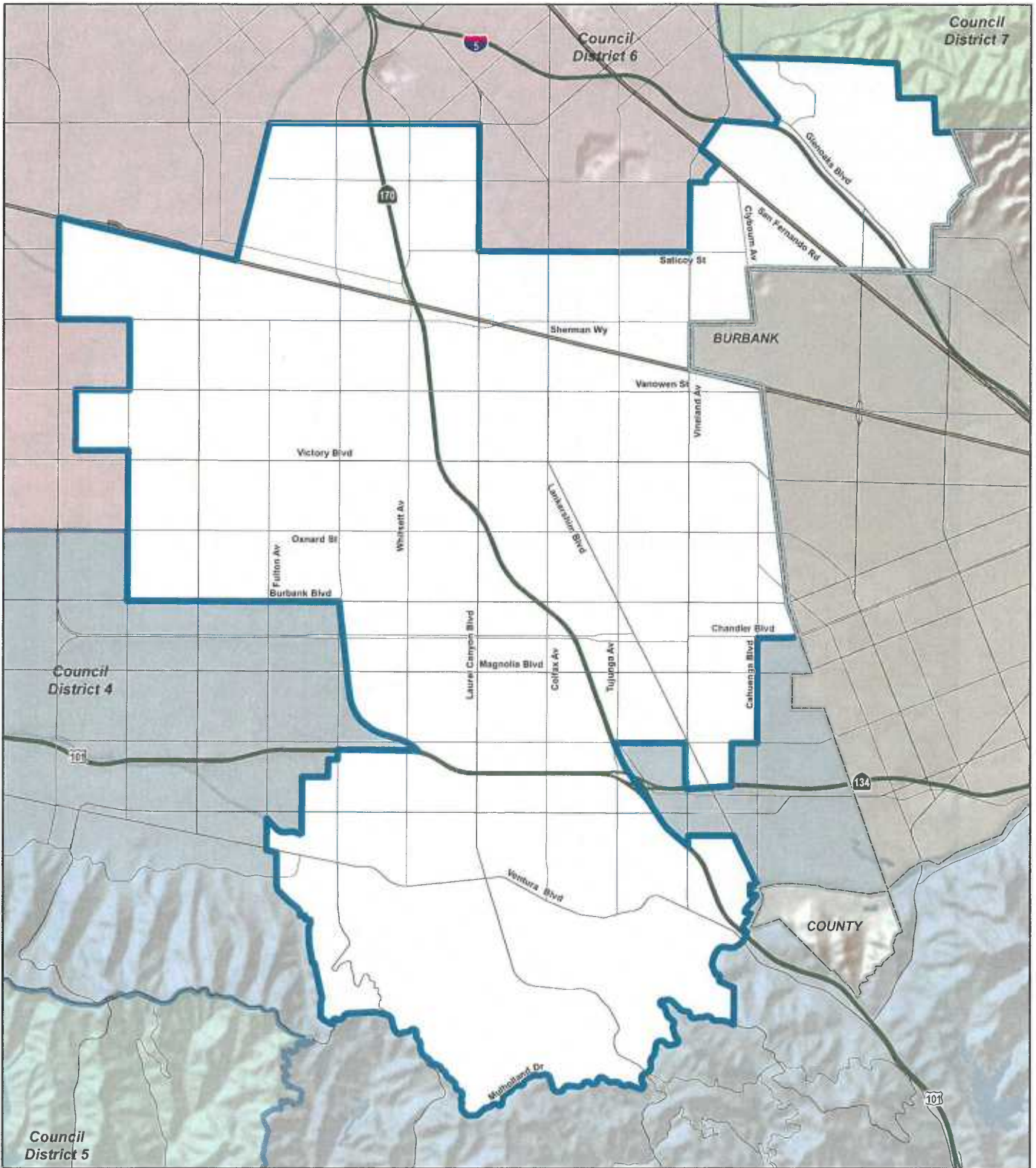




Council District 15 - Joe Buscaino AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.





Council District 2 - Paul Krekorian AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.

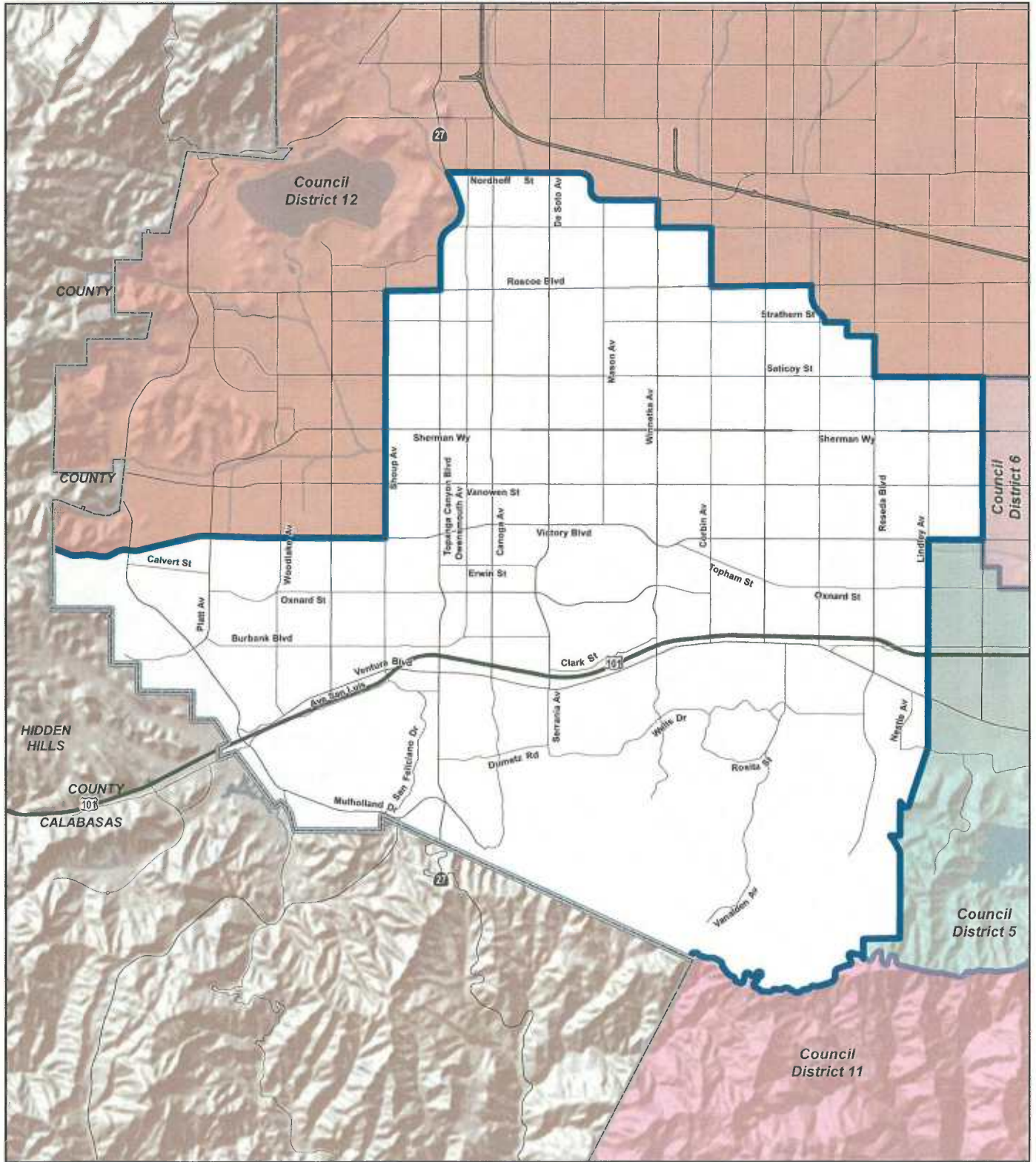
- | | | | | |
|---------------------------|-----------------------------|------------------------------|-------------------------|-------------------|
| -O Zoning District areas | Hydraulic Fracturing | Acidizing | Matrix Acidizing | All Events |
| M3 Zoning Class areas | 0 Events | 0 Events | 0 Events | 0 Events |
| Council District Boundary | Acid Fracturing | Maintenance Acidizing | Gravel Packing | |
| City Boundary (BOE) | 0 Events | 0 Events | 0 Events | |

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1 in = 0.977 mi





Council District 3 - Bob Blumenfield AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.

- | | | | | |
|---------------------------|-----------------------------|------------------------------|-------------------------|-------------------|
| -O Zoning District areas | Hydraulic Fracturing | Acidizing | Matrix Acidizing | All Events |
| M3 Zoning Class areas | 0 Events | 0 Events | 0 Events | 0 Events |
| Council District Boundary | Acid Fracturing | Maintenance Acidizing | Gravel Packing | |
| City Boundary (BOE) | 0 Events | 0 Events | 0 Events | |

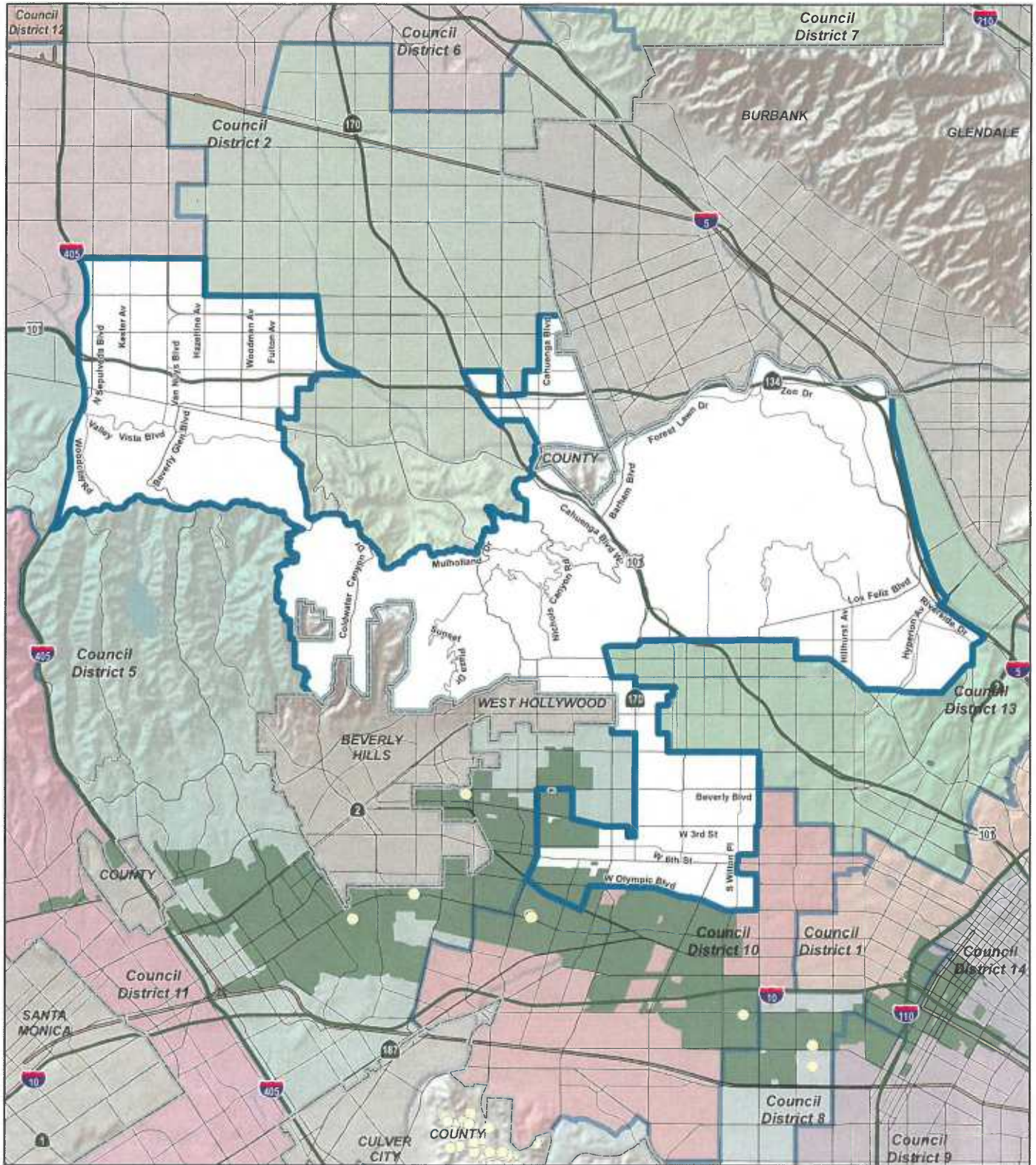
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1 in = 1,258 mi



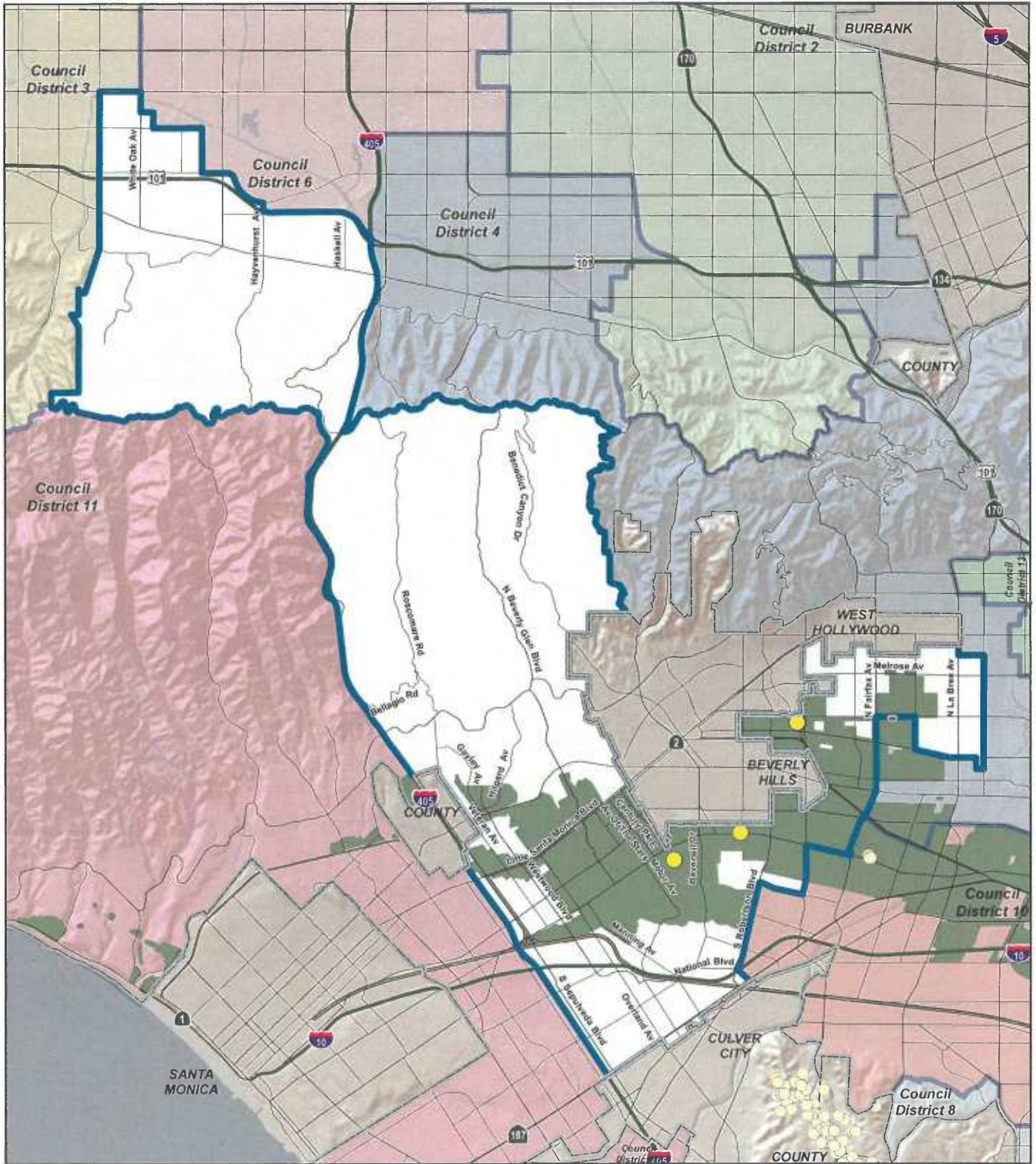


Council District 4 - Tom LaBonge AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.

- O Zoning District areas
- M3 Zoning Class areas
- Council District Boundary
- City Boundary (BOE)
- Hydraulic Fracturing
- Acidizing
- Acid Fracturing
- Matrix Acidizing
- Maintenance Acidizing
- Gravel Packing
- All Events





Council District 5 - Paul Koretz AQMD Rule 1148.2 Events

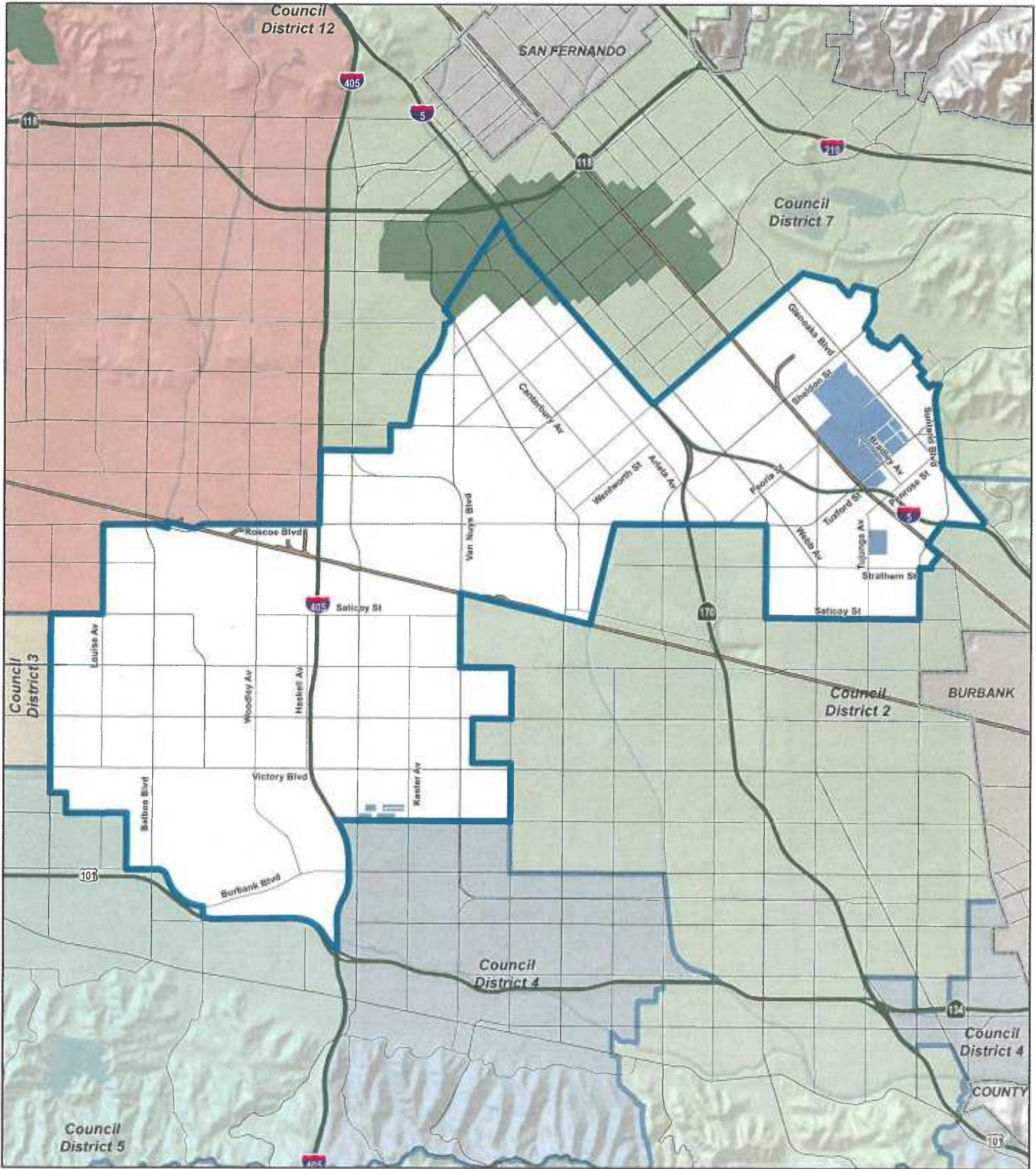
Data showing single events including but not limited to hydraulic fracturing and well stimulation.

-O Zoning District areas	Hydraulic Fracturing	Acidizing	Matrix Acidizing	All Events
M3 Zoning Class areas	0 Events	23 Events	0 Events	28 Events
Council District Boundary	Acid Fracturing	Maintenance Acidizing	Gravel Packing	
City Boundary (BOE)	0 Events	2 Events	0 Events	

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1 in = 1.67 mi





Council District 6 - Nury Martinez AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.

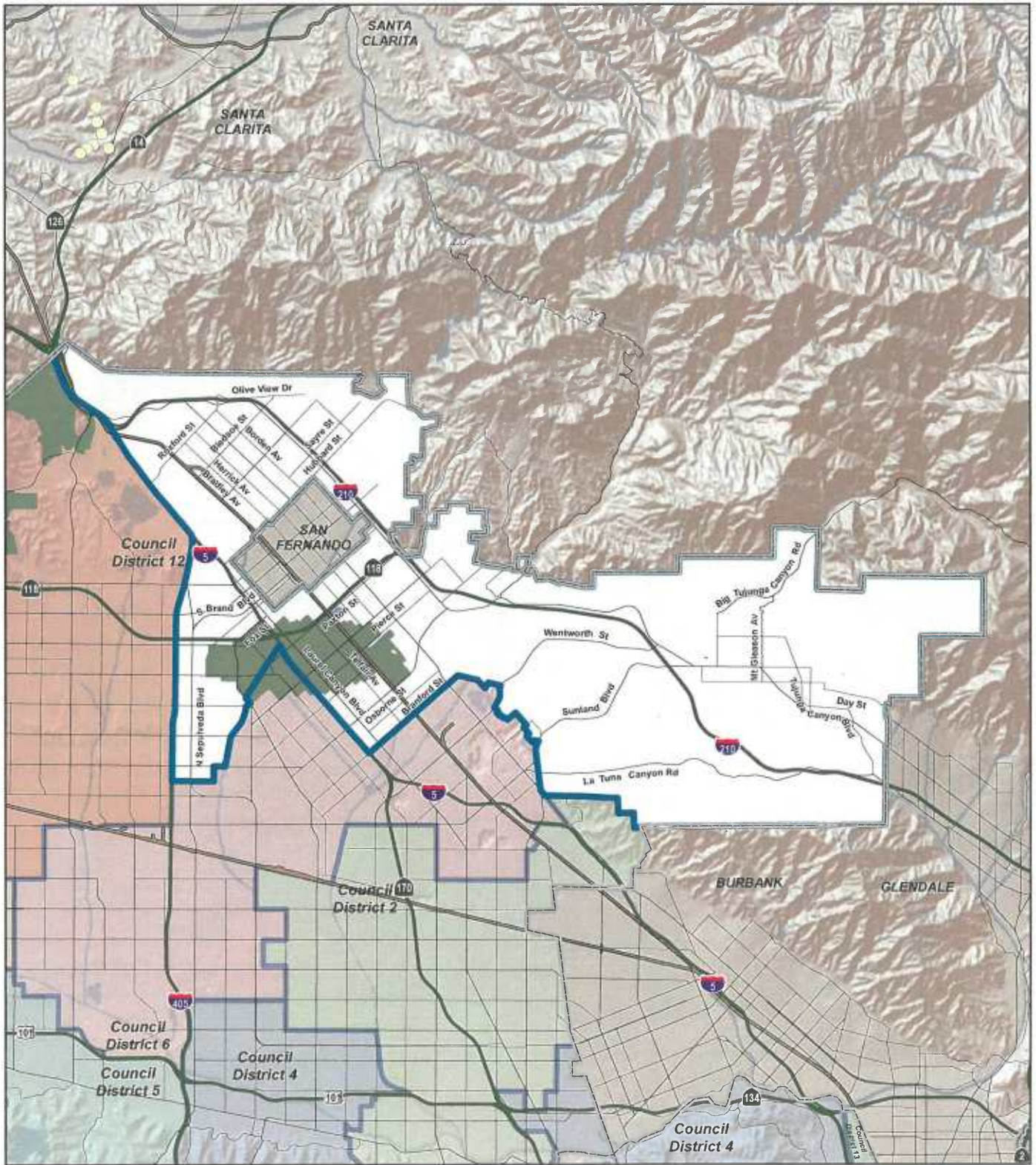
- | | | | | |
|---------------------------|-----------------------------|------------------------------|-------------------------|-------------------|
| -O Zoning District areas | Hydraulic Fracturing | Acidizing | Matrix Acidizing | All Events |
| M3 Zoning Class areas | 0 Events | 0 Events | 0 Events | 0 Events |
| Council District Boundary | Acid Fracturing | Maintenance Acidizing | Gravel Packing | |
| City Boundary (BOE) | 0 Events | 0 Events | 0 Events | |

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1 in = 1.34 mi





Council District 7 - Felipe Fuentes AQMD Rule 1148.2 Events

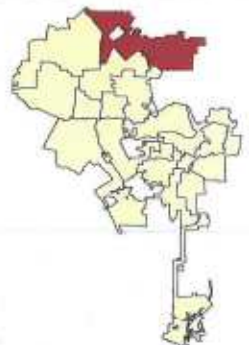
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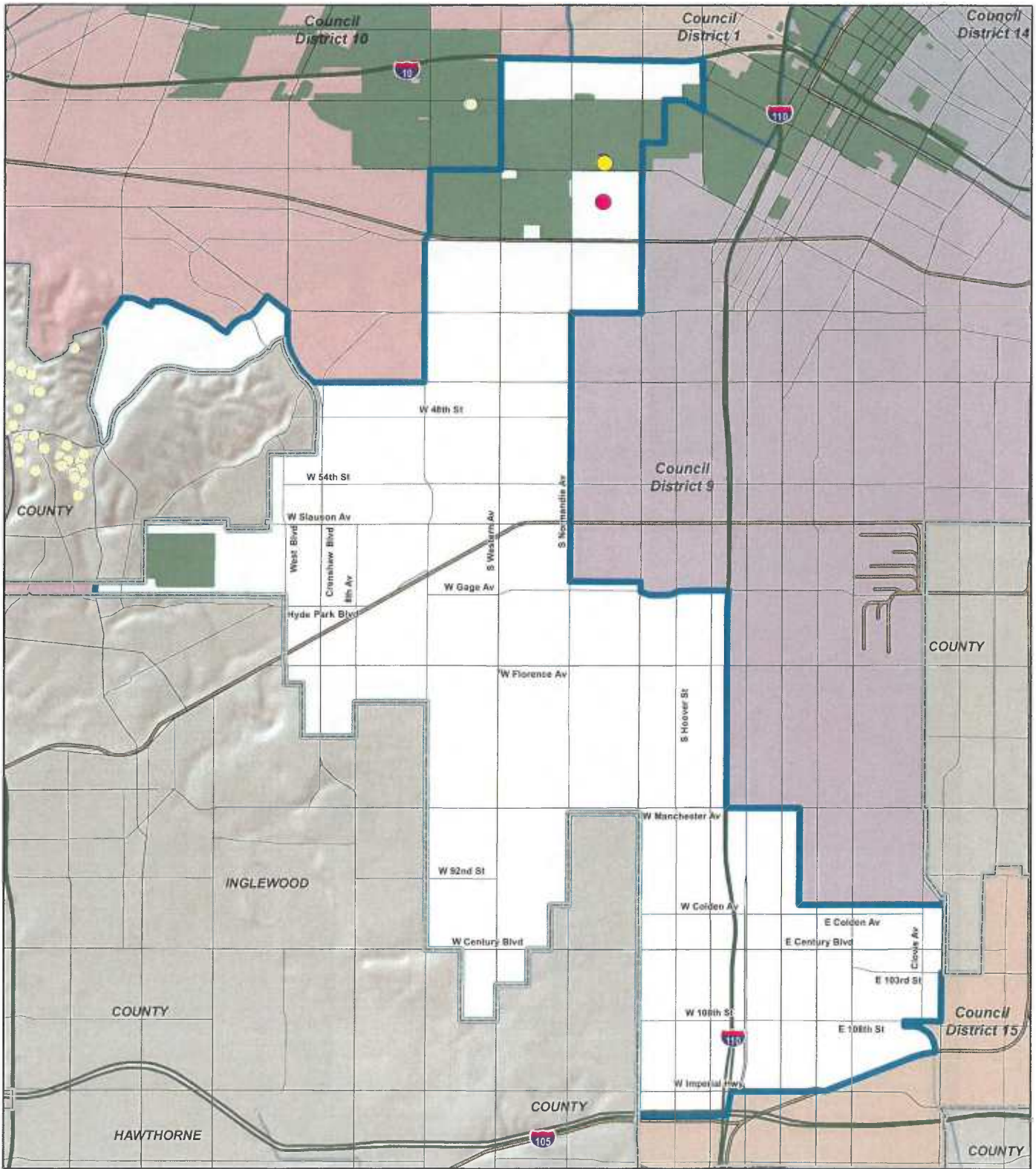
- | | | | | |
|---------------------------|-----------------------------|------------------------------|-------------------------|-------------------|
| -O Zoning District areas | Hydraulic Fracturing | Acidizing | Matrix Acidizing | All Events |
| M3 Zoning Class areas | 0 Events | 0 Events | 0 Events | 0 Events |
| Council District Boundary | Acid Fracturing | Maintenance Acidizing | Gravel Packing | |
| City Boundary (BOE) | 0 Events | 0 Events | 0 Events | |

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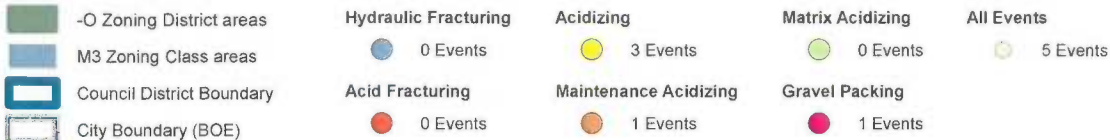
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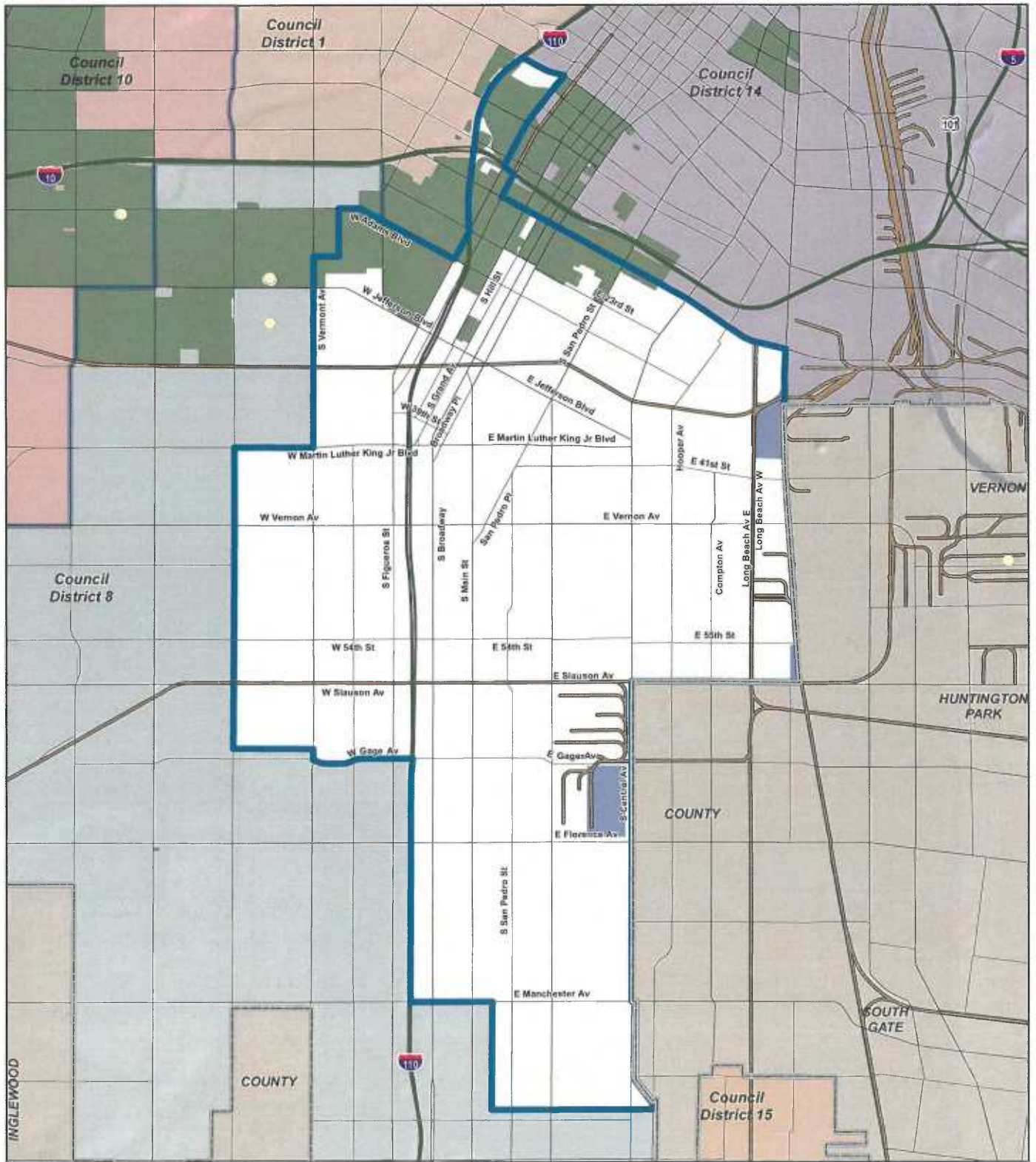




Council District 8 - Bernard C. Parks AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.





Council District 9 - Curren D. Price, Jr. AQMD Rule 1148.2 Events

Data showing single events including but not limited to hydraulic fracturing and well stimulation.

- | | | | | |
|---------------------------|----------------------|-----------------------|------------------|------------|
| -O Zoning District areas | Hydraulic Fracturing | Acidizing | Matrix Acidizing | All Events |
| M3 Zoning Class areas | Acid Fracturing | Maintenance Acidizing | Gravel Packing | |
| Council District Boundary | City Boundary (BOE) | | | |

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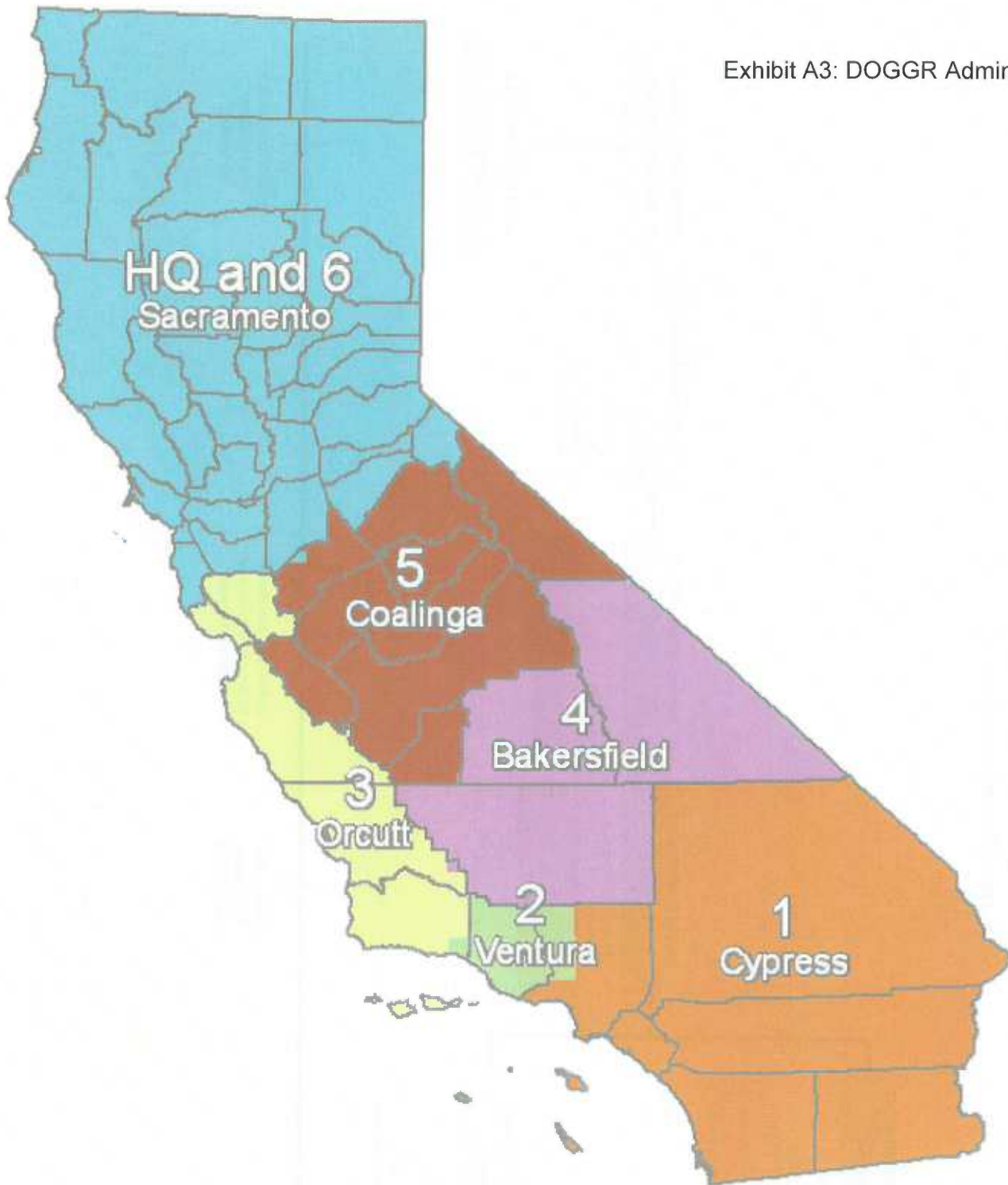
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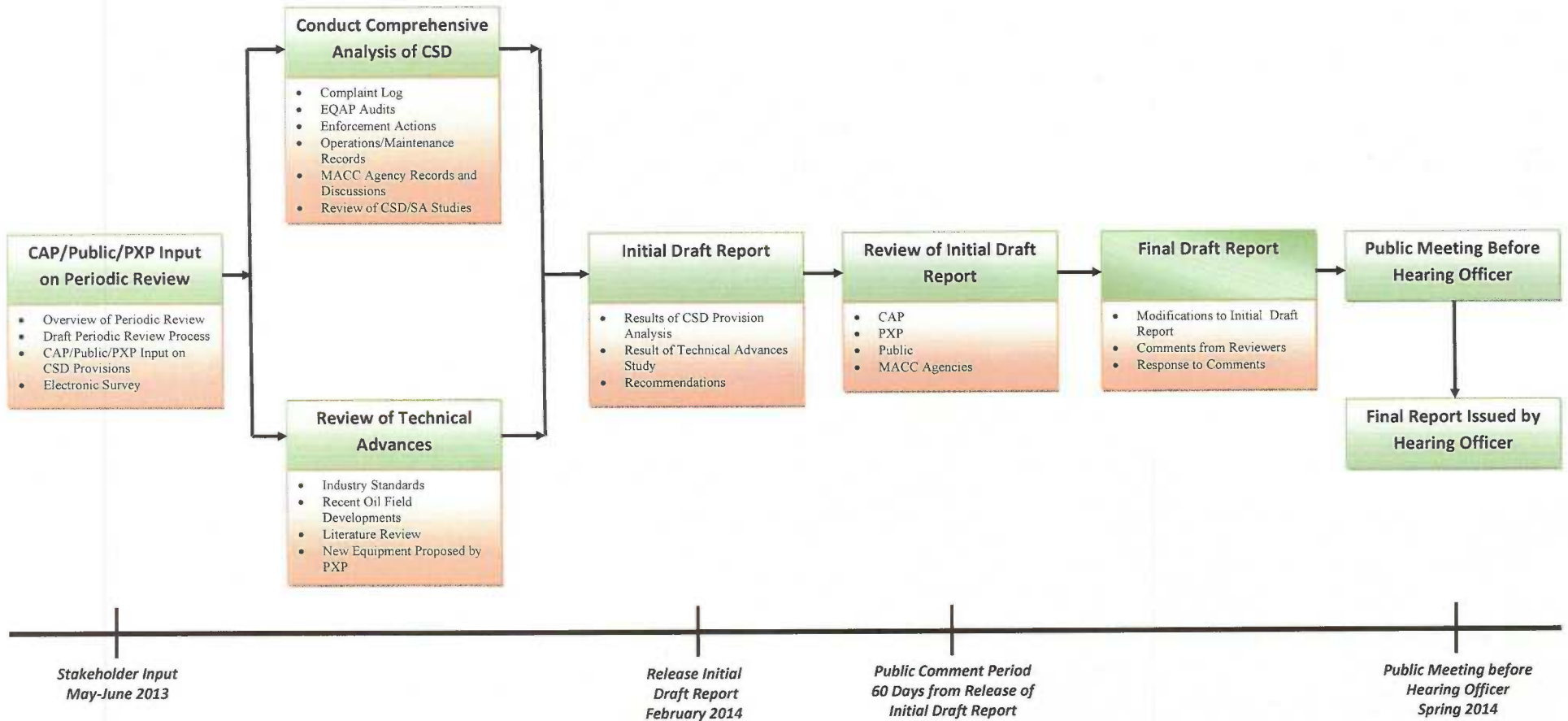
1 in = 0.86 mi



Exhibit A3: DOGGR Administrative Districts



Baldwin Hills CSD Periodic Review Flowchart





REPORT OF THE CHIEF LEGISLATIVE ANALYST

DATE: September 5, 2014

TO: Honorable Mayor Eric Garcetti
Honorable Members, City Council
The Heads of All Departments
City of Los Angeles

FROM: Sharon M. Tso
Chief Legislative Analyst

SUBJECT: Legislative Report
Week Ending September 5, 2014

HIGHLIGHTS

WASHINGTON

- Congress was not in session

SACRAMENTO

- Legislative Calendar
- End of Session Wrap-Up
- S.B. 375 Regional Targets Update Process
- Fracking Report Released

GRANTS

Federal grant notices

FEDERAL REGISTER

Federal Register notices

FEDERAL REPORTS

Federally issued reports and other documents

Sacramento Report

Legislative Calendar

Aug 31 Last day for each house to pass bills. Final Recess begins upon adjournment.
Sept 30 Last day for Governor to sign or veto bills passed by the Legislature before Sept. 1 and in the Governor's possession on or after Sept 1.

End of Session Wrap-Up

The 2013-14 biennial legislative session wrapped up after 3:00 a.m. on August 31, the last day of the session. The Governor has 30 days to sign bills passed by the Legislature.

During the final hours of the legislative session, a number of significant bills were passed — among them measures dealing with enhanced infrastructure financing districts (SB 628), successors to redevelopment agencies, and an effort to restore local control over the regulation of massage practitioners (AB 1147) .

The League of California Cities has identified several bill of interest and concern in an End of Session Wrap-Up, available on their website. The full wrap-up can be found at: <http://www.cacities.org/Top/News/News-Articles/2014/September/End-of-Session-Wrap-Up>

S.B. 375 Regional Targets Update Process

The California Air Resources Board (ARB or Board) will host three public workshops throughout the State in September to seek public input on issues that should be considered before the Board updates the regional passenger vehicle greenhouse gas emission reduction targets (SB 375 targets) for the State Metropolitan Planning Organizations (MPO). ARB staff has released a Preliminary Draft Staff Report on the SB 375 Greenhouse Gas Reduction Target Update Process, posted at [http://www.arb.ca.gov/cc/sb375/pre draft target update sr.pdf](http://www.arb.ca.gov/cc/sb375/pre_draft_target_update_sr.pdf) that identifies issues to be considered. At the workshops, ARB staff will present background information on the target update process, and will seek public input on the issues outlined in the preliminary draft staff report. ARB staff will consider all input received at these workshops before preparing a revised staff report with recommendations for target updates. The revised staff report and recommendations will be presented to the Board at a public meeting in October 2014.

One of the meetings will be held at the South Coast Air Quality Management District, Conference Room GB, 21865 Copley Drive, Diamond Bar, on September 11, 2014, at 1:30 p.m.

Fracking Report Released

California Council on Science and Technology (CCST) has released an independent report that reviews well stimulation technologies, including hydraulic fracturing, used in on-shore oil reservoirs in the state of California. This study was commissioned by the Federal Bureau of Land Management (BLM) and will inform BLM's oil and gas policies in California.

The findings of this CCST report describe current well stimulation activities in California, how, when and where they are currently applied, where they might be applied in the future and how this practice differs from other states. The report assesses information relevant to the potential future use of these technologies, and how they might or might not directly impact water supply, water quality, air quality, greenhouse gas emissions, seismicity, ecology, traffic and noise.

This independent scientific assessment of the available facts presents information for public use and will help to guide regulation and policymaking. A second expanded report on the same topic is currently in preparation for the California Natural Resources Agency in response to Senate Bill 4.

Lawrence Berkeley National Laboratory (Berkeley Lab), with help from the Pacific Institute, developed the report findings under the guidance of a steering committee of experts chartered by CCST. The steering committee, chaired by Dr. Jane C. S. Long, consisted of 12 subject-matter experts drawn from many of the major research institutes in the state as well as experts from other states with experience in well stimulation technology.

Commissioned in September 2013 by BLM, the independent report compiles existing data and literature about the nature of well stimulation in California. The report arrives at 11 main conclusions. Key among them are:

- ▶ **Well stimulation in California is different than in other states.** Available data suggest that present-day well stimulation practices in California are different from other states such as Texas and North Dakota primarily due to differences in the geology of the petroleum reservoirs. Information from well records indicates that hydraulic fracturing has been the main type of well stimulation applied in California to date and is performed on an estimated average of 100 to 150 wells per month, which is a modest level of activity compared to about 2,900 per month in the U.S. as a whole reported by FracFocus. Generally, hydraulic fracturing in California tends to be performed in shallower wells that are vertical as opposed to horizontal; requires much less water; but uses fluids with more concentrated chemicals than hydraulic fracturing in other states. Consequently, the experiences with hydraulic fracturing in other states do not necessarily apply to current hydraulic fracturing in California.

- ▶ **The most likely scenario for future oil recovery using hydraulic fracturing is expanded production in and near existing oil fields in the San Joaquin Basin in a manner quite similar to the production practices of today.** Existing and likely future production in California takes place in reservoirs that contain oil that has migrated from the rocks where it was formed ("source rocks") to relatively near surface reservoirs where it can be produced. Over 85% of all well stimulation applications in California take place in four fields of the San Joaquin Valley in reservoirs that rely on hydraulic fracturing to enable production. It is highly likely that expanded production in similar reservoirs in the San Joaquin Valley would also use this technology. Current production in the Los Angeles Basin does not depend heavily on well stimulation and similar future production could likely occur without these technologies.

- ▶ **Recent reports from the Energy Information Agency (EIA) have indicated there may be a new class of very deep unconventional reservoirs in the source rocks themselves, especially in the Monterey Formation.** The 2011 EIA report suggested 15-billion barrels of recoverable oil in these source rocks but a subsequent 2014 correction by EIA reduced the estimate to 0.6 billion barrels. Recovering these resources would certainly require well stimulation. However, Berkeley Lab investigators found no reports of successful production from these deep source rocks and had questions about the EIA estimation methodology. The study's review of the two resource projections from deep source rocks in the Monterey Formation developed by EIA concluded that both these estimates are highly uncertain.
- ▶ **Current hydraulic fracturing operations in California require a small fraction of statewide water use.** In California a hydraulic fracturing operation can consume between 130,000 to 210,000 gallons of water per well on average, compared to about 4 million gallons per well used on average in the Eagle Ford Formation in Texas. The study estimates that California operators conduct 100 to 150 well stimulations per month, which currently requires about 150 to 400 million gallons (450-1,200 acre-feet) of water per year. Even with the relatively low water use of California operations, hydraulic fracturing can contribute to local constraints on water availability given the extreme drought in the state.
- ▶ **There are no publicly reported instances of potable water contamination from subsurface releases in California.** However, more than half of the stimulated oil wells in California have shallow depth (less than 2,000 feet). Shallow hydraulic fracturing poses a potential risk for groundwater if usable aquifers are nearby. Some shallow hydraulic fracturing occurs where groundwater is highly saline, or non-existent. However, investigators could not determine the groundwater quality near many hydraulic fracturing operations and found that existing data was insufficient to evaluate the extent to which contamination may have occurred. California needs to develop an accurate understanding about the location, depth and quality of groundwater in oil- and gas-producing regions in order to evaluate the risk of well stimulation to groundwater.
- ▶ **The toxicity of chemicals used in hydraulic fracturing fluids warrants further review now that SB 4 requires disclosure.** Based on the voluntary database FracFocus, most of the chemicals used in California well stimulations are not considered to be highly toxic. However, a few of these chemicals, especially the biocides and corrosion inhibitors, are acutely toxic to mammals. No information could be found about the toxicity of about a third of the chemicals and few of the chemicals have been evaluated to see if animals or plants would be harmed by chronic exposure. Mandatory disclosure should improve our understanding, as previous data acquired from FracFocus does not consistently disclose all chemicals and may not always be complete or accurate.
- ▶ **Some chemicals used for hydraulic fracturing may become incorporated in the water that is produced along with the oil ("produced water").** In some cases, operators dilute produced water with fresh water for use in agriculture and some produced water is pumped into unlined pits where it could seep into the groundwater. Current practice and testing requirements do not necessarily protect against adding produced water contaminated with hydraulic fracturing fluid to water used in agriculture.

- ▶ **Well stimulation technologies, as currently practiced in California, do not result in a significant increase in seismic hazard.** The pressure increases from hydraulic fracturing are too small and too short in duration to be able to produce a felt, let alone damaging, earthquake. In California, only one minor, anomalous earthquake (which occurred in 1991) has been linked to hydraulic fracturing to date. In contrast, disposal of water produced from oil and gas operations into deep injection wells has caused felt seismic events in several states. Expanded oil production for any reason, including expanded use of hydraulic fracturing, would lead to increased volumes of produced water, which, if injected underground could increase seismic hazards.

- ▶ **Overall, in California, for industry practice of today, the direct environmental impacts of well stimulation practice appear to be relatively limited.** If these well stimulation technologies enable a significant increase in production in the future, the primary impacts on California's environment will likely be caused by the increase in production activities in general. Impacts of increased production will vary depending on whether this production occurs in existing production areas (both rural and urban), or in regions that have not previously been developed for oil and gas production - as well as on the nature of the ecosystems, geology, and groundwater in the vicinity.

The scientific review carefully assessed the direct environmental, climate, and public health impacts of well stimulation within the limits of available data. Records filed with state agencies before the enactment of Senate Bill 4 do not comprehensively record well stimulation events. Voluntarily submitted data, such as those available on FracFocus, although very useful, are not required to be either complete or accurate. The limitations of the data are described throughout the report in order to transparently qualify the conclusions.

Report summary available at: <http://ccst.us/publications/2014/2014wstES.pdf>

Full report: <http://ccst.us/publications/2014/2014wst.pdf>

Grants

{NOTE: The following is a listing of new or recent grant items appearing in the Federal Register, Grants.gov, and other federal sites}

Federal Transit Administration, September 5, 2014. Pages 53095-53099. Notices. Funding Availability: Innovative Public **Transportation Workforce Development Program** (Ladders for Opportunity Initiative).

Federal Transit Administration, September 4, 2014. Pages 52799-52804. Funding Availability: **Transit-Oriented Development Planning Pilot Program** Project Proposals.

{Note: The following is a listing of new or recent grant items appearing in <http://www.grants.gov> }

Close Date	Opportunity Title	Agency	Funding Opportunity
11/30/2014	Notice of Intent - Off Hours Freight Delivery	DOT Federal Highway Administration	NOI-15-OFF-HOURS-FREIGHT-DELIVERY
11/14/2014	Comprehensive High-Impact HIV Prevention Projects for Community-Based Organizations	Centers for Disease Control and Prevention	CDC-RFA-PS15-1502
11/03/2014	FY 2014 Regional Innovation Grants	Department of Commerce	EDA-HDQ-OIE-2014-2004219

SB 4 WELL STIMULATION TREATMENT REGULATIONS

FIRST REVISED TEXT OF PROPOSED REGULATIONS

Added text in originally proposed regulations is shown in underline.

Added text in revised proposed regulations is shown in double underline.

Deleted text in revised proposed regulations is shown in ~~double strikethrough~~.

CHAPTER 4. DEVELOPMENT, REGULATION, AND CONSERVATION OF OIL AND GAS RESOURCES

Subchapter 2. Environmental Protection

Article 1. General.

1751. Single-Project Authorization.

(a) For the purposes of this section, "single-project authorization" shall mean a single Division approval for multiple applications for permits to perform well stimulation treatments under Public Resources Code section 3160, subdivision (d), and/or notices of intent to drill or rework wells under Public Resources Code section 3203.

(b) A request for a single-project authorization shall include:

- (1) Identification of each of the applications and notices that are part of the request;
- (2) The applications and notices that comprise the request for a single-project authorization.

(c) The Division will review each application and notice submitted for single-project authorization in the same manner as it would had the application or notice been submitted individually. A single-project authorization shall specify which of the application or notices have been approved and the conditions of each approval. ~~specify what operations are approved by a single-project authorization and the conditions under which the operations are approved.~~