



# Analysis of State Data

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Sandia National Laboratories



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**BATTELLE**



# Purpose

Analyze failure statistics of subsurface safety valves & extract trends from state data.



# Takeaways

- Data are available
- Large undertaking to extract useful statistics
- *(Moving forward)* Need for standardized classification and collection



# State Data Repositories



# California

## Department of Conservation (Well Finder App)

**Well Finder**  
DOGGR GIS

More Info | Help | ©

Well Status and Well Type Filter

Search

Zoom to Field

Measurement

Layers

- Notice and Permit
- Well
  - Tank
  - Pit/Sump
  - Setting
  - Facility Boundary (non-wellstar)
- Underground Gas Storage
- Well Stimulation
- TR26 Onshore Seep Count
- Oil/Gas Field
- DOGGR District
- Public Land Survey System
- City
- Legislative Districts

Enter place or location

Basemaps

(1 of 3)

**Well:**

API: 0403700014  
Well Number: 46  
Status: Idle  
Type: Oil & Gas  
Lease Name: Standard-Sesnon 1  
Operator: Crimson Resource Management Corp.

[Link to Well Record](#)  
[Link to Well Search \(current as of 4/27/18\)](#)  
[Get Driving Directions](#)

Zoom to

0.3mi

1:18,056 34.322945 -118.557982



# California

Information available by well, county, field, or operator

## Division of Oil, Gas, and Geothermal Resources - Well Search

Production and injection data can be found at this location:  
[ftp://ftp.consrv.ca.gov/pub/oil/Online\\_Data/Production\\_Injection\\_Data](ftp://ftp.consrv.ca.gov/pub/oil/Online_Data/Production_Injection_Data)

Well Details Well Info Well Records Production Data Injection Data Production Charts Injection Charts Well Search

### Well Information

<b>API #</b> 03700041	<b>Lease</b> Standard Sesnon			<b>Well #</b> 29	<b>County</b> Los Angeles [037]	<b>District</b> 2
<b>Operator</b> Southern California Gas Company [S4700]				<b>Field</b> Aliso Canyon [010]	<b>Area</b> Any Area [00]	
<b>Section</b> 28	<b>Township</b> 03N	<b>Range</b> 16W	<b>Base Meridian</b> SB	<b>Well Status</b> Active	<b>Pool WellTypes</b> GS	<b>SPUD Date</b> 4/26/1953
<b>GIS Source</b> gps	<b>Datum</b> 83		<b>Latitude</b> 34.315276	<b>Longitude</b> -118.566506	<b>Map</b> 	

Click to get Sum by [County: Los Angeles \[037\]](#) or [Field: Aliso Canyon \[010\]](#) or [Operator: Southern California Gas Company \[S4700\]](#)

Get sum by [Field-Operator-Lease: Standard Sesnon](#)





# California

Detailed information available for download

Well Records

Show  entries

< Previous **1** 2 3 4 Next >

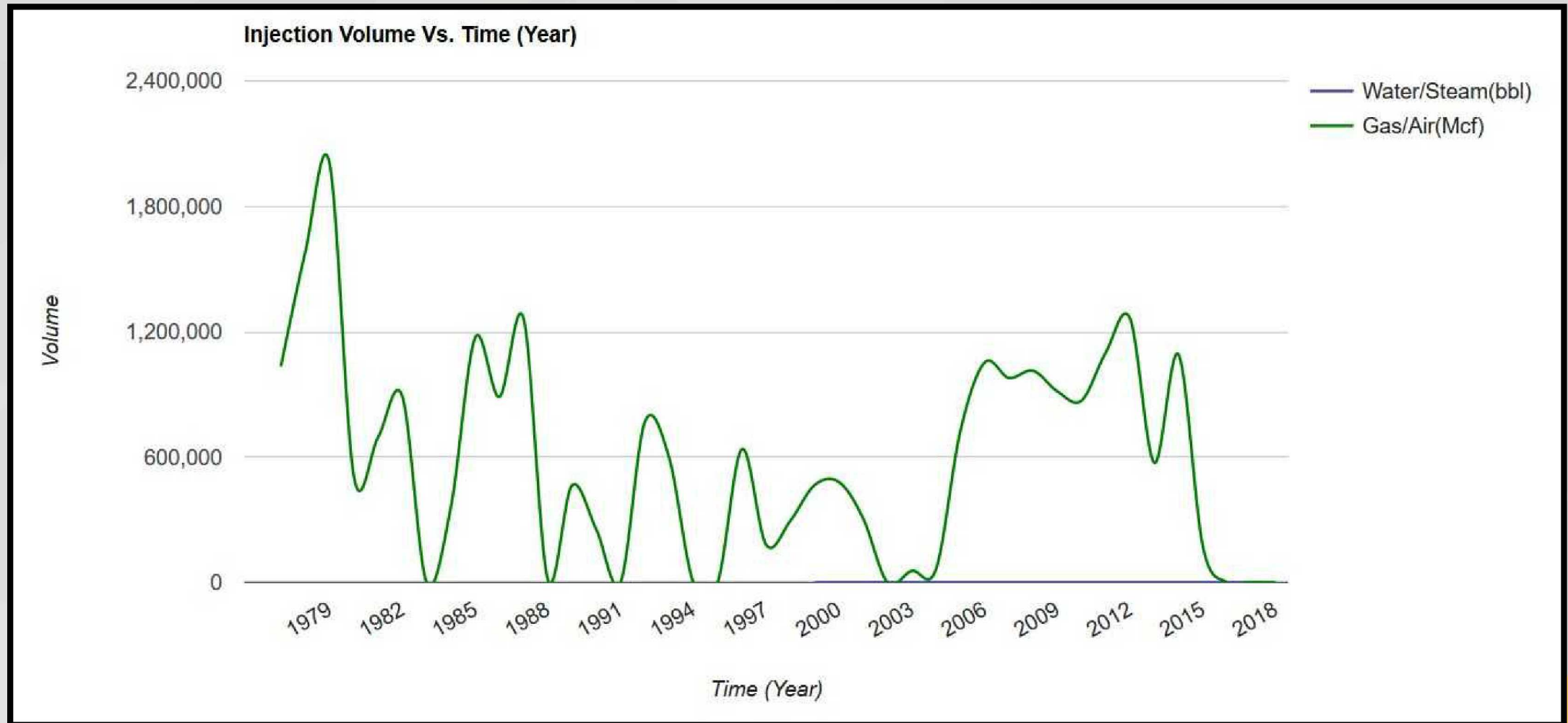
Showing 1 to 25 of 79 entries

File Name	Type	Size	Modified on
<a href="#">03700041_SS 29_MAC_01-24-2019.pdf</a>	PDF	6.00 MB	5/6/2019
<a href="#">03700041_DATA_03-19-2008.pdf</a>	PDF	80.00 MB	4/12/2019
<a href="#">03700041_SS 29__WBD_01-31-2019.pdf</a>	PDF	79.00 KB	2/25/2019
<a href="#">03700041_SS 29_PTEST_01-27-2019.xlsx</a>	Excel	51.00 KB	2/7/2019
<a href="#">03700041_SS 29_CBL_12-27-2018.pdf</a>	PDF	5.00 MB	1/29/2019
<a href="#">03700041_SS 29_CsgInsp_5in_12-26-2018.PDF</a>	PDF	514.00 KB	1/29/2019
<a href="#">03700041_SS 29_IBC_01-07-2019.pdf</a>	PDF	18.00 MB	1/29/2019
<a href="#">03700041_SS 29_MAC_12-27-2018.PDF</a>	PDF	11.00 MB	1/29/2019
<a href="#">03700041_SS 29_CsgInsp_5.5in_12-26-2018.PDF</a>	PDF	8.00 MB	1/29/2019
<a href="#">03700041_SS 29_CsgInsp_5in_12-26-2018.xlsx</a>	Excel	37.00 KB	1/28/2019
<a href="#">03700041_SS 29_CsgInsp_5.5in_12-26-2018.xlsx</a>	Excel	94.00 KB	1/28/2019
<a href="#">03700041_SS 29_IBC_01-07-2019.xls</a>	Excel	169.00 KB	1/28/2019
<a href="#">03700041_SS 29_PTEST_12-28-2018.xlsx</a>	Excel	54.00 KB	1/11/2019
<a href="#">03700041_SS 29_CBL_12-13-2018.pdf</a>	PDF	3.00 MB	12/14/2018
<a href="#">03700041_SS 29_CBL_10-10-2018.pdf</a>	PDF	5.00 MB	10/12/2018



# California

Limited charts are available





# Michigan

Department of Environment, Great Lakes, and Energy

**EGLE** MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Search

**ABOUT EGLE**    **AIR**    **LAND**    **WASTE**    **WATER**    **SUSTAINABILITY**

LAND

- Remediation
- Redevelopment
- Oil & Gas
- Compliance & Enforcement
- Mining
- Mineral Wells
- Dunes
- Soil Erosion and Construction Storm Water

EGLE / LAND / OIL & GAS

## DATABASE DOWNLOADS - WHERE TO FIND DIGITAL DATA

Contact: Oil, Gas, and Minerals Division 517-582-3446

### INTERNET MAPPING/DATA ACCESS APPLICATIONS

- **GeoWebFace** - 120 oil & gas and geological layers    [Application](#)    [Website](#)    [User Guide](#)
- **Data Portal** (work in progress)    [Application](#)    [User Guide](#)    [About Data Portal](#)

### OIL & GAS WELL DOCUMENTS

- Individual Well Files
- Raster Logs (Geophysical logs in .tiff, .pdf, and .las formats)
- Drillers Logs

For more information - [About Oil and Gas Well Documents](#).



# Michigan

Some mapping available

Michigan.gov Home DEQ Online Services Permits Programs Contact Feedback User's Guide

**DEQ** Department of Environmental Quality  
GeoWebFace

MICHIGAN.GOV Michigan's Official Web Site

Layers Tool Map Tools Data Search

GeoWebFace Map GeoWebFace Results

Zoom In Zoom Out Pan Clear Zoom Extents Map Nav Info Identify Label O&G Wells Print

Street 2005 Aerial 2009 Aerial Hi-Res Aerial TOPO

**GeoWebFace Layers**  
Toggle layer visibility by clicking the corresponding checkbox. Activate the transparency slider for a layer by clicking on the transparency slider.

- Oil and Gas Information**
  - Bottom Hole Locations - Single Syml
  - Plugged Wells
  - Directional Start Holes
  - Lines for Directional Holes
  - Well Type - Bottom Hole Locations
  - Hydrogen Sulfide Wells
  - Oil and Gas Fields by Formation
  - General Spacing Order Antrim
  - General Spacing Order Niagaran
  - General Spacing Order Trenton-Blac
  - General Spacing Order Glenwood and b
  - Gas Storage Fields
  - Uniform Spacing Plans
  - Active Oil and Gas Drilling Units
  - Wells With Geophysical Logs
- Mining and Minerals
- Geology

0 30 60mi

POWERED BY esri




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# Pennsylvania

## Department of Environmental Protection

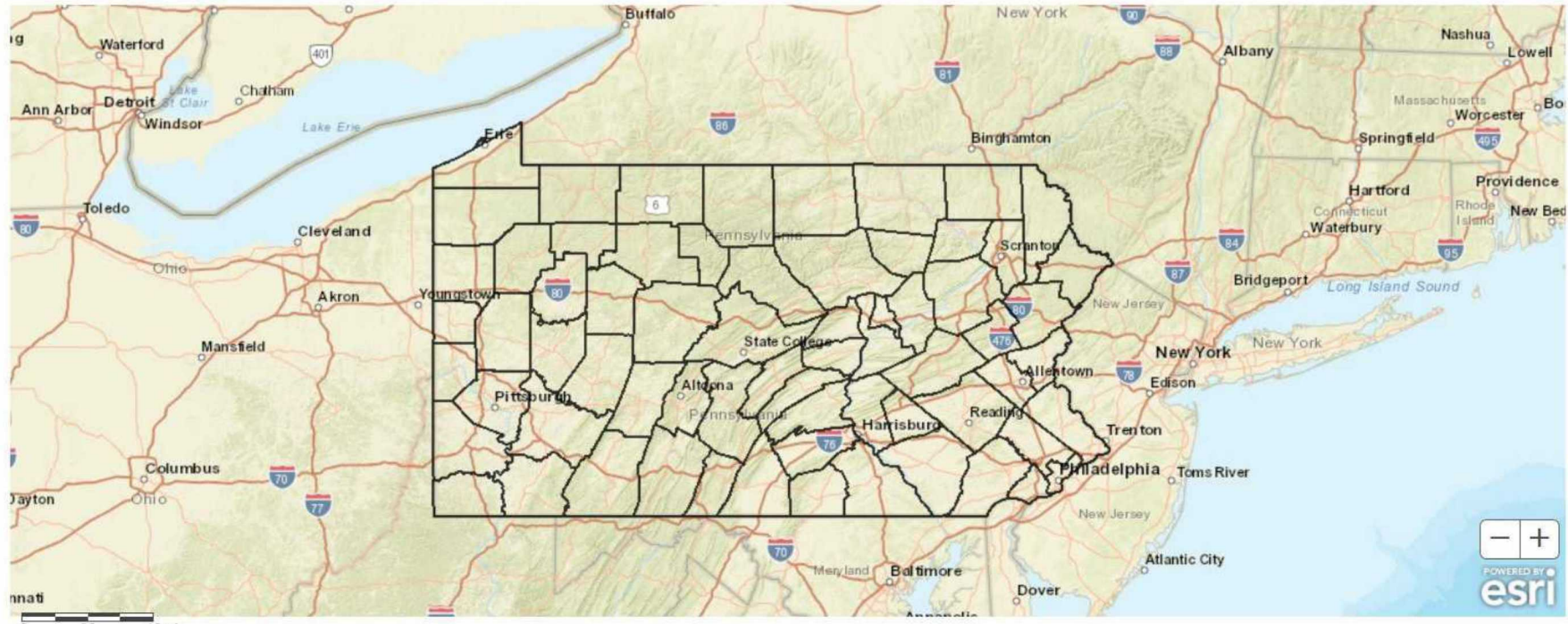

Tom Wolf, Governor   Patrick McDonnell, Secretary   [DEP Home](#)

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Map   eFacts Query   Advanced Query

ESRI Streets & Imagery    Topographic    National Geographic



eMapPA Layers

- Complaints
- Federal EPA Sites
- Regulated Facilities and Areas POI - Geological
- Areas POI - Environment
- Areas POI - General
- Boundaries
  - Zip Code Points
  - DEP Regions
  - County Boundaries
  - Municipalities
  - Zip Codes
  - State House Boundaries
  - State Senate Boundaries
  - Congressional Boundaries
  - 7.5 Minute Quad Boundaries
  - Voting Districts
  - Census Tract 2010
  - Urbanized Areas 2010
  - Urbanized Areas 2000

Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community; ESRI Streets: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



URL: [https://www.michigan.gov/egle/0,9429,7-135-3311\\_4231-188295--,00.html](https://www.michigan.gov/egle/0,9429,7-135-3311_4231-188295--,00.html)



# Pennsylvania

Additional information  
hosted by Penn State

<https://www.pasda.psu.edu/>

The screenshot shows the PASDA website header with a navigation menu. The main content area features a 'Data Summary' section for 'Oil & Gas Locations' from the '2019 - Pennsylvania Department of Environmental Protection'. It includes a list of actions: Metadata, Download, Preview, KMZ (GoogleEarth), Spreadsheet, GeoJSON, Add to ArcMap, IMAGE, and FEATURE. Below this is an 'API' section with REST and WMS endpoints. An 'ADDITIONAL RESOURCES' section lists an 'Online Viewer Application' and a 'Data Archive'. Finally, an 'ABSTRACT' section describes the data as DEP primary facility types related to the Oil & Gas Program, listing examples like Land Application, Well, and Pit.

**PASDA** PENNSYLVANIA SPATIAL DATA ACCESS  
The Pennsylvania Geospatial Data Clearinghouse

HOME ABOUT ADVANCED SEARCH APPS & TOOLS SHARE DATA TUTORIALS & HELP CONTACT US

## Data Summary

### Oil & Gas Locations

2019 - Pennsylvania Department of Environmental Protection

Metadata | Download | Preview | KMZ (GoogleEarth) | Spreadsheet | GeoJSON | Add to ArcMap | IMAGE | FEATURE

#### API

REST: <https://maps.pasda.psu.edu/ArcGIS/rest/services/pasda/DEP/MapServer>  
WMS: <https://maps.pasda.psu.edu/arcgis/services/pasda/DEP/MapServer/WMServer?SERVICE=WMS&request=getcapabilities>

#### ADDITIONAL RESOURCES

Online Viewer Application: <https://maps.psiee.psu.edu/paatlas/>  
Data Archive: Download historic versions of this dataset

#### ABSTRACT

An Oil and Gas Location is a DEP primary facility type related to the Oil & Gas Program. The sub-facility types related to Oil and Gas that are included in this layer are: \_\_\_\_\_ Land Application -- An area where drilling cuttings or waste are disposed by land application Well-- A well associated with oil and/or gas production Pit -- An approved pit that is used for storage of oil and gas well fluids . Some sub facility types are not included in this layer due to security policies.



# Extracting Data – The Library





# Extracting Data – The Library

Task: Find the pages that reference failure



# Extracting Data – The Library

## Potential Problems

- Not optimized for solving our problem



# Extracting Data – The Library

## Potential Problems

- Not optimized for solving our problem
- Small number of occurrences



# Extracting Data – The Library

## Potential Problems

- Not optimized for solving our problem
- Small number of occurrences
- ...still need to sample everything



# Extracting Data – The Library

## Potential Problems

- Not optimized for solving our problem
- Small number of occurrences
- ...still need to sample everything
- Classification inconsistencies



# Future Data Collection

- Failure statistics ↔ Reliability Metrics
- Data collection and storage
- Common classification

Discussion to follow...



# Takeaways

- Data are available
- Large undertaking to extract useful statistics
- *Moving forward*, need for standardized data collection