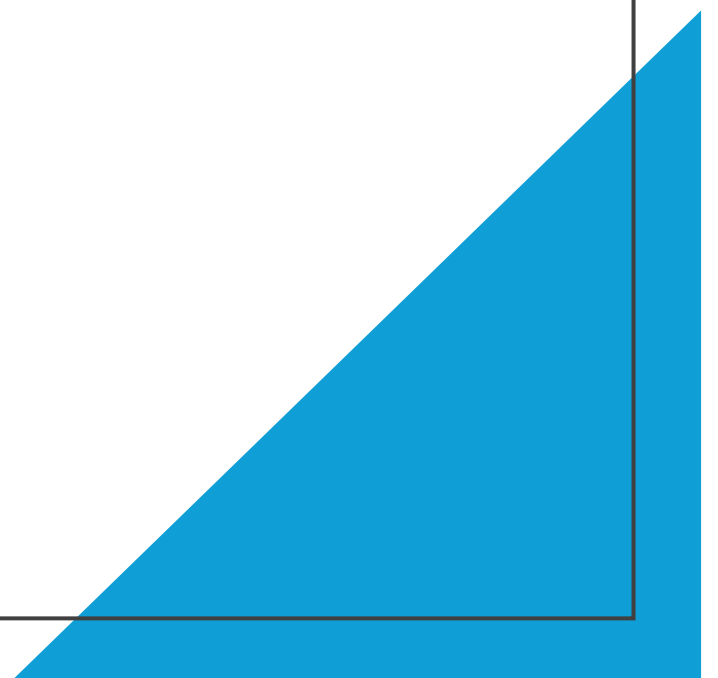


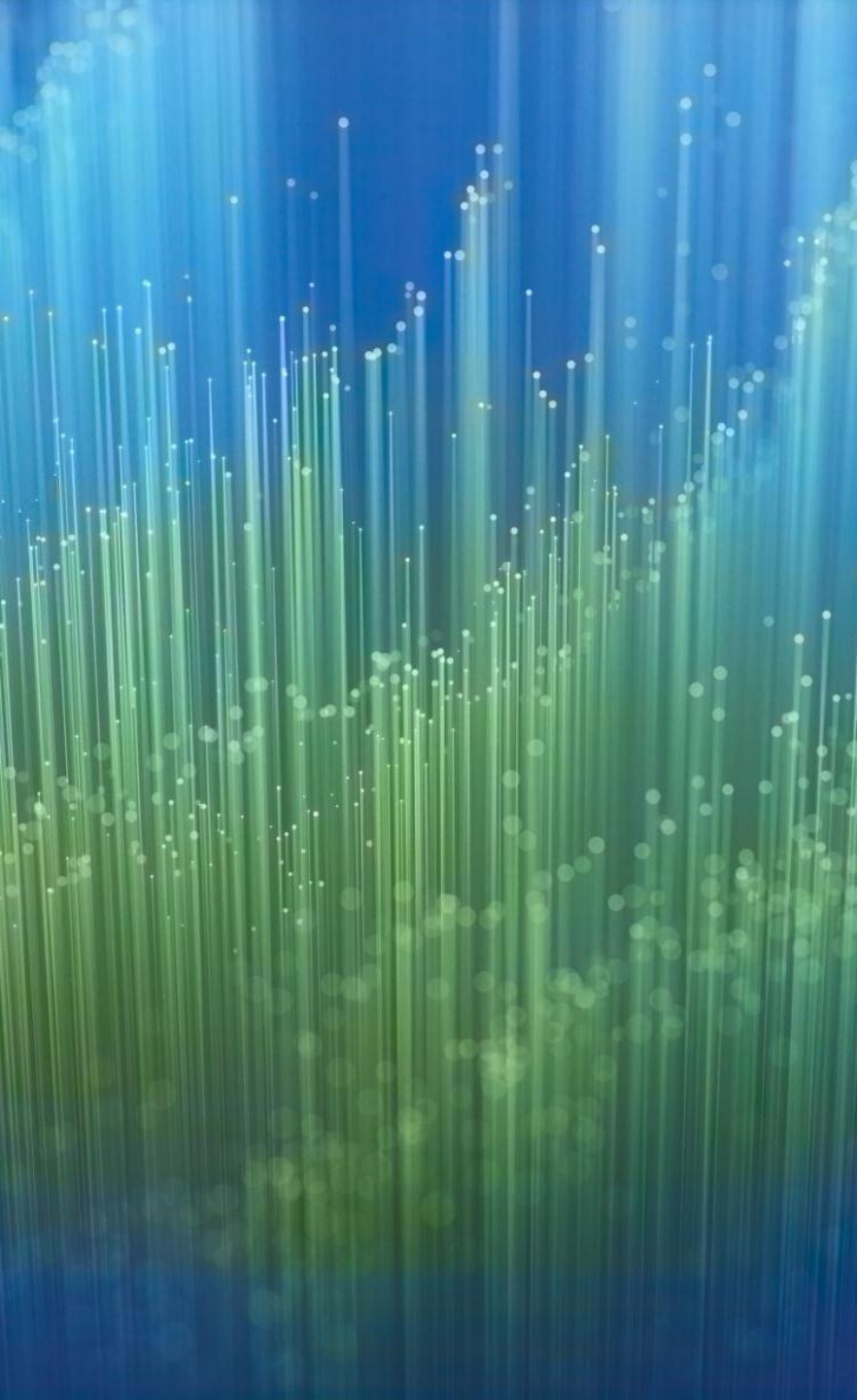
# HB Sports Complex

Landfill Gas Monitoring/Extraction System Analysis

Public Works Dept.

July 29, 2026





# Basic Description of Landfill Gas Monitoring/Extraction System

## System Architecture & Components

**34 vertical gas extraction wells** distributed across the site footprint.

A **10-horsepower gas extraction blower facility** to pull sub-slab methane and landfill gases.

**Activated carbon canister scrubbers** and filtration units to filter emissions prior to release/venting, compliant with South Coast AQMD Rule 1150.1 standards.

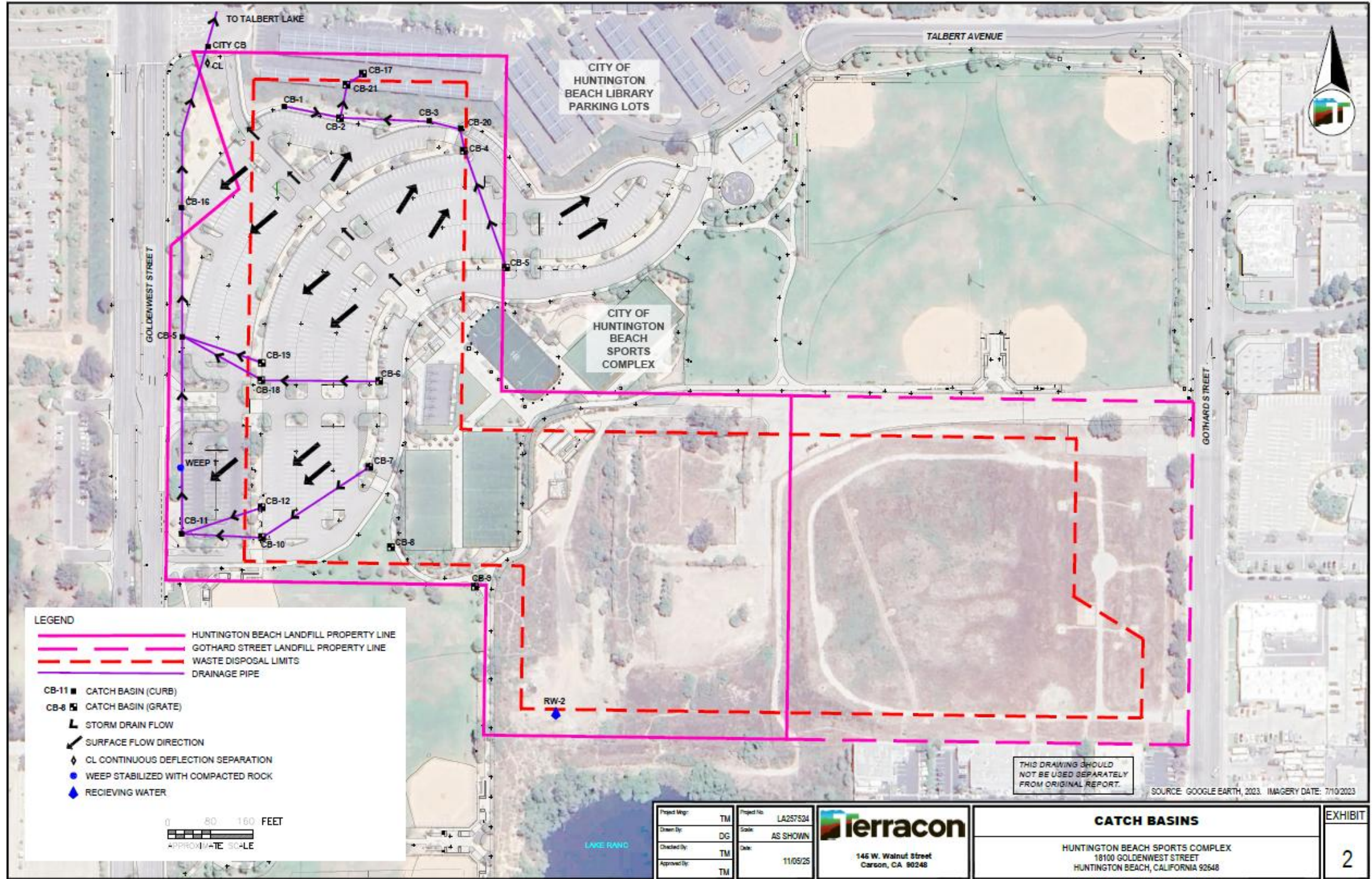
Main header piping connecting into the local landfill gas collection grid.

# History & Background

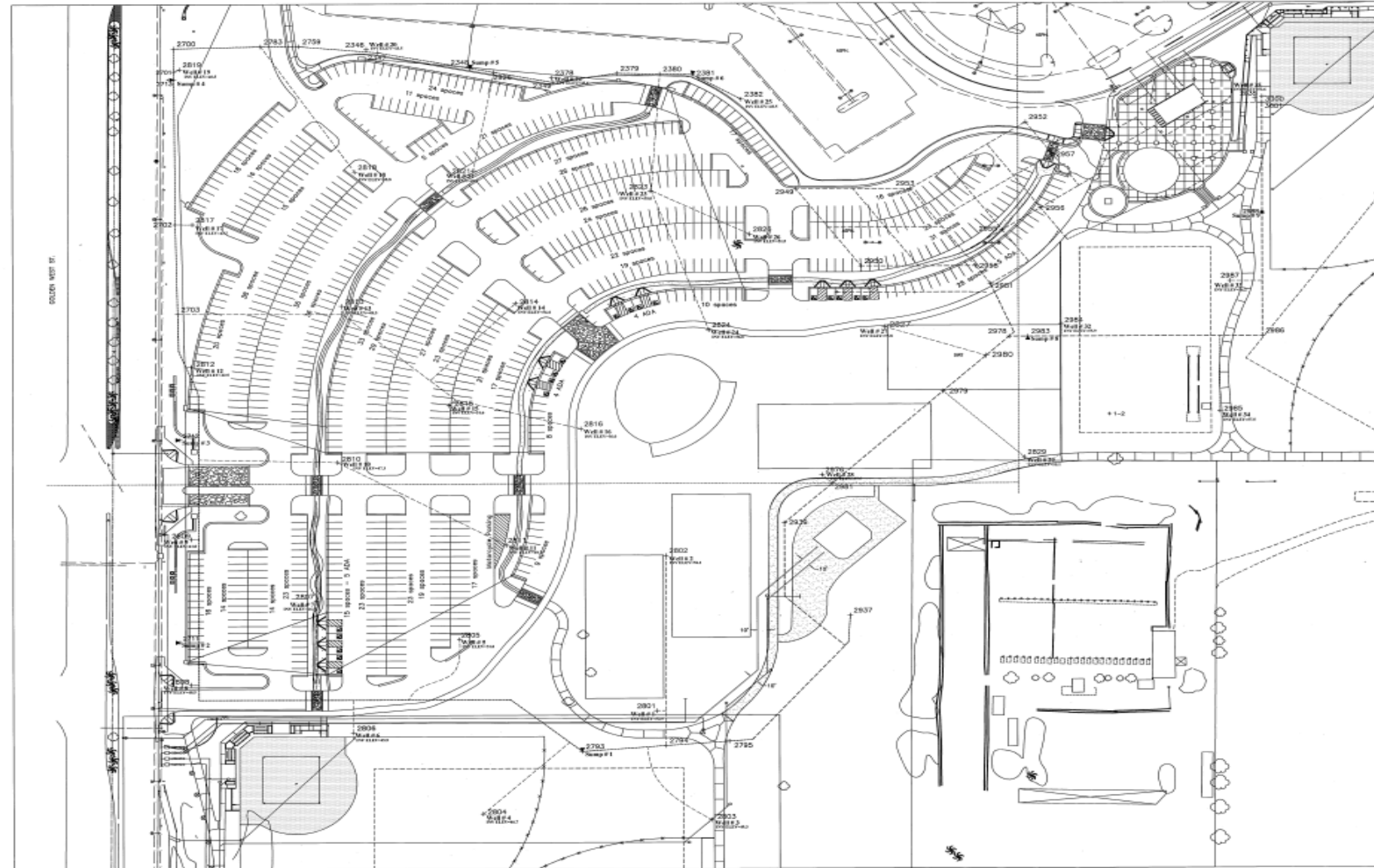
- **The Operational Era (1940s – 1970s)**
- **Unlined Municipal Dumping:** Long before the sports complex was built, the 30-acre site was operated as an unlined municipal solid waste landfill (often referenced alongside the broader Gothard Street / Central Park landfill footprint).
- **Refuse Accumulation:** Millions of cubic yards of commercial and household waste were buried up to 35 feet deep.
- **Closure & Dredged Cover:** When landfill operations ceased in the 1960s, the site was capped with a soil layer varying from 4 to 25 feet thick—partially composed of silty sand dredged from the Santa Ana River. Without engineered bottom liners, subterranean anaerobic decomposition naturally began generating significant quantities of landfill gas (primarily **methane** and **carbon dioxide**), along with volatile organic compounds (VOCs).

# History & Background

- **Grand Opening & Continuous Operation (2000s – Present)**
- **Sports Complex Opening (2003):** The \$16 million+, 45-acre Huntington Beach Sports Complex officially opened, serving as a model for brownfield redevelopment.
- **Gas Production & System Output:** Over the decades, as the buried organic waste has matured, the landfill gas generation rate has naturally decayed. Current operational data indicates the system extracts roughly **40 standard cubic feet per minute (SCFM)** of gas at a methane concentration of around **30%**.
- **Ongoing Regulatory Oversight:** The system remains under strict quarterly surface emission and perimeter probe monitoring regulated by SCAQMD, the Regional Water Quality Control Board, and the Orange County Waste and Recycling agency.



# Diagram of Landfill Gas Monitoring/Extraction System



| As-Built<br>Pnt # | Northing   | Eastong    |
|-------------------|------------|------------|
| 2346              | 2203076.98 | 6027758.58 |
| 2347              | 2203072.29 | 6027770.97 |
| 2348              | 2203051.93 | 6027868.77 |
| 2349              | 2203033.54 | 6027957.19 |
| 2378              | 2203039.40 | 6027956.26 |
| 2379              | 2203044.96 | 6028026.00 |
| 2380              | 2203043.91 | 6028071.32 |
| 2381              | 2203043.11 | 6028106.04 |
| 2382              | 2203011.21 | 6028158.20 |
| 2700              | 2203078.07 | 6027552.88 |
| 2701              | 2203048.07 | 6027553.07 |
| 2702              | 2202851.07 | 6027554.30 |
| 2703              | 2202735.31 | 6027556.63 |
| 2711              | 2202310.89 | 6027558.31 |
| 2712              | 2202572.89 | 6027558.66 |
| 2713              | 2203038.07 | 6027553.13 |
| 2759              | 2203080.43 | 6027868.81 |
| 2783              | 2203080.43 | 6027645.51 |
| 2793              | 2202168.97 | 6027987.14 |
| 2794              | 2202176.34 | 6028076.31 |
| 2795              | 2202181.91 | 6028143.78 |
| 2801              | 2202221.25 | 6028066.33 |
| 2802              | 2202421.91 | 6028076.31 |
| 2803              | 2202080.58 | 6028124.70 |
| 2804              | 2202088.74 | 6027881.17 |
| 2805              | 2202313.81 | 6027856.32 |
| 2806              | 2202193.51 | 6027743.18 |
| 2807              | 2202363.66 | 6027703.81 |
| 2808              | 2202255.98 | 6027570.25 |
| 2809              | 2202444.12 | 6027570.25 |
| 2810              | 2202543.48 | 6027726.60 |
| 2811              | 2202435.70 | 6027906.35 |
| 2812              | 2202667.28 | 6027570.94 |
| 2813              | 2202745.31 | 6027731.58 |
| 2814              | 2202746.22 | 6027917.01 |
| 2815              | 2202616.55 | 6027846.03 |
| 2816              | 2202586.13 | 6027986.25 |
| 2817              | 2202851.00 | 6027572.31 |
| 2818              | 2202918.21 | 6027745.92 |
| 2819              | 2203050.98 | 6027558.94 |
| 2821              | 2202819.61 | 6027872.16 |
| 2823              | 2202893.34 | 6028061.32 |
| 2824              | 2202713.49 | 6028122.92 |
| 2826              | 2202837.13 | 6028166.95 |
| 2827              | 2202716.88 | 6028311.01 |
| 2828              | 2202549.49 | 6028459.38 |
| 2835              | 2203011.11 | 6028706.13 |
| 2926              | 2203046.57 | 6027894.55 |
| 2937              | 2202344.07 | 6028273.20 |
| 2939              | 2202464.07 | 6028203.20 |
| 2948              | 2202895.49 | 6028216.43 |
| 2950              | 2202795.49 | 6028285.92 |
| 2951              | 2202772.32 | 6028423.81 |
| 2952              | 2202981.09 | 6028461.39 |
| 2953              | 2202895.50 | 6028338.21 |
| 2955              | 2202841.91 | 6028436.34 |
| 2956              | 2202870.44 | 6028477.40 |
| 2957              | 2202940.03 | 6028489.92 |
| 2958              | 2202795.50 | 6028407.70 |
| 2976              | 2202526.13 | 6028243.29 |
| 2978              | 2202704.48 | 6028443.62 |
| 2979              | 2202633.78 | 6028372.91 |
| 2980              | 2202679.74 | 6028418.86 |
| 2981              | 2202514.98 | 6028254.12 |
| 2983              | 2202704.48 | 6028463.62 |
| 2984              | 2202720.27 | 6028499.10 |
| 2985              | 2202607.66 | 6028568.09 |
| 2986              | 2202704.48 | 6028713.62 |
| 2987              | 2202775.42 | 6028679.23 |
| 2988              | 2202864.50 | 6028713.62 |
| 3000              | 2203013.50 | 6028713.62 |
| 3001              | 2203005.50 | 6028713.62 |



| REVISIONS | DATE | BY | APP |
|-----------|------|----|-----|
|           |      |    |     |
|           |      |    |     |
|           |      |    |     |
|           |      |    |     |
|           |      |    |     |
|           |      |    |     |
|           |      |    |     |
|           |      |    |     |
|           |      |    |     |
|           |      |    |     |

PLAN PREPARED BY:  
**adkan**  
**ENGINEERS**  
 CIVIL ENGINEERING • SURVEYING • PLANNING  
 28011 160th Ave., Suite 100, Huntington Beach, CA 92646  
 TEL: (949) 888-0241 • FAX: (949) 888-0249  
 SCALE: 1" = 60' DATE: Jan 20, 2003

**METHANE GAS AS-BUILT**  
 Huntington Beach Central Park  
 Sports Complex  
 for  
 Valley Crest

SHEET : 1 OF 1  
 FILE NO. 6173



LEGEND:

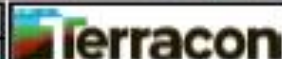
- +GW GAS WELL
- GP GAS PROBE
- V VAULT
- CB CONDENSATE TRAP
- BC, NC, MB BUILDING PROBES
- PS MOISTURE SENSOR

0 50 100 FEET

APPROXIMATE SCALE

THIS DRAWING SHOULD NOT BE USED SEPARATELY FROM ORIGINAL REPORT.

SOURCE: GOOGLE EARTH, 2021. IMAGERY DATE: 7/10/2023

|             |    |             |           |                                                                                                                                                      |                                                                                                                          |                         |
|-------------|----|-------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Project No. | TM | Project No. | LA257524  | <br><b>Terracon</b><br>145 W. Walnut Street<br>Carson, CA 90840 | <b>SITE POINTS</b><br><br>HUNTINGTON BEACH SPORTS COMPLEX<br>16100 GOLDWEST STREET<br>HUNTINGTON BEACH, CALIFORNIA 92648 | <b>EXHIBIT</b><br><br>1 |
| Drawn By    | DC | Date        | AS SHOWN  |                                                                                                                                                      |                                                                                                                          |                         |
| Checked By  | TM | Date        | 11/5/2025 |                                                                                                                                                      |                                                                                                                          |                         |
| Approved By | TM |             |           |                                                                                                                                                      |                                                                                                                          |                         |

# Ballpark Estimate of Replacement Costs

## **Full System Infrastructure Replacement (\$350,000 – \$800,000+)**

- If the entire extraction infrastructure across the Sports Complex footprint required full replacement (re-drilling extraction wells, relaying headers, replacing sub-slab vapor barriers, and updating the blower/treatment skid):
- **Well Field Work (34 Extraction Wells):** Drilling, well screens, heads, and piping run roughly **\$8,000 to \$15,000 per well** (\$270,000 – \$500,000+ total).
- **Collection Piping & Trenching:** High-density polyethylene (HDPE) header piping across the park grounds adds **\$50,000 to \$150,000+** depending on surface restoration requirements (pavement, turf, or hardscape).
- **Blower Skid & Controls:** **\$50,000 – \$100,000+.**
- **Engineering, CEQA/Permitting & Construction Management:** Soft costs typically add **20% to 30%** to the total capital outlay.