



Carlin Environmental Consulting, Inc.

Assessment > Remediation > Mitigation Design

August 21, 2019

Prepared for:

LINC Housing
3590 Elm Avenue
Long Beach, CA 90807-3903

Attn: Cody Snyder

Subject: Memorandum on Proposed and Anticipated Oil Well and Methane Mitigation Measures for the Property located at 1424 Deepwater Ave. Wilmington in the City of Los Angeles, California

Introduction

At the request of the Client, LINC Housing, Carlin Environmental Consulting, Inc. (Carlin) has prepared this *Memorandum on Proposed and Anticipated Oil Well and Methane Mitigation Measures* for the subject property located at 1424 Deepwater Ave. in the City of Wilmington, California. The Client has retained Carlin as their environmental and methane mitigation engineering consultant tasked with providing guidance related to the permitting, regulatory compliance, and mitigation of the Site in regard to the known presence of former oil wells. Ultimately, we will bring all oil wells into compliance and design, permit (plan check), inspect and certify methane mitigation measures beneath the proposed building. It is Carlin's understanding that the Planning Department of the City of Los Angeles is requesting clarification on the methods and procedures that will be implemented given the following information:

1. Based on previous Site investigation, available documentation, and the DOGGR Construction Site Well Review, there are seven (7) former oil wells located within the property boundaries.
2. The Site is located within the Methane Hazard Zone and regardless of the status of oil wells methane mitigation will be required.

Purpose

The purpose of this subject memo, prepared for the Planning Department, is to outline and elaborate on the proposed and anticipated mitigation measures and actions that will be implemented and incorporated into the development of the subject property to ensure that the proposed structure will protect the health and safety of all future inhabitants. It is the desired result of this memo that the Planning Department will have a complete understanding of the intended actions for this Site in regard to the former oil wells so as to allow the project to continue on its path towards redevelopment. It is Carlin's experience that the proposed activities discussed within are completely acceptable in the normal course of development in the City of Los Angeles and its



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jurisdictions. The proposed activities discussed herein have been implemented by Carlin successfully on numerous projects similar in scope and development. To state it clearly, the proposed actions described within have been approved and accepted by regulatory agencies in the City of Los Angeles and other surrounding jurisdictions.

The proposed activities discussed herein, and similar activities for like projects Carlin has consulted on, would result in land use approval conditions similar to the following, which in Carlin's opinion would guarantee the performance of all necessary activities while allowing the project to move forward:

1. Mitigation Measure 1. The Applicant shall perform exploratory excavation to locate the seven potential abandoned oil wells located on the site.
2. Mitigation Measure 2. The Applicant shall prepare and submit to DOGGR an Application for Construction Site Well Review and Notice(s) of Intention for any of the seven potential abandoned oil wells at the Site that a) DOGGR finds do not meet current abandonment standards or b) require lowering/raising to be at an acceptable depth below finished grade.
3. Mitigation Measure 3. The Applicant shall prepare a design for a methane mitigation system to be installed beneath the proposed building. The design shall conform to the provisions of City of Los Angeles Ordinance No. 175,790 and applicable methane mitigation standards of the Los Angeles Department of Building and Safety.
4. Mitigation Measure 4. The applicant shall abandon any oil wells identified at the site during the exploratory excavation according to the permit requirements of DOGGR. Some grading may need to be performed before well abandonment to allow access to the well(s) and room for well drilling and associated equipment.

The format of this report will pose certain questions/statements that the Client has provided Carlin and requested that we answer to facilitate the project's progress.

Questions

1. *What are the known Methane Mitigation Measures for the Proposed Structure?*

Even before conducting the subsurface methane soil gas investigation, there are several mitigation measures that are guaranteed to be incorporated at the proposed structure. When looking at Table 71 – Minimum Methane Mitigation Requirements (also referred to as Table 1A of the LADBS Standard Methane Code), one can see that there are five (5) Site Design Levels.



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For each of the five design levels, a Passive System is required regardless of the design methane concentration or the design methane pressures.

The Passive System for this project will include at minimum:

- A standard de-watering system;
- Sub-slab vapor collection and ventilation system that includes:
 - Perforated horizontal collection piping,
 - Permeable gravel blanket for soil gas migration a minimum of 2” thick;
 - Solid vent risers (amount and size are dependent on building size);
 - A complete impervious membrane (barrier) system. Since there are known oil wells on site, this barrier system will be a chemically compatible spray-applied product that covers the entire footprint of the proposed structure.
 - Trench dams and conduit seal fittings.

2. *What additional methane mitigation measures may be incorporated at the proposed structure?*

The purpose of the subsurface methane investigation will be to tell us 1) what methane concentrations exist at the site and 2) what level of methane pressure (in inches water pressure) exists at the Site. Once these design parameters are established, Carlin will look to the bottom half of Table 71 and the Active System and Misc. System rows. Possible measures that will be added include but are not limited to:

- An active mechanical extraction system (i.e. a fan pulling sub-slab air as opposed to active);
- Gas detection, alarm, and mechanical ventilation system on the lowest occupied spaces;
- A control panel for active/mechanical components;
- Additional vent risers.

3. *What does the Methane Investigation include?*

The subsurface methane investigation will be conducted in accordance with Document NO. P/BC 2014-101 Site Testing Standards for Methane which is produced by the LADBS. In general, this will include:

- Installation of three to four (3-4) gas probes set throughout the Site;
- Gas Probe Sets include probes at approximate depths of 5, 10 and 20 feet below ground surface or the lowest building slab elevation;



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- Collection of methane soil gas and pressure measurements in the field.

4. *How many former oil wells are anticipated to be on Site?*

The project team submitted a Construction Site Well Review (CSWR) Application to DOGGR to review and provide a determination on the former oil wells in questions. Note: all wells are documented to be plugged and abandoned circa 1995 based on available well records.

DOGGR has provided a determination on the current abandonment status of each well reviewed. The DOGGR CSWR has concluded – and upon review of previous Site investigation reports, Division of Oil Gas and Geothermal Resources (DOGGR) records/maps and aerial photos, Carlin has determined – that there are seven (7) former oil wells located on Site. This determination is based on a review of the available well records for the previous abandonment and any other activities performed on the well.

For Well WTU-1812, which **does not meet current standards**, DOGGR has identified the reasons why the well does not meet current code. Only for wells that do not meet current standards, it will be the Client's responsibility to assume ownership of the well, submit a Notice of Intention (NOI) with the proposed work plan on the well, and then have that work plan conducted to bring the well into current abandonment standards. Even without this well meeting current standards, the property can be developed following successful completion of an approved work plan during the permitting process

For the six (6) wells that **do meet current standards**, DOGGR will request that each well be leak tested and surveyed. Pending a successful leak test (no leaking), the well will not require any additional work other than protection and venting, which is discussed below.

5. *What work needs to be done associated with the wells REGARDLESS of DOGGR's determination?*

Regardless of the determinations from DOGGR, it is the responsibility of the property owner to locate, survey and leak test each well. Further, should development proceed, each well will receive ventilation and protection. Some clarification on each of these actions:

- Locate: each well must be located to verify that it is or is not within the Site boundaries;
- Survey: each well must be surveyed, both horizontally and vertically, to provide the exact location of this well on the Site and its depth;



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- Leak Tested: following exposure, the top casing of each well must be leak tested in the field for excessive methane levels, with DOGGR personnel present to verify. If a well is determined to be leaking, reabandonment activities are likely necessary.
- Ventilation and Protection: Each oil well that is to current abandonment standards, will require that a protection and ventilation cone be placed over the well cap (head). Attached to the vent cone will be a solid pipe vent riser that will terminate above breathing levels. This ventilation is a precautionary measure should the well ever begin to leak.

NOTE: In order to construct the proposed structure on this Site, **all wells within the proposed Site boundary will be in accordance with current abandonment standards and be recognized as such by DOGGR. Ultimately, an individual letter will be provided by DOGGR for each such well, as applicable, that states each well meets current DOGGR standards for abandonment.**

6. *Is it safe to place structures over an abandoned oil well?*

It has been Carlin's experience, in both Los Angeles County and Orange County, that it is possible and allowed to construct on top of former oil wells as long as they are 1) properly abandoned to current day standards, 2) are properly protected and ventilated, and 3) the structure has additional mitigation measures incorporated. Carlin can provide examples of projects that have been permitted, approved and constructed over several oil wells under LADBS jurisdiction.

In some projects, structures may be relocated so as not to cover abandoned wells, but this is due to the high cost associated with oil well abandonment. The following excerpt below is from the DOGGR website, Frequently Asked Questions page:

“Question: Can I build a structure over an old, abandoned well?”

“Answer: Yes, However, during DOGGR's construction site plan review process, the construction site engineer will require all wells to be tested for leakage and all wells under buildings or restricted access must be vented and abandoned or reabandoned to present day standards. It is advisable to design your project so that you avoid building over old wells since the cost to abandoning or reabandoning a well is very high, ranging from \$25,000 - \$100,000 and up.”

As noted by DOGGR, avoiding abandoned wells, where feasible, reduces costs.



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Please feel free to contact the undersigned with questions or comments regarding this Memorandum.

Sincerely,

Carlin Environmental Consulting, Inc.

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Project Manager
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Previous Project Examples

To whom it may concern:

The three projects outlined below are examples of developments in the Los Angeles area that are constructed over abandoned oil wells. Carlin provided environmental consulting and mitigation. engineering services on the third project, 327 Boylston.

As you can see, there is a precedence for the type of project we are currently engaged in. If you have any questions or concern, please feel free to contact us.

Sincerely,

Carlin Environmental Consulting, Inc.

Gary Carlin
Principal
Senior Environmental Scientist

153 N Glendale Blvd - 45 units affordable, construction complete in 2013.
DIR-2011-878-DB - Approved 2011

<http://planning.lacity.org/pdiscaseinfo/Caseld/MTqyNjQw0>

Application / Permit: 11010-10000-00722
Plan Check / Job No.: B11LA03422
Filed 2011, pulled 2012, completed building 2013.

<https://www.ladbsservices2.lacity.org/OnlineServices/PermitReport/PcisPermitDetail?id1=11010&id2=10000&id3=00722>





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1256 W Court St - 54 units, under construction

DIR-2017-1127-SPP-WDI

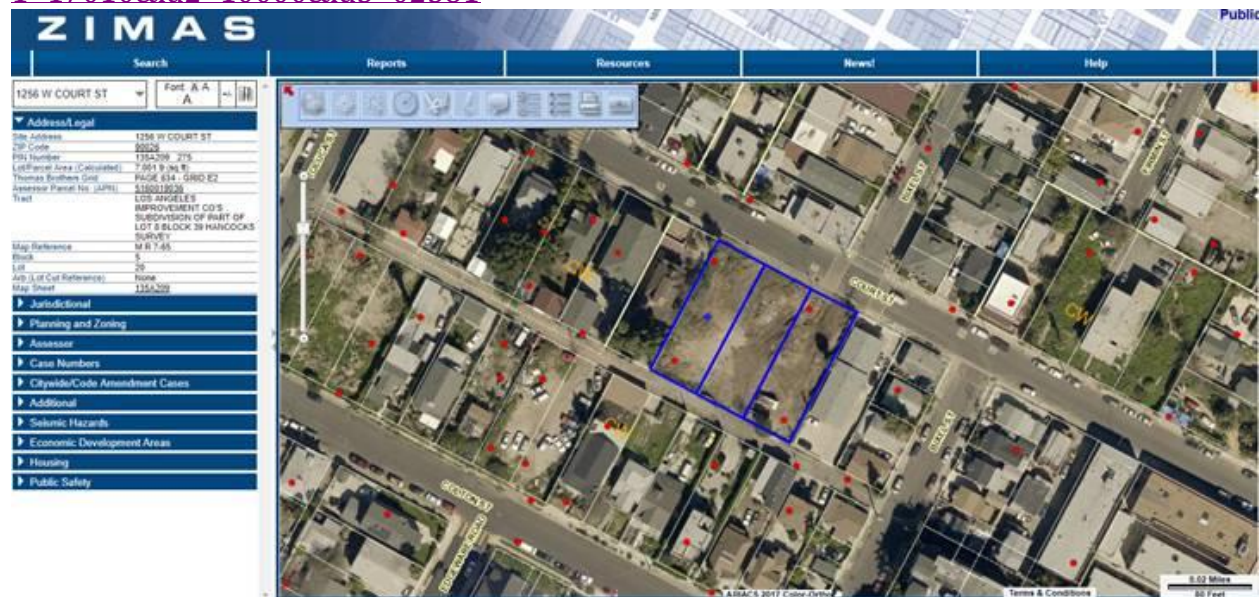
<http://planning.lacity.org/pdiscaseinfo/CaseId/MjEzMDgw0>

Application / Permit: 17010-10000-02581

Plan Check / Job No.: B17LA11650

filed in 2017, pulled permit in 2018, now under construction

<https://www.ladbsservices2.lacity.org/OnlineServices/PermitReport/PCisPermitDetail?id1=17010&id2=10000&id3=02581>





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327 N Boylston - 121 units, under construction

DIR-2014-4506-SPP-SPPA-DB - Approved 2016

<http://planning.lacity.org/pdiscaseinfo/CaseId/MjAwMDg40>

Application / Permit: 15010-10000-02187

Plan Check / Job No.: B15LA08349

Filed permit 2015, pulled permit in 2016.

<https://www.ladbsservices2.lacity.org/OnlineServices/PermitReport/PcisPermitDetail?id1=15010&id2=10000&id3=02187>

