

Pacific States/British Columbia Oil Spill Task Force

Summary of West Coast Oil Spill Data

Calendar Year 2019

August 2020



CONTACT INFORMATION

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Data analysis and summary report
by Camille Stephens

OIL SPILL DATA PROJECT

Summary of Regional Spill Data (CY 2019)

The Task Force's regional oil spill database, which was launched in 2003, is a unique and valuable resource that enables us to track regional trends in spills and related causal factors. Using a standardized data dictionary to ensure uniform entries, we collect data on all spills of a barrel (42 gallons) or larger.

DATABASE WORKGROUP

Database Workgroup provides staff-level coordination to help ensure that data is collected in a consistent manner by all Task Force member agencies. The Pacific States/British Columbia Oil Spill Task Force Data Dictionary (available at oilspilltaskforce.org/ourwork/data-project/) was developed by the Database Workgroup and establishes standardized terms and definitions for collecting spill data.

Workgroup members include:

- Bill Steele (Alaska Department of Environmental Conservation)
- Cathy Conway, (California Department of Fish and Wildlife, Office of Spill Prevention and Response)
- Sarah Idczak (Oregon Department of Environmental Quality)
- Liz Galvez (Hawaii Department of Human Health)
- Eli Seely (Washington Department of Ecology)

The British Columbia Ministry of Environment monitors the project, is developing a spill database, and plans to join the Task Force project as soon as possible.

DATA LIMITATIONS

- Each agency that assists in the creation and maintenance of the Task Force database in no way guarantees the accuracy of the information and no guarantee of accuracy shall be expressed or implied.
- Only spills of one barrel (42 gallons) or larger are included in our Database.
- Detailed information about small spills is often limited or unknown because the effort necessary to investigate them is cost-prohibitive. For this reason, we are presenting spill counts only.
- The Task Force oil spill database is created and maintained for informational purposes only. The data it contains reflects the respective agencies' best information at the time it was entered in the database. This means that recorded quantities may be under-reported. It remains an ongoing challenge to refine the information entered to a

level of specificity that supports effective analysis while also taking into account the varied collection capabilities of member agencies.

HIGHLIGHTS

The 2019 data is provided on the following pages. Highlights include:

- A total of 695 releases of 42 gallons or more occurred during 2019, with a total volume of 563,709 gallons spilled. Of those, 6 releases were over 10,000 gallons.
- An additional 5,607 small spills (less than 42 gallons) occurred during 2019.

Non-Crude Oil Spills

- 624 releases were non-crude oil spills totaling 427,795 gallons.
- Facilities (47%) and Vehicles (26%) were the major sources of non-crude spills during 2019, comprising nearly three-quarters of the non-crude volume for the year.
- More than half of the total non-crude spill volume was attributable to Unknown (57%) causes.
- Unknown was the main activity at the time of the spill (55%).
- Spills with volumes greater than 1,000 gallons comprised more than 75% of the total non-crude volume during 2019.
- Over half of the non-crude volume was spilled to Land (70%).

Crude Oil Spills

- 71 crude oil spills totalling 135,914 gallons occurred during 2019.
- Crude oil comprised 24% the total volume for 2019.
- Unknown (56%) and Facilities (34%) were the main sources of crude spills during 2019.
- Unknown (94%) and Equipment Failure (4%) were the main causes of crude oil spills during 2019.
- During 2019, crude spills to Fresh water (68%) comprised over half of the total volume.

NOTE:

- California’s data submission does not include every oil spill reported to the California Office of Emergency Services (Cal OES); it does not include oil spills to land. The responsibility of response and investigation of oil spills to land falls within the jurisdiction of agencies other than the Office of Spill Prevention and Response (OSPR). Causal data, oil types, and volumes for oil spills to land are not collected by OSPR and therefore are not included in this year’s report. In 2019, 7,925 hazardous material reports were generated by Cal OES. Of those, 2,395 were petroleum reported to land.
- Also, of note, OSPR responded to a situation where several “surface expressions” occurred over the course of three months, releasing into the same gully (dry wash) located within the Cymric oil field, near McKittrick, CA. A “surface expression” is a flow, movement, or release from the subsurface to the surface of fluid or other material such as oil, water, steam, gas, formation solids, formation debris, material, or any combination thereof, that is outside of a wellbore and that appears to be caused by injection operations. [14 CA Code of Reg. §1720.1(n)]. Because the fluids released were confined within the gully, there was a single Unified Command and this situation was treated as a single incident even though technically there were multiple releases. 29,389 total barrels of liquid were recovered (20,755 bbls of produced water; 4,996 bbls of crude oil; 3,638 bbls of total petroleum hydrocarbons in solids). This single incident would otherwise significantly skew the data.

Trends

The 2002-2019 data provides us with an opportunity to look at 18-year trends, which is also shown in this report. Here are the highlights:

- A total of 16,378 releases of 42 gallons or more occurred during the 18-year period 2002-2019, with a total volume of nearly 13.4 million gallons.
- Over the 18-year period, the combined volume of non-crude oil spills was nearly three times that for crude oil spills.
- The top two crude oil spills during the 18-year period were 463,848 gallons in California (2008) and a 267,000 gallon spill in Alaska (2006). The combined volume of these two incidents comprised 22% of the total crude oil volume released for the period.
- Diesel Oil/Marine Gas Oil comprised 25% of the total spill

volume and 34% of the non-crude oil spill volume for the period.

- Overall, Facilities (50%) and Pipelines (18%) were the major sources of spills by volume during the 18-year period.
- Facilities were the source of 53% of the non-crude oil spill volume.
- Pipelines (51%) and Facilities (42%) were the major sources of crude oil spills.
- Overall, Equipment Failure (52%) and Human Error (29%) were the major spill causes.
- Equipment Failure (45%) and Human Error (36%) were the predominant causes for non-crude oil spills
- 75% of the total crude oil spill volume was due to Equipment Failure.

FOR MORE INFORMATION

Data summaries for calendar years 2002 – 2018, as well as other information about the Pacific States/British Columbia Oil Spill Task Force and its work, are available at www.oilspilltaskforce.org. Summaries for years prior to 2012 are included in the Task Force Annual Reports for those years. Beginning with calendar year 2012, the data summary was created as a separate document available at oilspilltaskforce.org/documents/other-documents/#spilldata

For questions specifically related to this report or the Task Force’s data project, contact Sarah Brace, Executive Coordinator at Sarah@VedaEnv.com.

ANNUAL SUMMARY (2019)

Summary of Releases (42 gallons or more) by Product (2019)

Product	Spill Count	Gallons	% Total Volume
Oily water mixture	39	223,970	39.7%
Crude oil	71	135,914	24.1%
Diesel oil / Marine gas oil	351	94,200	16.7%
Gasoline	26	45,530	8.1%
Asphalt / creosote	9	13,604	2.4%
Mineral oil / Transformer oil	41	9,339	1.7%
Aviation Gasoline	13	8,033	1.4%
Hydraulic Oil	64	7,104	1.3%
Lube oil / Motor oil	22	5,995	1.1%
Unknown	16	5,896	1.0%
Jet fuel / kerosene	18	5,019	0.9%
Other	5	4,800	0.9%
Edible / Vegetable oil	7	2,495	0.4%
Heating oil	4	755	0.1%
Bunker C / IFO / HFO	3	502	0.1%
Waste oil	5	413	0.1%
Cutter stock	1	140	0.02%
Total	695	563,709	100.0%

NOTE:

- California's data submission does not include every oil spill reported to the California Office of Emergency Services (Cal OES); it does not include oil spills to land. The responsibility of response and investigation of oil spills to land falls within the jurisdiction of agencies other than the Office of Spill Prevention and Response (OSPR). Causal data, oil types, and volumes for oil spills to land are not collected by OSPR and therefore are not included in this year's report. In 2019, 7,925 hazardous material reports were generated by Cal OES. Of those, 2,395 were petroleum reported to land.
- Also, of note, OSPR responded to a situation where several "surface expressions" occurred over the course of three months, releasing into the same gully (dry wash) located within the Cymric oil field, near McKittrick, CA. A "surface expression" is a flow, movement, or release from the subsurface to the surface of fluid or other material such as oil, water, steam, gas, formation solids, formation debris, material, or any combination thereof, that is outside of a wellbore and that appears to be caused by injection operations. [14 CA Code of Reg. §1720.1(n)]. Because the fluids released were confined within the gully, there was a single Unified Command and this situation was treated as a single incident even though technically there were multiple releases. 29,389 total barrels of liquid were recovered (20,755 bbls of produced water; 4,996 bbls of crude oil; 3,638 bbls of total petroleum hydrocarbons in solids). This single incident would otherwise significantly skew the data.

ANNUAL SUMMARY OF SPILLS

- A total of 695 releases of 42 gallons or more occurred during 2019, with a total volume of 563,709 gallons spilled. Of those, 6 releases were over 10,000 gallons.
- Diesel oil/marine gas oil was the most frequent product released and comprised 16.7% of the total volume for 2019.
- An additional 5,607 small spills (less than 42 gallons) occurred during 2019.

ANNUAL SUMMARY (2019)



Spills Greater Than 10,000 Gallons (2019)

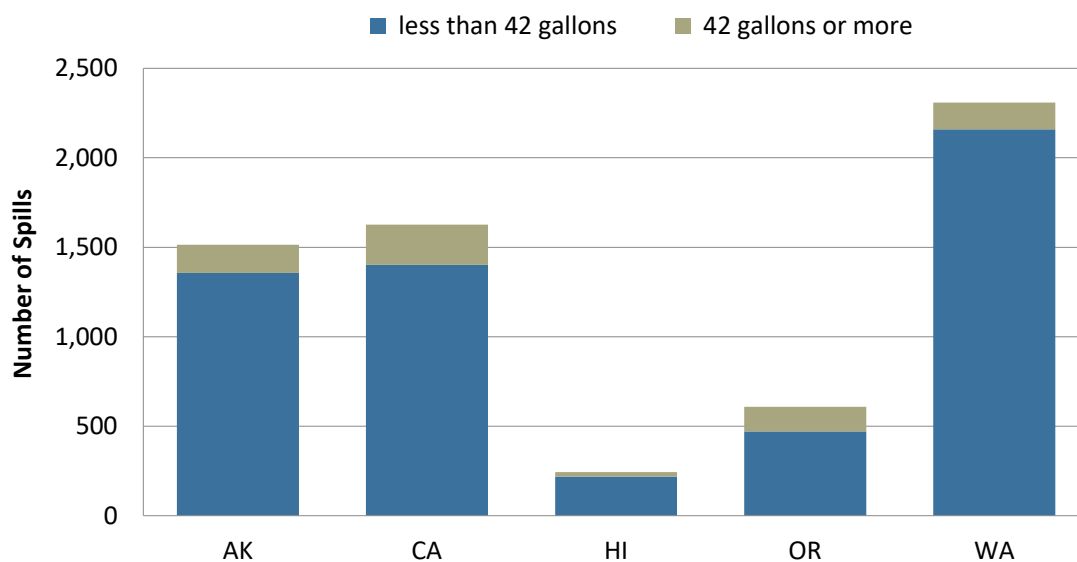
Product	Volume	State	Date	Source Type	Cause Type	Medium
Oily Water Mixture	147,840	California	11/8/2019	Facility	Unknown	Land
Crude Oil	66,318	California	10/12/2019	Unknown	Unknown	Fresh Water
Oily Water Mixture	37,800	California	3/21/2019	Other	Unknown	Land
Crude Oil	23,478	California	8/21/2019	Facility	Unknown	Land
Crude Oil	10,500	California	6/8/2019	Facility	Unknown	Fresh Water
Asphalt / creosote	10,112	Oregon	6/17/2019	Vehicle	Human Error	Land

Summary of Releases with Volume Less Than 42 gallons (2019)

Beginning with the 2016 data, the Task Force began tracking the number of spills with volumes less than 42 gallons. This data will be used to help target outreach and spill prevention efforts such as the Pacific Oil Spill Prevention Education Team (POSPET).

Detailed information about small spills is often limited or unknown because the effort necessary to investigate them is cost-prohibitive. For this reason, we are presenting spill counts only. Small spills are NOT included in the graphs or tables elsewhere in this document.

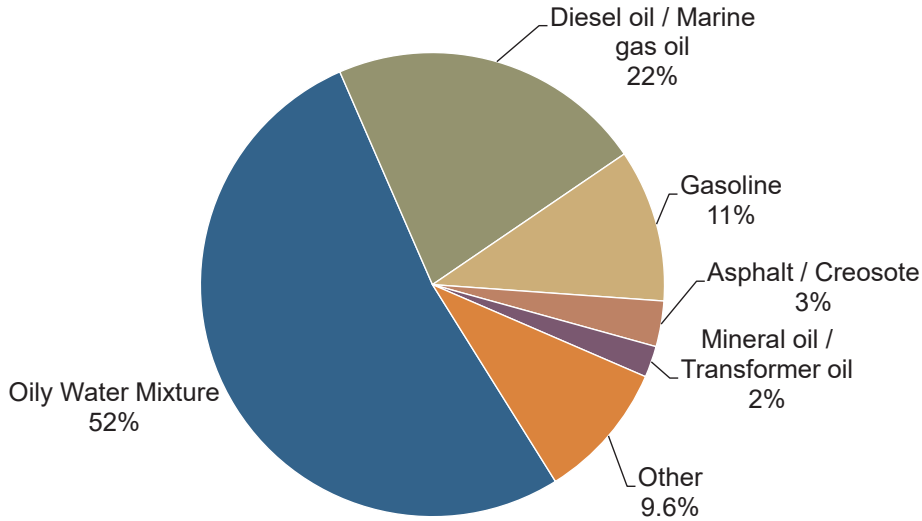
State	Less Than 42 Gallons	42 Gallons or More
Alaska	1,357	157
California	1,401	225
Hawaii	219	25
Oregon	471	138
Washington	2,159	150
Total	5,607	695



ANNUAL SUMMARY (2019)

Non-Crude Oil Spills by Product (2019)

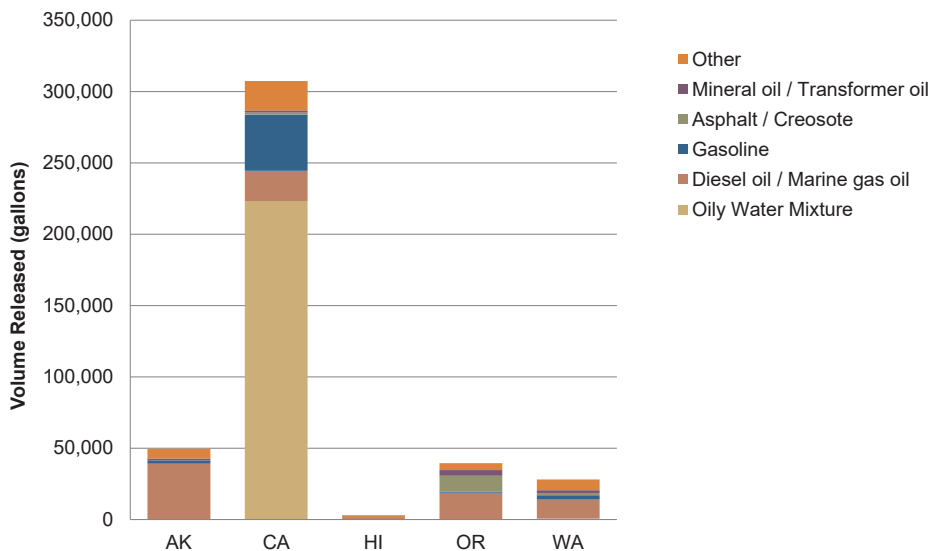
(percent total volume)



NOTE: "Other" includes classifications comprising 2% or less of the total volume released: Aviation Gasoline, Hydraulic Oil, Lube oil/Motor oil, Unknown, Jet fuel/kerosene, Edible/Vegetable Oil, Heating Oil, Bunker C/IFO/HFO, Waste Oil, Cutter stock

Non-Crude Oil Spills by Product and State (2019)

(5% or more total volume)



NON-CRUDE SPILLS

Total Spills	624
Total Volume (gal)	427,795
Average Spill Size (gal)	686

Summary by Product

Top Products

Product	Gallons
Oily Water Mixture	223,970
Diesel oil/Marine gas oil	94,200
Gasoline	45,530
Asphalt / Creosote	13,604
Mineral oil/Transformer oil	9,339

- 624 releases were non-crude oil spills totaling 427,795 gallons.

ANNUAL SUMMARY (2019)

NON-CRUDE SPILLS

Summary by Source

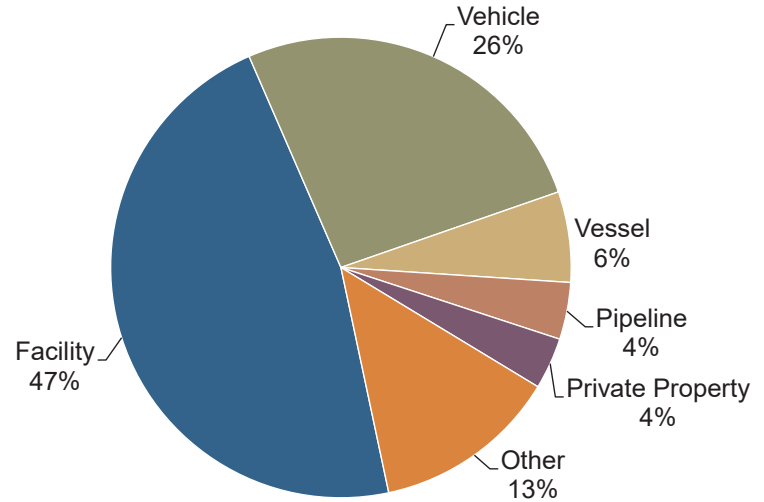
Top Sources

Source	Gallons
Facility	200,223
Vehicle	112,110
Other	51,606
Vessel	27,220
Pipeline	17,109

- Facilities (47%) and Vehicles (26%) were the major sources of non-crude spills during 2019, comprising nearly three-quarters of the non-crude volume for the year.

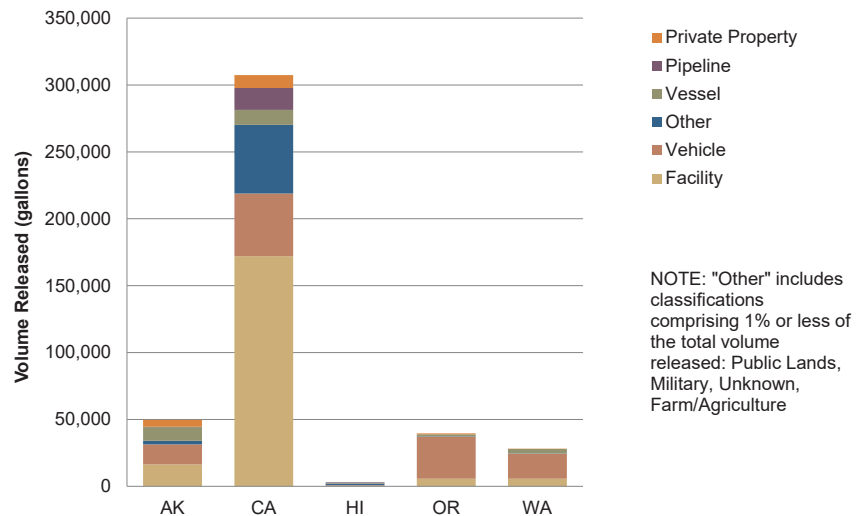
Non-Crude Oil Spills by Source (2019)

(percent total volume)



NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Public Lands, Military, Unknown, Farm/Agriculture

Non-Crude Oil Spills by Source and State (2019)

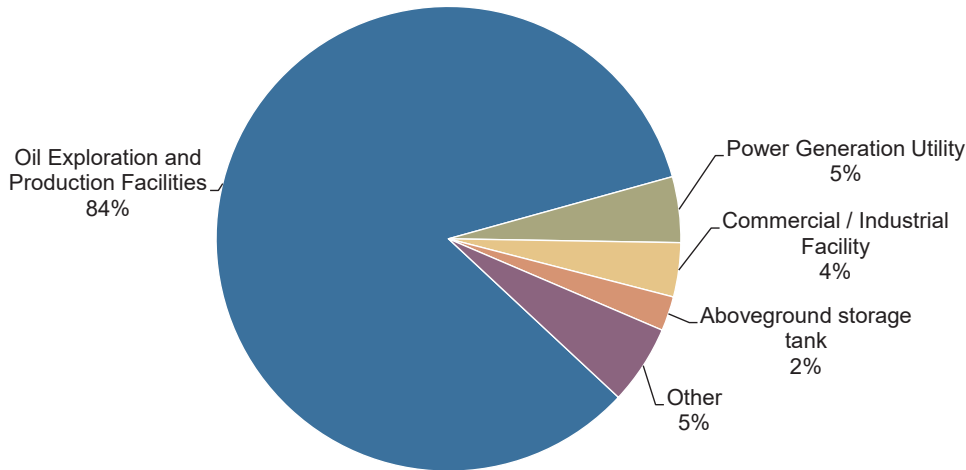


NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Public Lands, Military, Unknown, Farm/Agriculture

ANNUAL SUMMARY (2019)

Non-Crude Oil Spills -- Facility Detail (2019)

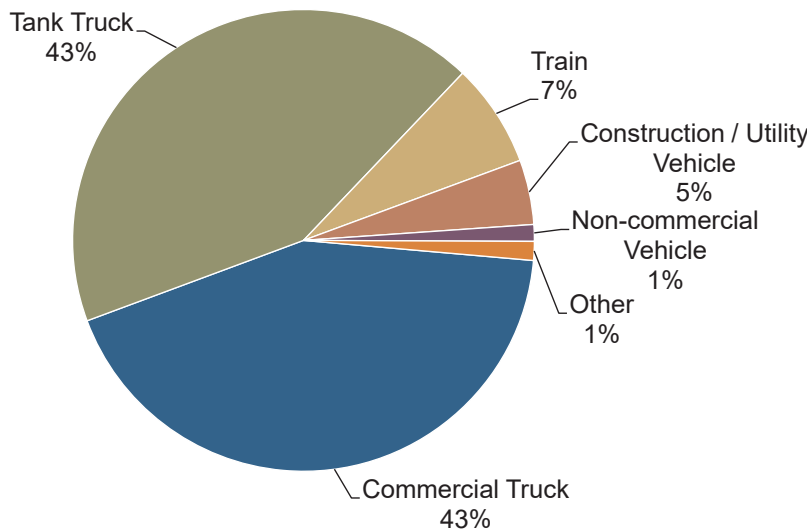
(percent total volume)



NOTE: "Other" includes classifications comprising 2% or less of the total volume Government Facilities, Bulk Oil Facility, Drum or Container, Refinery, Underground Storage Tank, Shipyard/Port Facility, Retail Petroleum Outlet, Marina, Railyard, Marine Terminal

Non-Crude Oil Spills -- Vehicle Detail (2019)

(percent total volume)



NOTE: For graphing purposes, "Other" includes classifications comprising less than 1% of the total volume released: Aircraft, Other

NON-CRUDE SPILLS

Summary by Source (continued)

- Over three-quarters of the non-crude spill volume for Facilities was from Oil Production Facilities (84%).
- Tank Trucks (43%), and Commercial Trucks (43%) comprised more than 75% of the total non-crude spill volume for Vehicles during 2019.

ANNUAL SUMMARY (2019)

NON-CRUDE SPILLS

Summary by Cause

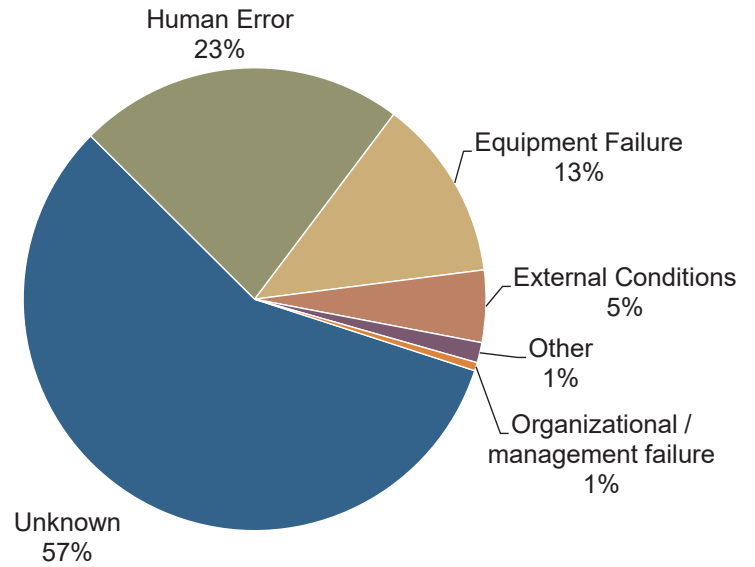
Top Causes

Cause	Gallons
Unknown	245,820
Human Error	97,571
Equipment Failure	54,349
External Conditions	21,563
Other	6,035

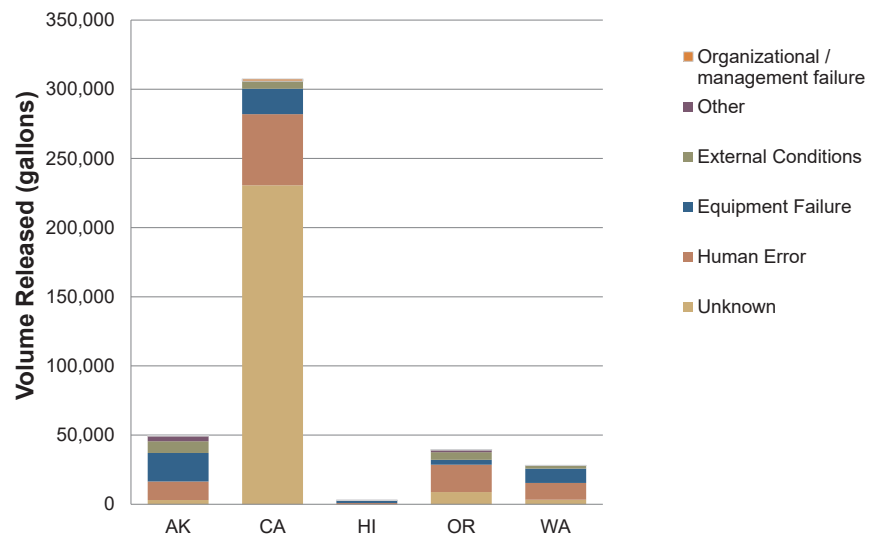
- More than half of the total non-crude spill volume was attributable to Unknown (57%).

Non-Crude Oil Spills by Cause (2019)

(percent total volume)



Non-Crude Oil Spills by Cause and State (2019)

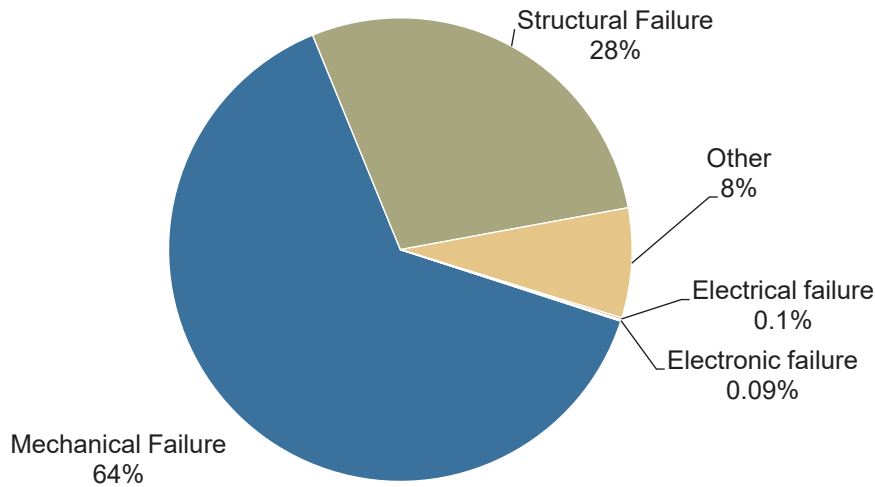


ANNUAL SUMMARY (2019)



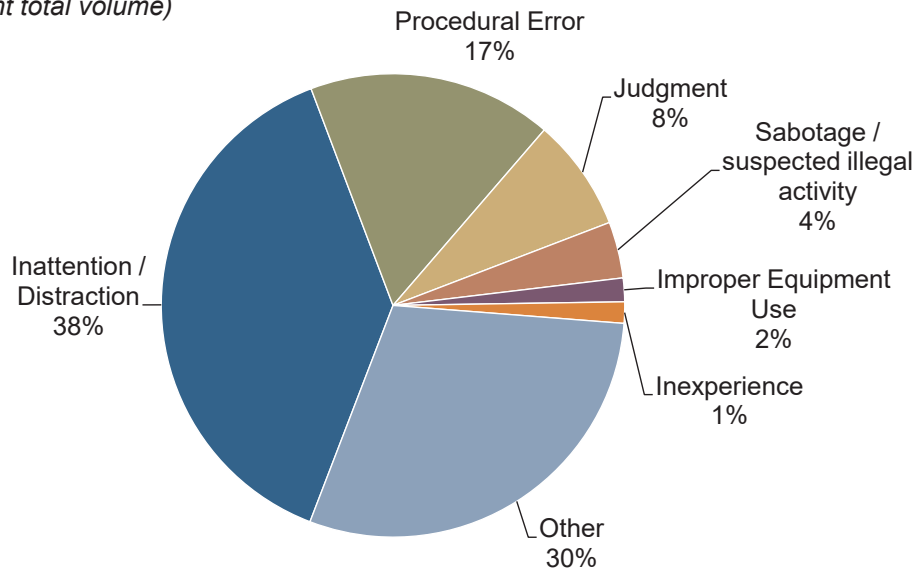
Non-Crude Oil Spills -- Equipment Failure Detail (2019)

(percent total volume)



Non-Crude Oil Spills -- Human Error Detail (2019)

(percent total volume)



NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Deliberate Violation, Fatigue/Reduced Alertness, Inaccurate Computation, Illness

NON-CRUDE SPILLS

Summary by Cause (continued)

- Over half of the total Equipment Failure spill volume was due to Mechanical Failure (64%).
- Inattention/distraction (38%) and Procedural Error (17%) comprised over half the total non-crude volume for releases due Human Error during 2019.

ANNUAL SUMMARY (2019)

NON-CRUDE SPILLS

Summary by Activity

Top Activities

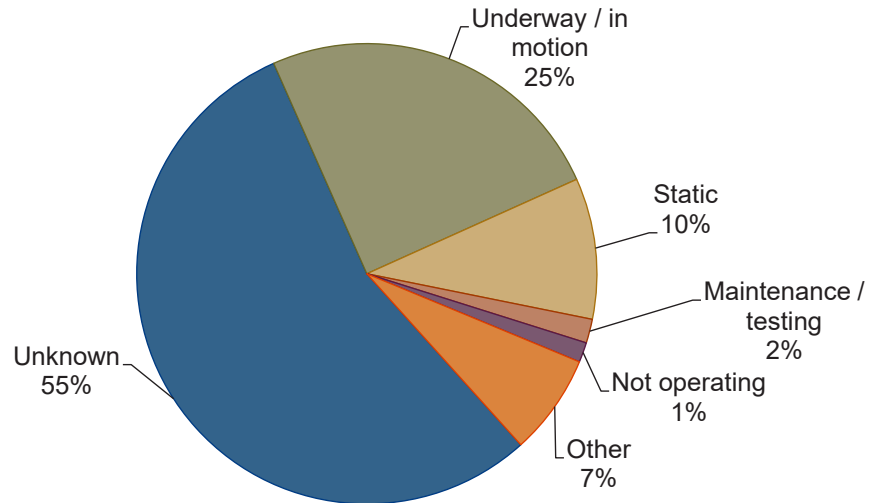
Activity	Gallons
Unknown	235,433
Underway / in motion	106,540
Static	42,373
Other	17,640
Maintenance / testing	7,190

- Unknown was the main activity at the time of the spill (55%).

¹Underway/In Motion: (1) Vessel underway conducting normal operations, no oil movements in progress (oil movements include ballasting, tank washing, internal transfers); (2) Vehicle in motion conducting designed function

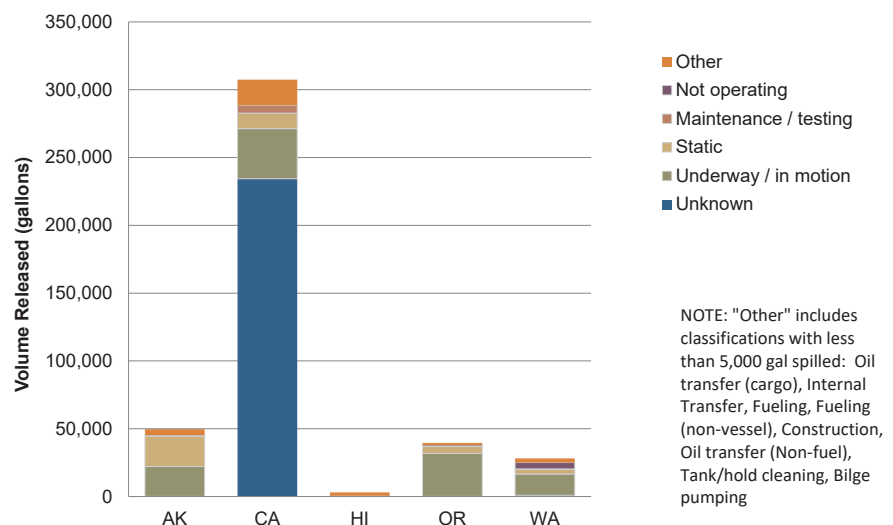
Non-Crude Oil Spills by Activity (2019)

(percent total volume)



NOTE: "Other" includes classifications with less than 5,000 gal spilled: Oil transfer (cargo), Internal Transfer, Fueling, Fueling (non-vessel), Construction, Oil transfer (Non-fuel), Tank/hold cleaning, Bilge pumping

Non-Crude Oil Spills by Activity and State (2019)

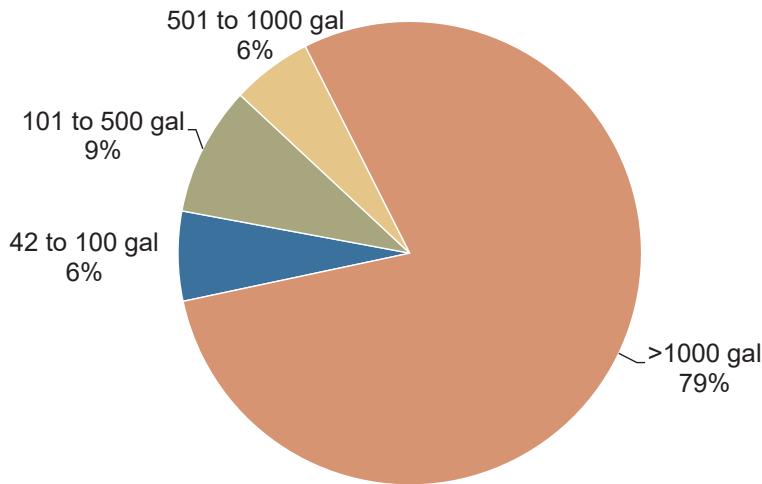


NOTE: "Other" includes classifications with less than 5,000 gal spilled: Oil transfer (cargo), Internal Transfer, Fueling, Fueling (non-vessel), Construction, Oil transfer (Non-fuel), Tank/hold cleaning, Bilge pumping

ANNUAL SUMMARY (2019)

Non-Crude Oil Spills by Spill Size (2019)

(percent total volume)



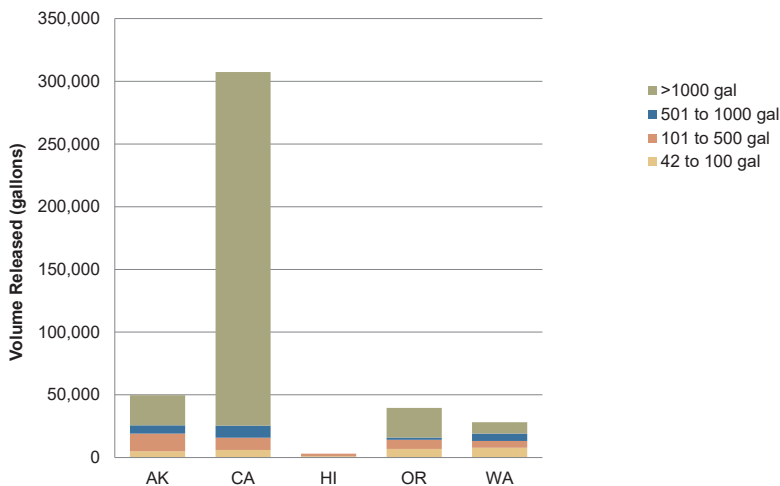
NON-CRUDE SPILLS

Summary by Spill Size

Size Class	Gallons
42 to 100 gal	26,758
101 to 500 gal	38,594
501 to 1000 gal	24,019
>1000 gal	338,424

- Spills with volumes greater than 1,000 gallons comprised more than 75% of the total non-crude volume during 2019.

Non-Crude Oil Spills by Spill Size and State (2019)



ANNUAL SUMMARY (2019)

NON-CRUDE SPILLS

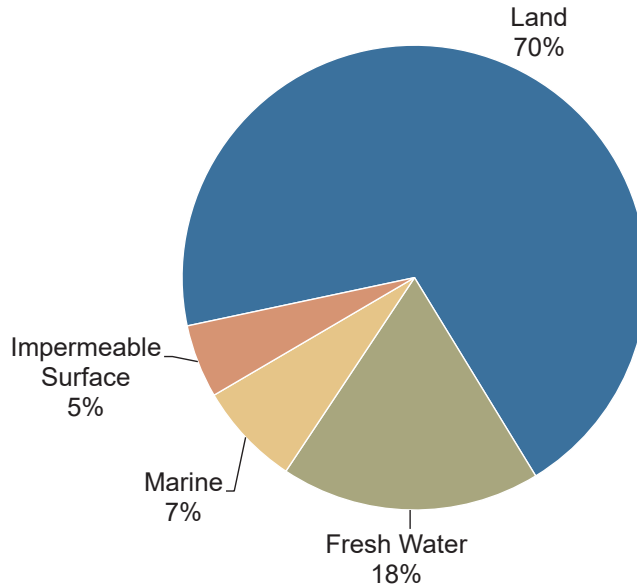
Summary by Medium

Medium	Gallons
Land	297,750
Fresh Water	77,286
Marine	30,919
Impermeable Surface	21,840

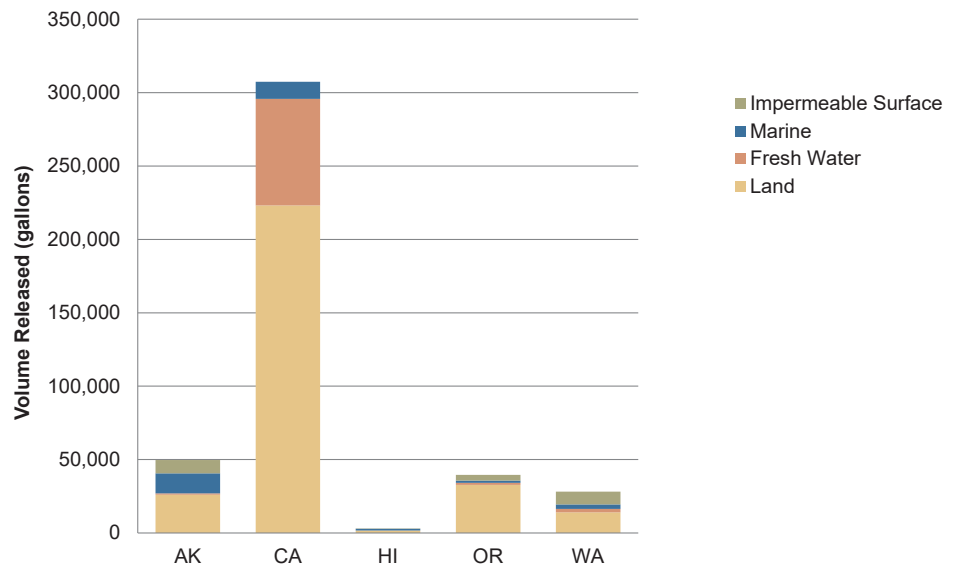
- Over half of the non-crude volume was spilled to Land (70%).

Non-Crude Oil Spills by Medium Impacted (2019)

(percent total volume)



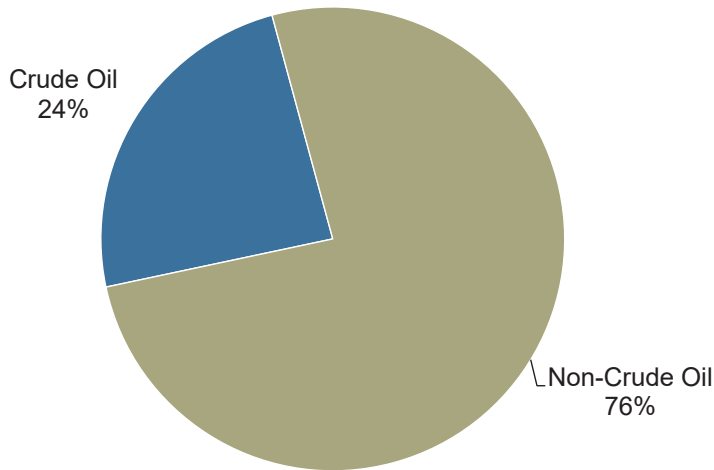
Non-Crude Oil Spills by Medium and State (2019)



ANNUAL SUMMARY (2019)

Crude Spills vs. Non-Crude Oil Spills (2019)

(percent total volume)



CRUDE SPILLS

Total Spills	71
Total Volume (gal)	135,914
Average Spill Size (gal)	1,914

Product Type	Gallons
Non-crude Oil	427,795
Crude Oil	135,914
Total	563,709

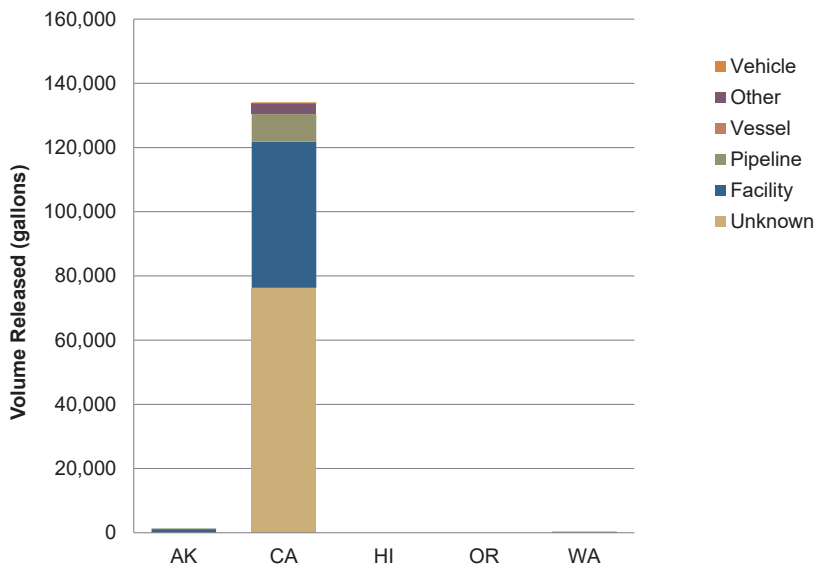
- 71 crude oil spills totalling 135,914 gallons occurred during 2019.
- Crude oil comprised 24% the total volume for 2019.

Top Sources

Source Type	Gallons
Unknown	76,314
Facility	46,755
Pipeline	8,813
Other	3,258
Vehicle	546

- Unknown (56%) and Facilities (34%) were the main sources of crude spills during 2019.

Crude Spills by Source Type and State (2019)



ANNUAL SUMMARY (2019)

CRUDE SPILLS

Top Causes

Cause Type	gallons
Unknown	127,566
Equipment Failure	5,875
External Conditions	999
Human Error	970
Organizational / Management Failure	504

- Unknown (94%) and Equipment Failure (4%) were the main causes of crude oil spills during 2019.

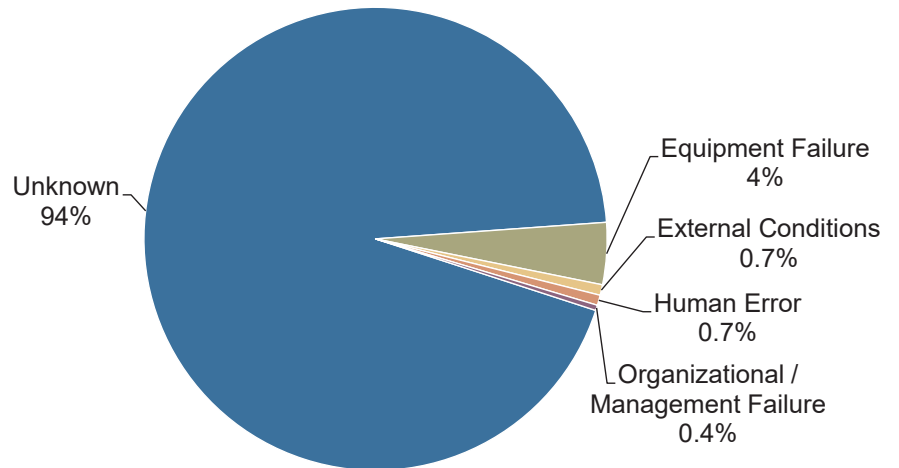
Equipment Failure Detail

Cause	gallons
Other	2,394
Mechanical Failure	1,820
Structural Failure	1,493
Electrical Failure	168

- During 2019, Other (41%) and Mechanical Failure (31%) were the main cause for crude oil spills due to Equipment Failure.

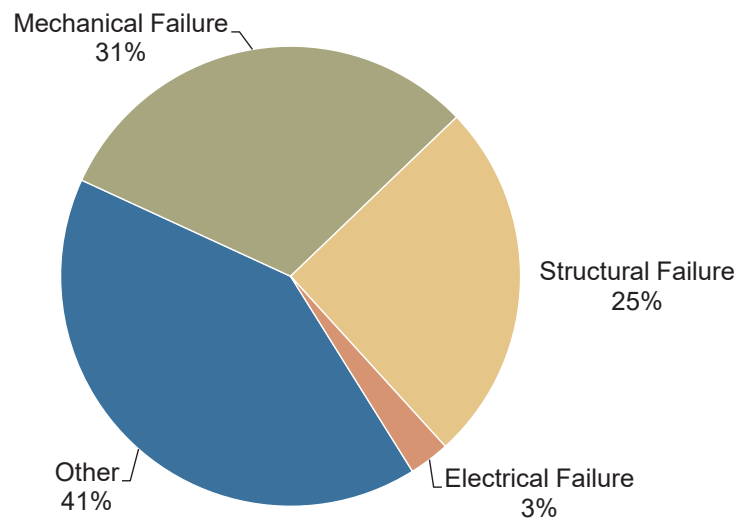
Crude Spills by Cause (2019)

(percent total volume)



Crude Spills -- Equipment Failure Detail (2019)

(percent total volume)

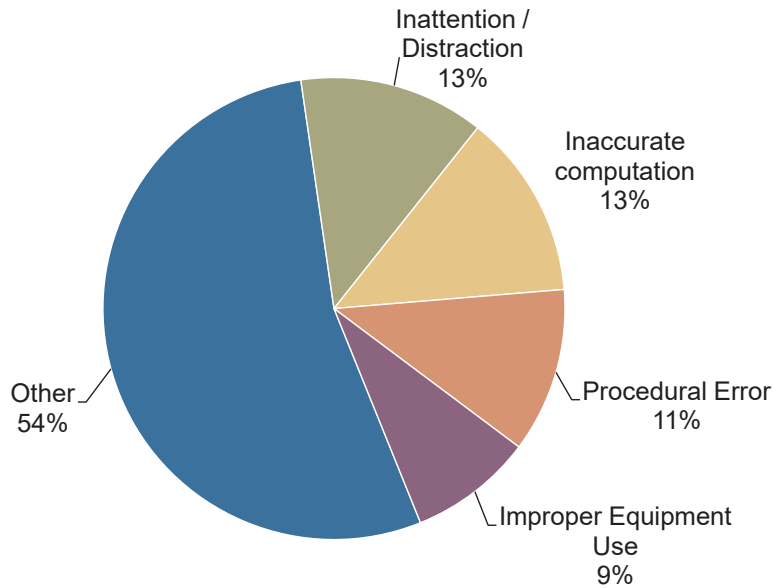


ANNUAL SUMMARY (2019)



Crude Spills -- Human Error Detail (2019)

(percent total volume)



CRUDE SPILLS

Human Error Detail

Cause	gallons
Other	522
Inattention / Distraction	126
Inaccurate computation	126
Procedural Error	112
Improper Equipment Use	84

- Other (54%) was the main cause of spills attributed to Human Error.

ANNUAL SUMMARY (2019)

CRUDE SPILLS

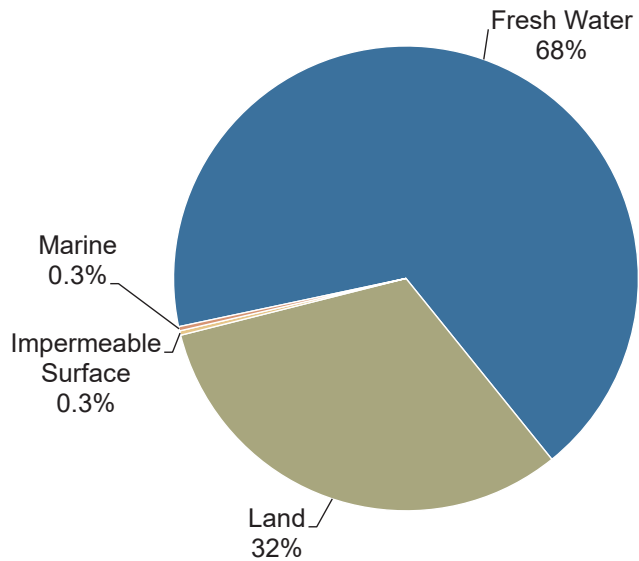
Summary by Medium

Medium	Gallons
Fresh Water	91,784
Land	43,320
Impermeable Surface	414
Marine	396

- During 2019, crude spills to Fresh water (68%) comprised over half of the total volume.

Crude Oil Spills by Medium Impacted (2019)

(percent total volume)



Crude Spills by Medium and State (2019)



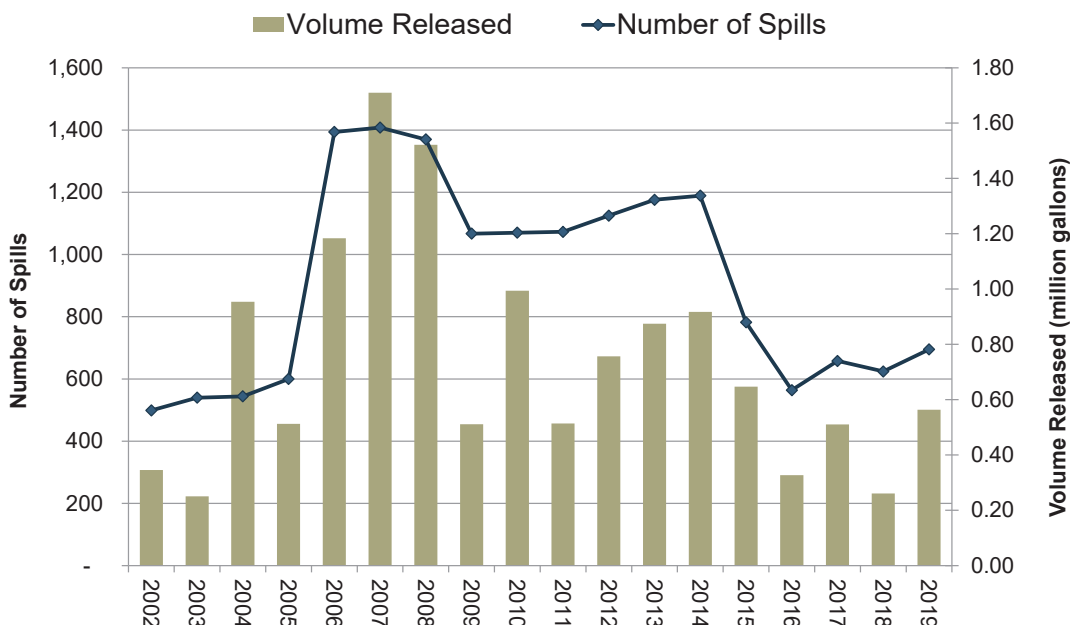
SPILL TRENDS (2002-2019)

- A total of 16,378, releases of 42 gallons or more occurred during the 18-year period 2002-2019, with a total volume of nearly 13.4 million gallons.

Releases by Product (2002-2019)

Product	Spill Count	Gallons	% Total Volume
Crude oil	1,605	3,376,549	25.3%
Diesel oil / marine gas oil	8,005	3,365,739	25.2%
Oily water mixture	662	1,941,295	14.5%
Other	415	760,580	5.7%
Gasoline	667	758,778	5.7%
Bunker C / IFO / HFO	107	734,905	5.5%
Asphalt / creosote	201	659,941	4.9%
Mineral oil / Transformer oil	1,549	470,874	3.5%
Jet fuel / kerosene	357	403,288	3.0%
Aviation gasoline	196	184,429	1.4%
Lube oil / Motor oil	633	150,240	1.1%
Hydraulic oil	970	124,410	0.9%
Unknown	176	122,084	0.9%
Waste oil	353	96,311	0.7%
Heating oil	345	76,255	0.6%
Edible / Vegetable oil	109	66,657	0.5%
Naphtha	1	27,000	0.2%
Oily waste	9	23,732	0.2%
LNG / LPG	16	12,590	0.1%
Cutter stock	2	240	0.0%
Total	16,378	13,355,897	

Number of Spills and Volume Released (2002-2019)



SPILL TRENDS (2002-2019)

Summary by Product

- Over the 18-year period, the combined volume of non-crude oil spills was nearly three times that for crude oil spills.

Crude Oil Spills

- The top two crude oil spills during the 18-year period were 463,848 gallons in California (2008) and a 267,000 gallon spill in Alaska (2006). The combined volume of these two incidents comprised 22% of the total crude oil volume released for the period.

Non-Crude Oil Spills

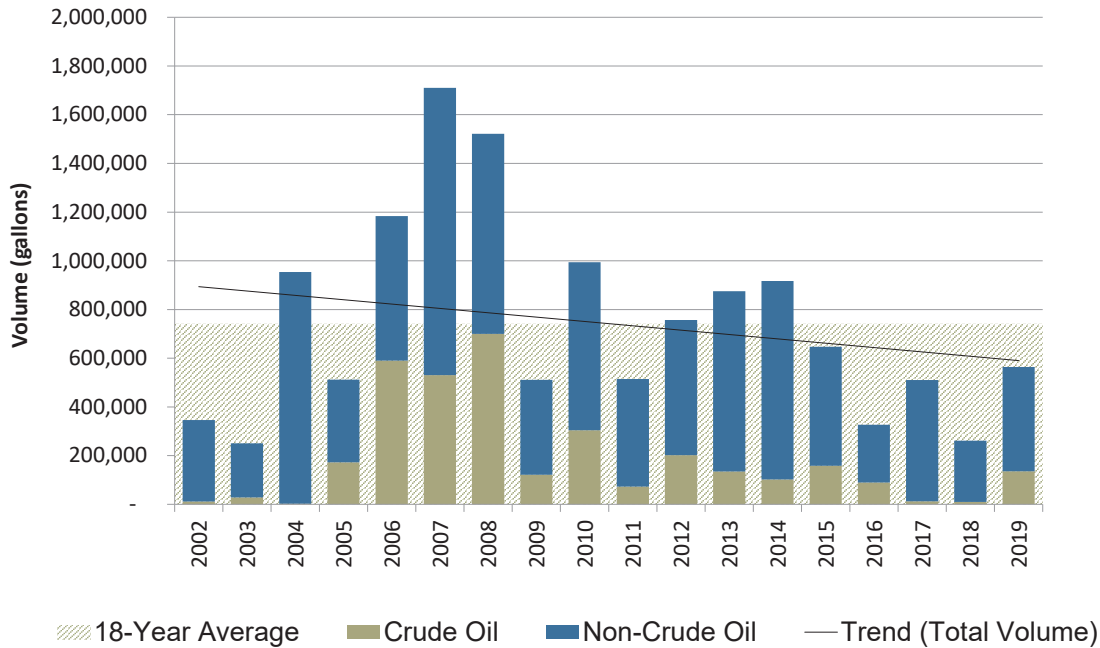
- Diesel Oil/Marine Gas Oil comprised 25% of the total spill volume and 34% of the non-crude oil spill volume for the period.

Crude vs. Non-Crude Oil Spills by Year (2002-2019)

Year	Non-Crude Oil		Crude Oil		Total	
	Spill Count	Gallons	Spill Count	Gallons	Spill Count	Gallons
2002	481	334,418	18	11,424	499	345,842
2003	524	222,531	16	28,015	540	250,546
2004	538	951,906	6	2,018	544	953,924
2005	581	339,516	19	172,871	600	512,387
2006	1,152	594,120	242	589,867	1,394	1,183,987
2007	1,200	1,179,794	208	530,288	1,408	1,710,082
2008	1,145	821,392	225	700,297	1,370	1,521,689
2009	933	390,268	134	120,972	1,067	511,240
2010	941	690,061	129	303,808	1,070	993,869
2011	945	441,172	128	73,004	1,073	514,176
2012	1,000	555,203	125	201,812	1,125	757,015
2013	1,081	740,141	95	134,692	1,176	874,833
2014	1,099	815,752	90	101,713	1,189	917,465
2015	742	488,585	40	158,318	782	646,903
2016	547	237,687	17	89,127	564	326,814
2017	641	498,135	17	12,254	658	510,389
2018	599	250,872	25	10,155	624	261,027
2019	624	427,795	71	135,914	695	563,709
18-YR Total	14,773	9,979,348	1,605	3,376,549	16,378	13,355,897
18-YR AVG	821	554,408	89	187,586	910	741,994

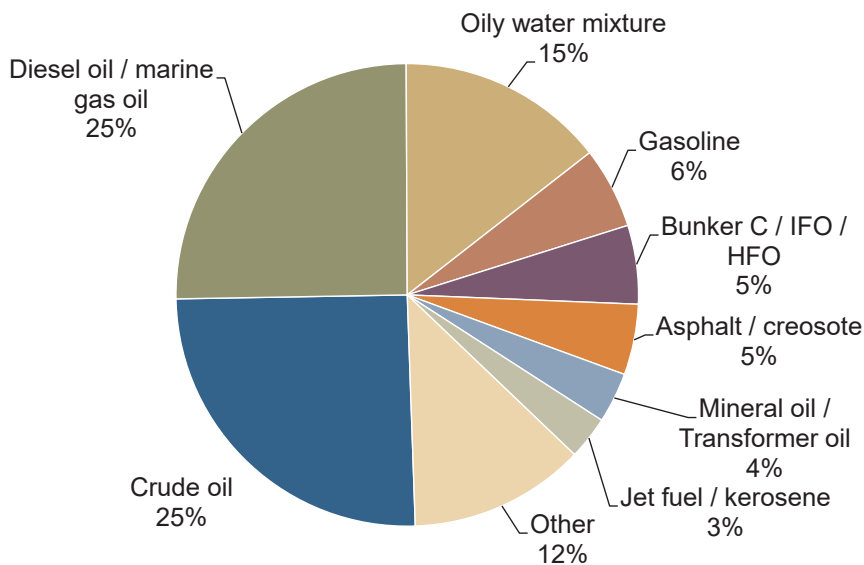
SPILL TRENDS (2002-2019)

Crude vs. Non-Crude Oil Spills (2002-2019)



Spills by Product (2002-2019)

(percent total volume)



NOTE: includes products comprising 2% or less of the total volume released: Aviation gasoline, Lube oil/Motor oil, Hydraulic oil, Unknown, Waste oil, Heating oil, Edible/Vegetable oil, Naphtha, Oily waste, LNG/LPG, Cutter stock

SPILL TRENDS (2002-2019)

Summary by Source

- Overall, Facilities (50%) and Pipelines (18%) were the major sources of spills by volume during the 18-year period.
- Facilities were the source of 53% of the non-crude oil spill volume.
- Pipelines (51%) and Facilities (42%) were the major sources of crude oil spills.

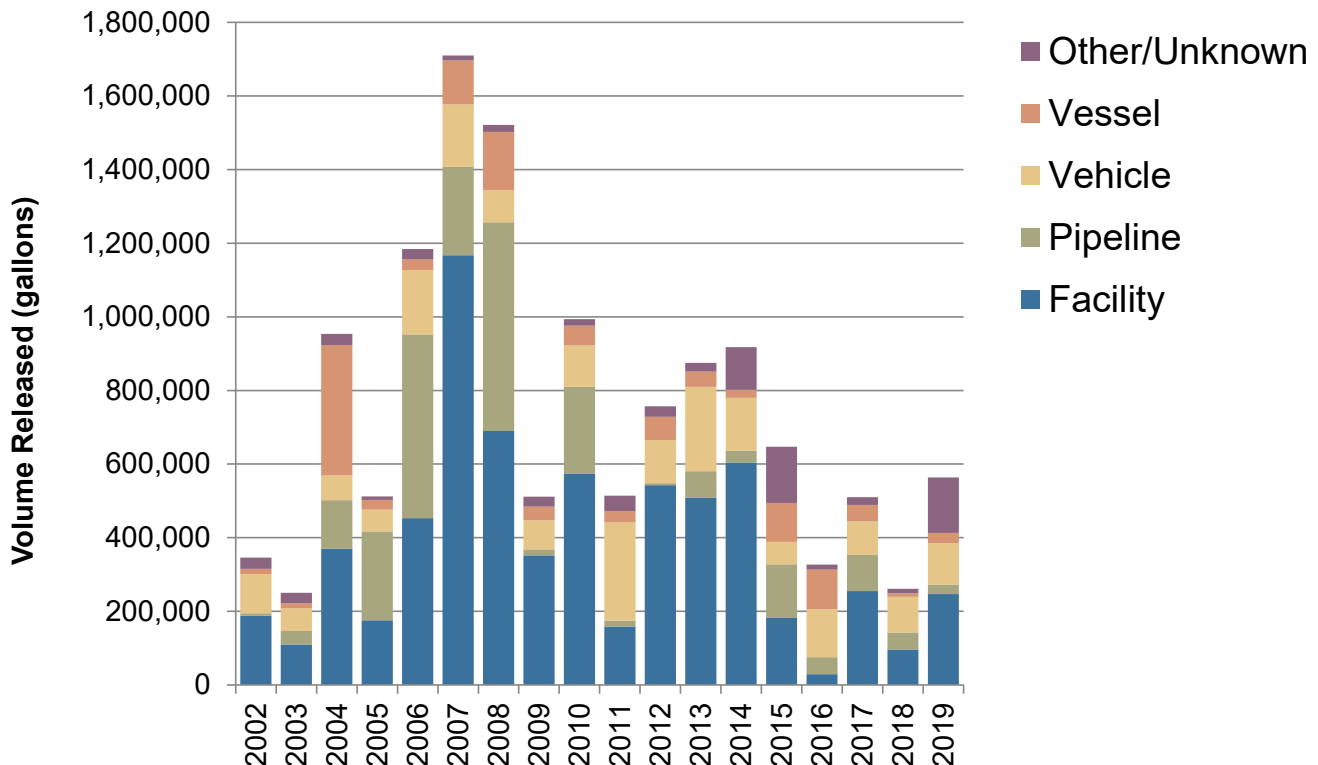
Non-Crude Oil Spill Sources

Source	gallons
Facility	5,274,519
Vehicle	2,090,567
Vessel	1,253,414
Pipeline	731,348
Other/Unknown	590,710
Military	21,992
Public Lands	15,798
Farm / Agriculture	1,000
Total	9,979,348

Crude Oil Spill Sources

Source	gallons
Pipeline	1,731,210
Facility	1,428,784
Other/Unknown	135,703
Vehicle	75,290
Vessel	5,562
Total	3,376,549

Annual Spill Volume by Source (2002-2019)



SPILL TRENDS (2002-2019)

Summary by Cause

- Overall, Equipment Failure (52%) and Human Error (29%) were the major spill causes.
- Equipment Failure (45%) and Human Error (36%) were the predominant causes for non-crude oil spills
- 75% of the total crude oil spill volume was due to Equipment Failure.

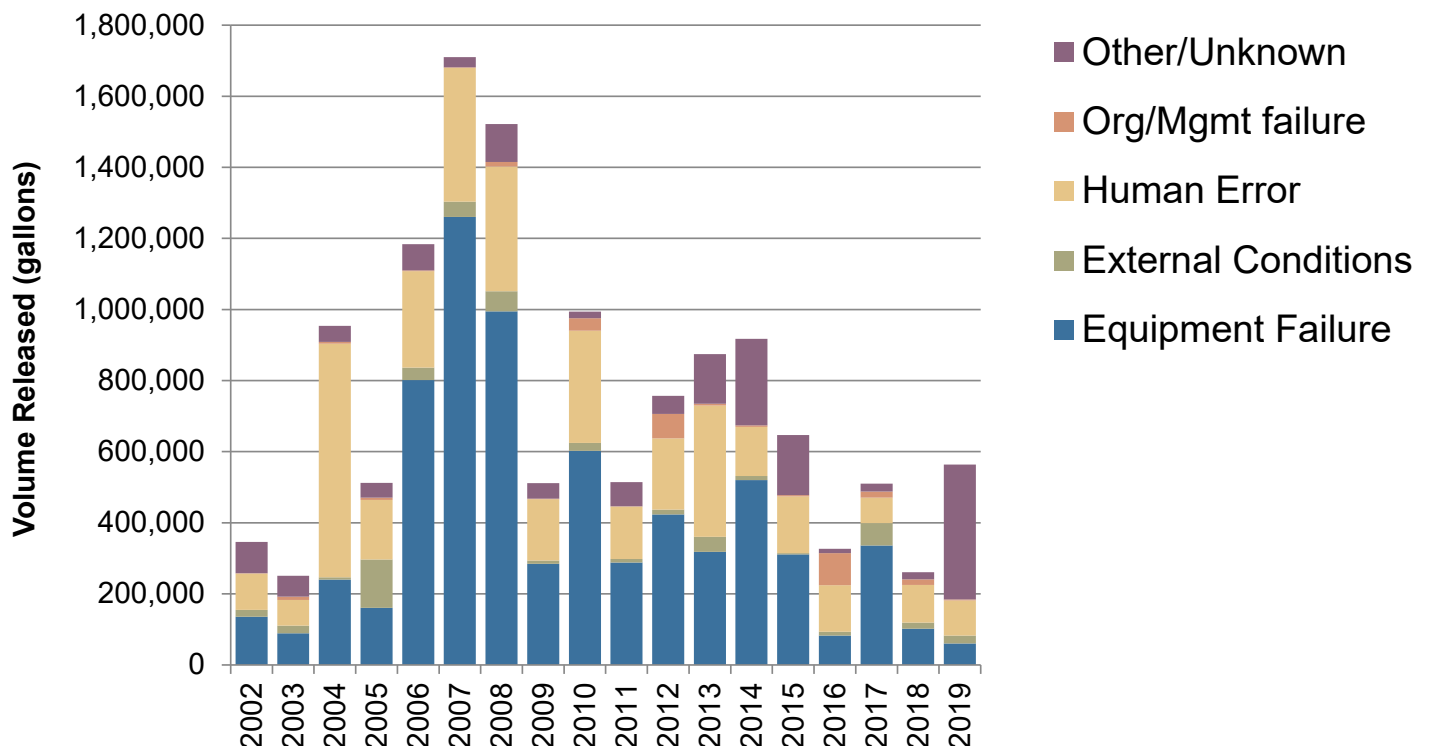
Non-Crude Oil Spills

Cause	gallons
Equipment Failure	4,483,084
Human Error	3,606,475
Other/Unknown	1,277,722
External Conditions	382,579
Organizational / Management Failure	229,488
Total	9,979,348

Crude Oil Spills

Cause	gallons
Equipment Failure	2,529,369
Other/Unknown	332,049
Human Error	302,865
External Conditions	160,695
Organizational / Management Failure	51,571
Total	3,376,549

Annual Spill Volume by Cause (2002-2019)



SPILL TRENDS (2002-2019)

Spills Greater Than 10,000 Gallons (2002-2019)

Number of Spills	160	Crude Spills	41
Releases to Water	42	Non-crude Spills	119

Product	Volume	State	Date	Source Type	Cause Type	Medium
Crude oil	463,848	California	4/24/08	Pipeline	Equipment Failure	Impermeable Surface
Diesel oil / marine gas oil	420,000	California	10/30/07	Facility	Equipment Failure	Land
Bunker C / IFO / HFO	321,052	Alaska	12/8/04	Vessel	Human Error	Marine
Bunker C / IFO / HFO	270,000	Washington	8/25/04	Facility	Human Error	Land
Crude oil	267,000	Alaska	3/2/06	Pipeline	Equipment Failure	Land
Asphalt / creosote	203,000	Washington	1/22/14	Facility	Equipment Failure	Land
Other	193,200	California	1/4/10	Facility	Equipment Failure	Land
Crude oil	191,562	Alaska	5/25/10	Pipeline	Equipment Failure	Impermeable Surface
Other	167,202	California	9/4/17	Facility	Equipment Failure	Fresh Water
Oily water mixture	147,840	California	11/8/19	Facility	Unknown	Land
Diesel oil / marine gas oil	145,000	Alaska	3/23/08	Vessel	Human Error	Marine
Diesel oil / marine gas oil	142,800	Alaska	1/11/10	Facility	Human Error	Marine
Crude oil	140,000	California	5/19/15	Pipeline	Equipment Failure	Marine
Oily water mixture	128,000	California	11/26/08	Facility	Equipment Failure	Land
Crude oil	126,000	California	3/23/05	Pipeline	External Conditions	Fresh Water
Crude oil	126,000	California	3/9/07	Facility	Equipment Failure	Land
Aviation gasoline	115,353	California	11/22/04	Pipeline	Equipment Failure	Land
Other	112,000	Oregon	5/4/11	Vehicle	Equipment Failure	Fresh Water
Oily water mixture	100,000	California	9/7/12	Facility	Equipment Failure	Fresh Water
Crude oil	87,192	California	1/10/07	Facility	Equipment Failure	Land
Diesel oil / Marine gas oil	87,000	Alaska	7/26/16	Vessel	Organizational / management failure	Marine
Jet fuel / kerosene	83,000	Hawaii	5/9/17	Pipeline	Equipment Failure	Land
Gasoline	80,000	California	8/31/13	Vehicle	Human Error	Land
Diesel oil / Marine gas oil	75,000	Hawaii	1/22/15	Vessel	Human Error	Marine
Asphalt / creosote	71,000	Washington	2/8/15	Facility	Equipment Failure	Fresh Water
Mineral oil / Transformer oil	70,000	California	4/16/13	Facility	Human Error	Fresh Water
Crude Oil	66,318	California	10/12/19	Unknown	Unknown	Fresh Water
Oily water mixture	63,000	California	7/29/08	Facility	Unknown	Land
Oily water mixture	63,000	California	1/17/12	Facility	Equipment Failure	Land
Crude oil	63,000	California	4/23/07	Facility	Equipment Failure	Land
Asphalt / creosote	60,000	California	12/27/14	Facility	Unknown	Land
Diesel oil / marine gas oil	58,800	California	7/7/07	Facility	Human Error	Land
Oily water mixture	58,128	California	4/6/14	Facility	Equipment Failure	Land
Bunker C / IFO / HFO	58,000	California	11/7/07	Vessel	Human Error	Marine
Crude oil	44,755	California	6/23/16	Pipeline	Human error	Marine
Mineral oil / Transformer oil	42,000	California	12/8/10	Facility	Equipment Failure	Land
Crude oil	42,000	Oregon	6/3/16	Vehicle	Equipment Failure	Fresh Water
Crude oil	42,000	California	10/23/12	Facility	Organizational / management Failure	Fresh Water
Oily water mixture	42,000	California	8/11/15	Unknown	Unknown	Land
Crude oil	42,000	California	6/12/07	Pipeline	Equipment Failure	Land
Diesel oil / Marine Gas Oil	40,000	Washington	8/8/05	Facility	Human Error	Land
Crude oil	40,000	California	4/17/07	Pipeline	Equipment Failure	Land

SPILL TRENDS (2002-2019)

Spills Greater than 10,000 Gallons -- *continued*

Product	Volume	State	Date	Source Type	Cause Type	Medium
Oily Water Mixture	37,800	California	3/21/19	Other	Unknown	Land
Oily water mixture	37,306	California	11/11/06	Facility	Equipment Failure	Impermeable Surface
Oily water mixture	36,750	California	6/24/09	Facility	Equipment Failure	Land
Unknown	35,910	California	12/3/13	Facility	Equipment Failure	Land
Diesel oil / marine gas oil	35,456	Alaska	2/11/17	Vessel	External Conditions	Marine
Oily water mixture	33,600	California	4/14/06	Pipeline	Equipment Failure	Impermeable Surface
Jet fuel / kerosene	33,600	California	2/15/10	Vessel	Organizational / management Failure	Marine
Oily water mixture	33,600	California	11/9/14	Unknown	Unknown	Land
Diesel oil / Marine gas oil	32,000	California	1/25/13	Vehicle	External Conditions	Fresh Water
Oily water mixture	31,500	California	12/3/09	Facility	Equipment Failure	Land
Oily water mixture	31,500	California	6/10/08	Facility	External Conditions	Land
Diesel oil / Marine gas oil	30,847	Alaska	8/15/15	Facility	Equipment Failure	Land
Oily water mixture	30,240	California	4/20/07	Facility	Equipment Failure	Land
Oily water mixture	30,000	California	2/3/14	Vehicle	Other	Fresh Water
Gasoline	29,400	California	8/14/05	Pipeline	Human Error	Land
Crude oil	29,400	California	10/1/06	Facility	Equipment Failure	Impermeable Surface
Gasoline	27,500	California	4/25/07	Vehicle	Equipment Failure	Land
Jet fuel / kerosene	27,000	Hawaii	1/13/14	Facility	Equipment Failure	Land
Naphtha	27,000	Washington	3/23/12	Facility	Equipment Failure	Impermeable Surface
Crude oil	26,460	California	1/30/06	Pipeline	Human Error	Land
Oily water mixture	26,250	California	6/17/09	Facility	Equipment Failure	Land
Crude oil	26,250	California	6/11/08	Facility	Equipment Failure	Land
Crude oil	25,200	California	11/24/12	Facility	Equipment Failure	Land
Crude oil	25,200	California	11/27/05	Pipeline	Equipment Failure	Land
Oily water mixture	25,200	California	7/7/15	Unknown	Unknown	Land
Gasoline	24,500	Hawaii	10/6/04	Unknown	Equipment Failure	Land
Oily water mixture	24,360	California	5/9/14	Facility	Human Error	Land
Jet fuel / kerosene	24,000	Washington	3/1/05	Pipeline	Equipment Failure	Fresh Water
Crude Oil	23,478	California	8/21/19	Facility	Unknown	Land
Jet fuel / kerosene	22,388	California	5/18/11	Vehicle	Unknown	Marine
Diesel oil / Marine gas oil	22,000	Alaska	3/14/18	Facility	Human Error	Impermeable Surface
Oily water mixture	21,546	California	6/27/08	Facility	Equipment Failure	Land
Diesel oil / marine gas oil	21,402	Washington	10/27/10	Facility	Equipment Failure	Fresh Water
Crude oil	21,336	California	6/1/10	Pipeline	Equipment Failure	Land
Oily Water Mixture	21,000	California	3/6/18	Pipeline	Equipment Failure	Fresh Water
Diesel oil / marine gas oil	21,000	California	5/18/06	Pipeline	Equipment Failure	Land
Crude oil	21,000	California	12/10/13	Pipeline	Unknown	Land
Oily water mixture	21,000	California	4/10/14	Facility	Equipment Failure	Land
Oily water mixture	21,000	California	3/29/07	Pipeline	Human Error	Land
Crude oil	21,000	California	11/6/06	Facility	Unknown	Land
Other	21,000	California	6/4/03	Facility	Equipment Failure	Marine
Oily water mixture	21,000	California	7/11/08	Facility	Equipment Failure	Land
Asphalt / creosote	21,000	Oregon	1/14/11	Vehicle	Equipment Failure	Land
Crude oil	20,622	California	9/6/08	Facility	Equipment Failure	Land
Asphalt / creosote	20,575	Washington	4/30/13	Facility	Unknown	Land

SPILL TRENDS (2002-2019)

Spills Greater than 10,000 Gallons -- *continued*

Product	Volume	State	Date	Source Type	Cause Type	Medium
Diesel oil / Marine gas oil	20,000	California	4/13/13	Vessel	Unknown	Marine
Diesel oil / marine gas oil	20,000	California	5/2/05	Pipeline	Equipment Failure	Land
Diesel oil / marine gas oil	20,000	California	12/8/09	Facility	Human Error	Land
Oily waste	20,000	Washington	11/13/14	Facility	Equipment Failure	Impermeable surface
Mineral oil / Transformer oil	20,000	Washington	3/25/13	Facility	Equipment Failure	Land
Diesel oil / marine gas oil	20,000	California	11/7/12	Vessel	Organizational / management Failure	Marine
Gasoline	18,900	Hawaii	2/13/08	Facility	Human Error	Land
Crude oil	18,900	California	5/15/06	Facility	Human Error	Land
Diesel oil / marine gas oil	18,200	Washington	11/3/06	Facility	Equipment Failure	Fresh Water
Crude oil	17,640	California	5/27/12	Facility	Equipment Failure	Land
Bunker C / IFO / HFO	17,000	California	9/14/11	Private Property	Equipment Failure	Marine
Crude oil	16,800	California	10/13/06	Pipeline	Equipment Failure	Land
Crude oil	16,800	California	6/2/06	Facility	Equipment Failure	Impermeable Surface
Bunker C / IFO / HFO	16,800	California	8/7/07	Facility	Equipment Failure	Land
Oily water mixture	16,800	California	4/9/14	Facility	Equipment Failure	Land
Gasoline	16,800	California	3/24/06	Vehicle	Unknown	Land
Crude oil	16,800	California	12/3/09	Facility	Equipment Failure	Land
Waste oil	15,750	Washington	6/12/06	Facility	Equipment Failure	Land
Diesel oil / marine gas oil	15,000	Washington	8/1/08	Facility	Equipment Failure	Impermeable Surface
Diesel oil / marine gas oil	15,000	Oregon	10/31/05	Facility	Human Error	Fresh Water
Crude oil	14,700	California	3/2/14	Unknown	Unknown	Land
Other	14,700	California	12/4/04	Pipeline	Equipment Failure	Fresh Water
Diesel oil / marine gas oil	14,680	Alaska	12/8/04	Vessel	Human Error	Marine
Edible / Vegetable oil	14,400	California	4/8/13	Facility	Human Error	Land
Oily water mixture	14,070	California	7/29/07	Facility	Human Error	Land
Oily water mixture	14,000	California	9/16/06	Pipeline	Equipment Failure	Land
Crude oil	14,000	California	3/7/03	Pipeline	Equipment Failure	Land
Diesel oil / marine gas oil	14,000	Hawaii	11/1/11	Vessel	Equipment Failure	Land
Oily water mixture	13,659	California	1/10/07	Facility	Equipment Failure	Land
Jet fuel / kerosene	13,630	Alaska	10/30/08	Facility	Equipment Failure	Land
Jet fuel / kerosene	13,524	Washington	4/7/05	Facility	Human Error	Land
Crude oil	13,500	Alaska	11/29/09	Facility	Equipment Failure	Land
Oily water mixture	13,440	California	1/21/07	Facility	External Conditions	Land
Asphalt / creosote	13,000	Oregon	8/11/04	Vehicle	Equipment Failure	Land
Asphalt / creosote	13,000	Alaska	5/16/18	facility	Equipment failure	Land
Diesel oil / marine gas oil	13,000	Hawaii	7/20/06	Vessel	Equipment Failure	Marine
Mineral oil / Transformer oil	13,000	Hawaii	3/22/07	Vessel	Equipment Failure	Marine
Crude oil	12,852	California	6/28/10	Facility	Equipment Failure	Fresh Water
Oily water mixture	12,684	California	4/3/08	Facility	Equipment Failure	Land
Crude oil	12,600	California	7/15/07	Facility	Equipment Failure	Land
Oily water mixture	12,600	California	10/15/12	Facility	Equipment Failure	Land
Oily water mixture	12,600	California	12/3/09	Facility	Equipment Failure	Land
Asphalt / creosote	12,600	California	11/13/09	Facility	Human Error	Land
Crude oil	12,600	California	11/9/14	Unknown	Unknown	Land
Crude oil	12,600	California	11/26/07	Facility	Equipment Failure	Land

SPILL TRENDS (2002-2019)



Spills Greater than 10,000 Gallons -- *continued*

Product	Volume	State	Date	Source Type	Cause Type	Medium
Oily water mixture	12,600	California	10/12/07	Pipeline	Equipment Failure	Land
Oily water mixture	12,600	Alaska	1/29/07	Facility	Equipment Failure	Land
Diesel oil / marine gas oil	12,248	Alaska	4/24/05	Facility	Human Error	Land
Other	12,118	Alaska	12/18/02	Facility	Other	Land
Mineral oil / Transformer oil	12,096	California	9/30/07	Pipeline	Equipment Failure	Land
Diesel oil / marine gas oil	12,045	Alaska	1/19/12	Facility	Human Error	Impermeable Surface
Crude oil	12,012	California	6/28/12	Facility	Equipment Failure	Land
Crude oil	12,000	California	3/15/07	Facility	Equipment Failure	Land
Oily water mixture	11,970	California	5/1/07	Pipeline	Equipment Failure	Land
Oily water mixture	11,760	California	12/10/13	Facility	Unknown	Land
Crude oil	11,676	California	3/4/06	Facility	Equipment Failure	Land
Other	11,611	Alaska	2/26/02	Facility	Other	Land
Gasoline	11,600	Oregon	12/15/17	Vehicle	External Conditions	Fresh Water
Gasoline	11,300	Oregon	12/13/15	Vehicle	Human Error	Land
Gasoline	11,000	Washington	11/27/03	Vehicle	Unknown	Fresh Water
Gasoline	11,000	Oregon	12/2/02	Vehicle	Human Error	Fresh Water
Diesel oil / marine gas oil	11,000	Alaska	11/17/03	Facility	Human Error	Land
Mineral oil / Transformer oil	10,659	Washington	4/21/02	Facility	External Conditions	Fresh Water
Diesel oil / marine gas oil	10,584	Hawaii	8/5/05	Pipeline	Equipment Failure	Land
Crude Oil	10,500	California	6/8/19	Facility	Unknown	Fresh Water
Oily water mixture	10,500	California	8/12/06	Pipeline	Equipment Failure	Land
Oily water mixture	10,500	California	5/29/06	Pipeline	Equipment Failure	Fresh Water
Oily water mixture	10,500	California	4/11/08	Facility	Human Error	Land
Asphalt / creosote	10,500	Washington	9/13/07	Facility	Human Error	Land
Asphalt / creosote	10,112	Oregon	6/17/19	Vehicle	Human Error	Land
Oily water mixture	10,080	California	9/29/14	Unknown	Unknown	Land
Asphalt / creosote	10,080	California	2/13/13	Facility	Equipment Failure	Land
Crude oil	10,080	California	7/21/08	Pipeline	Equipment Failure	Land