Mapping Legacy Oil Wells:

How Parcel-Level Intelligence Reveals Hidden Opportunities

By Richard W. White, Research & Development, Environmental Due Diligence, LightBox

Southern California's push to add housing is colliding with a hidden layer of complexity. Thousands of legacy oil wells are woven directly into the parcels where today's infill redevelopment is most viable. Developers are navigating zoning and entitlement against a backdrop of fragmented historical records, uneven well documentation, and regulatory uncertainty that can reshape timelines and budgets.

Commercial Observer's Nick Trombola recently spotlighted this dynamic, illustrating the reality that developers in Southern California increasingly face. Much of the remaining developable land supply sits on top of the legacy of nearly a century and a half of oil production.

Trombola's piece brought renewed attention to the underlying frictions that continue to shape redevelopment: uncertainty around well locations, inconsistencies in historical documentation, and varying interpretations of California Geologic Energy Management Division (CalGEM) guidance that can slow approvals or complicate site preparation.

These challenges are widely recognized by developers, but they are difficult to quantify without a spatial and historical frame of reference.

That raised a question for us: What does this landscape look like when measured parcel by parcel?

To understand the issue at a level only spatial and environmental intelligence can reveal, LightBox conducted a parcel-level analysis of the Signal Hill neighborhood in the Long Beach Oil Field.

Using LightBox Smart Fabric data — integrated with zoning, ownership, environmental records, CalGEM well information, and historical Sanborn and City Directory sources — we conducted a detailed analysis of Signal Hill.

What the Data Reveals About Los Angeles' Hidden Well Infrastructure

The CalGEM data contains records on more than 240,000 wells of all types and 165,000 oil and gas wells that includes location information, well status (active, idle, or plugged), as well as current owner/operator information. Of these, there are more than 36,000 active and 100,000 plugged oil and gas wells.

Our Signal Hill study area contains more than 1,400 historical oil and gas well sites, spread out across 2,500 parcels with a typical mix of zoning and land-use activity including single-family, multifamily and mixed-use residential plus commercial, industrial, government, and open space.

By integrating parcel-level ownership, zoning, building attributes, and historical well status into a multi-variable, multi-step analysis, we can help separate perceived risk from actual risk.

Signal Hill Study Area
Tax Parcels and Oil and Gas Wells

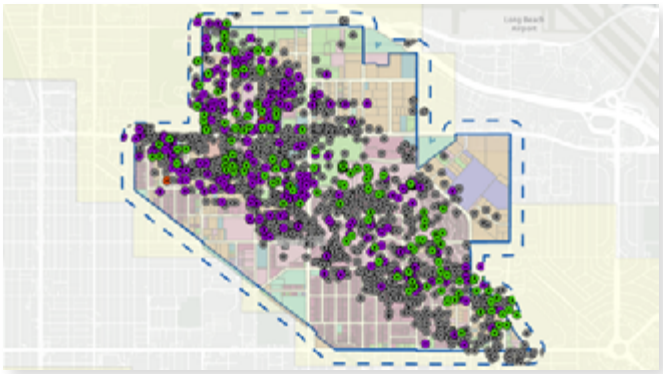

Figure 1

In Figure 1, the study area is mapped showing tax parcels by current zoning overlaid with oil and gas wells by status.

Finding Redevelopment Clusters Hidden in Plain Sight

Because we spatially joined wells to parcel geometries, we were able to identify clean clusters — areas where all wells are plugged or idle, land use is compatible with redevelopment, and parcel ownership or well owner / operator patterns suggest combining adjoining parcels for redevelopment. These clusters might be defined as:

- Groups of parcels where zoning already supports mixed-use or multifamily redevelopment.
- Small groups of adjoining lots where ownership is consolidated, making assemblage more realistic.
- Areas where all wells were operated by the same company, suggesting that a developer / operator partnership could streamline liability transfer and site preparation.

These aren't specific project recommendations, nor are they signals that any property owner is preparing to sell. Rather, they demonstrate how parcel intelligence and environmental context can be leveraged by developers to more efficiently short-list candidate locations where redevelopment may be more plausible, data-supported, and aligned with planning policy than others in the same area.

Turning Legacy Liabilities into Community Assets

One of the most compelling insights from Trombola's reporting is that, despite the risks, Southern California's developers remain motivated: *"There's too much land that has oil wells dotting all over it... and it's otherwise valuable and productive land where there's a demand for development."* The encouraging news is that integrated parcel, environmental, and historical data can:

- Reveal site conditions and constraints
- Inform more accurate valuation and underwriting
- Support responsible, compliance-aligned redevelopment

Our Signal Hill study area shows that once you intersect historical well information with zoning, land use, ownership patterns, and building attributes, the redevelopment map changes. Sites that once seemed risky become legible. Clusters that were invisible become visible. And the conversations between developers, operators, and regulators can become more grounded in shared facts.

How Historical Sources Reveal What Modern Maps Can't

While modern data helps quantify present conditions, historical sources help explain why certain patterns exist today.

Historical sources, from Sanborn Fire Insurance Maps to City Directories to aerial imagery, add critical context and bring to life a site's history in a way that informs its future. While today's aerials rarely reveal the location of plugged wells, mid-century aerials and fire insurance maps often capture above-ground tanks, service buildings, and operator names adjacent to historical well sites.

Zooming into a few blocks and parcels in Signal Hill, current aerial imagery (Figure 2), shows new structures and use cases that have been placed directly on top of idle and plugged historical wells. Without the actual pumpjack and derrick, it is rare that these historical, plugged well sites would be visible.

Cherry Avenue and East Burnett Street

Figure 2

Sanborn Fire Insurance Maps (Figure 3) show historical details such as above ground storage tanks (denoted by circles) plus oil and gas industry supporting businesses and structures, with very high resolution and detail.

Sanborn Fire Insurance Map, Long Beach

CA, Volume 2, 1950, Sheet 295

Figure 3

Historical City Directories (Figure 4) frequently show nearby oil and gas company field offices but also oil and gas industry supporting businesses such as well drilling suppliers, riggers, and refiners.

Los Angeles Directory

Long Beach, CA, 1952 – Cherry Ave and E Burnett Ave


2211 Beam S K @ 4-7600
2225 Morrill V E real est @ 4-7604
2233 Vacant
2235 Bruce J S contr @ 4-7223
23d intersects
2350 Pac Lighting Gas Sup Co (sub sta)
Burnett intersects
2490 Automotive Parts Co 4-8635
25th intersects
2502 Signal Hill Mach Wks 40-8959
2520 LeMeur Wldg & Mfg Co 40-3343
2552 Acme Tool & Tester Co 40-3433
Willow intersects
2601 Reed's Auto Service 40-6473
2611 Vacant
2623 Wilbert F E 40-3059
2626 Bekeo Oil Tools 4-1095
2627 Vacant
2640 West & Laing oil well sups 40-2244
2644 Cherry Cafe 40-9245
2644½ Gill Stanley
2648 LeRoi-Rix Machy Co oil well sups 4-8027
2648½ Rippee Martha L 40-3021
2650 Ofcco Constn Co 4-8105
Oilfield Constr Co of L B 4-8105
2654 Western Perforating Sls Co oil well perforating 4-3334
2657 Baash-Ross Tool Co 4-1438
2659 Ritchie Constr Co 4-4223
2659½ Ritchie Curtis
2660 Mary's Cafe 40-9231
1155 Holladay V E @ 4-2795
1175 Masonic Temple
Alta Loma Lodge No 643 F&AM
Bixby Knolls Lodge No 699 F&AM
El Portal Chapter No 507 OES
Job's Daughters Bethel No 109
1180 Houston J U @
Orange av intersects
1204 Cook O J 4-7647
1241 Atlantic Oil Co 4-8175
Pacific American Oil Co 4-8509
West American Oil Co 4-8509
1270 American Boiler Works 4-4243
Brayton av intersects
1300 H & L Supply oil well equip 4-8067
Hansberger Roy @
1301 Galvin Gerald
1365 Mackin Salvage Co 4-6818
1390 Petrolite Corp Ltd oil refiners 40-7454
Gundry av intersects
cor Stovall Rig Building Co 5-3073
1416 D & P Associated Supply Co oil well sups 40-6840
Graflube Bearing Co 40-2967
Petroleum Management Corp 40-3048
1453 Nichols N J Mrs @ 4-7606
Walnut av intersects
1637 Forman M P whol gas 4-7050
Gaviota av intersects

Figure 4

From Constraint to Opportunity: What Cities and Developers Can Learn

This exercise is not about predicting specific projects or signaling redevelopment opportunities. It is about demonstrating how integrated geospatial and environmental data can help cities and developers plan for the next century on top of the infrastructure of the last one. Similar analysis can be applied to other desirable areas to highlight which sites may hold more promise based on zoning, current use, well status and owner / operator information, and past history.

If Southern California is going to build the housing and mixed-use developments it needs (especially in neighborhoods like Signal Hill), it starts with the clarity that parcel-level environmental intelligence is designed to provide.

Appendix A: Data Sources & Methodology

LightBox Smart Fabric was developed to integrate our core parcel, building footprint, address file, geocoding, and tax assessor details in a proprietary and flexible modeled fabric.

LightBox Environmental Datasets empower decision-making by bringing to light risk profiles and critical information as identified by Federal, State, Local and Tribal regulatory agencies.

LightBox Sanborn Map Reports are generated from the complete holdings of the Sanborn Map Library, which dates back to 1866, and includes over 1.4 million SANBORN fire insurance maps.

LightBox City Directory Reports are the largest collection of historical city directory information ever assembled. The EDR City Directory Report, a super library offering you the best way to find city directory information.

California Department of Conservation, Geologic Energy Management Division (CalGEM) Oil production began in earnest in California in the late 1800s. The Legislature created what is now the Geologic Energy Management Division (CalGEM) in 1915 to ensure the safe development and recovery of energy resources. CalGEM has jurisdiction over more than 242,000 wells, including nearly 101,300 defined as active or idle oil producers. CalGEM's authority extends from onshore to three miles offshore.

For questions or to discuss this analysis, please contact Richard W. White, Research & Development, Environmental Due Diligence, LightBox, at rwhite@lightboxre.com.

About LightBox

At LightBox, we are at the forefront of delivering advanced and precise solutions for commercial real estate intelligence. Our dedication to innovation propels real estate professionals forward by providing them with the essential tools required to navigate complex decisions, minimize risk, and boost productivity across the spectrum of real estate operations. LightBox is renowned for its commitment to promoting excellence and fostering connections in the industry, serving an extensive clientele of over 30,000 customers. Our diverse client base spans commercial and government sectors, including but not limited to brokers, developers, investors, lenders, insurers, technologists, environmental advisors, appraisers, and other businesses that depend on geospatial information. To discover more about how LightBox can illuminate the path to informed real estate solutions, visit us at: **www.LightBoxRE.com**

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