

Pacific States/British Columbia Oil Spill Task Force

OIL SPILL DATA PROJECT



Summary of West Coast

Oil Spill Data (2021)

August 2022

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Data analysis and summary report
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Table of Contents

Oil Spill Data Project	iii
2021 Oil Spill Data - Highlights	iv
Annual Summary (2021)	v
Large vs. Small Spills	1
Spills by Oil Type (<i>42 gallons or more</i>)	2
Spills by Source Type	4
Spills by Source Type - <i>Facility Detail</i>	6
Spills by Source Type - <i>Vehicle Detail</i>	7
Spills by Cause Type	8
Spills by Cause Type - <i>Equipment Failure Detail</i>	10
Spills by Cause Type - <i>Human Error Detail</i>	11
Activity at the Time of Incident	12
Spills by Size	14
Spills by Medium Impacted	16
Spill Trends (2002-2021)	19
Spills 42 gallons or More (2002-2021)	21
Spills By Source Type (2002-2021)	24
Spills By Cause Type (2002-2021)	26
Spills Size (2002-2021)	28
Spills Greater Than 10,000 Gallons (2002-2021)	30

ACRONYMS AND ABBREVIATIONS

AK	Alaska
AK DEC	Alaska Department of Environmental Conservation
BC	British Columbia
BC ENV	British Columbia Ministry of Environmental and Climate Change Strategy
CA	California
OSPR	California Office of Spill Prevention and Response
Cal OES	California Office of Emergency Services
HI	Hawaii
HI HEER	Hawaii Evaluation and Emergency Response Office
OR	Oregon
OR DEQ	Oregon Department of Environmental Quality
WA	Washington
WA ECY	Washington Department of Ecology
LNG/LPG	Liquefied Natural Gas/Liquefied Petroleum Gas
OE&P	Oil Exploration and Production

OIL SPILL DATA PROJECT



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.

OIL SPILL DATA WORKGROUP

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

The British Columbia Ministry of Environment and Climate Change Strategy joined the Data Workgroup in 2021. Their data is included in this report for the second year.

Workgroup members include:

- Angela Doroff (*Alaska Department of Environmental Conservation*)
- Roshelle Williams (*British Columbia Ministry of Environment and Climate Change Strategy*)
- Azadeh Ramesh (*British Columbia Ministry of Environment and Climate Change Strategy*)
- Cathy Conway (*California Office of Spill Prevention and Response*)
- Bob Chedsey (*California Office of Spill Prevention and Response*)
- Kimberlee Van Patten (*Oregon Department of Environmental Quality*)
- Liz Galvez (*Hawaii Office of Hazard Evaluation and Emergency Response*)
- Eli Seely (*Washington Department of Ecology*)

DATA LIMITATIONS

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 shared with the Task Force. Neither the Task Force nor its member jurisdictions can fully guarantee the accuracy of the data included herein.

Recorded quantities are estimates and may be under- or over-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.

In California, the responsibility of response and investigation of oil spills to water (fresh and marine) falls under the jurisdiction Office of Spill Prevention and Response (OSPR), while spills to land fall under the jurisdiction of other agencies, primarily the California Office of Emergency Services (Cal OES). California's data submission only includes data tracked by OSPR; thus, it may not include causal data, oil types, and volumes for oil spills to land in 2021.

LARGE vs. SMALL SPILLS

- Detailed spill data for larger spills of one barrel (42 gallons) or more are included in The Task Force database. The Task Force has been collectively reporting on this shared data set since 2003 (CY 2002 data).
- Small spills less than one barrel (<42 gallons) are tracked by agencies and a count of spills is shared with the Task Force annually. Detailed information about small spills is often limited or unknown because the effort necessary to investigate them is cost-prohibitive. For this reason, the Task Force does not track on volumes of other characteristics of these small spills. Small spills are NOT included in the graphs or tables elsewhere in this document.
- The Task Force has been tracking the number of small spills by jurisdiction since 2016. This data can be used to help target outreach and spill prevention efforts, such as the work of the Pacific Oil Spill Prevention Education Team (POSPET).
- The Trends section includes a comparison of spills under 42 gallons, 42-10,000 gallons and over 10,000 gallons over time. See pages 28-29.

2021 OIL SPILL DATA - HIGHLIGHTS

Annual Summary (2021)

Highlights from the 2021 data include:

- A total of 1,115 releases of 42 gallons or more occurred during 2021, with a total volume of 647,978 gallons spilled. Of those, 11 releases were over 10,000 gallons.
- An additional 7,011 small spills (less than 42 gallons) occurred during 2021.

Non-Crude Oil Spills

- 1,079 releases were noncrude oil spills totaling 532,918 gallons.
- Pipelines (32%), Vehicles (28%) and Facilities (25%) were the major sources of non-crude spills during 2021, comprising 85% of the noncrude volume for the year.
- Over 40% of the noncrude spilled was due to Equipment Failure.
- For noncrude oil spills, Underway/In Motion (37%) and Static (35%) the main activities at the time of the spill.
- Noncrude spills with volumes greater than 1,000 gallons comprised over 71% of the total non-crude volume during 2021.
- Over 70% of the noncrude oil volume was spilled to land.

Crude Oil Spills

- 36 crude oil spills totalling 115,060 gallons occurred during 2021.
- Crude oil comprised 18% the total volume for 2021.
- Pipelines (82%) were the major source for crude oil spills in 2021.
- Equipment Failure was the cause for 77% of the crude oil spill volume.
- 75% of the crude oil volume was spilled to land.

Trends (2002-2021)

The 2002-2021 data provides us with an opportunity to look at 20-year trends, which is also shown in this report. Here are the highlights:

- A total of 18,477, releases of 42 gallons or more occurred during the 20-year period 2002-2020, with a total volume of 14.2 million gallons.
- Nearly half the total volume spilled was Diesel/Marine Gas Oil (24%) and Crude Oil (26%) during the period.
- Over the 20-year period, the combined volume of noncrude oil spills was nearly three times that for crude oil spills.

- The top two crude oil spills during the 20-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 20% of the total crude oil volume released for the period.
- Diesel Oil/Marine Gas Oil comprised 24% of the total spill volume and 32% of the non-crude oil spill volume for the period.
- Overall, Facilities (49%) and Pipelines (20%) were the major sources of spills by volume during the 20-year period.
- Facilities were the source of 52% of the non-crude oil spill volume.
- Pipelines (52%) and Facilities (41%) were the major sources of crude oil spills.
- Overall, Equipment Failure (53%) and Human Error (28%) were the major spill causes.
- Equipment Failure (46%) and Human Error (34%) were the predominant causes for non-crude oil spills
- 75% of the total crude oil spill volume was due to Equipment Failure.
- Over the 6-year period (2016-2021), small spills have consistently outnumbered larger spills (42 gallons or more), making up 88.5% of the total spill count. The increase in counts for small and large spills beginning in 2020 reflects the addition of data from British Columbia.
- Over the 20-year period (2002-2021), 179 spills with a volume greater than 10,000 gallons occurred in the region. The total volume for these spills comprised nearly half of the total volume for spills with a volume of 42 gallons or more..

FOR MORE INFORMATION

Data summaries for calendar years 2002 – 2021, 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 Data Wprkgroup, contact Meg Harris, Executive Coordinator at meg@VedaEnv.com.

ANNUAL SUMMARY (2021)



SMALL SPILLS (*less than 42 gallons*)



Small Spills (less than 42 gallons)

Beginning with the 2016 data, the Task Force began tracking the number of spills with volumes less than 42 gallons ('small spills'). 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 report.

The Trends section includes a comparison of spills under 42 gallons, 42-10,000 gallons and over 10,000 gallons over time. See pages 28-29.

Table 1. Number of small spills (<42 gallons) compared to number of spills 42 gallons or more (2021).

State/Province	<42 gallons	42 gallons or more
Alaska	1,200	155
British Columbia	1,610	444
California	1,054	194
Hawaii	257	29
Oregon	540	128
Washington	2,350	165
Total	7,011	1,115

Figure 1. Small spills (<42 gallons) compared to spills 42 gallons or more by state/province (2021).

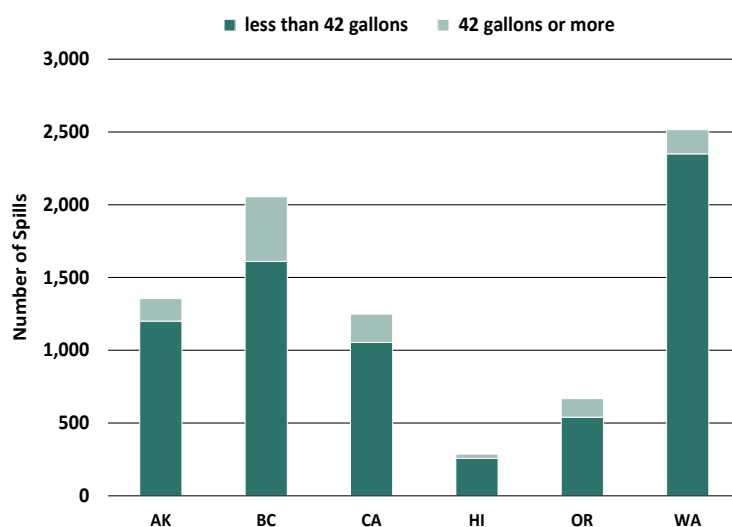


Table 2. List of spills greater than 10,000 gallons (2021).

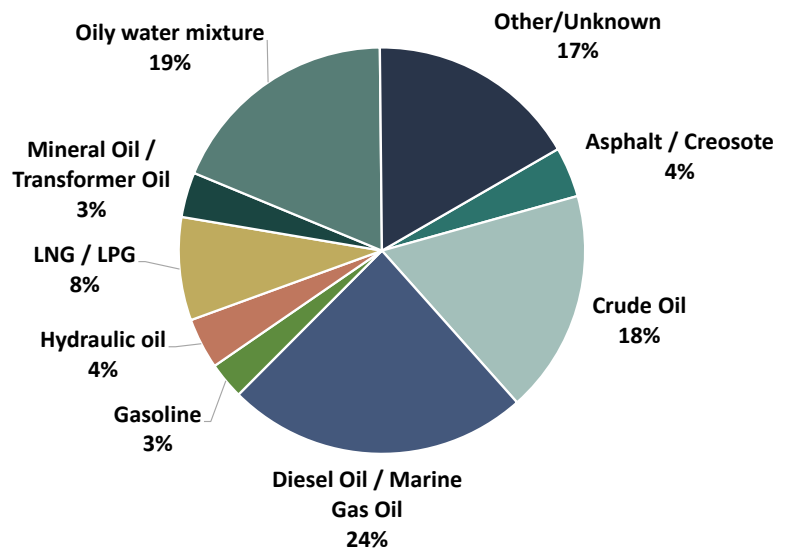
Product	Volume	State	Date	Source Type	Cause Type	Medium
Crude Oil	55,986	California	3/18/2021	Pipeline	Equipment Failure	Land
LNG / LPG	52,834	British Columbia	11/24/2021	Pipeline	Equipment Failure	Land
Diesel oil / Marine Gas Oil	29,000	California	3/5/2021	Vessel	Organizational/management failure	Marine
Crude Oil	24,696	California	10/2/2021	Pipeline	Equipment Failure	Marine
Oily Water Mixture	23,940	California	1/27/2021	Pipeline	Unknown	Land
Oily Water Mixture	21,000	California	7/19/2021	Pipeline	Equipment Failure	Land
Diesel oil / Marine Gas Oil	20,000	Alaska	3/1/2021	Facility	Unknown	Land
Other	14,700	California	10/28/2021	Pipeline	Unknown	Land
Other	12,600	California	6/22/2021	Facility	Unknown	Fresh Water
Mineral oil / Transformer oil	11,000	Oregon	12/27/2021	Facility	Equipment Failure	Impermeable Surface
Crude Oil	10,626	California	11/16/2021	Other	Unknown	Land

SPILLS BY OIL TYPE (42 gallons or more)

Table 3. All spills by oil type (2021).

Oil Type	Count	Gallons	% Total Volume
Diesel oil/Marine Gas Oil	493	155,828	24%
Oily water mixture	56	120,513	19%
Crude oil	36	115,060	18%
Other	41	59,801	9%
Liquefied Natural/Petroleum Gas (LNG/LPG)	2	53,176	8%
Hydraulic oil	200	26,230	4%
Asphalt/creosote	11	25,918	4%
Mineral Oil/Transformer Oil	82	23,207	4%
Gasoline	33	18,997	3%
Heating oil	40	12,723	2%
Jet Fuel/Kerosene	23	9,499	1.5%
Waste Oil	11	8,602	1.3%
Lube Oil/Motor oil	48	6,808	1.1%
Edible/Vegetable oil	10	4,880	0.8%
Aviation gasoline	18	4,776	0.7%
Unknown	6	833	0.1%
Oily Waste	3	810	0.1%
Bunker C/IFO/HFO	2	317	0.05%
Total	1,115	647,978	100.0%

Figure 2. All spills by oil type, percent volume released (2021).



NOTE: 'Other/Unknown' includes classifications comprising less than 2% of the total volume released.

- A total of 1,115 releases of 42 gallons or more occurred during 2021, with a total volume of 647,978 gallons spilled. Of those, 11 releases were over 10,000 gallons.
- Diesel Oil/Marine gas oil was the most frequent product released (493) and comprised 24% of the total volume for 2021.
- Eleven (11) spills had a volume greater than 10,000 gallons, comprising 43% of the total volume for 2021.
- An addition 7,011 small spills (less than 42 gallons) occurred during 2021.

SPILLS BY OIL TYPE (42 gallons or more) - continued

Figure 3. All spills by oil type and state/province (2021).

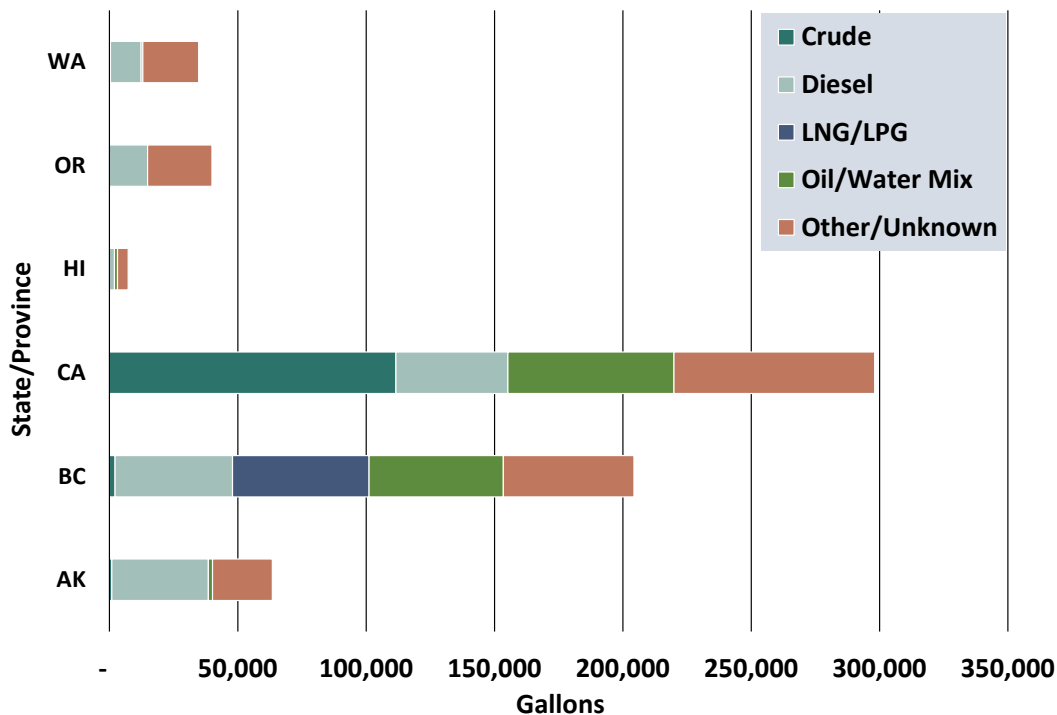


Figure 4. All Spills by oil type and relative total volume by state/province (2021).

OIL TYPE	TOTAL	AK	BC	CA	HI	OR	WA
Diesel Oil / Marine Gas Oil	155,828	37,649	45,814	43,617	1,935	14,861	11,952
Oily Water Mixture	120,513	1,620	52,318	64,725	1,200		650
Crude Oil	115,060	900	2,166	111,574			420
Other	59,801	4,277		55,469			55
LNG / LPG	53,176		53,176				
Hydraulic Oil	26,230	4,395	19,423	1,036	165	750	461
Asphalt / Creosote	25,918		11,358	5,000	200	360	9,000
Mineral Oil / Transformer Oil	23,207	150	6,900	857	661	13,060	1,579
Gasoline	18,997	2,284	3,106	8,520	100	4,842	145
Heating Oil	12,723	8,697	896			1,500	1,630
Jet Fuel / Kerosene	9,499	1,753	711		2,950	3,668	417
Waste Oil	8,602		5,427	1,620		55	1,500
Lube Oil / Motor Oil	6,808		2,867	2,326		95	1,520
Edible / Vegetable Oil	4,880					670	4,210
Aviation Gasoline	4,776	1,725	159	2,600	75		217
Unknown	833		53	730			50
Oily Waste	810					110	700
Bunker C / IFO / HFO	317			50			267

greatest volume
 smallest volume
 midpoint (50th percentile)
 no spills

SPILLS BY SOURCE TYPE (42 gallons or more)

Noncrude Oil Spills

- Pipelines (32%), Vehicles (28%) and Facilities (25%) were the major sources of non-crude spills during 2021, comprising 85% of the non-crude volume for the year.

Crude Oil Spills

- Pipelines (82%) were the major source for crude oil spills in 2021.
- Spills in California represented most of the total crude oil volume.

Table 4. Spill volume by source type (2021).

Source Type	Noncrude (gal)	Crude (gal)	Total (gal)
Facility	134,592	9,634	144,226
Other/Unknown	28,359	10,760	39,119
Pipeline	170,612	93,724	264,336
Vehicle	145,603	942	146,545
Vessel	53,752	--	53,752
Total	532,918	115,060	647,978

Figure 5. Noncrude oil spills by source type, percent total volume released (2021).

NOTE: 'Other/Unknown' includes classifications comprising less than 5% of the total volume released

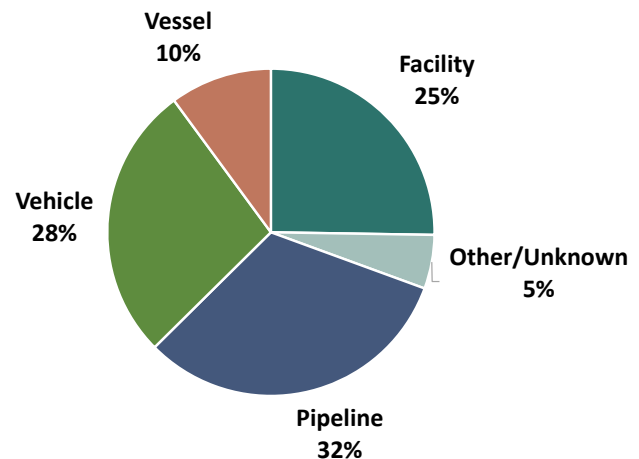
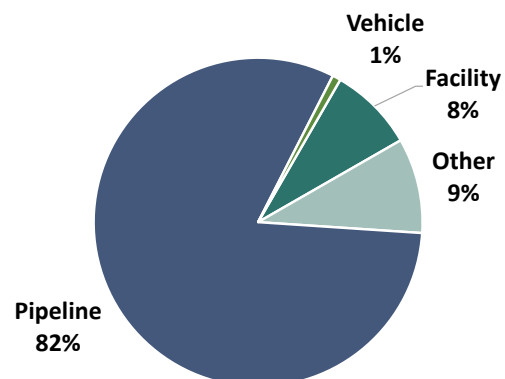


Figure 6. Crude oil spills by source type, percent total volume released (2021).



SPILLS BY SOURCE TYPE (42 gallons or more) - continued

Figure 7. Noncrude spill volume by source type and state/province (2021).

NOTE: 'Other/Unknown' includes classifications comprising less than 5% of the total volume released.

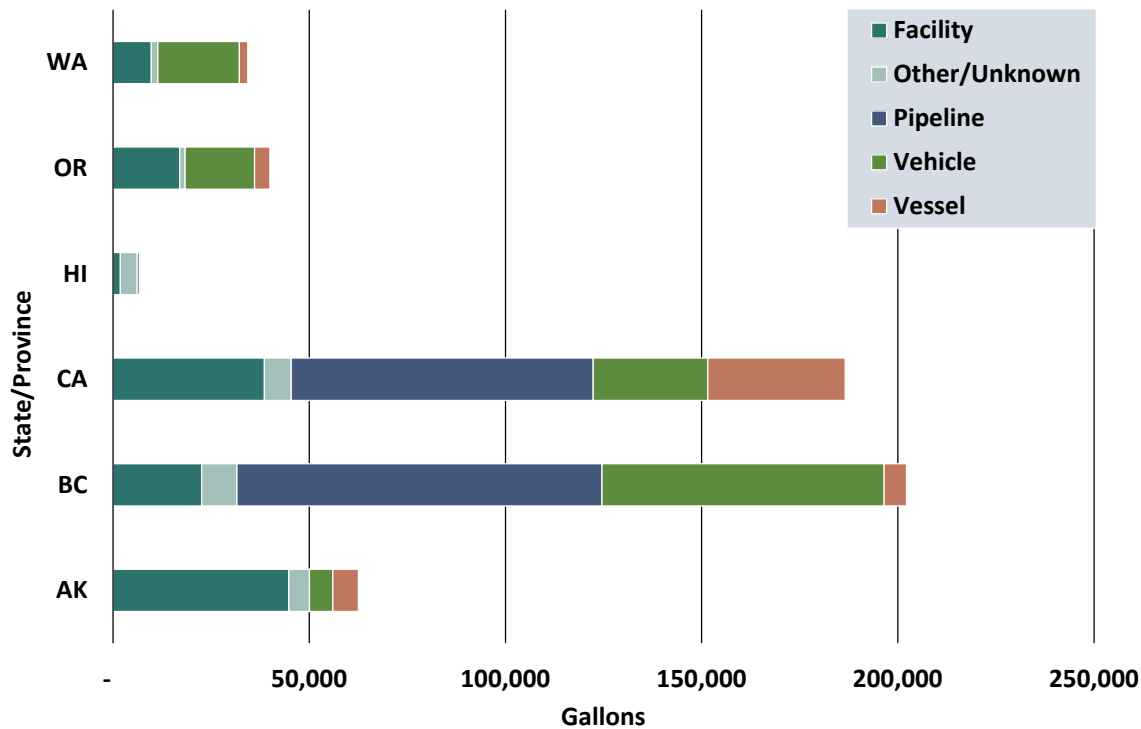
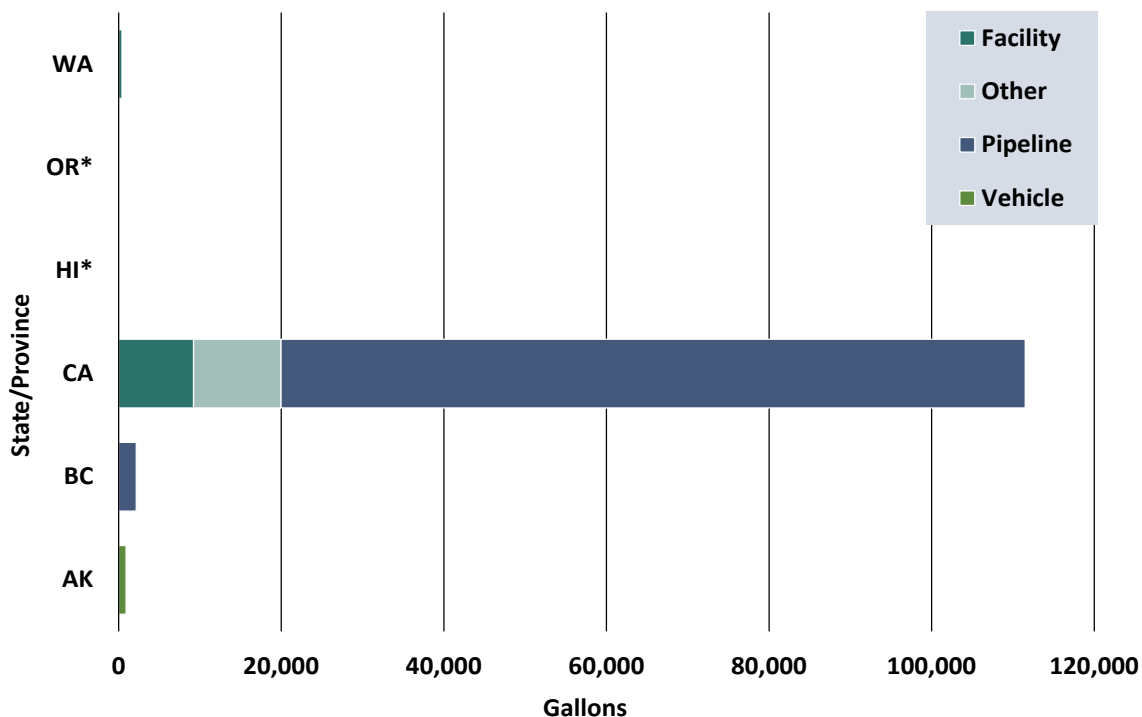


Figure 8. Crude spill volume by source type and state/province (2021).



NOTES:

- An asterisk (*) denotes states that had no crude oil spills.
- Alaska (AK) had one (1) 900-gallon crude oil spill, source type Vehicle.
- Washington (WA) had one (1) 420-gallon crude oil spill, source type Facility.

SPILLS BY SOURCE TYPE - *Facility Detail*

Table 5. Noncrude oil spills, Facility detail (2021).

Facility Detail	Gallons
Aboveground Storage Tank	35,747
Commercial / Industrial Facility	20,684
Government Facilities	11,672
Oil Exploration & Production (OE&P)	31,568
Other/Unknown	17,464
Power Generation Utility	17,457
Total	134,592

Figure 9. Noncrude oil spills (percent volume released), Facility detail (2021).

NOTE: 'Other/Unknown' includes classifications comprising less than 5% of the total volume released.

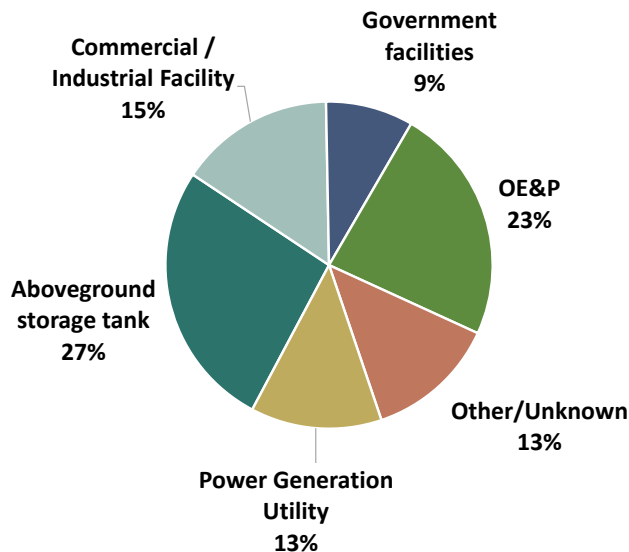
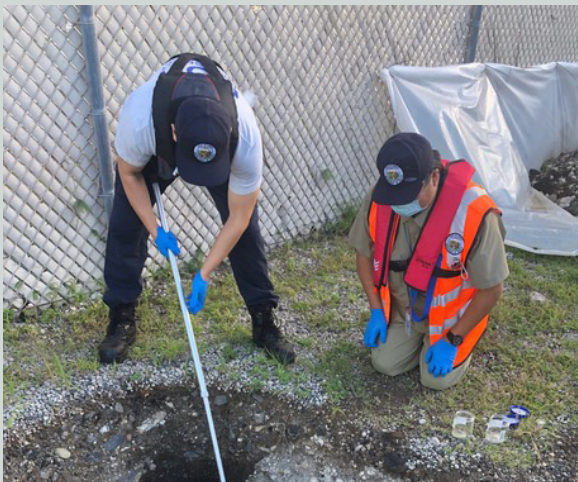
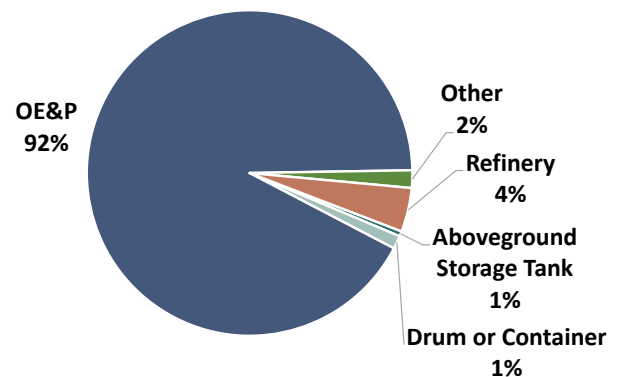


Table 6. Crude oil spills, Facility detail (2021).

Facility Detail	Gallons
Aboveground Storage Tank	50
Drum or Container	126
Oil Exploration and Production (OE&P)	8,870
Other	168
Refinery	420
Total	9,634

Figure 10. Crude oil spills (percent volume released), Facility detail (2021).



Facility Detail

- Aboveground Storage Tanks, Commercial/Industrial Facilities and Power Generation Utility were the source of more than half the Facility noncrude spill volume.
- Over 90% of the crude oil spill volume was from Oil Exploration and Production Facilities (OE&P).

Hawaii Hazard Evaluation and Emergency Response Office (HEER) staff sample at an incident site; January 2021. Photo Credit: HI HEER

SPILLS BY SOURCE TYPE - *Vehicle Detail*

Table 7. Noncrude oil spills, Vehicle detail (2021).

Vehicle Detail	Gallons
Other/Unknown	13,076
Commercial Truck	51,753
Construction / Utility Vehicle	29,167
Tank Truck	44,225
Train	7,382
Total	145,603

Figure 11. Noncrude spills (percent volume released), Vehicle detail (2021).

NOTE: 'Other/Unknown' includes classifications comprising less than 5% of the total volume released.

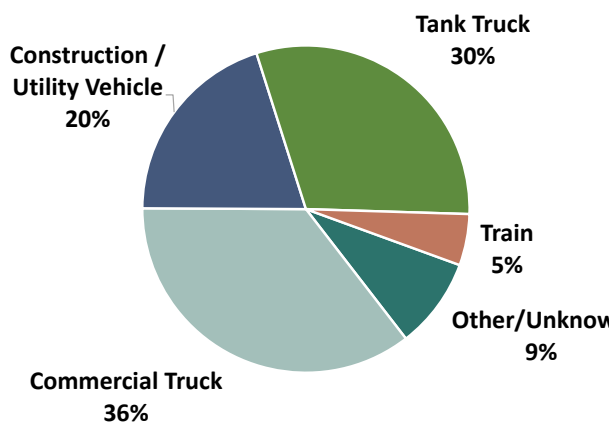
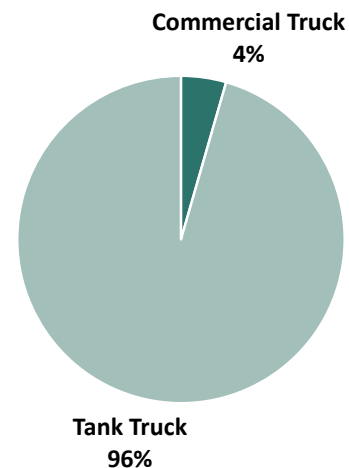


Table 8. Crude oil spills, Vehicle detail (2021).

Vehicle Detail	Gallons
Commercial Truck	42
Tank Truck	900
Total	942

Figure 12. Crude spills (percent volume released), Vehicle detail (2021).



Vehicle Detail

- Commercial Trucks and Construction/Utility Vehicles comprised over half of the noncrude spill volume from vehicles.
- Tank Trucks were the source of nearly all the crude oil spill volume from vehicles.

Tank truck rollover, Sterling, Alaska; July 2021.
Photo credit: AK DEC



SPILLS BY CAUSE TYPE (42 gallons or more)

Table 9. Spill volume by cause type (2021).

Cause Type	Noncrude (gal)	Crude (gal)	Total (gal)
Equipment Failure	230,301	88,379	318,680
Unknown	178,353	19,302	197,655
Human Error	68,393	6,959	75,352
Organizational/Management Failure (Org/Mgmt Failure)	33,374	420	33,794
External Conditions	21,217		21,217
Other	1,280		1,280
Total	532,918	115,060	647,978

Noncrude Oil Spills

- Over 40% of the noncrude spilled was due to Equipment Failure.

Crude Oil Spills

- Equipment Failure was the cause for 77% of the crude oil spill volume.

Figure 13. Noncrude oil spills by cause type, percent total volume released (2021).

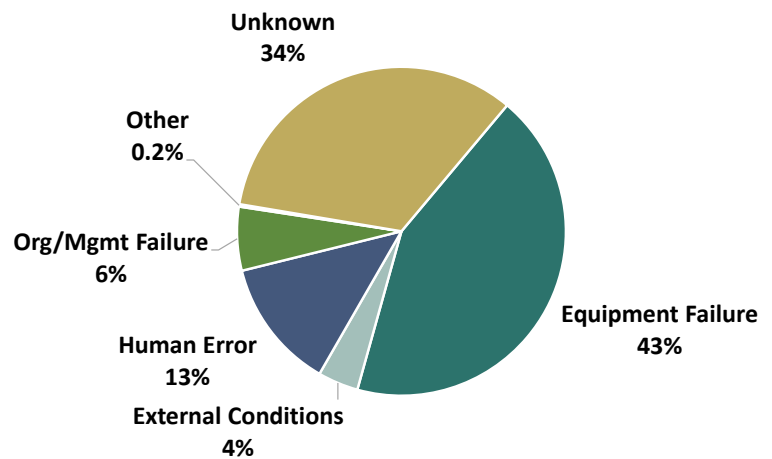
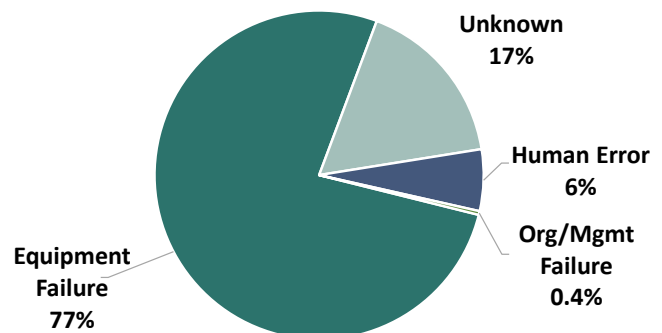


Figure 14. Crude oil spills by cause type, percent total volume released (2021).



SPILLS BY CAUSE TYPE (42 gallons or more) - continued

Figure 15. Noncrude spills by cause type and state/province, volume released (2021).

NOTE: 'Other/Unknown' includes classifications comprising less than 5% of the total volume released.

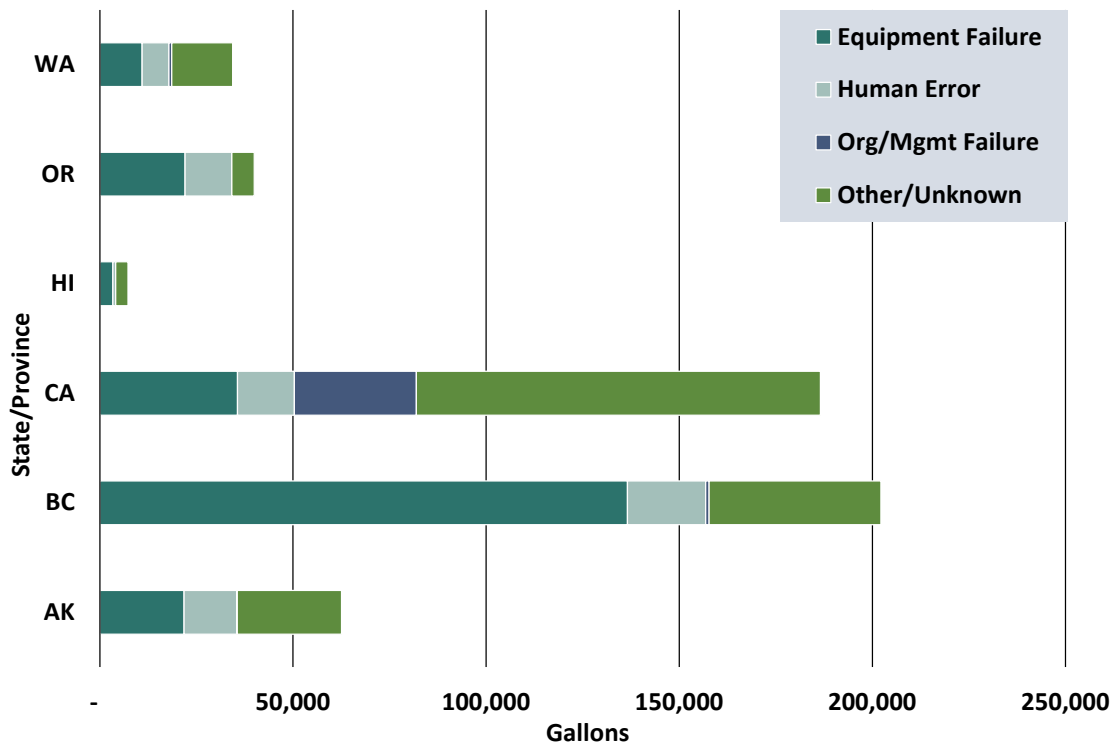
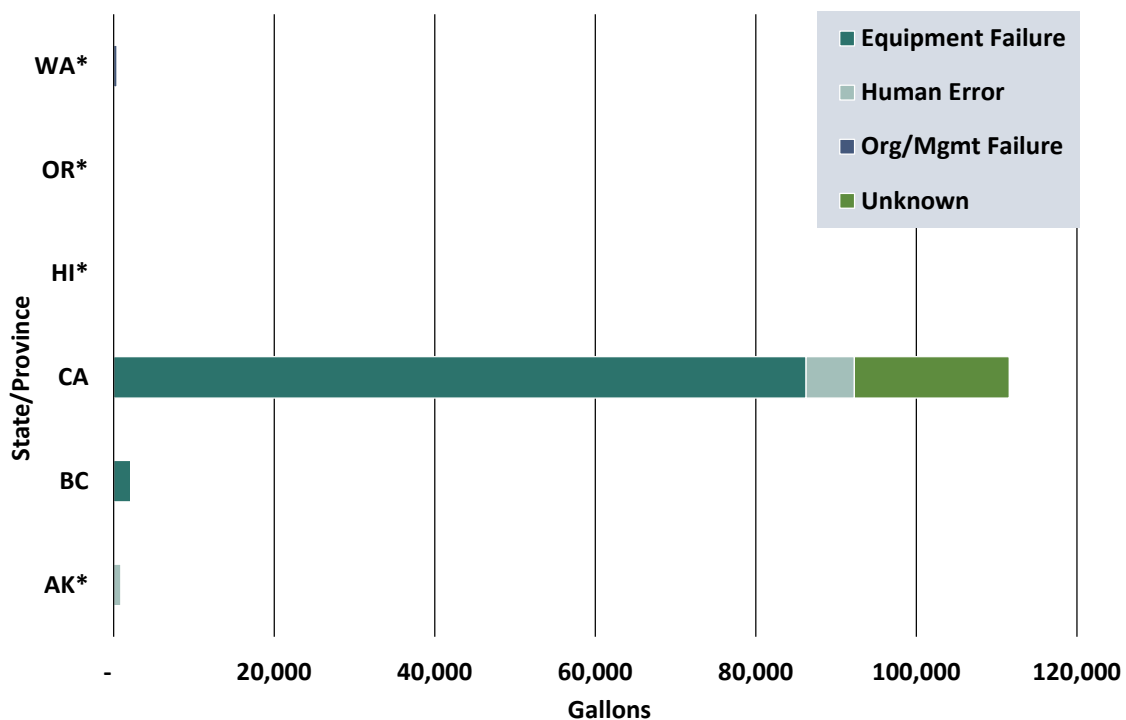


Figure 16. Crude spills by cause type and state/province, volume released (2021).



NOTES:

- An asterisk (*) denotes states that had no crude oil spills.
- Washington (WA) had one (1) 420-gallon crude oil spill caused by Organizational/Management Failure (Org/Mgmt Failure).
- Alaska (AK) had one (1) 900-gallon crude oil spill caused by Human Error.

SPILLS BY CAUSE TYPE - *Equipment Failure Detail*

Table 10. Noncrude oil spills, Equipment Failure detail (2021).

Equipment Failure Detail	Gallons
Structural Failure	122,113
Mechanical Failure	51,266
Other/Unknown	21,310
Total	194,689

NOTE: graphs on this page do not include data from California.

Table 11. Crude oil spills, Equipment Failure detail (2021).

Equipment Failure Detail	Gallons
Other	2,113
Total	2,113

Figure 17. Noncrude oil spills (percent volume released), Equipment Failure detail (2021).

NOTE: Other/Unknown includes classifications comprising less than 5% of the total volume released.

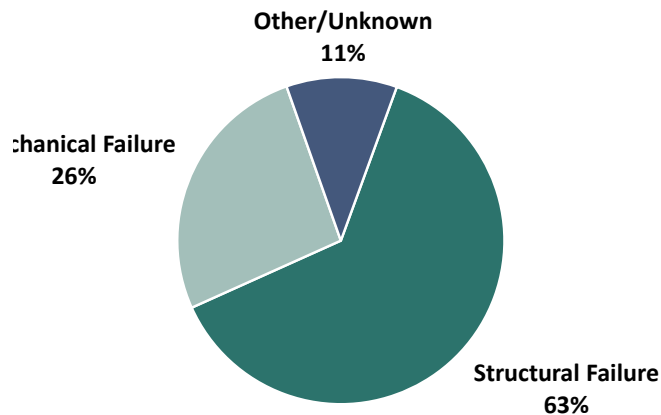
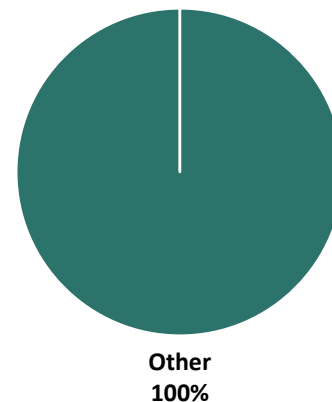


Figure 18. Crude oil spills (percent volume released), Equipment Failure detail (2021).



Equipment Failure Detail

- Structural Failure was the primary type of Equipment Failure for noncrude spills.
- A single 2,113-gallon spill in British Columbia comprised 100% of the crude oil spills caused by Equipment Failure. The release was to lined secondary containment.

Deployed boom during a spill response October 2021. Photo credit: CA OSPR

SPILLS BY CAUSE TYPE - *Human Error Detail*

Table 12. Noncrude oil spills, Human Error detail (2021).

Human Error Detail	Gallons
Inattention / Distraction	20,784
Other/Unknown	14,090
Judgment	11,178
Deliberate violation	4,733
Procedural Error	2,886
Total	53,671

NOTE: graphs on this page do not include data from California.

Figure 19. Noncrude oil spills (percent volume released), Human Error detail (2021).

NOTE: 'Other/Unknown' includes classifications comprising less than 5% of the total volume released.

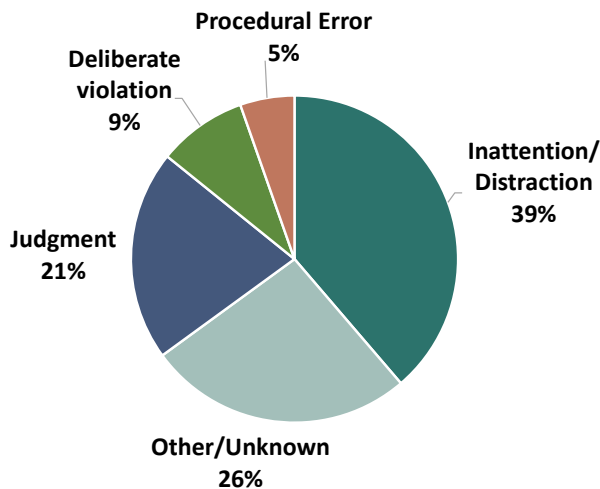
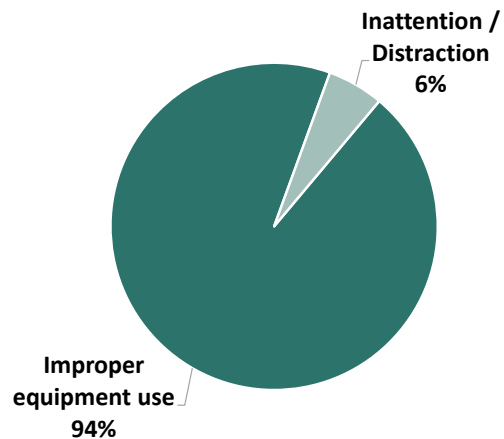


Table 13. Crude oil spills, Human Error detail (2021).

Human Error Type	Gallons
Improper equipment use	900
Inattention / Distraction	53
Total	953

Figure 20. Crude oil spills (percent volume released), Human Error detail (2021).



Human Error Detail

- Over a third of the noncrude spill volume attributed to Human Error was due to Inattention/Distraction.
- For crude oil spills caused by Human Error, over 90% of the volume was due to Improper Equipment Use.

Truck rollover in eastern Washington caused by Human Error (6/17/2021). Photo by WA Department of Ecology.



ACTIVITY AT THE TIME OF INCIDENT (42 gallons or more)

- Overall, Underway/in motion¹ (37%) and Static² (35%) were nearly three-quarters of the total spill volume.
- For noncrude oil spills, Underway/In Motion (37%) and Static (35%) the main activities at the time of the spill.
- Oil Transfer (non-fuel) was the activity for nearly half of the crude oil volume.

¹Static, or performing designed function, not to include oil transfers

²Underway/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

Table 14. Spill volume by activity at the time of incident (2021).

Activity	Noncrude (gal)	Crude (gal)	Total (gal)
Underway / in motion	207,987	29,750	237,737
Static	201,449	25,116	226,565
Oil transfer (non-fuel)	246	55,986	56,232
Other	66,724	1,415	68,139
Unknown	32,714	680	33,394
Internal Transfer	23,798	2,113	25,911
Total	532,918	115,060	647,978

Figure 21. Noncrude oil spills by activity, percent total volume released (2021).

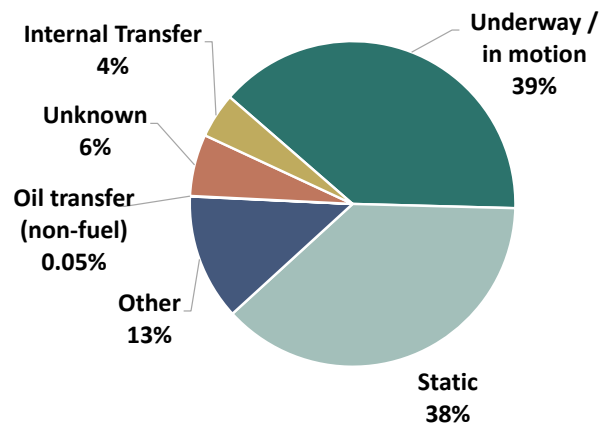
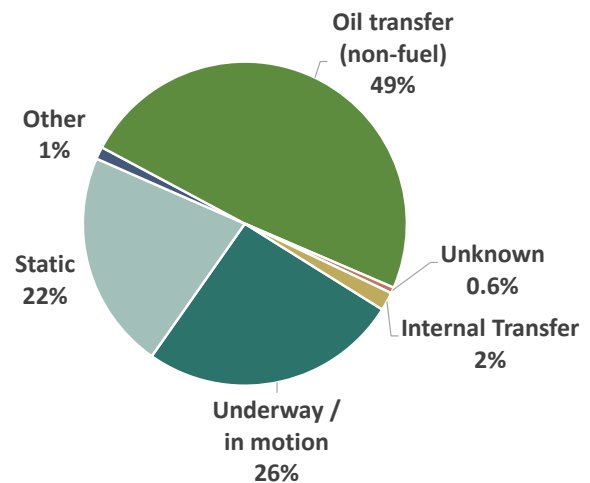


Figure 22. Crude oil spills by activity, percent total volume released (2021).



ACTIVITY AT THE TIME OF INCIDENT (42 gallons or more) - continued

Figure 23. Noncrude spills by activity and state/province, volume released (2021).

NOTE: 'Oth/Unk' includes classifications comprising less than 5% of the total volume released.

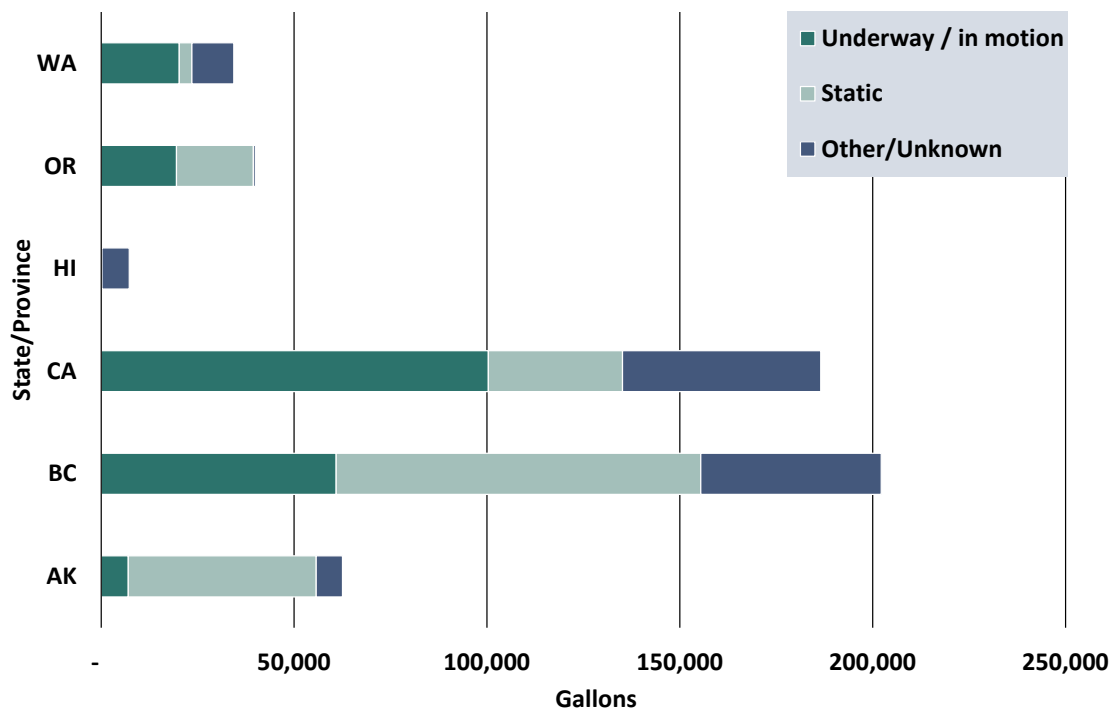
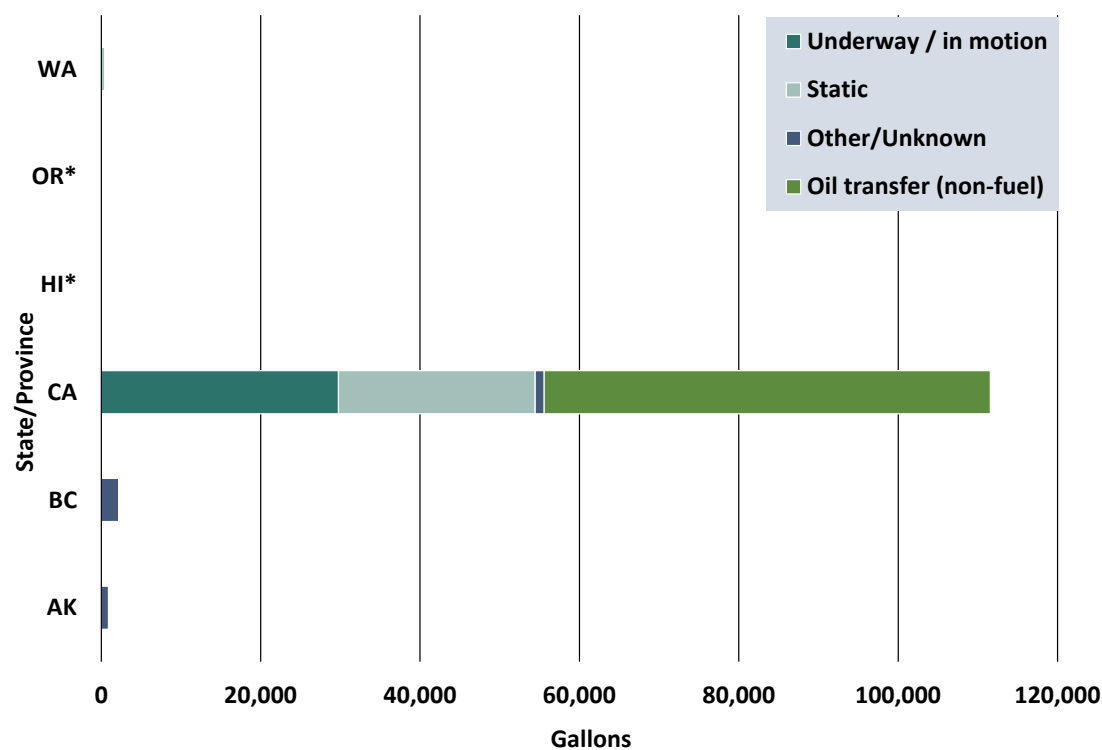


Figure 24. Crude spills by activity type and state/province, volume released (2021).



NOTES:

- An asterisk (*) denotes states that had no crude oil spills.
- Washington (WA) had one (1) 420-gallon crude oil spill. Activity at the time of incident was Static.
- Alaska (AK) had one (1) 900-gallon crude oil spill. Activity at the time of incident was Oil transfer (cargo).

SPILLS BY SIZE (42 gallons or more)

Table 15. Spill volume by size (2021).

Spill Size	Noncrude Oil		Crude Oil		Total	
	count	gallons	count	gallons	count	gallons
42 to 100 gal	577	38,992	10	631	587	39,623
101 to 500 gal	381	77,814	12	3,142	393	80,956
501 to 1000 gal	49	36,322	4	3,042	53	39,364
>1000 gal	72	379,790	10	108,245	82	488,035
Total	1,079	532,918	36	115,060	1,115	647,978

- Noncrude spills with volumes greater than 1,000 gallons comprised over 71% of the total non-crude volume during 2021.
- Over 90% of the crude oil volume was from spills greater than 1,000 gallons.

Figure 25. Noncrude oil spills by size, percent total volume released (2021).

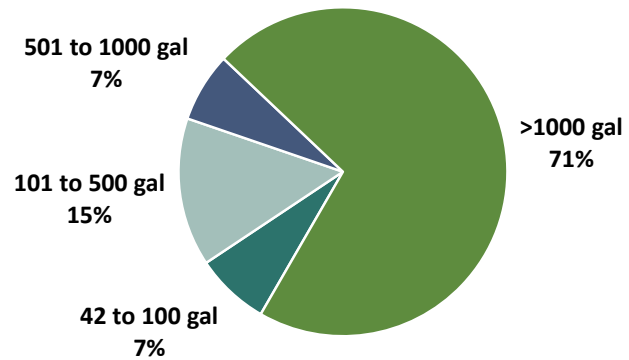
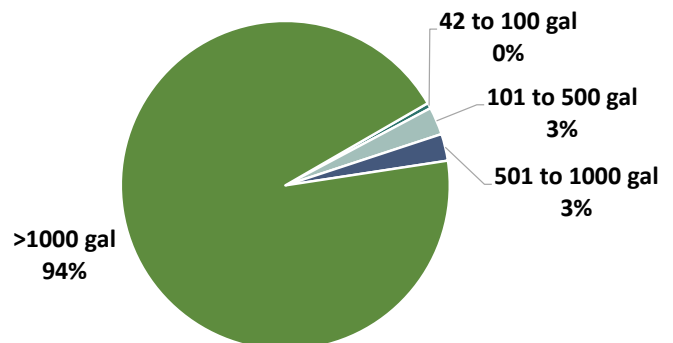


Figure 26. Crude oil spills by size, percent total volume released (2021).



SPILLS BY SIZE (42 gallons or more) - continued

Figure 27. Noncrude spills by size and state/province, volume released (2021).

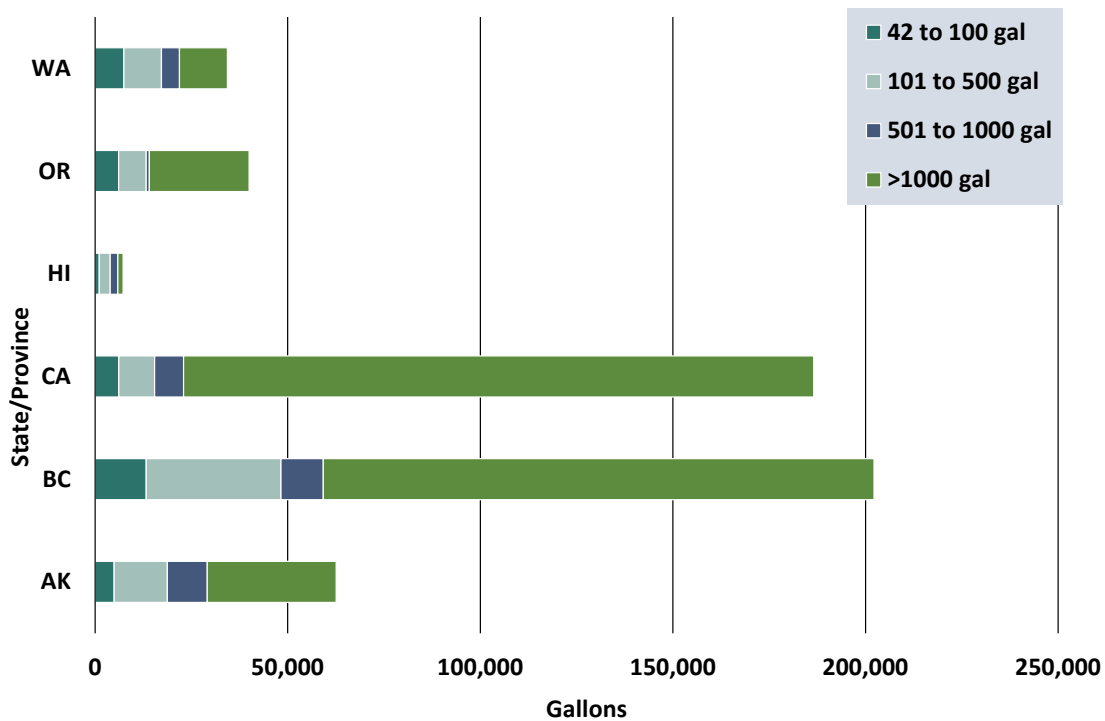
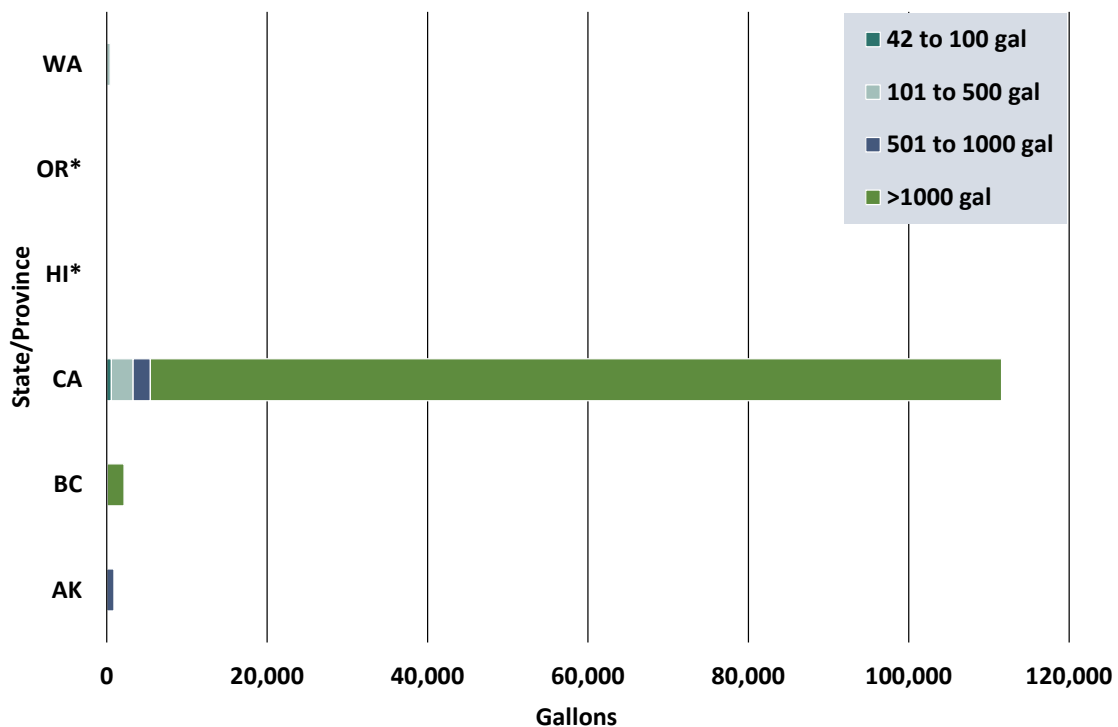


Figure 28. Crude spills by size and state/province, volume released (2021).



NOTES:

- An asterisk (*) denotes states that had no crude oil spills.
- Washington (WA) had one (1) 420-gallon crude oil spill.
- Alaska (AK) had one (1) 900-gallon crude oil spill.

SPILLS BY MEDIUM IMPACTED (42 gallons or more)

- Over 70% of the noncrude oil volume and 75% of the crude oil volume was spilled to land.
- Seven percent of the spills (by volume) impacted freshwater resources and 12% of the spills impacted marine resources.

Table 16. Spill volume by medium impacted (2021).

Medium	Noncrude (gal)	Crude (gal)	Total (gal)
Fresh Water	38,459	1,840	40,299
Impermeable Surface	49,331	2,166	51,497
Land	381,394	86,308	467,702
Marine	63,734	24,746	88,480
Total	532,918	115,060	647,978

Figure 29. Noncrude oil spills by medium impacted, percent total volume released (2021).

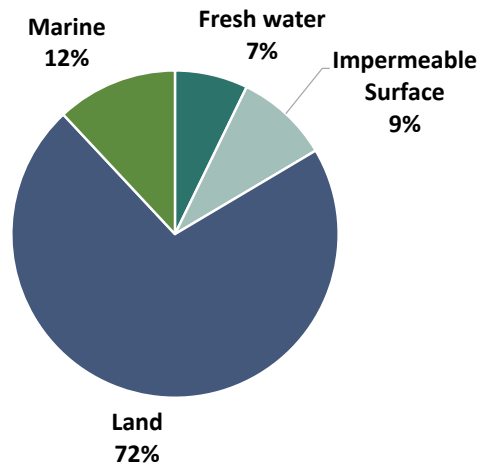
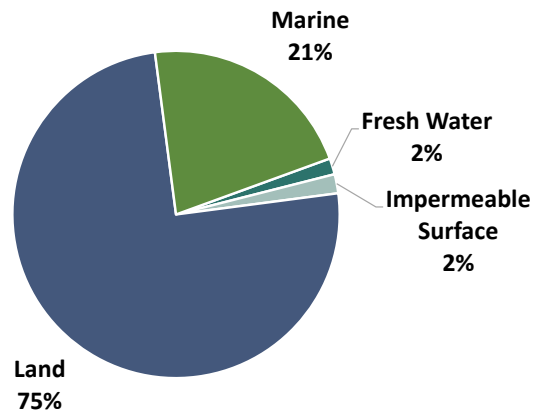


Figure 30. Crude oil spills by medium impacted, percent total volume released (2021).



SPILLS BY MEDIUM IMPACTED (42 gallons or more) - continued

Figure 31. Noncrude spills by medium and state/province, volume released (2021).

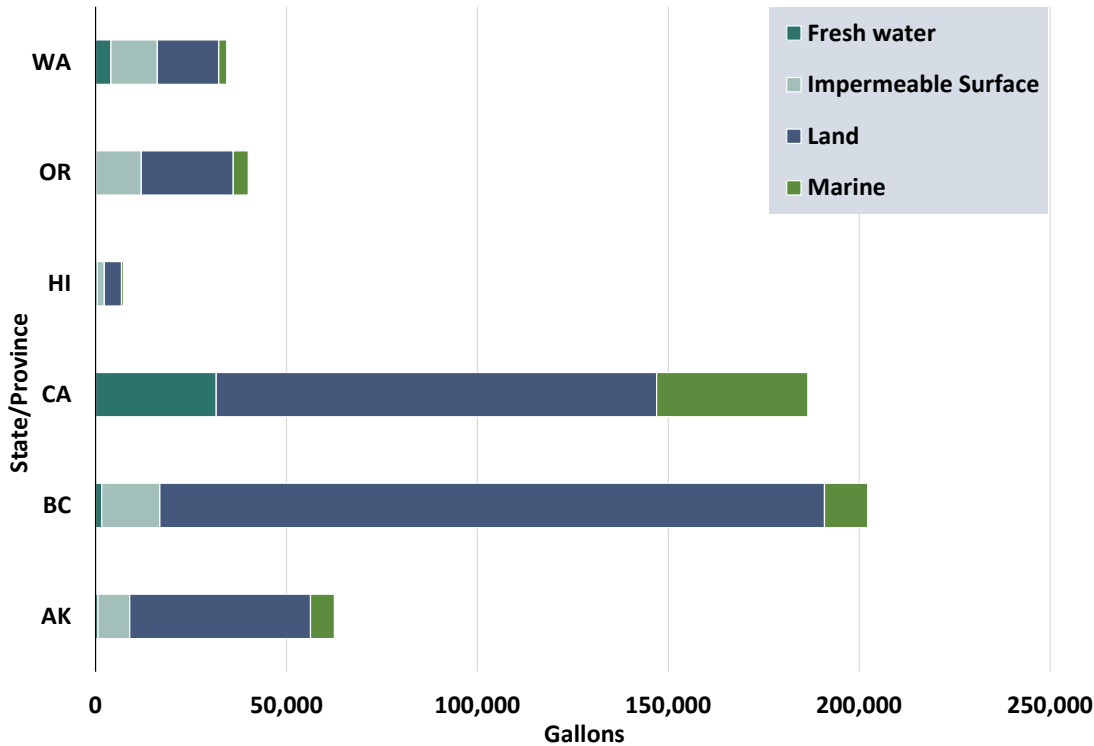
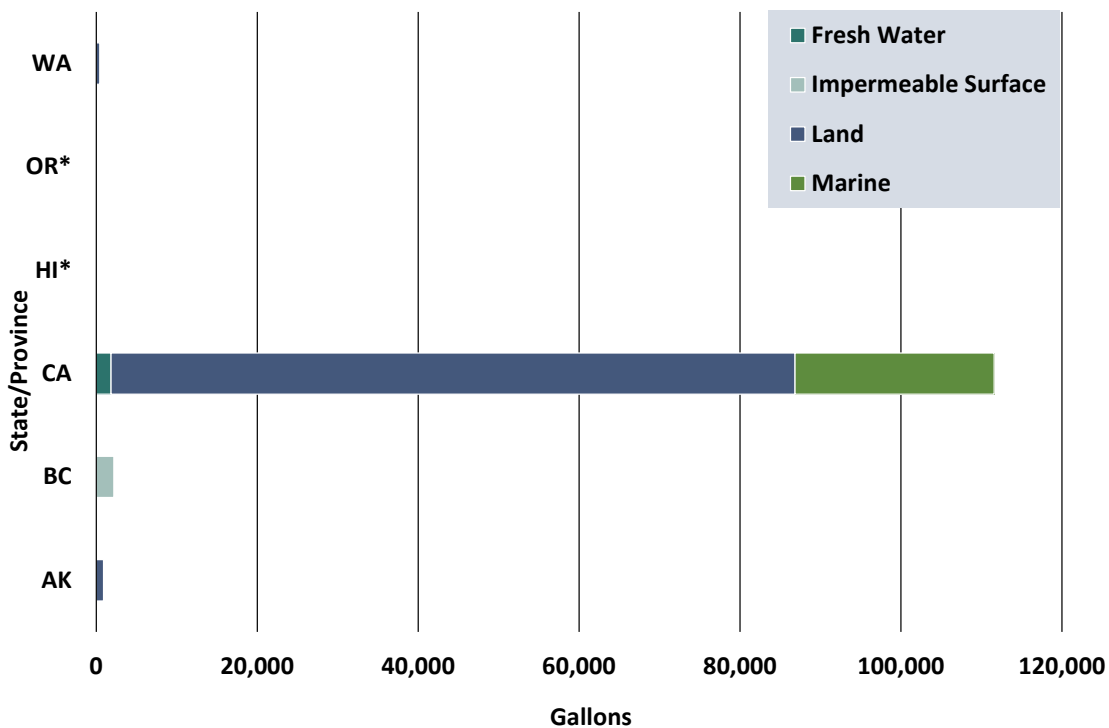


Figure 32. Crude spills by medium and state/province, volume released (2021).



NOTES:

- An asterisk (*) denotes states that had no crude oil spills.
- Washington (WA) had one (1) 420-gallon crude oil spill to Land.
- Alaska (AK) had one (1) 900-gallon crude oil spill to Land.

A photograph of the shipwreck of the American Challenger, a fishing vessel, resting on a rocky shore. The ship is tilted at a steep angle, with its white superstructure and dark hull visible. The name "AMERICAN CHALLENGER" is printed on the side of the hull. The ship is surrounded by dark, jagged rocks and the blue ocean. A white rope or cable is visible in the foreground, running across the rocks. A semi-transparent dark green rectangular box is overlaid on the upper portion of the image, containing the title text.

SPILL TRENDS (2002-2021)

American Challenger, California. Photo Credit: CA OSPR

SPILLS 42 gallons or more (2002-2021)



- A total of 18,477, releases of 42 gallons or more occurred during the 20-year period 2002-2020, with a total volume of 14.2 million gallons.
- Nearly half the total volume spilled was Diesel/Marine Gas Oil (24%) and Crude Oil (26%) during the period.
- Over the 20-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 20-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 20% of the total crude oil volume released for the period.

Non-Crude Oil Spills

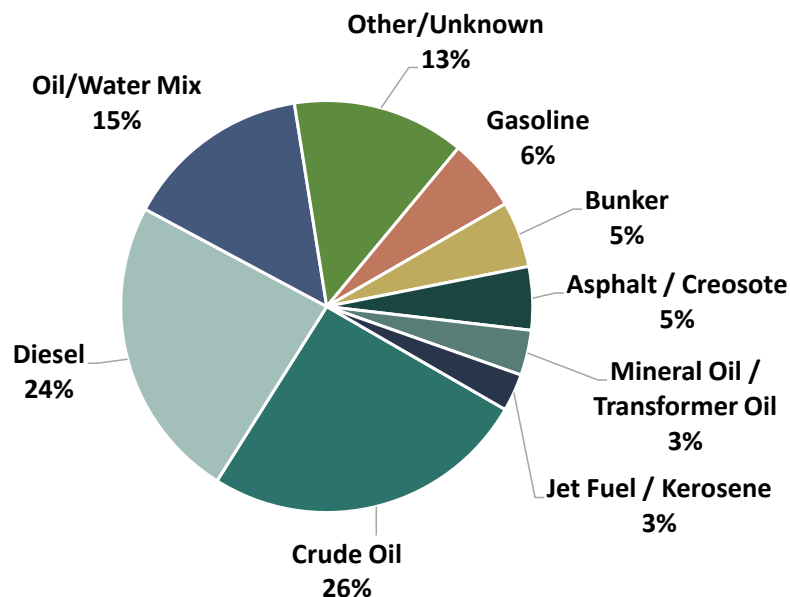
- Diesel Oil/Marine Gas Oil comprised 24% of the total spill volume and 32% of the non-crude oil spill volume for the period.

Table 17. Releases by oil type (2002-2021).

Product	Count	Gallons	% Volume
Crude Oil	1,674	3,643,009	26%
Diesel Oil / Marine Gas Oil	8,989	3,398,776	24%
Oily Water Mixture	745	2,084,349	15%
Other	461	820,995	6%
Gasoline	733	806,506	6%
Bunker C / IFO / HFO	113	737,774	5%
Asphalt / Creosote	230	707,372	5%
Mineral Oil / Transformer Oil	1,695	504,850	4%
Jet Fuel / Kerosene	396	417,782	3%
Aviation Gasoline	230	213,395	2%
Hydraulic Oil	1,338	171,984	1%
Lube Oil / Motor Oil	714	162,392	1%
Unknown	227	158,051	1%
Waste Oil	373	106,537	0.8%
Heating Oil	397	90,874	0.6%
Edible / Vegetable Oil	124	79,473	0.6%
LNG / LPG	19	65,845	0.5%
Oily Waste	17	28,686	0.2%
Cutter Stock	2	240	0.002%
Total	18,477	14,198,890	100.0%

Figure 33. Spills by oil type (2002-2021).

NOTE: 'Other/Unknown' includes classifications comprising less than 2% of the total volume released.



SPILLS 42 gallons or more - continued

Table 18. Crude vs. noncrude oil spills by year (2002-2021).

Year	Noncrude Oil		Crude Oil		Total	
	Count	Gallons	Count	Gallons	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	1,144	676,392	225	700,297	1,369	1,376,689
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	999	528,203	125	201,812	1,124	730,015
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	546	150,687	17	89,127	563	239,814
2017	641	498,135	17	12,254	658	510,389
2018	599	240,872	25	10,155	624	251,027
2019	624	427,795	71	135,914	695	563,709
2020	954	312,615	33	151,400	987	464,015
2021	1,079	532,918	36	115,060	1,115	647,978
20YR Total	16,803	10,555,881	1,674	3,643,009	18,477	14,198,890
Annual AVG	1,200	657,352	87	208,386	1,287	865,738



Selendang Ayu grounding, near Unalaska, Alaska (December 2007). Credit: Collection of Doug Helton, NOAA/NOS/ORR

SPILLS 42 gallons or more - continued

Figure 34. Number of spills and volume released (2002-2021).

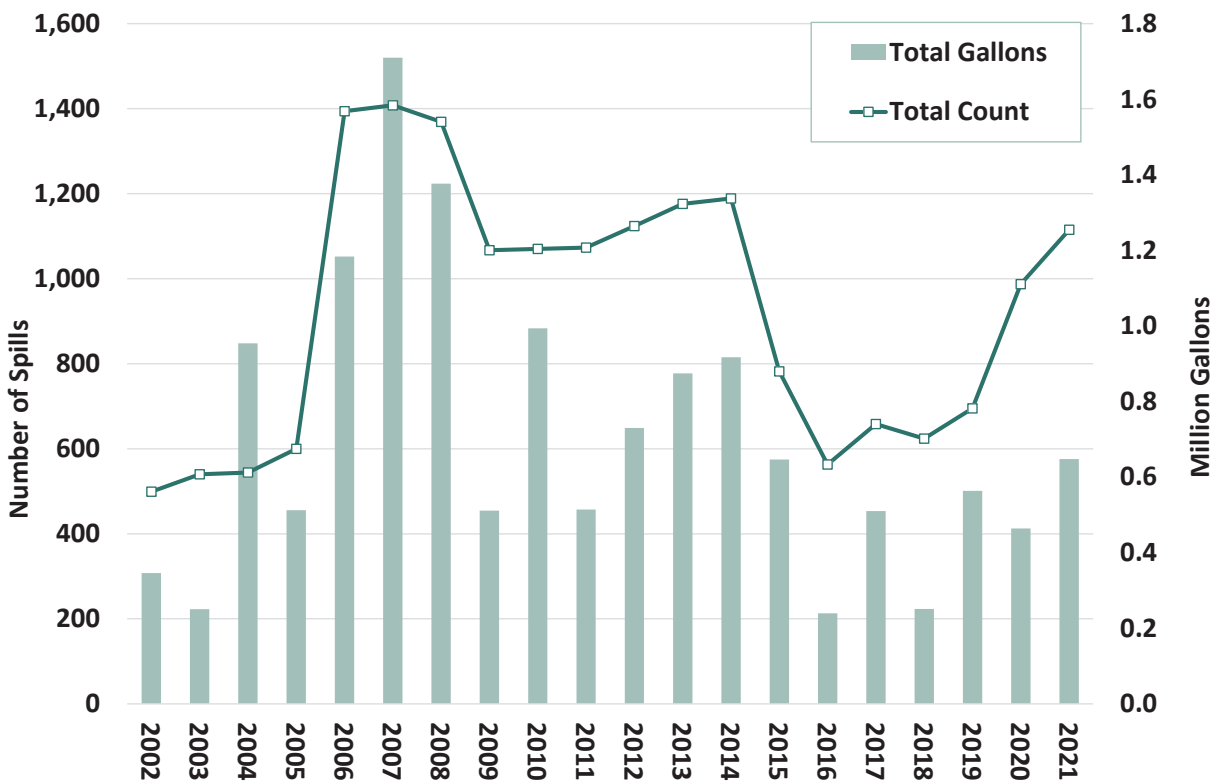
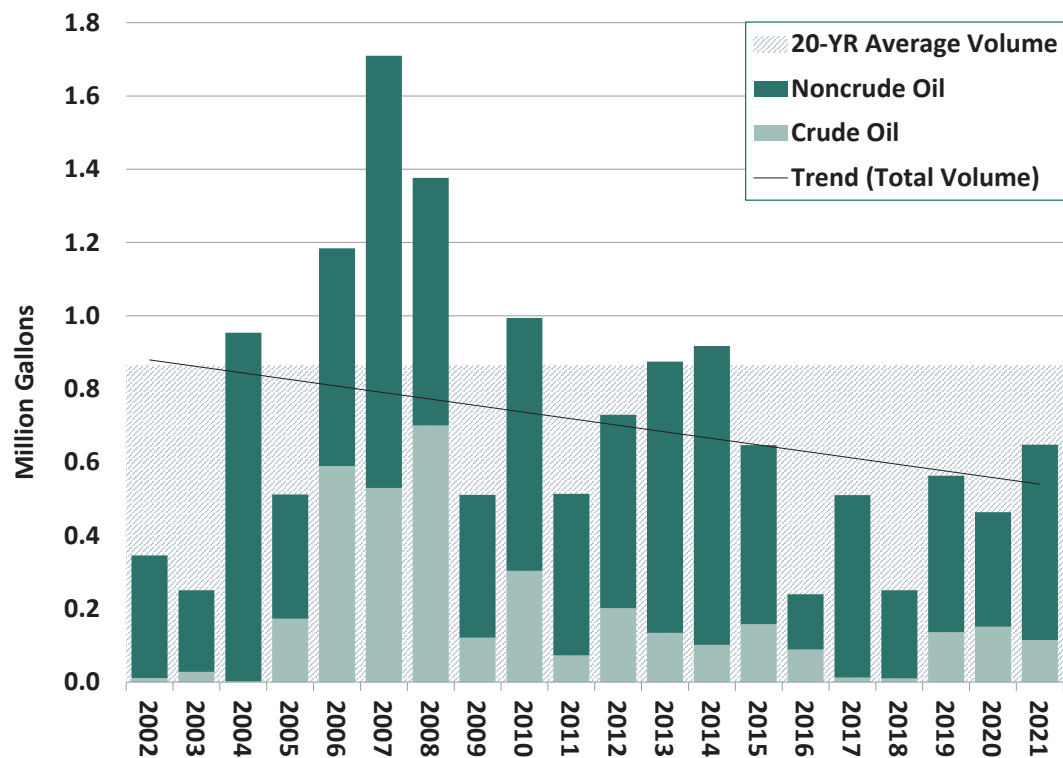


Figure 35. Crude vs. noncrude spills (2002-2021).



SPILLS 42 GALLONS OR MORE BY SOURCE TYPE (2002-2021)

- Overall, Facilities (49%) and Pipelines (20%) were the major sources of spills by volume during the 20-year period.
- Facilities were the source of 52% of the non-crude oil spill volume.
- Pipelines (52%) and Facilities (41%) were the major sources of crude oil spills.

Table 19. Spills by source type (2002-2021).

Source Type	Noncrude (gal)	Crude (gal)	Total (gal)
Facility	5,466,854	1,490,652	6,957,506
Other/Unknown	723,171	147,471	870,642
Pipeline	937,452	1,877,299	2,814,751
Vehicle	2,340,405	121,761	2,462,166
Vessel	1,087,999	5,826	1,093,825
Total	10,555,881	3,643,009	14,198,890

Figure 36. Percent total volume released by source type (2002-2021).

NOTE: Other/Unknown includes Other, Unknown, Private Property, Military, Public Lands, and Farm/Agriculture

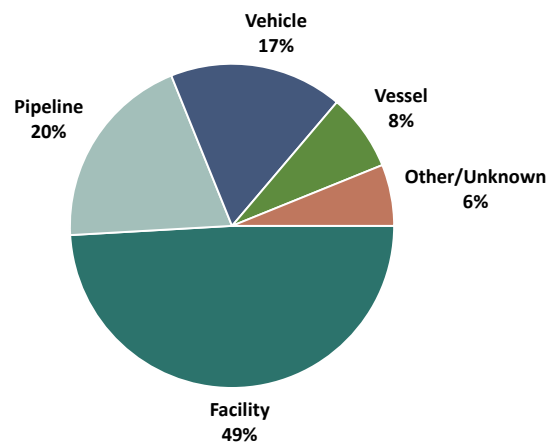
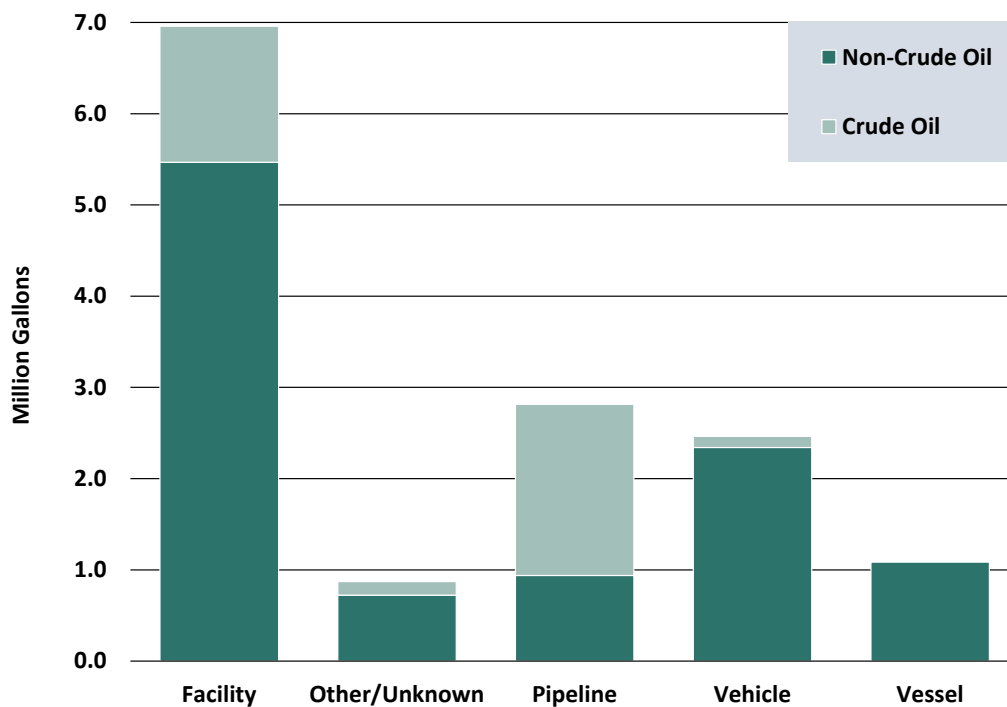


Figure 37. Crude vs noncrude spills by source type (2002-2021).



SPILLS 42 GALLONS OR MORE BY SOURCE TYPE (2002-2021) - continued

Figure 38. Spills by source type by year (2002-2021).

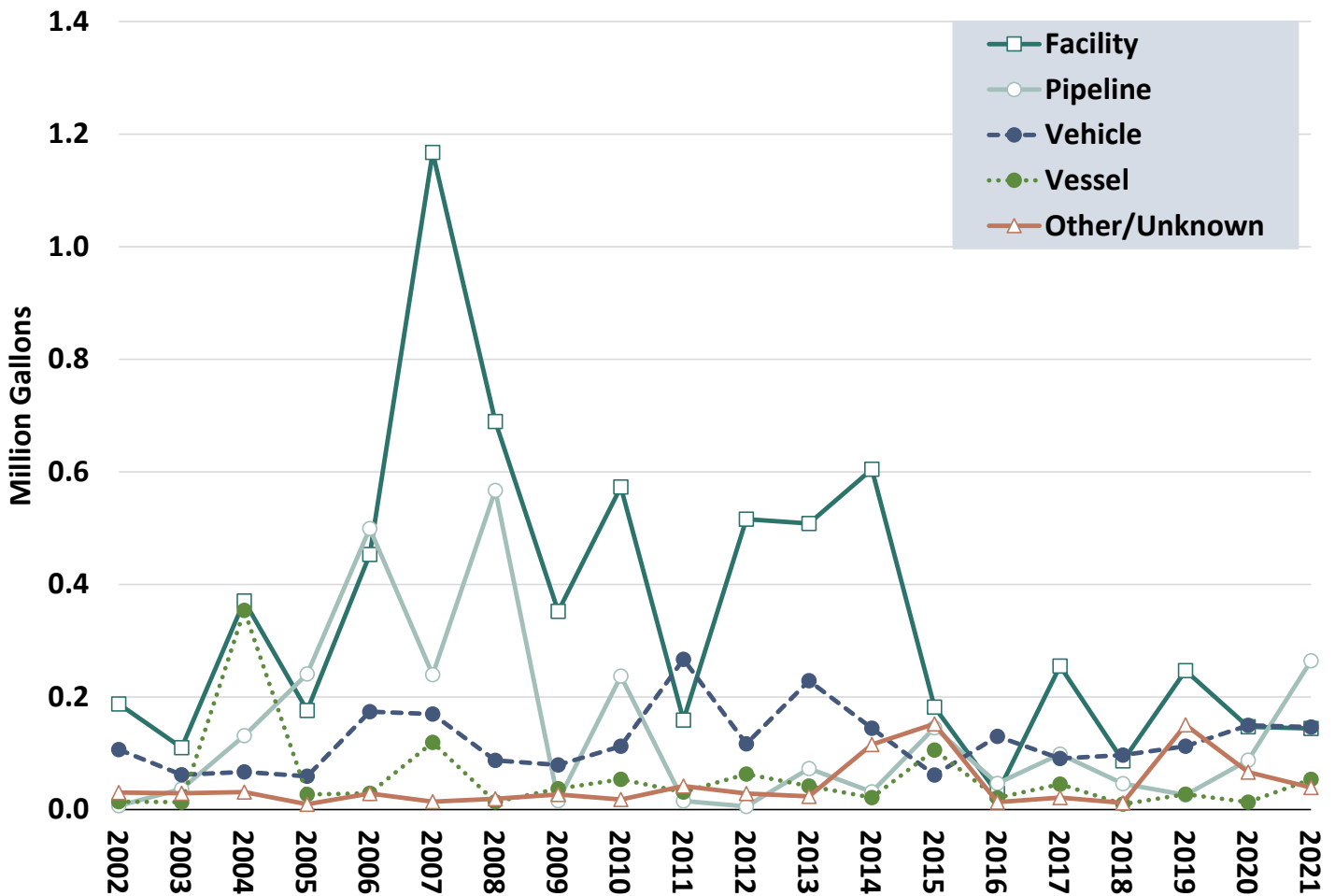


Figure 39. All Spills by source type and relative total volume by state/province (2002-2021).

SOURCE TYPE	TOTAL	AK	BC	CA	HI	OR	WA
Facility	6,957,506	1,214,838	35,497	4,330,990	101,671	181,146	1,093,364
Pipeline	2,814,751	468,093	157,489	2,051,346	101,960	2,856	33,007
Vehicle	2,462,166	210,836	129,381	1,058,508	26,308	635,216	401,917
Vessel	1,093,825	554,772	11,575	251,822	144,226	52,143	79,287
Unknown	373,547	2,479	1,005	333,823	32,078	1,005	3,157
Private Property	263,660	91,075	4,220	95,606	3,555	26,228	42,976
Other	168,736	13,700	4,842	113,444	7,501	26,155	3,094
Public Lands	32,926	21,875	1,236		4,507	3,070	2,238
Military	30,585	23,154	963		4,726		1,742
Farm / Agriculture	1,188	488			200	450	50

	greatest volume
	smallest volume
	midpoint (50th percentile)
	no spills

SPILLS 42 GALLONS OR MORE BY CAUSE TYPE (2002-2021)

- Overall, Equipment Failure (53%) and Human Error (28%) were the major spill causes.
- Equipment Failure (46%) and Human Error (34%) were the predominant causes for non-crude oil spills
- 75% of the total crude oil spill volume was due to Equipment Failure.

Table 20. Spills by cause type (2002-2021).

Cause Type	Noncrude (gal)	Crude (gal)	Total (gal)
Equipment Failure	4,807,835	2,715,385	7,523,220
Human Error	3,629,012	309,824	3,938,836
Unknown	1,303,993	391,836	1,695,829
External Conditions	414,889	160,695	575,584
Organizational / Management Failure	180,540	52,921	233,461
Other	219,612	12,348	231,960
Total	10,555,881	3,643,009	14,198,890

Figure 40. Percent total volume released by cause type (2002-2021)

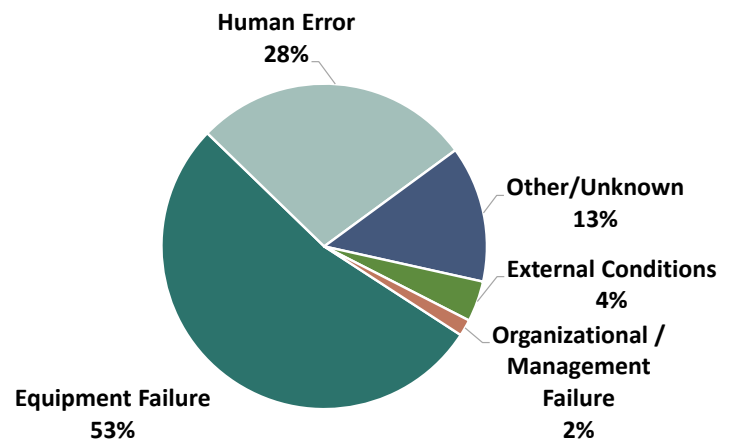
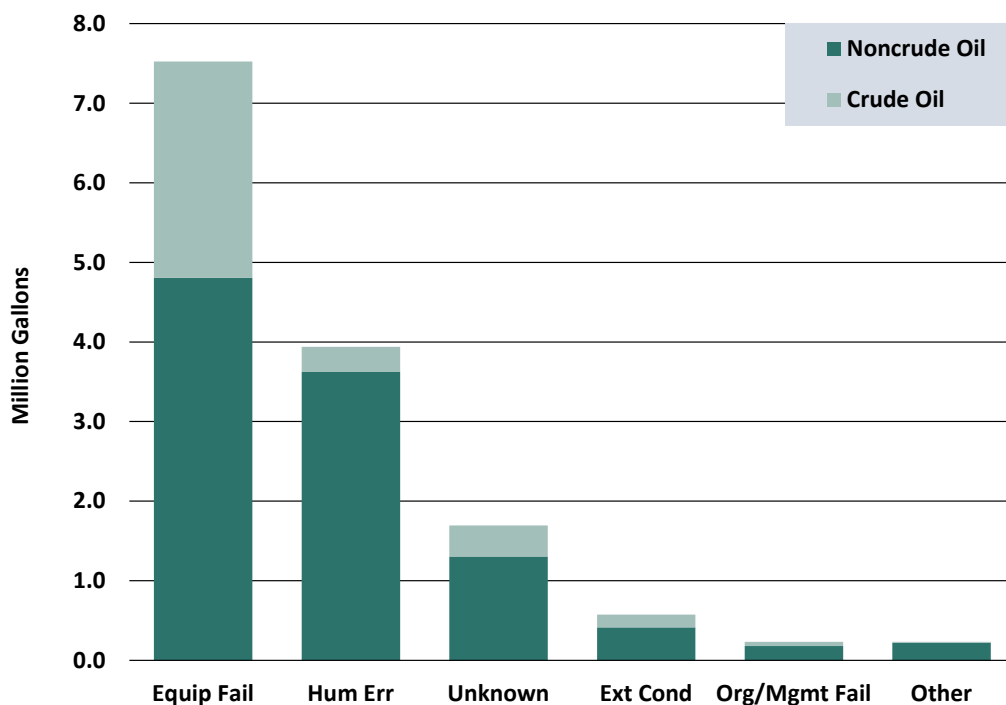


Figure 41. Crude vs noncrude spills by cause type (2002-2021).



SPILLS 42 GALLONS OR MORE BY CAUSE TYPE (2002-2021) - continued

Figure 42. Spills by cause type over time (2002-2021).

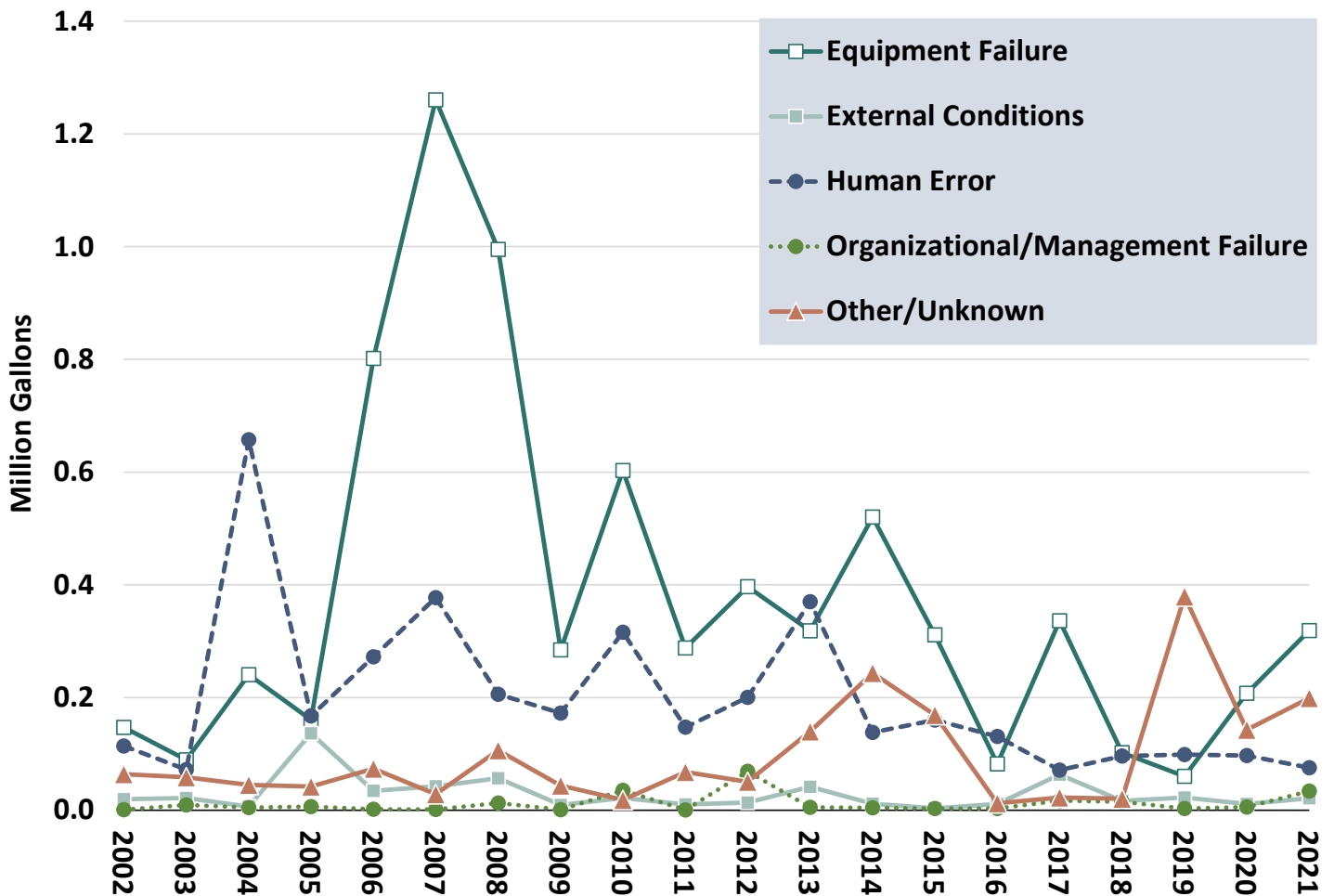


Figure 43. All Spills by cause type and relative total volume by state/province (2002-2021).

CAUSE TYPE	TOTAL	AK	BC	CA	HI	OR	WA
Equipment Failure	7,523,220	1,203,697	229,340	4,763,242	256,919	369,252	700,770
Human Error	3,938,836	1,122,851	41,720	1,645,564	142,290	301,597	684,814
Unknown	1,695,829	104,985	62,098	1,267,986	12,651	62,176	185,933
External Conditions	575,584	95,952	11,697	334,067	610	93,015	40,243
Org/Mgmt Failure	233,461	22,885	930	157,212	9,036	4,227	39,171
Other	231,960	50,940	423	67,468	5,226	98,002	9,901

greatest volume

smallest volume

midpoint (50th percentile)

no spills

SMALL SPILLS COMPARED TO LARGER SPILLS (2002-2021)

Table 21. Annual number of small spills (<42 gallons) compared to number of spills 42-10,000 gallons and >10,000 gallons.

Year	<42 gallons		42-10,000 gallons		>10,000 gallons	
	count	gallons	count	gallons	count	gallons
2002			495	300,454	4	45,388
2003			536	193,546	4	57,000
2004			537	180,639	7	773,285
2005			590	196,431	10	315,956
2006			1,376	585,295	18	598,692
2007			1,384	568,415	24	1,141,667
2008			1,355	520,129	14	856,560
2009			1,059	341,240	8	170,000
2010			1,062	335,117	8	658,752
2011			1,068	327,788	5	186,388
2012			1,115	425,518	9	304,497
2013			1,165	539,108	11	335,725
2014			1,176	386,197	13	531,268
2015			775	251,556	7	395,347
2016	5,062	--	561	153,059	2	86,755
2017	5,350	--	654	213,131	4	297,258
2018	5,924	--	621	205,027	3	46,000
2019	5,607	--	689	267,661	6	296,048
2020	6,942	--	977	273,167	10	190,848
2021	7,011	--	1,104	371,596	11	276,382
Total	35,896	--	18,299	6,635,074	178	7,563,816

Figure 44. Number of small spills (<42 gallons) compared to number of spills 42-10,000 gallons and >10,000 gallons.

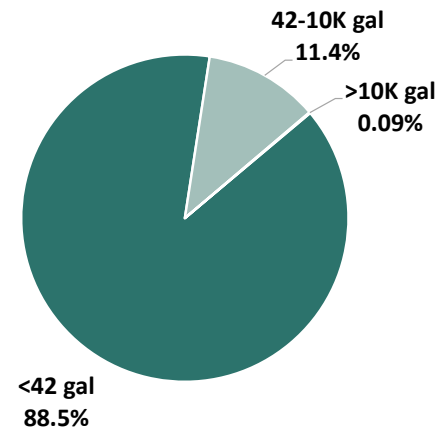
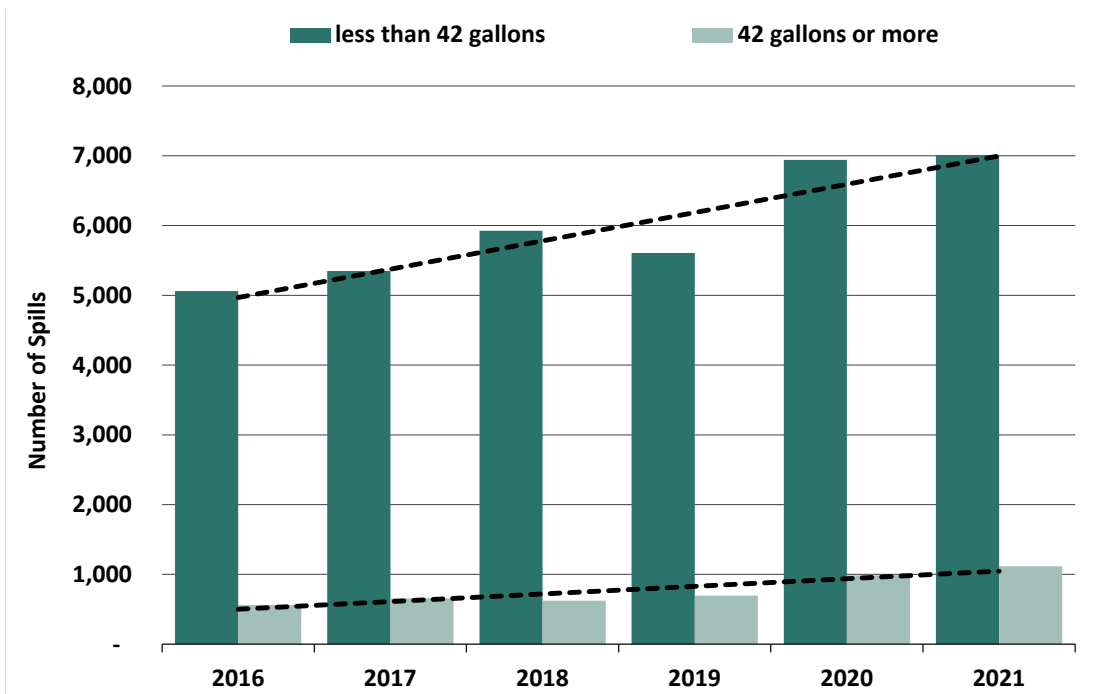


Figure 45. Number of small spills (<42 gallons) by year compared to number of spills 42 gallons or more (2016-2021).



SMALL SPILLS COMPARED TO LARGER SPILLS (2002-2021)- continued

Small <42 gallons vs. Spills 42 gallons or more

Beginning with the 2016 data, the Task Force began tracking the number of spills with volumes less than 42 gallons ('small spills'). 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.

Over the 6-year period (2016-2021), small spills have consistently outnumbered 'large spills' (42 gallons or more), making up 88.5% of the total spill count. The increase in counts for small and large spills beginning in 2020 reflects the addition of data from British Columbia.

Spills >10,000 gallons

Over the 20-year period (2002-2021), 179 spills with a volume greater than 10,000 gallons occurred in the region. The total volume for these spills comprised nearly half of the total volume for spills with a volume of 42 gallons or more.

Figure 46. Total volume of spills 42-10,000 gallons compared to spills >10,000 gallons (2002-2021).

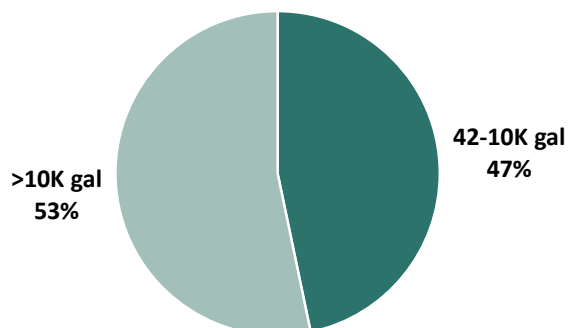
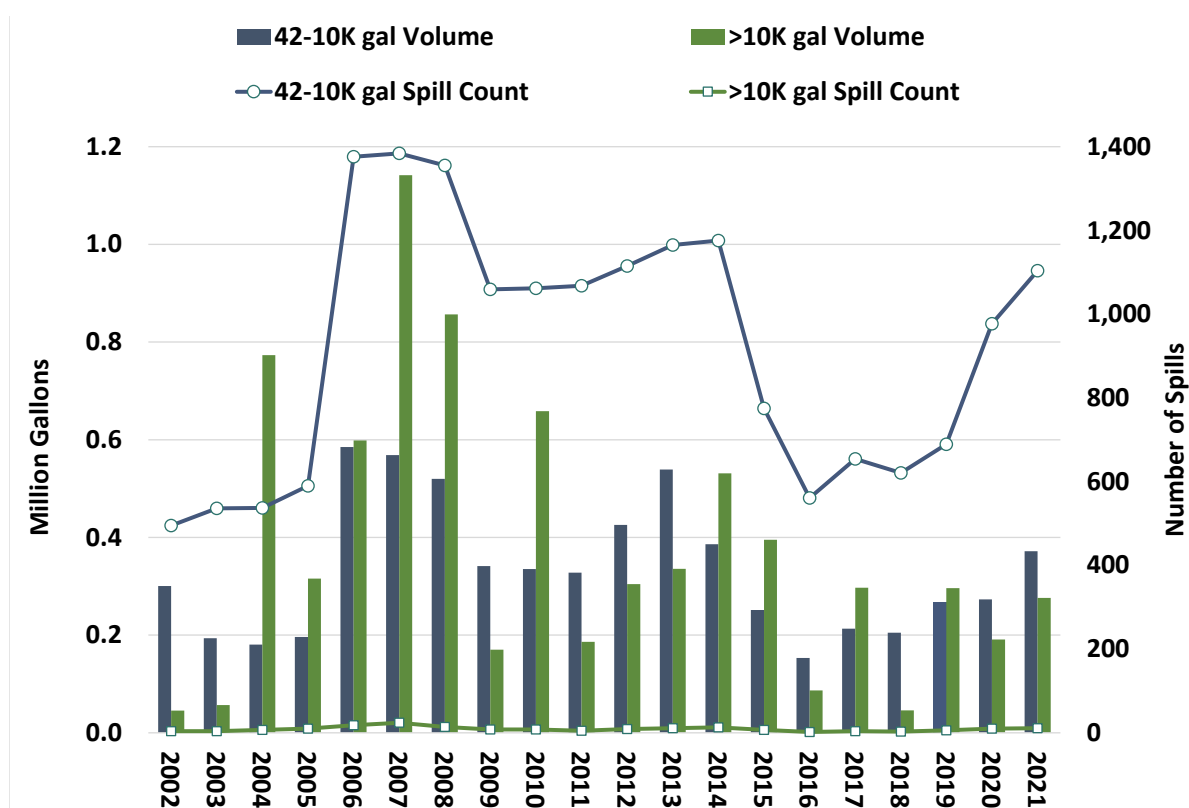


Figure 47. Number of spills 42-10,000 gallons compared to spills >10,000 gallons (2002-2021).



SPILLS GREATER THAN 10,000 GALLONS (2002-2021)

For total volumes for all spills between 2002-2021, see pages 21-22.

Number of Spills	178	Crude Spills	49
Total Volume	7,563,816	Non-crude Spills	129

2002-2006

Product	Volume (gal)	State/Prov	Date	Source Type	Cause Type	Medium
Bunker C / IFO / HFO	321,052	Alaska	12/8/2004	Vessel	Human Error	Marine
Bunker C / IFO / HFO	270,000	Washington	8/25/2004	Facility	Human Error	Land
Crude Oil	267,000	Alaska	3/2/2006	Pipeline	Equipment Failure	Land
Crude Oil	126,000	California	3/23/2005	Pipeline	External Conditions	Fresh Water
Aviation Gasoline	115,353	California	11/22/2004	Pipeline	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	40,000	Washington	8/8/2005	Facility	Human Error	Land
Oily Water Mixture	37,306	California	11/11/2006	Facility	Equipment Failure	Impermeable Surface
Oily Water Mixture	33,600	California	4/14/2006	Pipeline	Equipment Failure	Impermeable Surface
Crude Oil	29,400	California	10/1/2006	Facility	Equipment Failure	Impermeable Surface
Gasoline	29,400	California	8/14/2005	Pipeline	Human Error	Land
Crude Oil	26,460	California	1/30/2006	Pipeline	Human Error	Land
Crude Oil	25,200	California	11/27/2005	Pipeline	Equipment Failure	Land
Gasoline	24,500	Hawaii	10/6/2004	Unknown	Equipment Failure	Land
Jet Fuel / Kerosene	24,000	Washington	3/1/2005	Pipeline	Equipment Failure	Fresh Water
Crude Oil	21,000	California	11/6/2006	Facility	Unknown	Land
Other	21,000	California	6/4/2003	Facility	Equipment Failure	Marine
Diesel Oil / Marine Gas Oil	21,000	California	5/18/2006	Pipeline	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	20,000	California	5/2/2005	Pipeline	Equipment Failure	Land
Crude Oil	18,900	California	5/15/2006	Facility	Human Error	Land
Diesel Oil / Marine Gas Oil	18,200	Washington	11/3/2006	Facility	Equipment Failure	Fresh Water
Crude Oil	16,800	California	6/2/2006	Facility	Equipment Failure	Impermeable Surface
Gasoline	16,800	California	3/24/2006	Vehicle	Unknown	Land
Crude Oil	16,800	California	10/13/2006	Pipeline	Equipment Failure	Land
Waste Oil	15,750	Washington	6/12/2006	Facility	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	15,000	Oregon	10/31/2005	Facility	Human Error	Fresh Water
Other	14,700	California	12/4/2004	Pipeline	Equipment Failure	Fresh Water
Diesel Oil / Marine Gas Oil	14,680	Alaska	12/8/2004	Vessel	Human Error	Marine
Oily Water Mixture	14,000	California	9/16/2006	Pipeline	Equipment Failure	Land
Crude Oil	14,000	California	3/7/2003	Pipeline	Equipment Failure	Land
Jet Fuel / Kerosene	13,524	Washington	4/7/2005	Facility	Human Error	Land
Asphalt / Creosote	13,000	Oregon	8/11/2004	Vehicle	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	13,000	Hawaii	7/20/2006	Vessel	Equipment Failure	Marine
Diesel Oil / Marine Gas Oil	12,248	Alaska	4/24/2005	Facility	Human Error	Land
Other	12,118	Alaska	12/18/2002	Facility	Human Error	Land
Crude Oil	11,676	California	3/4/2006	Facility	Equipment Failure	Land

SPILLS GREATER THAN 10,000 GALLONS (2002-2021) - continued

2002-2006 (continued)

Product	Volume (gal)	State/Prov	Date	Source Type	Cause Type	Medium
Other	11,611	Alaska	2/26/2002	Facility	Equipment Failure	Land
Gasoline	11,000	Oregon	12/2/2002	Vehicle	Human Error	Fresh Water
Diesel Oil / Marine Gas Oil	11,000	Alaska	11/17/2003	Facility	Human Error	Land
Gasoline	11,000	Washington	11/27/2003	Vehicle	Unknown	Fresh Water
Mineral Oil / Transformer Oil	10,659	Washington	4/21/2002	Facility	External Conditions	Fresh Water
Diesel Oil / Marine Gas Oil	10,584	Hawaii	8/5/2005	Pipeline	Equipment Failure	Land
Oily Water Mixture	10,500	California	5/29/2006	Pipeline	Equipment Failure	Fresh Water
Oily Water Mixture	10,500	California	8/12/2006	Pipeline	Equipment Failure	Land

2007-2011

Product	Volume (gal)	State/Prov	Date	Source Type	Cause Type	Medium
Crude Oil	463,848	California	4/24/2008	Pipeline	Equipment Failure	Impermeable Surface
Diesel Oil / Marine Gas Oil	420,000	California	10/30/2007	Facility	Equipment Failure	Land
Other	193,200	California	1/4/2010	Facility	Equipment Failure	Land
Crude Oil	191,562	Alaska	5/25/2010	Pipeline	Equipment Failure	Impermeable Surface
Diesel Oil / Marine Gas Oil	142,800	Alaska	1/11/2010	Facility	Human Error	Marine
Oily Water Mixture	128,000	California	11/26/2008	Facility	Equipment Failure	Land
Crude Oil	126,000	California	3/9/2007	Facility	Equipment Failure	Land
Other	112,000	Oregon	5/4/2011	Vehicle	Equipment Failure	Fresh Water
Crude Oil	87,192	California	1/10/2007	Facility	Equipment Failure	Land
Crude Oil	63,000	California	4/23/2007	Facility	Equipment Failure	Land
Oily Water Mixture	63,000	California	7/29/2008	Facility	Unknown	Land
Diesel Oil / Marine Gas Oil	58,800	California	7/7/2007	Facility	Human Error	Land
Bunker C / IFO / HFO	58,000	California	11/7/2007	Vessel	Human Error	Marine
Mineral Oil / Transformer Oil	42,000	California	12/8/2010	Facility	Equipment Failure	Land
Crude Oil	42,000	California	6/12/2007	Pipeline	Equipment Failure	Land
Crude Oil	40,000	California	4/17/2007	Pipeline	Equipment Failure	Land
Oily Water Mixture	36,750	California	6/24/2009	Facility	Equipment Failure	Land
Jet Fuel / Kerosene	33,600	California	2/15/2010	Vessel	Organizational / Management Failure	Marine
Oily Water Mixture	31,500	California	6/10/2008	Facility	External Conditions	Land
Oily Water Mixture	31,500	California	12/3/2009	Facility	Equipment Failure	Land
Oily Water Mixture	30,240	California	4/20/2007	Facility	Equipment Failure	Land
Gasoline	27,500	California	4/25/2007	Vehicle	Equipment Failure	Land
Oily Water Mixture	26,250	California	6/17/2009	Facility	Equipment Failure	Land
Crude Oil	26,250	California	6/11/2008	Facility	Equipment Failure	Land
Jet Fuel / Kerosene	22,388	California	5/18/2011	Vehicle	Unknown	Marine
Oily Water Mixture	21,546	California	6/27/2008	Facility	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	21,402	Washington	10/27/2010	Facility	Equipment Failure	Fresh Water

SPILLS GREATER THAN 10,000 GALLONS (2002-2021) - continued

2007-2011 (continued)

Product	Volume (gal)	State/Prov	Date	Source Type	Cause Type	Medium
Crude Oil	21,336	California	6/1/2010	Pipeline	Equipment Failure	Land
Oily Water Mixture	21,000	California	7/11/2008	Facility	Equipment Failure	Land
Asphalt / Creosote	21,000	Oregon	1/14/2011	Vehicle	Equipment Failure	Land
Oily Water Mixture	21,000	California	3/29/2007	Pipeline	Human Error	Land
Crude Oil	20,622	California	9/6/2008	Facility	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	20,000	California	12/8/2009	Facility	Human Error	Land
Gasoline	18,900	Hawaii	2/13/2008	Facility	Human Error	Land
Bunker C / IFO / HFO	17,000	California	9/14/2011	Private Property	Equipment Failure	Marine
Crude Oil	16,800	California	12/3/2009	Facility	Equipment Failure	Land
Bunker C / IFO / HFO	16,800	California	8/7/2007	Facility	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	15,000	Washington	8/1/2008	Facility	Equipment Failure	Impermeable Surface
Oily Water Mixture	14,070	California	7/29/2007	Facility	Human Error	Land
Diesel Oil / Marine Gas Oil	14,000	Hawaii	11/1/2011	Vessel	Equipment Failure	Land
Oily Water Mixture	13,659	California	1/10/2007	Facility	Equipment Failure	Land
Jet Fuel / Kerosene	13,630	Alaska	10/30/2008	Facility	Equipment Failure	Land
Crude Oil	13,500	Alaska	11/29/2009	Facility	Equipment Failure	Land
Oily Water Mixture	13,440	California	1/21/2007	Facility	External Conditions	Land
Mineral Oil / Transformer Oil	13,000	Hawaii	3/22/2007	Vessel	Equipment Failure	Marine
Crude Oil	12,852	California	6/28/2010	Facility	Equipment Failure	Fresh Water
Oily Water Mixture	12,684	California	4/3/2008	Facility	Equipment Failure	Land
Oily Water Mixture	12,600	Alaska	1/29/2007	Facility	Equipment Failure	Land
Oily Water Mixture	12,600	California	12/3/2009	Facility	Equipment Failure	Land
Asphalt / Creosote	12,600	California	11/13/2009	Facility	Human Error	Land
Oily Water Mixture	12,600	California	10/12/2007	Pipeline	Equipment Failure	Land
Crude Oil	12,600	California	11/26/2007	Facility	Equipment Failure	Land
Crude Oil	12,600	California	7/15/2007	Facility	Equipment Failure	Land
Mineral Oil / Transformer Oil	12,096	California	9/30/2007	Pipeline	Equipment Failure	Land
Crude Oil	12,000	California	3/15/2007	Facility	Equipment Failure	Land
Oily Water Mixture	11,970	California	5/1/2007	Pipeline	Equipment Failure	Land
Oily Water Mixture	10,500	California	4/11/2008	Facility	Human Error	Land
Asphalt / Creosote	10,500	Washington	9/13/2007	Facility	Human Error	Land
Crude Oil	10,080	California	7/21/2008	Pipeline	Equipment Failure	Land

2012-2016

Product	Volume (gal)	State/Prov	Date	Source Type	Cause Type	Medium
Asphalt / Creosote	203,000	Washington	1/22/2014	Facility	Equipment Failure	Land
Crude Oil	140,000	California	5/19/2015	Pipeline	Equipment Failure	Marine
Oily Water Mixture	100,000	California	9/7/2012	Facility	Equipment Failure	Fresh Water
Gasoline	80,000	California	8/31/2013	Vehicle	Human Error	Land
Diesel Oil / Marine Gas Oil	75,000	Hawaii	1/22/2015	Vessel	Human Error	Marine
Asphalt / Creosote	71,000	Washington	2/8/2015	Facility	Equipment Failure	Fresh Water

SPILLS GREATER THAN 10,000 GALLONS (2002-2021) - continued

2012-2016 (continued)

Product	Volume (gal)	State/Prov	Date	Source Type	Cause Type	Medium
Mineral Oil / Transformer Oil	70,000	California	4/16/2013	Facility	Human Error	Fresh Water
Oily Water Mixture	63,000	California	1/17/2012	Facility	Equipment Failure	Land
Asphalt / Creosote	60,000	California	12/27/2014	Facility	Unknown	Land
Oily Water Mixture	58,128	California	4/6/2014	Facility	Equipment Failure	Land
Crude Oil	44,755	California	6/23/2016	Pipeline	Human Error	Marine
Crude Oil	42,000	California	10/23/2012	Facility	Organizational / Management Failure	Fresh Water
Oily Water Mixture	42,000	California	8/11/2015	Unknown	Unknown	Land
Crude Oil	42,000	Oregon	6/3/2016	Vehicle	Equipment Failure	Fresh Water
Unknown	35,910	California	12/3/2013	Facility	Equipment Failure	Land
Oily Water Mixture	33,600	California	11/9/2014	Unknown	Unknown	Land
Diesel Oil / Marine Gas Oil	32,000	California	1/25/2013	Vehicle	External Conditions	Fresh Water
Diesel Oil / Marine Gas Oil	30,847	Alaska	8/15/2015	Facility	Equipment Failure	Land
Oily Water Mixture	30,000	California	2/3/2014	Vehicle	Other	Fresh Water
Jet Fuel / Kerosene	27,000	Hawaii	1/13/2014	Facility	Equipment Failure	Land
Oily Water Mixture	25,200	California	7/7/2015	Unknown	Unknown	Land
Crude Oil	25,200	California	11/24/2012	Facility	Equipment Failure	Land
Oily Water Mixture	24,360	California	5/9/2014	Facility	Human Error	Land
Crude Oil	21,000	California	12/10/2013	Pipeline	Unknown	Land
Oily Water Mixture	21,000	California	4/10/2014	Facility	Equipment Failure	Land
Asphalt / Creosote	20,575	Washington	4/30/2013	Facility	Unknown	Land
Diesel Oil / Marine Gas Oil	20,000	California	11/7/2012	Vessel	Organizational / Management Failure	Marine
Oily Waste	20,000	Washington	11/13/2014	Facility	Equipment Failure	Impermeable Surface
Diesel Oil / Marine Gas Oil	20,000	California	4/13/2013	Vessel	Unknown	Marine
Mineral Oil / Transformer Oil	20,000	Washington	3/25/2013	Facility	Equipment Failure	Land
Crude Oil	17,640	California	5/27/2012	Facility	Equipment Failure	Land
Oily Water Mixture	16,800	California	4/9/2014	Facility	Equipment Failure	Land
Crude Oil	14,700	California	3/2/2014	Unknown	Unknown	Land
Edible / Vegetable Oil	14,400	California	4/8/2013	Facility	Human Error	Land
Crude Oil	12,600	California	11/9/2014	Unknown	Unknown	Land
Oily Water Mixture	12,600	California	10/15/2012	Facility	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	12,045	Alaska	1/19/2012	Facility	Human Error	Impermeable Surface
Crude Oil	12,012	California	6/28/2012	Facility	Equipment Failure	Land
Oily Water Mixture	11,760	California	12/10/2013	Facility	Unknown	Land
Gasoline	11,300	Oregon	12/13/2015	Vehicle	Human Error	Land
Asphalt / Creosote	10,080	California	2/13/2013	Facility	Equipment Failure	Land
Oily Water Mixture	10,080	California	9/29/2014	Unknown	Unknown	Land

2017-2021

Product	Volume (gal)	State/Prov	Date	Source Type	Cause Type	Medium
Other	167,202	California	9/4/2017	Facility	Equipment Failure	Fresh Water

SPILLS GREATER THAN 10,000 GALLONS (2002-2021) - continued

2017-2021 (continued)

Product	Volume (gal)	State/Prov	Date	Source Type	Cause Type	Medium
Oily Water Mixture	147,840	California	11/8/2019	Facility	Unknown	Land
Jet Fuel / Kerosene	83,000	Hawaii	5/9/2017	Pipeline	Equipment Failure	Land
Crude Oil	66,318	California	10/12/2019	Unknown	Unknown	Fresh Water
Crude Oil	55,986	California	3/18/2021	Pipeline	Equipment Failure	Land
LNG / LPG	52,834	British Columbia	11/24/2021	Pipeline	Equipment Failure	Land
Crude Oil	44,909	British Columbia	6/13/2020	Pipeline	Equipment Failure	Land
Oily Water Mixture	37,800	California	3/21/2019	Other	Unknown	Land
Diesel Oil / Marine Gas Oil	35,456	Alaska	2/11/2017	Vessel	External Conditions	Marine
Diesel Oil / Marine Gas Oil	29,000	California	3/5/2021	Vessel	Organizational / management failure	Marine
Crude Oil	28,962	Washington	12/22/2020	Vehicle	Unknown	Land
Crude Oil	25,200	California	2/18/2020	Facility	Equipment Failure	Land
Crude Oil	24,696	California	10/2/2021	Pipeline	Equipment Failure	Marine
Oily Water Mixture	23,940	California	1/27/2021	Pipeline	Unknown	Land
Crude Oil	23,478	California	8/21/2019	Facility	Unknown	Land
Oily Water Mixture	21,000	California	3/6/2018	Pipeline	Equipment Failure	Fresh Water
Oily Water Mixture	21,000	California	7/19/2021	Pipeline	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	20,000	Alaska	3/1/2021	Facility	Unknown	Land
Crude Oil	16,800	California	6/12/2020	Facility	Equipment Failure	Land
Diesel Oil / Marine Gas Oil	15,000	Alaska	6/20/2020	Public Lands	Human Error	Land
Aviation Gasoline	15,000	California	1/14/2020	Other	Other	Fresh Water
Other	14,700	California	10/28/2021	Pipeline	Unknown	Land
Oily Water Mixture	13,209	British Columbia	6/28/2020	Pipeline	Equipment Failure	Fresh Water
Asphalt / Creosote	13,000	Alaska	5/16/2018	facility	Equipment failure	Land
Other	12,600	California	6/22/2021	Facility	Unknown	Fresh Water
Diesel Oil / Marine Gas Oil	12,000	Alaska	3/14/2018	Facility	Human Error	Impermeable Surface
Gasoline	11,600	Oregon	12/15/2017	Vehicle	External Conditions	Fresh Water
Mineral Oil / Transformer Oil	11,000	Oregon	12/27/2021	Facility	Equipment Failure	Impermeable Surface
Gasoline	10,701	Washington	10/1/2020	Facility	Equipment Failure	Land
Crude Oil	10,626	California	11/16/2021	Other	Unknown	Land
Crude Oil	10,567	British Columbia	5/26/2020	Vehicle	Unknown	Land
Asphalt / Creosote	10,500	Washington	3/18/2020	Facility	Human Error	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