Table 4-1

Projected Oil and Gas Production in the Gulf of Mexico OCS

	Proposed Action	OCS Program (2003-2042)
Western Planning Area		
Reserve/Resource Production		
Oil (BBO)		3.349-5.533
Gas (Tcf)		42.661-58.174
Central Planning Area		
Reserve/Resource Production		
Oil (BBO)		12.005-16.525
Gas (Tcf)		108.271-146.271
Eastern Planning Area		
Reserve/Resource Production		
Oil (BBO)	0.065-0.085	0.139-0.370
Gas (Tcf)	0.265-0.340	2.488-3.538

Table 4-2

Offshore Scenario Information Related to a Proposed Action in the Eastern Planning Area

	Offshore Subareas*		Total EPA**
	E1600-2400m	E>2400m	
Wells Drilled			
Exploration and Delineation Wells	4 - 5	7 - 8	11 - 13
Development Wells	7 - 10	12 - 17	19 - 27
Oil Wells	5 - 6	9 - 12	14 - 18
Gas Wells	2 - 4	3 - 5	5 - 9
Workovers and Other Well Activities	29 - 42	50 - 71	80 - 111
Production Structures			
Installed	1	1	2
Removed Using Explosives	0	0	0
Total Removed	1	1	2
Method of Oil Transportation			
Percent Piped	100%	100%	100%
Percent Barged	0%	0%	0%
Percent Tankered	0%	0%	0%
Length of Installed Pipelines (km)	NA	NA	50 - 800
Blowouts	0 - 1	0 - 1	0 - 1
Service-Vessel Trips (1,000 trips)	4 - 4	4 - 5	8 - 9
Helicopter Trips (1,000 trips)	4 - 4	4 - 5	7 - 9

* See Figure 3-10.

** Subarea totals may not add up to the planning area total because of rounding.

NA means that information is not available.

Table 4-3

Offshore Scenario Information Related to OCS Program Activities in the Gulf of Mexico for the Years 2003-2042

	Water Depths*						Total OCS**
	0-60m	60-200m	200-800m	800-1600m	1600-2400m	>2400m	
Wells Drilled							
Exploration and Delineation Wells	3,409 - 3,977	1,217 - 1,420	1,162 - 1,262	1,989 - 2,782	1,003 - 1,458	216 - 434	8,996 - 11,333
Development Wells	7,390 - 8,181	3,599 - 3,990	2,057 - 2,232	2,727 - 3,619	1,125 - 2,472	250 - 585	17,148 - 21,079
Oil Wells	1,180 - 1,324	687 - 722	1,135 - 1,209	1,315 - 1,748	699 - 1,465	168 - 396	5,184 - 6,864
Gas Wells	6,210 - 6,857	2,912 - 3,268	922 - 1,023	1,412 - 1,871	426 - 1,007	82 - 189	11,964 - 14,215
Workovers and Other Well Activities	83,000 - 86,600	32,900 - 34,700	12,300 - 13,100	13,500 - 17,700	5,400 - 12,000	1,200 - 2,900	148,300 - 167,000
Production Structures							
Installed	2,239 - 2,969	426 - 566	100 - 107	151 - 200	57 - 125	14 - 32	2,987 - 3,999
Removed Using Explosives	3,696 - 4,243	579 - 692	29 - 30	0 - 0	0 - 0	0 - 0	4,305 - 4,965
Total Removed	5,286 - 6,069	827 - 988	82 - 87	85 - 109	28 - 55	8 - 14	6,303 - 7,296
Method of Oil Transportation***							
Percent Piped	99%	100%	92 - 100%	93 - 100%	94 - 100%	100%	94 - > 99%
Percent Barged	1%	0%	0%	0%	0%	0%	< 1%
Percent Tankered	0	0	0 - 7%	0 - 6%	0 - 7%	0 - 4%	0 - 6%
Length of Installed Pipelines (km)#	9,800 - 24,374	NA	NA	NA	NA	NA	27,590 - 52,364
Blowouts	99 - 108	42 - 46	24 - 26	33 - 45	15 - 28	3 - 7	215 - 258
Service-Vessel Trips (1,000 trips)	9,689 - 9,835	1,433 - 1,531	276 - 314	332 - 451	121 - 264	38 - 84	11,889 - 12,479
Helicopter Trips (1,000 trips)	11,374 - 18,920	4,792 - 8,360	4,075 - 5,727	5,094 - 10,203	2,150 - 6,047	501 - 1,445	27,997 - 50,692

* See Figure 3-10.

** Water depth totals may not add up to the OCS total because of rounding.

*** 100% of gas is assumed to be piped.

Projected length of OCS pipelines does not include length in State waters.

NA means that information is not available.

Table 4-4

Offshore Scenario Information Related to OCS Program Activities in the Eastern Planning Area for the Years 2003-2042

	Offshore Subareas*			Total EPA**
	E0-60m	E1600-2400m	E>2400m	
Wells Drilled				
Exploration and Delineation Wells	8 - 8	14 - 29	24 - 44	46 - 81
Development Wells	25 - 27	25 - 55	35 - 81	85 - 163
Oil Wells	0 - 0	10 - 27	19 - 50	29 - 77
Gas Wells	25 - 27	15 - 28	16 - 31	56 - 86
Workovers and Other Well Activities	100 - 100	100 - 300	200 - 400	400 - 800
Production Structures				
Installed	1 - 2	2 - 3	2 - 4	5 - 9
Removed Using Explosives	0	0	0	0
Total Removed	6 - 7	2 - 2	2 - 3	10 - 12
Method of Oil Transportation***				
Percent Piped	100%	100%	100%	100%
Percent Barged	0%	0%	0%	0%
Percent Tankered	0%	0%	0%	0%
Length of Installed Pipelines (km)#	160 - 224	N/A	N/A	1,040 - 1,664
Blowouts	0 - 0	0 - 1	0 - 1	1
Service-Vessel Trips (1,000 trips)	4 - 8	8 - 14	9 - 20	21 - 42
Helicopter Trips (1,000 trips)	4 - 9	7 - 15	8 - 20	19 - 43

* See Figure 3-10.
** Subarea totals may not add up to the planning area total because of rounding.
*** 100% of gas is assumed to be piped.
# Projected length of OCS pipelines does not include length in State waters.
NA means that information is not available.

Table 4-5

Offshore Scenario Information Related to OCS Program Activities in the Central Planning Area for the Years 2003-2042

	Offshore Subareas*							
	C0-60m (western)	C0-60m (eastern)	C60-200m	C200-800m	C800-1600m	C1600-2400m	C>2400m	Total CPA**
Wells Drilled								
Exploration and Delineation Wells	2,337 - 2,728	413 - 481	1,056 - 1,233	703 - 736	1,651 - 1,996	834 - 1,150	114 - 260	7,108 - 8,584
Development Wells	4,708 - 5,190	831 - 916	2,874 - 3,108	1,268 - 1,327	1,899 - 2,428	821 - 1,736	152 - 347	12,553 - 15,052
Oil Wells	801 - 882	141 - 156	552 - 558	692 - 692	962 - 1,194	538 - 1,063	115 - 258	3,801 - 4,803
Gas Wells	3,907 - 4,308	690 - 760	2,322 - 2,550	576 - 635	937 - 1,234	283 - 673	37 - 89	8,752 - 10,249
Workovers and Other Well Activities	61,300 - 63,500	5,800 - 6,200	25,800 - 26,900	7,800 - 8,100	9,400 - 11,900	4,000 - 8,400	700 - 1,700	114,800 - 126,700
Production Structures								
Installed	1,539 - 2,034	271 - 359	331 - 429	62 - 65	106 - 136	42 - 90	9 - 21	2,360 - 3,134
Removed Using Explosives	2,808 - 3,161	377 - 452	474 - 552	16 - 18	0	0	0	3,676 - 4,183
Total Removed	4,012 - 4,515	539 - 646	677 - 789	47 - 50	56 - 72	15 - 32	4 - 6	5,350 - 6,110
Method of Oil Transportation***								
Percent Piped	99%	99%	100%	94% - 100%	94% - 100%	93% - 100%	94% - 100%	94% - > 99%
Percent Barged	1%	1%	0%	0%	0%	0%	0%	< 1%
Percent Tankered	0%	0%	0%	0 - 6%	0 - 6%	0 - 7%	0 - 6%	0 - 6%
Length of Installed Pipelines (km)#	4,100 - 12,320	720 - 2,170	NA	NA	NA	NA	NA	16,900 - 31,380
Blowouts	68 - 74	10 - 11	33 - 36	15 - 15	25 - 31	12 - 20	2 - 4	164 - 192
Service-Vessel Trips (1,000 trips)	8,345 - 8,384	657 - 709	1,164 - 1,215	158 - 178	220 - 293	80 - 172	21 - 45	10,644 - 10,996
Helicopter Trips (1,000 trips)	5,290 - 11,540	930 - 2,040	2,950 - 6,330	1,480 - 3,010	2,670 - 6,450	1,240 - 4,210	200 - 880	14,770 - 34,450

* See Figure 3-10.

** Subarea totals may not add up to the planning area total because of rounding.

*** 100% of gas is assumed to be piped.

Projected length of OCS pipelines does not include length in State waters.

NA means that information is not available.

Table 4-6

Offshore Scenario Information Related to OCS Program Activities in the Western Planning Area for the Years 2003-2042

	Offshore Subareas*						Total WPA**
	W0-60m	W60-200m	W200-800m	W800-1600m	W1600-2400m	W>2400m	
Wells Drilled							
Exploration and Delineation Wells	651 - 760	161 - 187	459 - 526	338 - 786	155 - 279	78 - 130	1,842 - 2,668
Development Wells	1,826 - 2,048	725 - 882	789 - 905	828 - 1,191	279 - 681	63 - 157	4,510 - 5,864
Oil Wells	238 - 286	135 - 164	443 - 517	353 - 554	151 - 375	34 - 88	1,354 - 1,984
Gas Wells	1,588 - 1,762	590 - 718	346 - 388	475 - 637	128 - 306	29 - 69	3,156 - 3,880
Workovers and Other Well Activities	15,800 - 16,800	7,100 - 7,800	4,500 - 5,000	4,100 - 5,800	1,300 - 3,300	300 - 800	33,100 - 39,500
Production Structures							
Installed	428 - 574	95 - 137	38 - 42	45 - 64	13 - 32	3 - 7	622 - 856
Removed Using Explosives	510 - 631	105 - 139	12 - 13	0	0	0	629 - 783
Total Removed	729 - 901	150 - 199	35 - 37	29 - 37	11 - 21	2 - 5	943 - 1,174
Method of Oil Transportation***							
Percent Piped	99%	100%	92 - 100%	93 - 100%	94 - 100%	100%	94 - > 99%
Percent Barged	1%	0%	0%	0%	0%	0%	< 1%
Percent Tankered	0%	0%	0 - 8%	0 - 7%	0 - 6%	0%	0 - 6%
Length of Installed Pipelines (km)#	4,820 - 9,660	NA	NA	NA	NA	NA	9,650 - 19,320
Blowouts	21 - 24	8 - 9	9 - 10	8 - 14	3 - 7	1 - 2	51 - 66
Service-Vessel Trips (1,000 trips)	682 - 733	269 - 316	118 - 136	113 - 158	33 - 78	8 - 19	1,223 - 1,440
Helicopter Trips (1,000 trips)	5,150 - 5,331	1,842 - 2,030	2,595 - 2,717	2,424 - 3,753	902 - 1,823	293 - 545	13,208 - 16,199

* See Figure 3-10.
** Subarea totals may not add up to the planning area total because of rounding.
*** 100% of gas is assumed to be piped.
# Projected length of OCS pipelines does not include length in State waters.
NA means that information is not available.

Table 4-7

Coastal Infrastructure Related to OCS Program Activities in the Gulf of Mexico for the Years 2003-2042 by Coastal Subarea

	Coastal Subareas*																				Total OCS Program**	
	TX-1		TX-2		LA-1		LA-2		LA-3		MA-1		FL-1		FL-2		FL-3		FL-4			
Infrastructure	Current	New	Current	New	Current	New	Current	New	Current	New	Current	New	Current	New	Current	New	Current	New	Current	New	Current	New
Pipeline Landfalls	2	0-2	11	4-8	38	4-6	33	6-9	35	5-7	7	4-6	0	0	0	0	0	0	0	0	126	23-38
Service Bases	10	0	6	0	10	0	13	0	6	0	4	0	1	0	0	0	0	0	0	0	50	0
Helicopter Hubs	7	0	32	0	29	0	28	0	27	0	5	0	0	0	0	0	0	0	0	0	128	0
Platform Yards	3	0	4	0	11	0	12	0	8	0	5	0	0	0	0	0	0	0	0	0	43	0
Shipyards	2	0	25	0	3	0	15	0	20	0	20	0	4	0	1	0	4	0	0	0	94	0
Pipecoating Plants	0	0	7	0	5	0	0	0	2	0	2	0	2	0	0	0	1	0	0	0	19	0
Refineries	5	0	14	0	4	0	1	0	9	0	4	0	0	0	0	0	0	0	0	0	37	0
Petrochemical Plants	4	0	16	0	3	0	4	0	2	0	0	0	0	0	0	0	0	0	0	0	29	0
Gas Processing Plants	0	0-2	1	1-3	13	1-3	8	1-3	7	1-3	6	0-2	0	0	0	0	0	0	0	0	35	4-16
Pipeline Shore Facilities	6	0-1	7	2-4	18	2-3	10	3-5	9	3-4	0	2-3	0	0	0	0	0	0	0	0	50	12-20
Barge Terminals	1	0	3	0	1	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	8	0
Tanker Ports	1	0	3	0	1	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	10	0
Waste Disposal Plants	4	0	5	0	10	0	8	0	3	0	4	0	0	0	0	0	0	0	0	0	34	0

* See Figure 3-10.

** Individual coastal subarea totals do not add up to the OCS Program total because some navigation channels span more than one subarea (Chapter 4.1.2.1.10).

Notes: Current infrastructure refers to the maximum number of existing facilities that will be used to support future operations.

New infrastucture refers to facilities projected to be built to support future operations. Expansion of existing facilities is not included.

Table 4-8(a)

Average Volumes of Fluids (muds) and Cuttings Projected for a Typical Shallow Exploration Well or Development Well in the Proposed Lease Sale Area

Well Type	Drilling Fluid Type	Interval of Well Depth (m)	Volume of Fluid Generated (bbl)	Volume of Fluid Discharged (bbl)	Volume of Cuttings Generated (bbl)	Volume of Cuttings Discharged (bbl)
Exploration	WBF[1] SBF[2]	Seafloor to 800 800- TD[3]	0-230 100[4]	0-230 0[5]	2,300 1,000	2,300 0[5]
Development	WBF[1] SBF[2]	Seafloor to 800 800- TD[3]	100 50[4]	100 0[5]	1,000 500	1,000 0[5]

Table 4-8(b)

Average Volumes of Fluids (muds) and Cuttings Projected for a Typical Deep Exploration Well or Development Well in the Proposed Lease Sale Area

Well Type	Drilling Fluid Type	Interval of Well Depth (m)	Volume of Fluid Generated (bbl)	Volume of Fluid Discharged (bbl)	Volume of Cuttings Generated (bbl)	Volume of Cuttings Discharged (bbl)
Exploration	WBF[1] SBF[2]	0-914 914-TD[3]	0-272 339[4]	0-272 0[5]	2,720 3,390	2,720 0[5]
Development	WBF[1] SBF[2]	0-914 914-TD[3]	0-122 152[4]	0-122 0[5]	1,225 1,525	1,225 0[5]

[1] WBF (water-based fluid) means treated seawater.
[2] SBF (synthetic-based fluid). If an operator chooses to use SBF to drill a portion of a wellbore, Region 4 of the USEPA will require an individual NPDES permit to discharge these cuttings or the operator may choose the "zero discharge" option and transport the SBF drill cuttings to shore for disposal at an approved site.
[3] TD is the total depth of the well measured from the seafloor.
[4] SBF adheres to cuttings, 10%.
[5] The discharge of cuttings with SBF adhering to them may not be permitted.

Volumes are estimates and are shown for informational purposed only.

Assumptions:
1. A typical well may use either treated seawater with gel sweeps or water-based mud for the seafloor to 800-m segment.
2. The development well will be 45% of the exploratory well volume because drilling difficulties can be avoided (USEPA, 1999).
3. The wellbore erosional factors are as follows: 20-40% washout in upper portion (<800 m) when using WBF and 5-15% in the lower portion (>800 m) of the wellbore when using SBF.

Table 4-9

Annual Volume of Produced Water Discharged Overboard on the OCS from 1996 to 2000

Year	Produced Water Discharged Overboard (MMbbl)
1996	457
1997	454
1998	510
1999	547
2000	586

Source: USDOI, MMS, 2002.

Table 4-10

Average Annual Emission Rates from OCS Infrastructures in the Gulf of Mexico

	NO_x	CO	SO_x	VOC	PM_{10}
Platforms (tons/platform/year)	808	1490	68	213	8.1
Exploration Well (tons/well)[1]	1079	258	149	35	32
Development Well (tons/well)[2]	21.49	5.73	2.52	2.07	0.61

[1] Assumes a 4,115-m hole, 40-day drilling period, and a power consumption of 120 horsepower hour/foot.

[2] Assumes a 3,050-m hole, a 35-day drilling period in less than 400-m water depth, a 60-day drilling period in greater than 400-m water depth, and a power consumption of 180 horsepower hour/foot.

Source: USDOI, MMS, 1994.

Table 4-11

Average Annual Emission Rates from OCS Infrastructures in the Eastern Planning Area

	NO_x	CO	SO_x	VOC	PM_{10}
Platforms (tons/platform/year)	808	1490	68	213	8.1
Exploration Well (tons/well)[1]	1079	258	149	35	32
Development Well (tons/well)[2]	35.82	9.55	4.2	3.45	1.02

[1] Assumes a 4,115-m hole, 100-day drilling period, and a power consumption of 120 horsepower hour/foot.

[2] Assumes a 3,050-m hole, a 35-day drilling period in less than 400-m water depth, a 100-day drilling period in greater than 400-m water depth, and a power consumption of 180 horsepower hour/foot.

Table 4-12

OCS Louisiana Study Area Pipeline Landloss (300-m buffer) Trend Summary
(increase in water area by time period)

Time Period	Years Total	Mi^2 Total	Hectare Total	Acre Total	Mi^2/Ha/Ac Per Year
1956-1978	22	101	26,158	64,640	4.60/1,191/2,944
1978-1990	12	22	5,698	14,080	1.80/466/1,152
1990-2002	12	10	2,590	6,400	0.82/212/525
1956-2002	46	133	34,447	85,120	2.88/746/1,843

Source: Johnston and Barras, personal communication, 2002.

Table 4-13

2000 Cleanup Totals: People, Pounds, and Miles

	Land			Underwater			Total		
State	People	Pounds	Miles	People	Pounds	Miles	People	Pounds	Miles
Florida	32,039	1,062,064	1482.47	208	2,876	10.18	32,247	1,064,940	1492.65
Alabama	3,849	94,548	293.19	10	10	0.01	3,859	94,558	293.20
Mississippi	2,850	60,060	70	90	8,000	1.25	1,940	68,060	71.25
Louisiana	2,440	85,208	163.25	22	25	NR	2,462	85,223	163.25
Totals	41,178	1,301,880	2008.91	330	10,911	11	40,508	1,312,781	2020.35

Source: The Ocean Conservancy, 2002.

Table 4-14

Annual Inputs of Petroleum Hydrocarbons to Gulf of Mexico Waters from Various Sources

Source	Million metric tons (Mta)	% of Inputs Calculated
Municipal Wastewater Discharges [1]	0.034	30
Natural Seepage [2]	0.027	24
Spills [3]	0.011	10
From OCS Operations	0.001	
From Non-OCS Operations	0.010	
Mississippi River Runoff [4]	0.009	8
Nonpoint-Source urban Runoff [5]	0.008	7
Industrial Wastewater Discharges	0.006	5
Non-Refinery Industrial Discharges [6]	0.004	
Refinery Discharges [7]	0.002	
Produced Water from OCS Production [8]	0.002	2
Vessel Operational Discharges [9]	Not calculated	Not calculated
Atmospheric Sources	Not calculated	Not calculated
Flux from Sediment Disturbances	Not calculated	Not calculated
International Inputs	Not calculated	Not calculated
Partial Sum of inputs	0.114	100

[1] Amount calculated by multiplying the Gulf Coast population projected for the year 2015 (Chapter 3.3.5.4.1) by an average value per person of petroleum hydrocarbon discharged in wastewater of 4.5 grams PHC/day/person, estimated by the NRC (1985).

[2] Amount based on estimates made by Wilson et al. (1973) for the NRC (1985) report on Oil in the Sea.

[3] Amount calculated by multiplying the number of spills estimated to occur for a typical future year (Table 4-15) by the average spill size for various size categories. Chapter 4.3.1.1.3 and Table 4-15 provides a detailed description of spill occurrence for both OCS and non-OCS sources.

[4] Amount based on assuming the Mississippi River carries 67% of total U.S. river runoff contribution estimated by NRC (1985).

[5] Amount calculated by multiplying the Gulf Coast population projected for the year 2015 (Chapter 3.3.5.4.1) by an average value of 1 gram PHC/day/person, estimated by the NRC (1985).

[6] Amount calculated by (1) using the NRC (1985) estimate of 0.2 Mta of PHC discharged from non-refinery industrial operations into the world ocean, (2) applying their assumption that U.S. coastal waters make up one-third of the world ocean, and (3) proportioning that value by the ratio of the GOM population to the U.S. population for the year 2015.

[7] Amount calculated by multiplying the NRC (1985) estimate of 0.005 kg PHC per 103 kg production by the 2001 refinery capacity of GOM refineries reported by the EIA (2002) as 2.589 billion bbl of oil per year.

[8] Amount calculated by multiplying the average annual value of 532 million bbl per year of produced water discharged (MMS, internal data 1985-2000) by the monthly allowable average oil and grease content of discharged water (29 mg/l) (Chapter 4.1.1.4).

[9] The MMS expects that the NRC 1985 estimate of operational discharges from vessels will be reduced significantly due to increased regulatory prohibitions on vessel operational discharges. No estimate derived from 1985 methodology is therefore provided.

Table 4-15

Projected Annual Oil Spill Occurrence within Coastal and Offshore Waters of the Gulf of Mexico
(Gulfwide Projections)

Spills ≥ 1,000 bbl			Spills < 1,000 bbl		
Source	Number of Spills*	Assumed Size (bbl)	Source	Number of Spills*	Assumed Size (bbl)
OFFSHORE SPILLS			OFFSHORE SPILLS		
Total All Sources	4-5 per year	not calculated	Total All Sources	1,550-2,150	6
Total Non-OCS Sources	3-4 per year		Total Non-OCS Sources	200-250 per year	6
Tanker Traffic	1 per year	14,600	Tanker Traffic		
Barge Traffic	2-3 per year	3,000	Barge Traffic		
Total OCS Program Sources	1 every 1-2 years		Total OCS Program Sources	1,350-1,900 per year	
Facility	1 every 15-20 years	1,500	By Size		
Pipeline	1 every 2-3 years	4,600	0.1bbl - 1 bbl	1,300-1,850 per year	0.7
Shuttle Tanker	1 in next 40 years	14,600	1.1 bbl - 50 bbl	35-50 per year	6
			51 bbl - 999 bbl	2-4 per year	165
COASTAL SPILLS			COASTAL SPILLS		
Total All Sources	10-15 per year	not calculated	Total All Sources	1,875 per year	6
Non-OCS Sources	10-12 per year		Non-OCS Sources	1,775 per year	6
Tankers	1 per year	4,500			
Barge Traffic	7-8 per year	3,000			
Other	3-4 per year	4,200			
OCS Sources	1 per year	4,200	OCS Sources	100 per year	6

*Non-OCS and OCS sources may not add up to the total from all sources because of rounding.

Table 4-16

Projected Total OCS Emissions Related to a Proposed Action by Source
(tons over the life of a proposed action)

Activity/Pollutant	NO_x	CO	SO_x	VOC	PM_{10}*
Service Vessels	11,308.7-12,722.3	1,136.2-1,278.2	1,177.7-1,324.9	493.4-555.1	684.2-769.7
Pipeline Vessels	229.8-3,676.8	77.0-1,232.0	32.0-512.0	21.0-336.0	19.0-304.0
LTO Helicopters	0.8-1.0	0.6-0.8	0.1-0.2	0.0-0.0	0.0-0.0
Cruise Helicopters	1.3-1.7	3.7-4.8	0.3-0.4	0.3-0.4	0.4-0.5
Blowouts without Fire	0	0	0	0.0-10.9	0
Spills without Fire	0	0	0	232.6-255.0	0
Barge Loading	0	0	0	0	0
Tanker Loading	0	0	0	0	0
Tanker Loss	0	0	0	0	0
Tanker Exhaust	0	0	0	0	0
Tug Exhaust	0	0	0	0	0
Platform Construction	421.2-421.2	83.2-83.2	23.98-24.0	24.7-24.7	25.9-25.9
Exploratory Wells	11,869.0-14,027.0	2,838.0-3,354.0	1,639.0-1,937.0	385.0-455.0	352.0-416.0
Development Wells	680.6-967.1	181.5-257.9	79.8-113.4	65.6-93.2	19.4-27.5
Platforms	70,135.0-6,410.9	16,770.0-1,539.2	9,685.0-1,111.5	2,275.0-5,015.4	2,080.0-120.9
Totals	94,646.4-38,228.0	21,090.2-7,750.1	12,637.9-5,023.3	3,497.6-6,745.7	3,180.9-1,664.6

*TSP emissions were calculated in the spreadsheets. For conservative estimates of PM_{10}, it is assumed that the ratio of PM_{10} to TSP is equal to 1.0.

Table 4-17

Projected Total OCS Emissions Related to a Proposed Action by Offshore Subarea
(tons over the life of a proposed action)

Pollutant Distribution	E1600-2400m	E>2400m	Total
NO_x	47,323.2-19,114.0	47,323.2-19,114.0	94,646-38,228.0
CO	10,545.1-3,875.0	10,545.1-3,875.0	21,090-7,750.1
SO_x	6,318.9-2,511.6	6,318.9-2,511.6	12,638-5,023.3
VOC	1,748.8-3,372.9	1,748.8-3,372.9	3,498-6,745.7
PM_{10}	1,590.4-832.3	1,590.4-832.3	3,181-1,664.6

Table 4-18

Projected Peak-Year OCS Emissions Related to a Proposed Action by Source (tons)

Activity/Pollutant	NO_x	CO	SO_x	VOC	PM_{10}
Service Vessels	348.0-391.5	35.0-39.3	36.2-40.8	15.2-17.1	21.1-23.7
Pipeline Vessels	114.9-1838.4	38.5-616.0	16.0-256.0	10.5-168.0	9.5-152.0
LTO Helicopters	0.02-0.02	0.02-0.02	0.0-0.0	0.0-0.0	0-0.0
Cruise Helicopters	0.04-0.04	0.11-321.4	0.01-0.01	0.01-0.01	0.01-0.01
Blowouts without Fire	0	0	0	0.0-10.9	0
Spills without Fire	0	0	0	232.6-255.0	0
Barge Loading	0	0	0	0	0
Tanker Loading	0	0	0	0	0
Transit Loss	0	0	0	0	0
Tanker Exhaust	0	0	0	0	0
Tug Exhaust	0	0	0	0	0
Platform Construction	210.6-210.6	41.6-41.6	12.0-12.0	12.4-12.4	12.9-12.9
Exploratory Wells	2158.0-3237.0	516.0-774.0	298.0-447.0	70.0-105	64.0-96.0
Development Wells	71.6-71.6	19.1-19.1	8.4-8.4	6.9-6.9	2.0-2.0
Platforms	2158.0-203.5	516.0-47.4	298.0-34.2	70.0-154.3	64.0-3.7
Totals	5061.2-5952.7	1166.3-1858.8	668.6-798.4	417.5-729.6	173.5-290.4

Table 4-19

Projected Peak-Year OCS Emissions Related to a Proposed Action by Offshore Subarea (tons/year)

Pollutant Distribution	E1600-2400m	E>2400m	Total
NO_x	2530.6-2976.4	2530.6-2976.4	5061.2-5952.7
CO	583.1-929.4	583.1-929.4	1166.3-1858.8
SO_x	334.3-399.2	334.3-399.2	668.6-798.4
VOC	208.8-364.8	208.8-364.8	417.5-729.6
PM_{10}	86.8-145.2	86.8-145.2	173.5-290.4

Table 4-20

Results of Concentration Estimates and the
Corresponding Maximum Allowable Increases, Class I Areas
(micrograms per cubic meter)

Pollutant/ Averaging Period	Class I Maximum Allowable Increase*	Class I Modeled Impact**
SO_2		
Annual Average	2.0	0.01
24-hour Average	5.0	0.08
3-hour Average	25.0	0.17
NO_2		
Annual Average	2.5	0.05
PM_{10}		
Annual Average	4.0	***
24-hour Average	8.0	***

* 30 CFR 250.303
** Calculated using MMS's Offshore and Coastal Dispersion (OCD) Model.
*** PM_{10} emissions were not calculated because they are emitted in smaller quantities than NO_2 or SO_2; hence, their impacts would be even less than those modeled and presented above.

Table 4-21

Results of Concentration Estimates and the
Corresponding Maximum Allowable Increases, Class II Areas
(micrograms per cubic meter)

Pollutant/ Averaging Period	Class II Maximum Allowable Increase*	Class II Modeled Impact**
SO_2		
Annual Average	20.0	0.02
24-hour Average	91.0	0.24
3-hour Average	512.0	0.16
NO_2		
Annual Average	25.0	0.08
PM_{10}		
Annual Average	17.0	***
24-hour Average	30.0	***

* 30 CFR 250.303
** Calculated using MMS's Offshore and Coastal Dispersion (OCD) Model.
*** PM_{10} emissions were not calculated because they are emitted in smaller quantities than NO_2 or SO_2; hence, their impacts would be even less than those modeled and presented above.

Table 4-22

Population Projected for a Proposed Lease Sale

SubArea:	TX-1	TX-2	WGOM	LA-1	LA-2	LA-3	MA-1	CGOM	FL-1	FL-2	FL-3	FL-4	EGOM
Year:	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High
1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
2	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
3	1.7 - 1.7	83.0 - 83.0	84.6 - 84.6	35.4 - 35.4	27.9 - 27.9	43.3 - 43.3	3.5 - 3.5	110.1 - 110.1	0.2 - 0.2	0.2 - 0.2	0.3 - 0.3	0.1 - 0.1	0.9 - 0.9
4	2.7 - 3.5	123.4 - 164.8	126.1 - 168.4	53.2 - 70.8	42.3 - 56.2	64.3 - 85.8	5.4 - 7.2	165.2 - 220.0	0.4 - 0.5	0.3 - 0.3	0.5 - 0.6	0.2 - 0.3	1.3 - 1.8
5	215.3 - 2,476.2	1,695.1 - 11,723.1	1,910.5 - 14,199.3	517.4 - 2,277.5	543.3 - 3,451.2	732.4 - 3,894.9	234.8 - 3,214.6	2,027.9 - 12,838.2	3.6 - 3.6	0.5 - 0.5	6.0 - 6.0	1.5 - 1.5	11.6 - 11.6
6	214.8 - 2,473.6	1,695.0 - 11,756.4	1,909.8 - 14,230.0	514.1 - 2,281.8	541.4 - 3,455.9	730.8 - 3,905.3	234.1 - 3,208.2	2,020.4 - 12,851.2	3.6 - 3.7	0.5 - 0.6	5.9 - 6.1	1.5 - 1.6	11.5 - 12.0
7	2.1 - 2.1	80.8 - 80.7	82.9 - 82.8	35.3 - 35.3	28.7 - 28.7	41.9 - 41.8	3.7 - 3.7	109.6 - 109.4	0.3 - 0.3	0.2 - 0.2	0.3 - 0.3	0.2 - 0.2	1.0 - 1.0
8	2.1 - 2.1	80.8 - 80.7	82.9 - 82.8	35.2 - 35.1	28.7 - 28.6	41.8 - 41.7	3.7 - 3.7	109.3 - 109.2	0.3 - 0.3	0.2 - 0.2	0.3 - 0.3	0.2 - 0.2	1.0 - 1.0
9	2.7 - 3.8	123.3 - 163.5	126.0 - 167.2	51.9 - 69.3	42.0 - 56.2	63.6 - 84.3	5.4 - 7.2	162.8 - 217.0	0.4 - 0.5	0.3 - 0.4	0.5 - 0.6	0.2 - 0.3	1.3 - 1.8
10	0.0 - 2.1	0.2 - 80.8	0.2 - 82.9	0.1 - 34.9	0.1 - 28.6	0.2 - 41.6	0.0 - 3.7	0.5 - 108.9	0.0 - 0.3	0.0 - 0.2	0.0 - 0.3	0.0 - 0.2	0.0 - 1.0
11	2.7 - 4.6	123.1 - 204.5	125.8 - 209.1	51.4 - 85.6	41.8 - 69.7	63.1 - 104.9	5.3 - 8.9	161.6 - 269.0	0.4 - 0.6	0.3 - 0.4	0.5 - 0.8	0.2 - 0.4	1.3 - 2.2
12	0.0 - 2.1	0.3 - 80.7	0.3 - 82.8	0.2 - 34.6	0.2 - 28.5	0.2 - 41.4	0.0 - 3.7	0.6 - 108.2	0.0 - 0.3	0.0 - 0.2	0.0 - 0.3	0.0 - 0.2	0.0 - 1.0
13	1.1 - 1.1	40.4 - 40.7	41.4 - 41.8	17.2 - 17.4	14.3 - 14.5	20.6 - 20.9	1.8 - 1.9	54.0 - 54.6	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
14	1.9 - 1.9	81.5 - 81.7	83.4 - 83.6	33.9 - 34.0	27.8 - 28.0	41.5 - 41.6	3.6 - 3.6	106.7 - 107.2	0.3 - 0.3	0.2 - 0.2	0.3 - 0.3	0.2 - 0.2	0.9 - 0.9
15	1.1 - 1.1	40.5 - 40.5	41.6 - 41.6	17.2 - 17.2	14.3 - 14.3	20.6 - 20.6	1.8 - 1.9	54.0 - 54.1	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
16	1.1 - 1.1	40.2 - 40.4	41.3 - 41.5	17.0 - 17.2	14.2 - 14.3	20.4 - 20.5	1.8 - 1.8	53.4 - 53.8	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
17	1.1 - 1.1	40.2 - 40.3	41.3 - 41.4	17.0 - 17.0	14.2 - 14.2	20.3 - 20.4	1.8 - 1.8	53.3 - 53.5	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
18	1.9 - 1.9	81.1 - 81.1	83.0 - 83.0	33.3 - 33.3	27.7 - 27.7	40.8 - 40.8	3.5 - 3.5	105.3 - 105.3	0.3 - 0.3	0.2 - 0.2	0.3 - 0.3	0.2 - 0.2	0.9 - 0.9
19	1.1 - 1.1	40.1 - 40.2	41.1 - 41.3	16.8 - 16.9	14.1 - 14.2	20.1 - 20.2	1.8 - 1.8	52.8 - 53.1	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
20	1.0 - 1.1	40.0 - 40.0	41.0 - 41.1	16.7 - 16.8	14.0 - 14.1	20.0 - 20.0	1.8 - 1.8	52.5 - 52.7	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
21	1.1 - 1.0	40.0 - 40.0	41.0 - 41.0	16.7 - 16.7	14.0 - 14.1	19.9 - 19.9	1.8 - 1.8	52.4 - 52.5	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
22	0.0 - 1.0	0.2 - 39.9	0.2 - 40.9	0.1 - 16.6	0.1 - 14.0	0.1 - 19.8	0.0 - 1.8	0.4 - 52.3	0.0 - 0.1	0.0 - 0.1	0.0 - 0.2	0.0 - 0.1	0.0 - 0.5
23	0.0 - 0.0	0.3 - 0.3	0.3 - 0.3	0.2 - 0.2	0.2 - 0.2	0.2 - 0.2	0.0 - 0.0	0.6 - 0.6	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
24	0.0 - 0.0	0.2 - 0.3	0.2 - 0.3	0.1 - 0.2	0.1 - 0.2	0.1 - 0.2	0.0 - 0.0	0.4 - 0.6	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
25	0.0 - 0.0	0.2 - 0.2	0.2 - 0.2	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.4 - 0.4	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
26	0.0 - 0.0	0.2 - 0.3	0.2 - 0.3	0.1 - 0.2	0.1 - 0.2	0.1 - 0.2	0.0 - 0.0	0.4 - 0.5	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
27	0.0 - 0.0	0.2 - 0.1	0.2 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
28	0.0 - 0.0	0.2 - 0.1	0.2 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
29	0.0 - 0.0	0.1 - 0.1	0.1 - 0.1	0.0 - 0.1	0.0 - 0.1	0.0 - 0.1	0.0 - 0.0	0.1 - 0.3	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
30	0.0 - 0.0	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
31	0.0 - 0.0	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
32	0.0 - 0.0	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
33	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
34	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
35	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
36	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
37	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
38	15.2 - 0.0	161.1 - 0.0	176.3 - 0.0	52.0 - 0.0	103.4 - 0.0	98.4 - 0.0	23.3 - 0.0	277.1 - 0.0	3.3 - 0.0	2.2 - 0.0	3.8 - 0.0	1.6 - 0.0	10.9 - 0.0
39	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
40	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0

Table 4-23

Population Projected for a Proposed Lease Sale as a Percent of Total Population

SubArea:	TX-1		TX-2		WGOM		LA-1		LA-2		LA-3		MA-1		CGOM		FL-1		FL-2		FL-3		FL-4		EGOM	
Year:	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.3	0.0	0.2	0.0	0.2	0.1	0.3	0.1	0.3	0.1	0.3	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.2	0.0	0.2	0.0	0.2	0.1	0.3	0.0	0.3	0.1	0.3	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 4-24

Employment (Direct, Indirect, and Induced) Projected for a Proposed Lease Sale

SubArea:	TX-1	TX-2	WGOM	LA-1	LA-2	LA-3	MA-1	CGOM	FL-1	FL-2	FL-3	FL-4	EGOM
Year:	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High
1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
2	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
3	0.8 - 0.8	49.0 - 49.0	49.9 - 49.9	20.4 - 20.4	16.0 - 16.0	25.6 - 25.6	2.0 - 2.0	63.9 - 63.9	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.4 - 0.4
4	1.3 - 1.8	72.9 - 97.4	74.3 - 99.2	30.8 - 40.9	24.3 - 32.3	38.0 - 50.8	3.1 - 4.1	96.1 - 128.1	0.2 - 0.3	0.1 - 0.1	0.3 - 0.4	0.1 - 0.2	0.7 - 0.9
5	107.2 - 1,233.4	1,002.8 - 6,934.8	1,110.0 - 8,168.3	301.1 - 1,325.3	312.6 - 1,985.4	434.6 - 2,311.1	133.3 - 1,825.1	1,181.5 - 7,446.9	2.0 - 2.0	0.2 - 0.2	3.5 - 3.5	0.9 - 0.9	6.5 - 6.5
6	107.1 - 1,233.8	1,003.4 - 6,959.4	1,110.5 - 8,193.2	300.9 - 1,335.5	312.3 - 1,993.4	434.9 - 2,323.9	133.3 - 1,826.1	1,181.3 - 7,478.9	2.0 - 2.1	0.2 - 0.2	3.5 - 3.6	0.9 - 0.9	6.5 - 6.7
7	1.1 - 1.0	47.9 - 47.8	48.9 - 48.9	20.8 - 20.8	16.6 - 16.6	25.0 - 25.0	2.1 - 2.1	64.5 - 64.4	0.2 - 0.2	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
8	1.1 - 1.1	47.9 - 47.8	49.0 - 48.9	20.8 - 20.8	16.6 - 16.6	25.0 - 25.0	2.1 - 2.1	64.6 - 64.5	0.2 - 0.2	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
9	1.4 - 1.9	73.1 - 97.0	74.5 - 98.8	30.9 - 41.2	24.4 - 32.7	38.2 - 50.6	3.1 - 4.1	96.5 - 128.6	0.2 - 0.3	0.1 - 0.1	0.3 - 0.4	0.1 - 0.2	0.7 - 1.0
10	0.0 - 1.1	0.1 - 48.0	0.1 - 49.0	0.1 - 20.9	0.1 - 16.7	0.1 - 25.1	0.0 - 2.1	0.3 - 64.8	0.0 - 0.2	0.0 - 0.1	0.0 - 0.2	0.0 - 0.1	0.0 - 0.5
11	1.4 - 2.3	73.1 - 121.5	74.5 - 123.8	30.9 - 51.4	24.4 - 40.7	38.2 - 63.4	3.1 - 5.1	96.5 - 160.6	0.2 - 0.4	0.1 - 0.2	0.3 - 0.5	0.1 - 0.2	0.7 - 1.2
12	0.0 - 1.1	0.2 - 48.0	0.2 - 49.1	0.1 - 20.9	0.1 - 16.7	0.1 - 25.1	0.0 - 2.1	0.4 - 64.8	0.0 - 0.2	0.0 - 0.1	0.0 - 0.2	0.0 - 0.1	0.0 - 0.5
13	0.5 - 0.5	24.0 - 24.2	24.6 - 24.8	10.5 - 10.6	8.4 - 8.5	12.6 - 12.7	1.1 - 1.1	32.5 - 32.9	0.1 - 0.1	0.0 - 0.0	0.1 - 0.1	0.0 - 0.1	0.3 - 0.3
14	0.9 - 1.0	48.6 - 48.7	49.5 - 49.6	20.7 - 20.7	16.4 - 16.5	25.3 - 25.4	2.1 - 2.1	64.4 - 64.7	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
15	0.5 - 0.5	24.2 - 24.2	24.7 - 24.7	10.6 - 10.6	8.5 - 8.5	12.7 - 12.7	1.1 - 1.1	32.7 - 32.8	0.1 - 0.1	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3
16	0.5 - 0.5	24.0 - 24.2	24.6 - 24.7	10.5 - 10.6	8.4 - 8.5	12.6 - 12.7	1.1 - 1.1	32.5 - 32.8	0.1 - 0.1	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3
17	0.5 - 0.5	24.1 - 24.1	24.6 - 24.7	10.5 - 10.5	8.4 - 8.4	12.6 - 12.6	1.1 - 1.1	32.6 - 32.7	0.1 - 0.1	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3
18	0.9 - 0.9	48.7 - 48.7	49.6 - 49.6	20.7 - 20.7	16.4 - 16.4	25.4 - 25.4	2.1 - 2.1	64.6 - 64.6	0.1 - 0.1	0.1 - 0.1	0.2 - 0.2	0.1 - 0.1	0.5 - 0.5
19	0.5 - 0.5	24.0 - 24.1	24.6 - 24.7	10.5 - 10.5	8.4 - 8.4	12.6 - 12.6	1.1 - 1.1	32.5 - 32.7	0.1 - 0.1	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3
20	0.5 - 0.5	24.0 - 24.1	24.6 - 24.6	10.5 - 10.5	8.4 - 8.4	12.6 - 12.6	1.1 - 1.1	32.5 - 32.6	0.1 - 0.1	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3
21	0.5 - 0.5	24.1 - 24.1	24.6 - 24.6	10.5 - 10.5	8.4 - 8.4	12.6 - 12.6	1.1 - 1.1	32.6 - 32.6	0.1 - 0.1	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3
22	0.0 - 0.5	0.1 - 24.1	0.1 - 24.6	0.1 - 10.5	0.1 - 8.4	0.1 - 12.6	0.0 - 1.1	0.3 - 32.6	0.0 - 0.1	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.3
23	0.0 - 0.0	0.2 - 0.2	0.2 - 0.2	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.4 - 0.3	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
24	0.0 - 0.0	0.1 - 0.2	0.1 - 0.2	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
25	0.0 - 0.0	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
26	0.0 - 0.0	0.1 - 0.2	0.1 - 0.2	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.3 - 0.3	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
27	0.0 - 0.0	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.2 - 0.2	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
28	0.0 - 0.0	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.1 - 0.1	0.0 - 0.0	0.2 - 0.2	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
29	0.0 - 0.0	0.1 - 0.1	0.1 - 0.1	0.0 - 0.1	0.0 - 0.1	0.0 - 0.1	0.0 - 0.0	0.1 - 0.2	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
30	0.0 - 0.0	0.0 - 0.0	0.1 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
31	0.0 - 0.0	0.0 - 0.0	0.1 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
32	0.0 - 0.0	0.0 - 0.0	0.1 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.1 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
33	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
34	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
35	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
36	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
37	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
38	8.0 - 0.0	100.6 - 0.0	108.6 - 0.0	35.2 - 0.0	64.4 - 0.0	68.7 - 0.0	14.3 - 0.0	182.6 - 0.0	1.9 - 0.0	0.8 - 0.0	2.4 - 0.0	1.0 - 0.0	6.1 - 0.0
39	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
40	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0

Table 4-25

Employment (Direct, Indirect, and Induced) Projected for a Proposed Lease Sale as a Percent of Total Employment

SubArea:	TX-1		TX-2		WGOM		LA-1		LA-2		LA-3		MA-1		CGOM		FL-1		FL-2		FL-3		FL-4		EGOM	
Year:	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
2	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
3	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
4	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
5	0.0	- 0.3	0.0	- 0.2	0.0	- 0.2	0.1	- 0.3	0.1	- 0.3	0.1	- 0.3	0.0	- 0.3	0.0	- 0.3	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
6	0.0	- 0.2	0.0	- 0.2	0.0	- 0.2	0.1	- 0.3	0.0	- 0.3	0.1	- 0.3	0.0	- 0.3	0.0	- 0.3	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
7	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
8	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
9	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
10	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
11	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
12	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
13	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
14	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
15	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
16	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
17	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
18	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
19	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
20	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
21	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
22	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
23	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
24	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
25	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
26	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
27	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
28	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
29	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
30	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
31	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
32	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
33	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
34	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
35	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
36	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
37	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
38	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
39	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0
40	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0	0.0	- 0.0

Table 4-26

Past OCS Oil[1] Spills, 1985-1999

Spill Size Group (bbl)	Total Number of Spills	Total Volume of Oil Spilled (bbl)	Number of Spills by Source (facility[2]/pipeline)	Spills Per Billion Barrels of Oil Handled[3]	Average Spill Size (bbl)	Median Spill Size (bbl)
0-1.0	19,506	1,365	Unavailable	3,357.31	0.07	unavailable
1.1-9.9	434	1,302	326/108	74.70	3.0	2.8
10.0-49.9	94	1,786	66/28	16.18	19.0	17.8
50.0-499.9	37	4,551	28/9	6.37	123	87
500.0-999.9	3	2,043	2/1	0.52	681	643
≥1,000	8	5,373	0/8	0.13/1.38[4]	6,716	4,551
≥10,000	2	30,000	0/2	0.05/.34	15,000	15,000

[1] Oil spilled includes crude oil, condensate, and refined petroleum products.
[2] Facilities represent spills that have occurred during drilling, development, and production operations.
[3] 1985–1999 OCS oil production = 5.81 BBO.
[4] Facility Spills Rate/Pipeline Spill Rate.

Source: Anderson and LaBelle, 2000.

Table 4-27

Offshore Spills ≥1,000 bbl, 1964-2000, from Accidents Associated with OCS Facility Operations

Year	Volume Spilled (bbl)	Area and Block	Water Depth (ft)	Distance from Shore (mi)	Cause of Spill
1964	2,5559	EI208	94	48	Freighter struck production platform, fire
1964	5,180	EI208	94	48	Hurricane Hilda destroyed 3 production platforms, blowout
1964	5,100	SS149	55	33	Hurricane Hilda destroyed production platform, blowout
1964	1,589	SS199	102	44	Hurricane Hilda destroyed production platform, caused storage oil loss
1965	1,688*	SS29	15	7	Drilling blowout
1969	80,000	**	190	6	Drilling blowout
1969	2,500	SS72	30	6	Storm caused vessel to bump drilling rig resulting in blowout
1970	30,000	MP41	39	14	Fire destroyed production platform, blowout
1970	53,000	ST26	60	8	Workover caused fire, destroyed platform and 2 drilling rigs
1973	9,935	WD79	110	17	Oil storage tank ruptured
1973	7,000	SP23	61	15	Rough seas sunk stationary storage barge
1979	1,500***	MP151	280	10	Collision during rough seas between service vessel and drilling rig, damaged rig's diesel tank
1980	1,456	HI206	60	27	During ballasting, for Hurricane Jeanne, oil storage tank overflowed

Notes: Gulf of Mexico crude oil unless otherwise indicated: *condensate; **occurred in Santa Barbara Channel, California; and *** diesel.

Table 4-28

Offshore Spills ≥1,000 bbl, 1964-2000, from Accidents Associated with OCS Pipeline Oil Transport

Year	Volume Spilled (bbl)	Area and Block	Water Depth (ft)	Distance from Shore (mi)	Cause of Spill
1967	160,638	WD73	168	22	Internal corrosion caused by anchor kink
1968	6,000	ST131	160	28	Anchor drag
1969	7,532	MP299	210	17	Anchor drag
1973	5,000	WD73	168	22	Internal corrosion
1974	19,833	EI317	240	75	Anchor drag
1974	3,500	MP73	141	9	Hurricane Carmen, connection torn loose
1976	4,000	EI297	210	71	Trawl drag
1981	5,100	SP60	185	4	Service vessel's anchor
1988	15,576	GAL2A	75	34	Anchor drag
1990	14,423*	SS281	197	60	Anchor drag
1990	4,569	EI314	230	78	Trawl drag
1992	2,000	SP8	30	6	During Hurricane Andrew, drilling rig's anchor drag
1994	4,533*	SS281	197	60	Trawl drag
1998	1,211*	EC334	264	105	Service vessel anchor drag during rescue operation
1998	8,212	SP38	10	6	During Hurricane Georges, damage from mudslide
1999	3,200	SS241	133	50	Jack-up barge damage
2000	2,240	SS332	435	75	Drilling rig anchor drag

Notes: Crude oil unless otherwise indicated: *condensate.

Table 4-29

Offshore Spill Rates* Used to Estimate the Future Potential for Spills

	Proposed Action	OCS Program	Non-OCS Operations
<1,000 bbl (all OCS sources)			
≤1 bbl	3,357	3,357	**
>1 and <50 bbl	91	91	**
≥50 bbl and <1,000 bbl	7	7	**
≥1,000 bbl			
Offshore Facility ***	0.13	0.13	n/a
Pipelines on the OCS	1.38	1.38	n/a
U.S. Tanker Operations	n/a	0.72	0.72
Offshore	n/a	0.29	0.29
Near Port	n/a	0.43	0.43
Import Tanker Operations	n/a	n/a	0.82
Offshore	n/a	n/a	0.36
Near Port	n/a	n/a	0.46
Barge Operations	n/a	1.23	1.23

* The spill rate is an occurrence rate that is based on historic spill occurrences and associated volume of oil produced or transported. Rates are expressed in terms of estimated mean number of spills per billion barrels of oil handled.

** No spill rates based on oil volume handled calculated. Estimates of future spills in the EIS are based on total average number spills per year derived from annual average of 1973-2000 USGS data (USDOT, Coast Guard, 2001) minus estimated OCS spills.

*** Offshore facilities include drilling rigs, drillships, and storage, processing, or production structures that are used for OCS oil exploration, development, and production.

n/a = not applicable.

Source: Anderson and LaBelle, 2000.

Table 4-30

Probability of One or More Offshore Spills Occurring and the Number of Assumed Offshore Spills Occurring from a Facility, Pipeline, or Tanker Accident as a Result of the OCS Program (2003-2042)

	OCS		OCS		OCS		All OCS	
	Low	High	Low	High	Low	High	Low	High
For Estimated Spills Occurring ≥ 1,000 bbl								
Western Planning Area - OCS Program								
Assumed* Number of Spills	0	1	5	7	0	0	5	8
Probability of One or More Occurrences (%)	35	51	99	99+	< 0.5	20	99	99+
Central Planning Area - OCS Program								
Assumed* Number of Spills	2	2	17	22	0	1	18	24
Probability of One or More Occurrences (%)	79	88	99+	99+	< 0.5	49	99+	99+
Eastern Planning Area - OCS Program								
Assumed* Number of Spills	0	0	0	1	0	0	0	1
Probability of One or More Occurrences (%)	2	5	18	40	0	0	19	43
Gulf Wide OCS Program								
Assumed* Number of Spills	2	3	21	29	0	1	23	33
Probability of One or More Occurrences (%)	87	95	99+	99+	< 0.5	60	99+	99+
For Estimated Spills Occurring ≥10,000 bbl								
Western Planning Area - OCS Program								
Assumed* Number of Spills	0	0	1	2	0	0	1	2
Probability of One or More Occurrences (%)	15	24	68	83	< 0.5	8	73	88
Central Planning Area - OCS Program								
Assumed* Number of Spills	1	1	4	5	0	0	5	6
Probability of One or More Occurrences (%)	45	56	98	99	< 0.5	21	99	99+
Eastern Planning Area - OCS Program								
Assumed* Number of Spills	0	0	0	0	0	0	0	0
Probability of One or More Occurrences (%)	1	2	5	12	0	0	5	13
Gulfwide OCS Program								
Assumed* Number of Spills	1	1	5	7	0	0	6	9
Probability of One or More Occurrences (%)	54	68	99	99+	< 0.5	27	99+	99+

* The assumed number of spills is the rounded average (mean) estimated by multiplying historical spill rates (Table 4-29) times the volume of oil resources estimated to be developed.

Table 4-31

Number of Assumed Offshore Spills Occurring, the Probability of these Offshore Spills Occurring, and the Assumed Offshore Spill Sizes as a Result of a Proposed Action

Spill Size Category	Range of Resource Estimates	
	Low	High
≤1 bbl		
Number of Spills that MMS Assumes Will Occur*	220	290
Percent Chance that the Assumed Number Will Occur	nc**	nc**
Percent Chance that One or More Spills Will Occur	99%	99%
Assumed Size*** that Will Occur	1 bbl	1 bbl
>1 to <10 bbl		
Number of Spills that MMS Assumes Will Occur*	50	60
Percent Chance that the Assumed Number Will Occur	6%	5%
Percent Chance that One or More Spills Will Occur	99%	99%
Assumed Size*** that Will Occur	3 bbl	3 bbl
≥10 to <50 bbl		
Number of Spills that MMS Assumes Will Occur*	1	1
Percent Chance that the Assumed Number Will Occur	37%	35%
Percent Chance that One or More Spills Will Occur	65%	75%
Assumed Size*** that Will Occur	20 bbl	20 bbl
≥50 to <500 bbl		
Number of Spills that MMS Assumes Will Occur*	0	1
Percent Chance that the Assumed Number Will Occur	66%	31%
Percent Chance that One or More Spills Will Occur	34%	42%
Assumed Size*** that Will Occur	120 bbl	120 bbl
≥500 to <1,000 bbl		
Number of Spills that MMS Assumes Will Occur*	0	0
Percent Chance that the Assumed Number Will Occur	97%	96%
Percent Chance that One or More Spills Will Occur	3%	4%
Assumed Size*** that Will Occur	680 bbl	680 bbl
≥1,000 bbl		
Number of Spills that MMS Assumes Will Occur*	0	0
Percent Chance that the Assumed Number Will Occur	91%	88%
Percent Chance that One or More Spills Will Occur	9%	12%
Assumed Size*** that Will Occur	4,600 bbl	4,600 bbl

* The assumed number of spills is the rounded average (mean) that was estimated by multiplying historical spill rates (Table 4-29) times the volume of oil resources estimated to be developed.

** n/c (not calculated) - Because of the large number of possibilities for the number of spill occurrences, the probability that any particular number will occur is very low and cannot be statistically calculated.

*** The assumed size of spills is the rounded average size of historical occurrences for spills <1,000 bbl and the median size of historical occurrences for spills ≥1,000 bbl (median is used because data skewed by a few events).

Table 4-32

Number of Assumed Spills Occurring in Louisiana Coastal Waters from Support Operation Accidents as a Result of a Proposed Action

Spill Size Group	Assumed Number of Coastal Spills*	Assumed Size of Possible Coastal Spills**
Total (all sizes)	12-16	
<1 bbl	10-12	1 bbl
>1 bbl and <50 bbl	3	4 bbl
≥50 bbl and <1,000 bbl	0	
≥1,000 bbl	0	

* Numbers of spills are calculated by multiplying Gulfwide coastal spill projections (Table IV-39, FEIS 181) by the percentage oil resources transported into Louisiana coastal waters as a result of a EPA proposed action.

** Size is derived from Coast Guard statistics of all coastal spills (USDOT, Coast Guard, 2001).

Table 4-33

Probability of a Particular Number of Offshore Spills Occurring from OCS Facility Operations and/or OCS Pipelines as a Result of a Proposed Action

Percent Chance for Spills ≥1,000 bbl			
Number of Spill Events	OCS Facility Operations	OCS Pipelines	All OCS Sources
1	1% - 1%	8% - 10%	9% - 11%
2	<0.5% - <0.5%	<0.5% - 1	<0.5% - 1
3	<0.5% - <0.5%	<0.5% - <0.5%	<0.5% - <0.5%
4	<0.5% - <0.5%	<0.5% - <0.5%	<0.5% - <0.5%
5	<0.5% - <0.5%	<0.5% - <0.5%	<0.5% - <0.5%
Percent Chance for Spills ≥10,000 bbl			
Number of Spill Events	OCS Facility Operations	OCS Pipelines	All OCS Sources
1	<0.5% - <0.5%	2% - 3%	2% - 3%
2	<0.5% - <0.5%	<0.5% - <0.5%	<0.5% - <0.5%
3	<0.5% - <0.5%	<0.5% - <0.5%.	<0.5% - <0.5%
4	<0.5% - <0.5%	<0.5% - <0.5%	<0.5% - <0.5%
5	<0.5% - <0.5%	<0.5% - <0.5%	<0.5% - <0.5%

Table 4-34

Probability of One or More Offshore Spills ≥1,000 bbl Occurring and Contacting Environmental Resource Habitats, Offshore Features, Beach Areas, or Parish Shorelines within 10 or 30 Days as a Result of a Proposed Action (only those features that have a probability >0.5% are shown)

Environmental Feature	Within 10 Days		Within 30 Days	
	Low %	High %	Low %	High %
BIRD HABITATS				
Diving Bird Habitat	1	1	2	3
Gulls, Terns, And Charadriid Allies Habitat	2	2	3	4
Raptor Bird Habitat	<0.5	<0.5	1	1
Charadriid Shorebird Habitat	2	2	3	4
Wading Bird Habitat	1	2	3	3
Waterfowl Habitat	2	3	4	5
ENDANGERED BIRD HABITATS				
Snowy Plover Habitat	1	1	1	2
Brown Pelican Habitat	1	1	2	2
Bald Eagle Habitat	2	2	3	4
Piping Plover Habitat	2	2	3	4
OTHER ENDANGERED SPECIES				
Gulf Sturgeon - Known Shoreline Locations	1	1	2	2
RECREATIONAL BEACH AREAS				
LA Beach Areas	<0.5	<0.5	1	1
PARISHES				
Lafourche, LA	<0.5	<0.5	<0.5	1
Plaquemines, LA	1	1	2	2
OFFSHORE FEATURES				
LA (Eastern) State Offshore Waters	1	1	1	1
LA (Western) State Offshore Waters	2	3	3	4
Chandeleur Islands	<0.5	1	1	1
Florida Panhandle State Offshore Waters	<0.5	<0.5	<0.5	1
SEA TURTLE HABITATS				
LA Sea Turtle Nesting Habitat	<0.5	<0.5	1	1
LA Sea Turtle Mating Habitat	<0.5	<0.5	<0.5	1
LA Sea Turtle General Coastal Habitat - West	2	3	3	4
LA Sea Turtle General Coastal Habitat - East	1	1	1	1
FL Sea Turtle General Coastal Habitat - Panhandle Area	<0.5	<0.5	<0.5	1
MARINE MAMMAL HABITATS				
LA West Marine Mammal Habitat	2	3	3	4
LA East Marine Mammal Habitat	1	1	1	1
FL Panhandle Marine Mammal Habitat	<0.5	<0.5	<0.5	1
LA/MS/AL Manatee Area	<0.5	<0.5	1	1

Table 4-35

Surface Area Covered and Length of Shoreline Contacted as a Function of Time for a Hypothetical Spill of 4,600 bbl of Neptune Composite Oil Spilled Over 12 Hours from an OCS Pipeline Break in DeSoto Canyon Block 884 during the Summer (represents the minimum volume of oil remaining in a slick as a function of time for EPA conditions)

Time Elapsed after Spill Events Begins (hours/days)	Amount Spilled (bbl)	Estimated Volume in Slick (spilled oil remaining on water surface) (bbl)	Estimated Open Water Slick Thickness (mm)	Open water Covered by Slick (mi^2)	Estimated Length of Shoreline Contacted, if Slick were to Reach Land (km)
4 hours	1,530	1,240	1	0.03	5
12 hours	4,600	2,750	1	0.13	10
24 hours	4,600	2,430	1	0.42	35
48 hours	4,600	440	1	0.23	20
3 days	4,600	0	1	0.03	5

Table 4-36

Surface Area Covered or Length of Shoreline Contacted as a Function of Time for a Hypothetical Spill of 4,600 bbl of Heavy Arabian Crude Spilled Over 12 Hours from an OCS Pipeline Break DeSoto Canyon Block 225 during the Winter (represents the maximum volume of oil remaining in slick as a function of time for EPA conditions)

Time Elapsed after Spill Events Begins (hours/days)	Amount Spilled (bbl)	Estimated Volume in Slick (spilled oil remaining on water surface) (bbl)	Estimated Open Water Slick Thickness (mm)	Open water Covered by Slick (mi^2)	Estimated Length of Shoreline Contacted, if Slick were to Reach Land (km)
4 hours	1,530	1,110	1	0.03	0-5
12 hours	4,600	2,340	1	0.11	5-10
24 hours	4,600	2,240	1	0.19	15-20
48 hours	4,600	1,250	1	0.22	15-20
3 days	4,600	1,000	1	0.20	15-20
4 days	4,600	980	1	0.31	25-30
5 days	4,600	970	1	0.50	40-45
7 days	4,600	940	1	0.73	60-65
10 days	4,600	890	1	0.92	80-85
20 days	4,600	610	1	0.95	80-85
30 days	4,600	570	1	0.90	75-80

Table 4-37

Surface Area Covered and Length of Shoreline Contacted as a Function of Time for a Hypothetical Spill of 4,600 bbl of Neptune Composite Oil Spilled Over 12 Hours from an OCS Pipeline Break in Viosca Knoll Block 948 during the Winter (represents the minimum volume of oil remaining in slick as a function of time for CPA conditions)

Time Elapsed after Spill Events Begins (hours/days)	Amount Spilled (bbl)	Estimated Volume in Slick (spilled oil remaining on water surface) (bbl)	Estimated Open Water Slick Thickness (mm)	Open water Covered by Slick (mi^2)	Estimated Length of Shoreline Contacted, if Slick were to Reach Land (km)
4 hours	1,530	1,210	1.4	0.06	0-5
12 hours	4,600	1,890	1	0.33	25-30
24 hours	4,600	1,610	1	0.84	70-75
48 hours	4,600	0	1	0.00	0

Table 4-38

Surface Area Covered or Length of Shoreline Contacted as a Function of Time for a Hypothetical Spill of 4,600 bbl of Heavy Arabian Crude Spilled Over 12 Hours from an OCS Pipeline Break at Mississippi Canyon Block 952 during the Summer (represents the maximum volume of oil remaining in slick as a function of time for CPA conditions)

Time Elapsed after Spill Events Begins (hours/days)	Amount Spilled (bbl)	Estimated Volume in Slick (spilled oil remaining on water surface) (bbl)	Estimated Open Water Slick Thickness (mm)	Open water Covered by Slick (mi^2)	Estimated Length of Shoreline Contacted, if Slick were to Reach Land (km)
4 hours	1,533	1,250	1.4	0.03	0-5
12 hours	4,600	2,840	1	0.13	10-15
24 hours	4,600	2,710	1	0.23	15-20
48 hours	4,600	860	1	0.15	15
3 days	4,600	330	1	0.06	5
4 days	4,600	270	1	0.08	5
5 days	4,600	220	1	0.11	10
7 days	4,600	140	1	0.11	10
10 days	4,600	50	1	0.08	5
20 days	4,600	10	1	0.06	5

Table 4-39

Employment Associated with the Cleanup and Remediation of a Scenario Spill
(number of jobs per year)

Subarea	Direct Employment	Indirect Employment	Induced Employment	Total Employment
TX-1	16.1	3.9	8.1	28.1
TX-2	84.4	27.0	51.2	162.6
WGOM	100.5	30.8	59.3	190.7
LA-1	23.1	5.2	10.2	38.5
LA-2	27.1	5.5	11.5	44.1
LA-3	35.3	7.6	19.4	62.3
MA-1	14.5	2.9	7.6	25.0
CGOM	100.0	21.2	48.7	169.9
FL-1	0.4	0.2	0.2	0.8
FL-2	0.0	0.0	0.0	0.0
FL-3	0.6	0.4	0.3	1.4
FL-4	0.1	0.1	0.0	0.2
EGOM	1.1	0.7	0.5	2.4
GOM	201.6	52.8	108.6	362.9

Table 4-40

Employment Associated with the Cleanup and Remediation of a Small Spill
(number of jobs per year)

Subarea	Direct Employment	Indirect Employment	Induced Employment	Total Employment
TX-1	0.0	0.0	0.0	0.0
TX-2	0.0	0.0	0.0	0.0
WGOM	0.0	0.0	0.0	0.0
LA-1	0.0	0.0	0.0	0.0
LA-2	0.0	0.0	0.0	0.0
LA-3	0.0	0.0	0.0	0.0
MA-1	0.0	0.0	0.0	0.0
CGOM	0.0	0.0	0.0	0.0
FL-1	0.0	0.0	0.0	0.0
FL-2	0.0	0.0	0.0	0.0
FL-3	0.0	0.0	0.0	0.0
FL-4	0.0	0.0	0.0	0.0
EGOM	0.0	0.0	0.0	0.0
GOM	0.0	0.0	0.0	0.1

Table 4-41

Projected Total OCS Emissions Related to the OCS Program in the EPA by Source for the Years 2003-2042
(tons)

Activity/Pollutant	NO_x	CO	SO_x	VOC	PM_{10}*
Service Vessels	29,685.4-59,370.8	2,982.5-5,965.1	3,091.4-6,182.8	1,295.2-2,590.5	1,796.1-3,592.1
Pipeline Vessels	5,515.2-7,647.7	1,848.0-2,562.6	768.0-1,065.0	504.0-698.9	456.0-632.3
LTO Helicopters	2.1-4.7	1.7-3.8	0.3-0.7	0.1-0.2	0.1-0.2
Cruise Helicopters	3.5-8.0	10.1-22.9	0.8-1.7	0.8-1.7	1.0-2.3
Blowouts without Fire	0	0	0	21.9-10.9	0
Spills without Fire	0	0	0	645.1-255.0	0
Barge Loading	0	0	0	0	0
Tanker Loading	0	0	0	0	0
Tanker Loss	0	0	0	0	0
Tanker Exhaust	0	0	0	0	0
Tug Exhaust	0	0	0	0	0
Platform Construction	1,053.12-1,895.6	208.0-374.4	60.0-107.9	61.8-111.2	64.7-116.5
Exploratory Wells	41,398.4-79,163.4	9,909.6-18,939.4	5,708.4-10,923.4	1,368.2-2,593.2	1,227.4-2,347.4
Development Wells	3,044.7-58,38.7	811.8-1,556.7	357.0-684.6	293.3-562.4	86.7-166.3
Platforms	87,911.0-31,342.1	153,258.7-7,482.9	7,859.4-5,403.6	25,892.6-24,382.6	926.6-587.8
Totals	168,613.5-185,271.0	169,030.4-36,907.9	17,845.2-24,369.7	29,903.0-31,206.6	4,558.6-7,444.8

*TSP emissions were calculated in the spreadsheets. For conservative estimates of PM_{10}, it is assumed here that the ratio of PM_{10} to TSP is equal to 1.0.

Table 4-42

Projected Total OCS Emissions Related to the OCS Program in the CPA by Source for the Years 2003-2042
(tons)

Activity/Pollutant	NO_x	CO	SO_x	VOC	PM_{10}*
Service Vessels	5,015,421–5,181,282	503,908–520,572	522,298–539,571	218,832–226,067	303,448–313,483
Pipeline Vessels	77,672–144,223	26,026–48,325	10,816–20,083	7,098–13,180	6,422–11,924
LTO Helicopters	1,600–3,732	1,292–3,014	246–574	55–129	61–144
Cruise Helicopters	2,757–6,431	7,877–18,373	591–1,378	591–1,378	788–1,837
Blowouts without Fire	0	0	0	0	0
Spills without Fire	0	0	0	0	0
Barge Loading	0	0	0	2,723–3,748	0
Tanker Loading	0	0	0	0	0
Tanker Loss	0	0	0	3,669–5,051	0
Tanker Exhaust	0	0	0	0	0
Tug Exhaust	0	0	0	0	0
Platform Construction	497,073–660,517	98,176–130,458	28,296–37,601	29,170–38,761	30,538–40,580
Exploratory Wells	140,861–170,135	37,525–45,324	16,488–19,915	13,574–16,395	4,051–4,893
Development Wells	269,743–325,595	71,923–86,815	31,631–38,181	25,983–31,363	7,657–9,242
Platforms	2,498,310–2,505,815	581,368–2,403,899	419,822–1,735,924	1,894,355–7,832,975	45,665–188,820
Totals	8,503,436–8,997,729	1,328,095–3,256,780	1,030,189–2,393,226	2,196,050–8,169,048	398,630–570,923

*TSP emissions were calculated in the spreadsheets. For conservative estimates of PM_{10}, it is assumed here that the ratio of PM_{10} to TSP is equal to 1.0.

Table 4-43

Projected Total Emissions Related to the OCS Program in the EPA by Subarea for the Years 2003-2042
(tons)

Pollutant Distribution	E0-60m	E1600-2400m	E>2400m	Total
NO_x	13,388.5-41,171.3	77,612.5-61,757.0	77,612.5.-82,342.7	168,613-185,271.0
CO	2,481.7-8,201.7	83,274.4-12,302.6	83,274.4-16,403.5	169,030-36,907.9
SO_x	1,778.3-5,415.5	8,033.5-8,123.2	8,033.5-10,831.0	17,845-24,369.7
VOC	4,861.1-6,934.8	12,521.0-10,402.2	12,521.0-13,869.6	29,903-31,206.6
PM_{10}	553.5-1,654.4	2,002.6-2,481.6	2,002.6-3,308.8	4,559-7,444.8

Table 4-44

Projected Total Emissions Related to the OCS Program in the CPA by Subarea for the Years 2003-2042
(tons)

Pollutant Distribution	0-60m	60-200m	200-800m	800-1600m	1600-2400m	>2400m	Total
NO_x	6,521,703–6,871,671	1,192,643–1,230,876	223,395–186,496	381,934–390,208	151,332–258,226	32,428–60,253	8,503,436–8,997,729
CO	1,018,581–2,487,241	186,271–445,523	34,891–67,503	59,652–141,238	23,636–93,466	5,065–21,809	1,328,095–3,256,780
SO_x	790,103–1,827,735	144,488–327,390	27,064–49,605	46,271–103,788	18,334–68,683	3,929–16,026	1,030,189–2,393,226
VOC	1,684,258–6,238,798	308,005–1,117,513	57,693–169,320	98,636–354,270	39,082–234,443	8,375–54,703	2,196,050–8,169,048
PM_{10}	305,729–436,021	55,910–78,101	10,472–11,834	17,905–24,759	7,094–16,385	1,520–3,823	398,630–570,923

Table 4-45

Projected Peak-Year Emissions Related to the OCS Program in the EPA by Source for the Years 2003-2042
(tons)

Activity/Pollutant	NO_x	CO	SO_x	VOC	PM_{10}
Service Vessels	1,256.5-2,254.6	126.2-226.5	130.9-234.8	54.8-98.4	76.0-136.4
Pipeline Vessels	1,930.3-1,699.5	646.8-569.5	268.8-236.7	176.4-155.3	159.6-140.5
LTO Helicopters	0.1-0.2	0.1-0.1	0-0.0	0-0.1	0-0
Cruise Helicopters	0.2-0.3	0.4-148.1	0.0-0.1	0.0-0.0	0.0-0.1
Blowouts without Fire	0	0	0	21.9-10.9	0
Spills without Fire	0	0	0	465.1-255.0	0
Barge Loading	0	0	0	0	0
Tanker Loading	0	0	0	0	0
Transit Loss	0	0	0	0	0
Tanker Exhaust	0	0	0	0	0
Tug Exhaust	0	0	0	0	0
Platform Construction	421.2-421.2	83.2-83.2	24.0-24.0	24.7-24.7	25.9-25.9
Exploratory Wells	5,399.8-10,750.6	1,292.6-2,572.0	744.6-1,483.4	178.5-352.2	160.1-318.8
Development Wells	322.4-618.2	86.0-164.8	37.8-72.5	31.1-59.5	9.2-17.3
Platforms	3,537.3-1,424.6	6031.0-331.5	323.3-239.4	1,083.5-1,080.2	38.0-26.0
Totals	12,867.8-17,169.3	8,266.3-4,095.8	1,529.4-2,290.8	2,036.0-2,036.4	468.8-665.3

Table 4-46

Projected Peak-Year Emissions Related to the OCS Program in the CPA by Source for the Years 2003-2042
(tons)

Activity/Pollutant	NO_x	CO	SO_x	VOC	PM_{10}
Service Vessels	174,103-176,697	17,492-17,753	18,131-18,401	7,596-7,710	10,534-10,691
Pipeline Vessels	3,357-6,439	1,125-2,157	467-8,97	307-588	278-532
LTO Helicopters	56-127	45-103	9-20	4-Feb	5-Feb
Cruise Helicopters	96-219	273-627	21-47	21-47	27-63
Blowouts without Fire	0	0	0	0	0
Spills without Fire	0	0	0	0	0
Barge Loading	0	0	0	114-157	0
Tanker Loading	0	0	0	0	0
Transit Loss	0	0	0	154-212	0
Tanker Exhaust	0	0	0	0	0
Tug Exhaust	0	0	0	0	0
Platform Construction	21,484-29,487	4,243-5,824	1,223-1,679	1,261-1,730	1,320-1,812
Exploration Wells	4,023-4,856	1,072-1,294	471-568	388-468	116-140
Development Wells	9,133-10,960	2,435-2,922	1,071-1,285	880-1,056	259-311
Platforms	86,725-352,293	20,181-81,980	14,573-59,200	65,760-267,128	1,585-6,439
Totals	298,976-316,859	46,867-112,660	35,966-82,097	76,482-279,101	14,121-19,992

Table 4-47

Projected Peak-Year Emissions Related to the OCS Program in the EPA by Subarea for the Years 2003-2042
(tons)

Pollutant Distribution	E0-60m	E1600-2400m	E>2400m	Total
NO_x	1,712.0-3,815.4	5,577.9-5,723.1	5,577.9-7,630.8	12,867.8-17,169.3
CO	429.8-910.2	3,918.3-1,365.3	3,918.3-1,820.4	8,266.3-4,095.8
SO_x	215.6-509.1	656.9-763.6	656.9-1,018.1	1,529.4-2,290.8
VOC	582.4-452.5	726.8-678.8	726.8-905.1	2,036.0-2,036.4
PM_{10}	102.5-147.9	183.1-221.8	183.1-295.7	468.8-665.3

Table 4-48

Projected Peak-Year Emissions Related to the OCS Program in the CPA by Subarea for the Years 2003-2042
(tons)

Pollutant Distribution	0-60m	60-20m	200-800m	800-1600m	1600-2400m	>2400m	Total
NO_x	229,300–241,989	41,933–43,346	7,854–6,568	13,429–13,741	7,854–9,094	1,140–2,122	301,510–316,859
CO	35,945–86,040	6,573–15,412	1,231–2,335	2,105–4,886	1,231–3,233	179–754	47,264–112,660
SO_x	27,584–62,698	5,044–11,231	945–1,702	1,615–3,560	945–2,356	1,615–549	37,749–82,097
VOC	58,658–213,153	10,727–381,181	2,009–5,785	3,435–12,104	2,009–8,010	292–1,869	77,130–279,101
PM_{10}	10,830–15,268	1,981–2,735	371–414	634–867	371–574	54–134	14,240–19,992

Table 4-49

Class I Air Quality Area Results of Concentration Estimates
from OCS Emissions and Corresponding Maximum Allowable Increases
(micrograms per cubic meter) for the Years 2003-2042

Pollutant/ Averaging Period	Maximum Allowable Increase	EPA Modeled Impact	CPA Modeled Impact	Total Modeled Impact
SO_2				
Annual Average	2.0	0.02-0.03	0.29	0.32
24-hour Average	5.0	0.78-1.2	4.46	5.66
3-hour Average	25.0	2.6-3.8	9.74	13.54
NO_2				
Annual Average	2.5	0.10-0.14	3.61	3.75
PM_{10}				
Annual Average	5.0	*	*	*
24-hour Average	10.0	*	*	*

*PM_{10} emissions were not calculated because they are emitted in smaller quantities than NO_2 or SO_2; hence, their impacts would be even less than those modeled and presented above.

Table 4-50

Class II Air Quality Areas Results of Concentration Estimates
for OCS Emissions and Corresponding Maximum Allowable Increases
(micrograms per cubic meter) for the Years 2003-2042

Pollutant/ Averaging Period	Maximum Allowable Increase	EPA Modeled Impact	CPA Modeled Impact	Total Modeled Impact
SO_2				
Annual Average	20.0	0.03	1.12	1.15
24-hour Average	91.0	0.99-1.1	13.18	14.28
3-hour Average	512.0	4.7-5.1	97.91	103.01
NO_2				
Annual Average	25.0	019-0.25	6.17	6.42
PM_{10}				
Annual Average	17.0	*	*	*
24-hour Average	30.0	*	*	*

*PM_{10} emissions were not calculated because they are emitted in smaller quantities than NO_2 or SO_2; hence, their impacts would be even less than those modeled and presented above.

Table 4-51

Gulf Ecological Management Site (GEMS) Areas

Texas	Habitat	Area
Christmas Bay Coastal Preserve	Migratory and resident waterfowl habitat	4,173 ac
North Deer Island Sanctuary	Natural island, colonial water bird nesting	10+ ac
Candy Abshier Wildlife Management Area	Coastal prairie habitat with significant coastal woodlot or oak mottes	209 ac
Murphree Wildlife Management Area	Fresh-intermediate and brackish marsh; a component of the Texas Chenier Plain	12,267 ac
Sea Rim State Park	Gulf Coast beach and marsh	15,109 ac
Armand Bayou Coastal Preserve and Nature Center	Salt and brackish marsh, open water	2,800 ac
Freeport Liberty Ship Reef Complex	Artificial reef complex	0.5 mi^2
Louisiana	**Habitat**	**Area**
Atchafalaya Delta Wildlife Management Area	Barrier island with sand beaches, freshwater marshes and shrub/scrub habitats	11,500 ac
Atchafalaya Delta and Swamp Basin	Riverine, natural levees, coastal flatlands and basins, and point bars	1.2 million ac
Baptiste Collette Marsh	Natural bayous, levees, beach ridges	4,100 ac
Barataria Basin Estuaries	Swamp forest, fresh marsh, brackish marsh, saline marsh and offshore; beaches and elevated areas	900,000 ac
Bayou Bois Piquant Crevasse Swamp	Live oak forest (riparian habitat)	unknown
Bayou Mauvais Bois Ridge	Live oak forest (riparian habitat)	unknown
Bayou Sauvage National Wildlife Refuge	Marshes, tidal and backswamp drainage canals, shallow open water	22,700 ac
Big Oak Island	Flood Control and Riparian habitat	2,000 ac
Cameron Prairie National Wildlife Refuge	Natural bayous, levees, hummocks	24,620 ac
Chandeleur Islands	Beach dune systems on barrier islands	18 mi x 0.5 mi
Cote Blanche Salt Dome	Salt dome	700 ac
Cheniere Au Tigre	Riparian habitat	3,400 ac
White's Kitchen	No description	N/A
River Pines Plantation	No description	N/A
Queen Bess Island	No description	N/A
Honey Island Swamp	No description	N/A
Sabine National Wildlife Refuge	No description	N/A
East Jetty Woods	No description	N/A
Petit Bois	No description	N/A
Timbalier Island and East Timbalier Island	No description	N/A
Peveto Beach	No description	N/A
Delta National Wildlife Refuge	No description	N/A
Weeks Island	No description	N/A
Grande Terre Island	No description	N/A
Jean Lafitte National Historic Park	No description	N/A
Mississippi	**Habitat**	**Area**
Bayou La Croix Coastal Preserve	The following ecological communities are expected or known to occur: estuarine subtidal - small tidal creek; estuarine intertidal - oligohaline marsh.	1,478 ac
Bayou Portage Coastal Preserve	This is an estuarine marsh that is expected or known to include the following ecological communities: estuarine subtidal - muddy sand embayment and small tidal creek; estuarine intertidal - mesohaline marsh and oligohaline marsh.	1,137 ac

N/A means information is not available.

Table 4-51. Gulf Ecological Management Site (GEMS) Areas (continued).

Bellefontaine Marsh Coastal Preserve	The following ecological communities are expected or known to occur: estuarine subtidal - small tidal creek; estuarine intertidal - polyhaline marsh, mesohaline marsh, sand shore and mud shore; other - beach dune scrub and oak-pine maritime woodland.	1,305 ac
Biloxi River Marshes	The following ecological communities are expected or known to occur: estuarine subtidal - muddy sand embayment, embayment widgeon grass bed and large tidal creek; estuarine intertidal - mesohaline marsh, oligohaline marsh and tidal freshwater marsh.	4,020 ac
Davis Bayou Coastal Preserve	The following ecological communities are expected or known to occur: estuarine subtidal, - muddy sand embayment, small tidal creek and embayment widgeon grass bed; estuarine intertidal, - mesohaline marsh, oligohaline marsh and sand shore; and others, beach dune scrub.	1,410 ac
Deer Island Coastal Preserve	The following ecological communities are expected or known to occur on the island: estuarine subtidal - Mississippi Sound-sand bottom (near shore), barrier island pond/lagoon complex and small tidal creek; estuarine intertidal - sand shore, salt flat, polyhaline marsh and mesohaline marsh; other - slash pine maritime forest and relic dune scrub.	674 ac
Escatawpa River Marsh Coastal Preserve	The following estuarine communities are expected or known to occur: estuarine subtidal - muddy sand embayment and riverine estuary (sand and muddy types); and other - cypress swamp, black gum swamp and pitcher plant bog.	2,826 ac
Grand Bay Savanna Coastal Preserve	The following ecological communities are expected or known to occur: estuarine subtidal - small tidal creek, muddy sand embayment and Mississippi sound mollusk reef; estuarine intertidal - mesohaline marsh, oligohaline marsh, tidal fresh water marsh, salt flat and supratidal coastal meadows; and others - wet pine savanna, pine savanna, pond cypress, shell midden, pitcher plant flat, pitcher plant bog, bottomland hardwood forest and pocosin-like wetland scrub.	26,900 ac
Grand Bayou Coastal Preserve	This is a small area of estuarine marsh in which the following estuarine communities are expected or known to occur; estuarine subtidal - muddy sand embayment; and estuarine intertidal - mesohaline marsh and oligohaline marsh.	565 ac
Graveline Bay Coastal Preserve	The following ecological communities are expected or known to occur: Estuarine subtidal - muddy sand embayment, small tidal creek and mollusk reef; Estuarine intertidal - sand beach, mesohaline marsh and oligohaline marsh.	2,339 ac
Hancock County Marsh Coastal Preserve	The ecological communities expected or known to occur are: estuarine subtidal - large tidal creek; estuarine intertidal - sand shore, mesohaline marsh and oligohaline marsh; and other shell middens.	13,570 ac
Horn Island Coastal Preserves	A large barrier island with the following ecological communities are expected or known to occur on the island: marine subtidal - Gulf of Mexico shallow sandy bottom (near shore); marine intertidal - sand shore; estuarine subtidal - Mississippi Sound-sand bottom (nearshore), barrier island pond/lagoon complex, tidal pass, barrier island seagrass bed and mollusk reef; estuarine intertidal - oligohaline or mesohaline marsh and barrier island high marsh.	2,763 ac
Jourdan River Coastal Preserve	The following ecological communities are expected or known to occur: estuarine subtidal - large tidal creek; estuarine intertidal - oligohaline marsh and mesohaline marsh.	6,423 ac

Table 4-51. Gulf Ecological Management Site (GEMS) Areas (continued).

Pascagoula River Marsh Coastal Preserve	The following ecological communities are expected or known to occur: estuarine subtidal - riverine estuary (sand), riverine estuary (muddy sand), tape grass beds and large tidal creek; estuarine intertidal - mesohaline marsh, oligohaline marsh and tidal freshwater marsh; and other - cypress swamp, black gum swamp and riverine sand bar.	11,150 ac
Petit Bois Island Coastal Preserve	A large barrier island, 6 miles long with the following ecological communities are expected or known to occur on the island: marine subtidal - Gulf of Mexico shallow sandy bottom (near shore); marine intertidal - sand bottom (near shore), barrier island pond/lagoon complex, tidal pass, barrier island seagrass beds, embayment seagrass bed and mollusk reef; estuarine intertidal - oligohaline or mesohaline marsh and barrier island high marsh. Only a small area of slash pine forest remains near the center of the island.	1,673 ac
Round Island Coastal Preserve	The following communities are expected or known to occur: estuarine subtidal - Mississippi Sound – sand bottom (near shore); estuarine intertidal - sand shore.	65 ac
Ship Island Coastal Preserve	This barrier island is currently in 3 parts; connected by narrow tidal sandbars. The island is 8 miles in length and the terrain is low and sandy except at the east end.	2,051 ac
Wolf River Marsh Coastal Preserve	This is a large extent of estuarine marsh that is expected or known to include the following estuarine communities: estuarine subtidal - large tidal creek and muddy sand embayment; and estuarine intertidal - mesohaline marsh and oligohaline marsh.	2,426 ac
Alabama	Habitat	Area
Orange Beach Maritime Forest	Coastal freshwater wetland, maritime live oak forest, longleaf pine-turkey oak sandhill, coastal sand pine scrub, bluejack oak scrub, wet longleaf pine savannah, pitcher plant bog, sphagnum/cypress swamp.	588 ac
Mobile-Tensaw River Delta	Mesic flood plains, cypress-gum swamps, tidal brackish water marshes, bottomland forests, submersed grassbeds.	185,000 ac
Weeks Bay National Estuarine Research Reserve (WBNERR)	Saltmarsh, freshwater marsh, estuarine benthos, tidal flats, swamp, bogs, pine savannah, upland forest, sawgrass marsh, other estuarine, riverine, and palustrine habitats.	6,000 ac
Florida (Northwest and Apalachicola Bay)	Habitat	Area
Fort Pickens State Park Aquatic Preserve	Salt marsh, seagrasses, and open water	34,000 ac
Rocky Bayou State Park Aquatic Preserve	Salt marsh, floodplain marsh, bottomland forest, seagrasses, and estuarine open water	480 ac
St. Andrews State Park Aquatic Preserve	Salt marsh, seagrasses, and open water	25,000 ac
Yellow River Marsh Aquatic Preserve	Salt marsh, floodplain marsh, seagrasses, forested wetland, and estuarine open water	16,435 ac
Alligator Harbor Aquatic Preserve	Seagrass beds, salt marshes, and nearshore coastal communities	14,366 ac
Apalachicola Bay Aquatic Preserve	Estuarine, riverine, floodplain, and adjacent upland habitats such as barrier islands	80,000 ac
St. Joseph Bay Aquatic Preserve	Extensive seagrass beds, expansive salt marshes, and nearshore coastal communities.	73,000 ac
St. Joseph Bay State Buffer Preserve	Upland, tidal marsh, bog and swamp habitats that closely interrelate and influence each other, as well as, St. Joseph Bay.	2,145 ac
Apalachicola National Estuarine Research Reserve	Barrier island, estuarine, riverine, floodplain and upland environments which are closely interrelated and influenced by each other.	246,766 ac

Table 4-52

Recommended Mitigation Techniques Used to Avoid or Reduce Adverse Impact to Wetlands by Pipelines, Canals, Dredging, and Dredged Material Placement

Technique	Decision Process	Factors To Consider
Pipeline Construction		
Avoidance	Route Selection and Location Evaluation of potential routes that avoid wetlands entirely Shared ROW and Pipelines Using all or part of an existing ROW would avoid new impacts to wetlands	Length of route Difficulty of the land for pipeline installation, i.e., access points, sediment characteristics Presence of other pipelines Presence of transportation corridors Density of surrounding developments Number of different land owners
Minimization	Necessity of pipeline contents	Environment function Timing of the project Previous pipeline installations Availability of equipment
Location/Route Selection	Early planning Considering wetland type Use of aerial photography as well as digital and topo maps combined with field surveys to identify route of minimal impact	Most routes are predetermined by the beginning and end points Flexibility within general route to locate sections of pipelines to one side or another to take advantage of upland areas, existing ROW, etc.
Existing ROW/Corridors	Plan routes paralleling existing pipelines (safety issues) Timing right to share section of pipeline between or among users	Group pipelines in corridors where impacts are limited to smaller areas of coastal wetlands
Construction/ Installation	Methods depend on environment pipeline is constructed Flotation canals Push-pull method Single versus double ditching techniques Directional drilling*	Choice of method has implications for Type of impact Access impact Impact from specific equipment
Dredging		
Dredge and Other Material Disposal	Features associated with pipeline canals and navigation channels Avoid levees by spray dredging, levee manipulation/spoil bank removal, and canal backfilling	Navigation channels and some canals must be left open for access Impacts associated with spoil banks include soil compaction, impoundment, and creation of upland vegetation
Dredge Material Bank Removal	Identify areas to place dredge Navigation channels Canals that cannot be backfilled Potential use for filling nearby old canal or abandoned navigation channels Offsite mitigation	Due to expense and difficulty in many coastal areas only used in sensitive areas
Levee Manipulation	Dredge material should allow water to pass through openings in the line of dredge placement	Levees used as walkways and built from material placed in a long line paralleling the length of the project is detrimental to marsh and should be built discontinuous instead Must maintain natural hydrologic pattern Technique is post construction technique where sections of dredge banks are removed in order to restore hydrologic flow

Table 4-52. Recommended Mitigation Techniques Used to Avoid or Reduce Adverse Impact to Wetlands by Pipelines, Canals, Dredging, and Dredged Material Placement (continued).

Technique	Decision Process	Factors To Consider
Spray Dredge	Suggested and used to avoid completely the creation of dredge banks Spray dredging places material over a large area of marsh surface at a depth that avoids destroying vegetation or altering hydrology	Normally dredge is deposited discontinuously and unevenly, enabling the avoidance of sensitive habitats or minimize spoil over small creeks More costly than more traditional use of the bucket dredge; most contractors along the coast of GOM have not invested in spray dredge technology
Canals and Channels		
Backfill	Suggested as a way to minimize impacts from canals and to restore impacted habitats Based on OCS permit information, this is the most common required mitigation in recent years In Texas and Louisiana, a typical backfilled pipeline canal results in 75% reduction in direct impacts to the marsh as compared to non-backfilled canals (Baumann and Turner, 1990)	Involves returning soil into the canal so that the elevation is restored as close as possible to pre-construction elevation May occur on site for canal restoration, as well as offsite as mitigation for other dredging operations Intended benefits of backfilling are reestablishment of marsh vegetation in the canal and on the re-graded spoil bank, and restoration of marsh soils on bottom of the canal
Wood Chipping	A new technique unique to forested wetlands Regulatory personnel believe the use of windrows should be avoided. Requirement for chipping on-site started approximately 1992/93	Prior to 1996, trees removed for ROW being pushed to the side created *windrows* with the potential to act as hydrologic barriers Success of wood chipping remains undetermined. Problems encountered: Equipment not adapted to the function of marshes Equipment is expensive Process is time-consuming
Erosion Stabilization	Many impacts are from pipeline canals and navigation channels Stabilization of banks is critical Lack of stabilization can result in slumping of canal sides and blockage of natural creeks/drainage streams	Erosion control measures are required through the use of Best Management Practices Requirement is usually erosion control./siltation fences
Revegetation	Often required by permits Extremely valuable to the acceleration of marsh recover over first growing season Most extensive data exist for the re-vegetation of dunes, but through the use of directional drilling, is not the concern as in past cases	Stabilizes shorelines, shore banks, and areas surrounding stream crossings where erosion is most likely to occur Helps to reduce sedimentation and erosion
Plugs/Dams	Structures have been used frequently in order to mitigate adverse hydrodynamic impacts and accelerated erosion (structures include dams, weirs, bulkheads, rip-rapshell/gravel mats, and biodegradable mats)	Reduces erosion and provides barriers to saltwater intrusion Plugs maintain elevated marsh water levels Prevent salt water intrusion into low-salinity marshes Reduces tidal exchange thereby reducing bank erosion
Erosion Control During Project	Construction of pipelines and navigation Channels are governed by the Best Management Practices and erosion control during the construction phase is a requirement	Natural features of each construction site should be identified for the necessary erosion control

Table 4-52. Recommended Mitigation Techniques Used to Avoid or Reduce Adverse Impact to Wetlands by Pipelines, Canals, Dredging, and Dredged Material Placement (continued).

Technique	Decision Process	Factors To Consider
Timing of Project	Seasonal timing of the project can minimize impacts Avoid impacts to endangered species, particularly bird breeding seasons	Expanding restrictions to ensure there will be at least part of one growing season for reestablishment of vegetation before fall/winter has been discussed, but dismissed for economic reasons too industry
Restoration	Can occur either immediately, post construction, or many years after pipeline and navigation canal construction	Backfilling of canals, resulting in levee removal, has been a requirement for most pipeline installation projects There is benefit to backfilling old canals and navigation channels in order to reduce or reverse the trend of wetland losses in coastal Louisiana Other options include the use of imported material
Compensation	Typically occurs through the creation of new wetland habitat or through a cash payment to the appropriate land management agency Allows for the creation and restoration of lost wetland habitat In Louisiana, the payment for cash for wetlands into a State trust fund is administered by LADNR and is controversial This fund has been in existence for several years and has a significant accumulation of funds, however, no creation projects have yet to tap into it	In many cases not an option Saline marshes have yet to be successfully created, and finding appropriate locations to create salt marsh is difficult Forested wetlands are also difficult to compensate

* Trenchless, or directional drilling, is the newest and favored technique in sensitive habitats. This technique is considered to be extremely protective of sensitive habitats. At present, directional drilling is required almost without exception for crossing barrier island and shore faces. Impacts are limited to the access and staging sites for the equipment. By using directional drilling, pipeline installation can occur without having to cut through shore facings minimizing any erosion and surface habitat disturbance.

Table 4-53

Population Projected for the OCS Program

SubArea:	TX-1		TX-2		WGOM		LA-1		LA-2		LA-3		MA-1		CGOM		FL-1		FL-2		FL-3		FL-4		EGOM	
Year:	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	5,287	7,317	57,551	78,909	62,838	86,227	28,069	39,080	22,749	31,438	35,287	48,969	6,912	6,912	93,016	126,400	186	253	63	83	278	382	90	122	617	839
2	5,928	7,751	62,118	82,914	68,046	90,665	29,228	39,990	24,206	32,661	37,088	50,443	7,435	7,435	97,957	130,528	196	263	66	86	293	395	95	127	649	871
3	5,708	8,022	61,126	85,436	66,834	93,458	28,884	40,558	23,871	33,408	36,622	51,360	7,722	7,722	97,098	133,048	195	268	66	87	290	403	94	129	645	887
4	5,489	7,728	59,507	83,273	64,996	91,001	27,969	39,339	23,207	32,519	35,538	49,918	7,464	7,464	94,179	129,240	190	261	66	87	281	390	92	126	628	864
5	6,260	7,805	65,048	84,290	71,308	92,095	29,465	39,444	24,934	32,767	37,784	50,188	7,546	7,546	99,729	129,945	201	265	67	88	298	395	97	127	663	875
6	5,092	7,302	57,239	80,546	62,331	87,849	26,879	37,755	22,313	31,336	34,210	48,063	7,063	7,063	90,466	124,217	186	255	67	87	272	376	91	123	615	842
7	6,329	8,238	65,397	88,136	71,726	96,373	28,846	40,170	24,808	33,861	37,320	51,431	8,008	8,008	98,981	133,469	201	273	70	91	295	405	97	131	662	899
8	6,112	7,883	64,138	85,496	70,250	93,379	28,376	38,897	24,348	32,803	36,709	49,848	7,663	7,663	97,096	129,211	199	265	69	90	292	391	96	127	655	874
9	5,598	7,809	60,537	84,935	66,135	92,744	27,014	38,413	23,077	32,503	34,896	49,329	7,597	7,597	92,584	127,841	190	264	68	90	277	388	93	127	629	868
10	5,602	7,462	60,483	81,876	66,086	89,338	27,102	37,001	23,119	31,340	34,892	47,516	7,256	7,256	92,370	123,114	189	256	68	88	274	374	92	123	623	841
11	6,296	7,777	65,065	84,424	71,360	92,201	27,904	37,451	24,382	32,032	36,398	48,296	7,601	7,601	96,285	125,380	199	261	69	89	290	382	96	125	654	857
12	5,933	7,648	62,430	82,998	68,363	90,646	26,905	36,534	23,509	31,446	35,080	47,223	7,499	7,499	92,993	122,702	196	259	70	90	285	378	95	124	646	851
13	5,763	7,167	60,977	79,020	66,739	86,186	26,429	34,831	22,989	29,922	34,302	44,975	7,019	7,019	90,740	116,746	187	245	67	87	271	356	91	118	616	807
14	5,663	7,222	59,955	79,171	65,618	86,393	25,569	34,428	22,427	29,776	33,389	44,557	7,109	7,109	88,494	115,870	185	243	66	86	267	354	89	117	608	800
15	5,830	6,916	61,222	76,593	67,052	83,508	26,175	33,530	23,003	28,990	34,053	43,311	6,773	6,773	90,004	112,603	190	242	69	87	275	350	92	117	626	796
16	4,755	6,414	53,090	72,218	57,845	78,632	23,029	31,708	20,091	27,383	29,907	40,872	6,289	6,289	79,317	106,252	173	230	66	85	245	329	84	111	569	755
17	5,733	7,094	59,116	77,072	64,848	84,166	24,348	32,731	21,831	28,744	31,959	42,470	7,017	7,017	85,155	110,962	180	237	65	84	259	343	87	114	592	778
18	5,295	6,428	56,455	71,613	61,749	78,041	23,991	30,753	21,226	26,927	31,158	39,743	6,341	6,341	82,716	103,763	180	229	67	84	257	327	87	110	591	751
19	4,528	6,350	50,305	70,508	54,833	76,858	21,409	29,951	18,911	26,356	27,822	38,738	6,291	6,291	74,434	101,337	164	222	64	82	231	318	80	107	539	729
20	5,109	6,350	54,177	70,075	59,286	76,426	22,522	29,534	20,159	26,101	29,379	38,168	6,297	6,297	78,357	100,100	173	220	64	80	246	316	83	106	565	722
21	4,827	5,820	51,454	65,355	56,281	71,174	21,262	27,625	19,082	24,372	27,686	35,561	5,786	5,786	73,816	93,345	162	206	61	77	231	293	78	100	532	676
22	4,009	5,339	45,519	61,184	49,528	66,522	19,376	26,119	17,182	22,994	25,022	33,483	5,300	5,300	66,880	87,896	153	199	62	77	214	280	75	96	503	653
23	4,837	5,361	50,815	60,892	55,652	66,254	20,699	25,564	18,818	22,736	26,959	32,929	5,359	5,359	71,835	86,589	164	200	62	77	232	283	78	97	537	657
24	3,992	4,677	44,535	54,873	48,527	59,550	18,697	23,347	16,701	20,599	24,106	29,882	4,681	4,681	64,184	78,508	148	182	58	73	207	254	72	89	485	597
25	4,201	5,011	45,382	57,123	49,584	62,134	18,512	23,727	16,919	21,352	24,037	30,579	5,058	5,058	64,526	80,716	154	194	62	78	214	270	74	94	503	635
26	3,550	4,382	40,194	51,544	43,743	55,926	16,646	21,484	15,182	19,406	21,533	27,634	4,486	4,486	57,846	73,011	143	182	63	78	196	249	70	89	472	598
27	3,275	4,556	37,920	52,490	41,196	57,046	15,826	21,458	14,416	19,669	20,384	27,702	4,683	4,683	55,309	73,512	140	188	62	80	191	258	68	91	462	618
28	2,760	4,143	33,720	48,512	36,481	52,655	14,359	19,943	12,967	18,256	18,376	25,675	4,270	4,270	49,972	68,144	129	176	59	77	173	239	64	86	426	578
29	2,657	3,781	32,231	44,885	34,887	48,666	13,601	18,500	12,414	16,951	17,434	23,751	3,908	3,908	47,357	63,109	127	166	59	74	169	224	62	81	417	545
30	2,716	3,636	31,913	42,757	34,629	46,393	13,347	17,647	12,225	16,240	17,108	22,654	3,734	3,734	46,414	60,275	123	162	56	73	166	219	60	79	404	533
31	2,442	3,308	28,868	39,124	31,310	42,432	11,960	16,050	11,098	14,867	15,365	20,606	3,428	3,428	41,851	54,951	115	151	55	69	153	202	56	73	380	494
32	2,414	3,058	28,284	36,741	30,698	39,799	11,667	15,148	10,889	14,089	14,998	19,424	3,180	3,180	40,734	51,841	114	148	54	70	152	196	56	72	376	485
33	2,444	3,014	28,180	35,974	30,624	38,988	11,439	14,616	10,780	13,716	14,708	18,741	3,148	3,148	40,074	50,220	114	145	54	68	151	193	55	70	375	477
34	2,237	2,796	26,135	33,834	28,372	36,630	10,531	13,664	10,023	12,931	13,551	17,533	2,957	2,957	37,062	47,084	109	140	53	68	142	184	53	68	357	461
35	2,102	2,417	24,567	30,198	26,668	32,615	9,749	12,227	9,347	11,543	12,531	15,596	2,580	2,580	34,207	41,945	101	126	50	63	132	164	49	62	333	415
36	2,203	2,498	25,102	30,519	27,305	33,017	9,835	12,230	9,549	11,654	12,675	15,627	2,652	2,652	34,712	42,163	106	129	52	64	138	169	51	63	347	425
37	1,949	2,215	22,649	27,944	24,598	30,158	8,749	11,070	8,608	10,708	11,281	14,169	2,416	2,416	31,054	38,363	98	124	51	64	126	160	48	61	322	409
38	1,865	2,080	21,654	26,409	23,519	28,489	8,229	10,325	8,169	10,016	10,611	13,179	2,283	2,283	29,292	35,804	93	115	49	60	119	148	45	56	306	379
39	1,833	1,922	21,158	24,786	22,990	26,708	7,962	9,517	8,007	9,389	10,289	12,168	2,156	2,156	28,413	33,229	94	112	50	60	120	142	46	55	309	369
40	1,480	1,471	16,901	19,965	18,380	21,436	5,985	7,350	6,205	7,455	7,767	9,438	1,738	1,738	21,696	25,982	72	94	40	53	90	117	36	46	238	310

Table 4-54

Population Projected for the OCS Program as a Percent of Total Population

SubArea:	TX-1		TX-2		WGOM		LA-1		LA-2		LA-3		MA-1		CGOM		FL-1		FL-2		FL-3		FL-4		EGOM	
Year:	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
1	0.6	0.8	1.1	1.5	1.0	1.4	4.3	6.1	2.3	3.1	2.7	3.8	0.7	0.7	2.4	3.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.6	0.8	1.2	1.6	1.1	1.4	4.5	6.2	2.4	3.2	2.8	3.9	0.8	0.8	2.5	3.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3	0.6	0.8	1.1	1.6	1.0	1.5	4.4	6.3	2.3	3.3	2.8	3.9	0.8	0.8	2.4	3.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4	0.6	0.8	1.1	1.5	1.0	1.4	4.2	6.0	2.2	3.1	2.7	3.8	0.8	0.8	2.3	3.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
5	0.6	0.8	1.2	1.5	1.1	1.4	4.4	6.0	2.4	3.1	2.8	3.8	0.8	0.8	2.5	3.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
6	0.5	0.7	1.0	1.4	0.9	1.3	4.0	5.7	2.1	3.0	2.5	3.6	0.7	0.7	2.2	3.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
7	0.6	0.8	1.1	1.5	1.1	1.4	4.2	6.0	2.3	3.2	2.8	3.8	0.8	0.8	2.4	3.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
8	0.6	0.8	1.1	1.5	1.0	1.4	4.1	5.8	2.2	3.0	2.7	3.7	0.8	0.8	2.3	3.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
9	0.5	0.8	1.0	1.4	1.0	1.3	3.9	5.6	2.1	3.0	2.6	3.6	0.7	0.7	2.2	3.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
10	0.5	0.7	1.0	1.4	0.9	1.3	3.9	5.4	2.1	2.8	2.5	3.5	0.7	0.7	2.2	2.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
11	0.6	0.7	1.1	1.4	1.0	1.3	4.0	5.4	2.2	2.9	2.6	3.5	0.7	0.7	2.3	3.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
12	0.6	0.7	1.0	1.3	0.9	1.3	3.8	5.2	2.1	2.8	2.5	3.4	0.7	0.7	2.2	2.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
13	0.5	0.7	1.0	1.3	0.9	1.2	3.7	4.9	2.0	2.6	2.5	3.2	0.7	0.7	2.1	2.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
14	0.5	0.7	0.9	1.2	0.9	1.2	3.5	4.8	1.9	2.6	2.4	3.2	0.7	0.7	2.0	2.7	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
15	0.5	0.6	1.0	1.2	0.9	1.1	3.6	4.6	2.0	2.5	2.4	3.1	0.6	0.6	2.0	2.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
16	0.4	0.6	0.8	1.1	0.8	1.0	3.1	4.3	1.7	2.3	2.1	2.9	0.6	0.6	1.8	2.4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
17	0.5	0.6	0.9	1.2	0.8	1.1	3.3	4.5	1.8	2.4	2.2	3.0	0.6	0.6	1.9	2.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
18	0.5	0.6	0.8	1.1	0.8	1.0	3.2	4.1	1.7	2.2	2.2	2.8	0.6	0.6	1.8	2.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
19	0.4	0.6	0.7	1.0	0.7	1.0	2.8	4.0	1.5	2.2	1.9	2.7	0.6	0.6	1.6	2.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
20	0.4	0.5	0.8	1.0	0.7	1.0	2.9	3.9	1.6	2.1	2.0	2.6	0.5	0.5	1.7	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	0.4	0.5	0.7	0.9	0.7	0.9	2.8	3.6	1.5	1.9	1.9	2.4	0.5	0.5	1.6	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	0.3	0.5	0.6	0.9	0.6	0.8	2.5	3.4	1.3	1.8	1.7	2.3	0.4	0.4	1.4	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.4	0.4	0.7	0.8	0.7	0.8	2.6	3.3	1.5	1.8	1.8	2.2	0.4	0.4	1.5	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.3	0.4	0.6	0.8	0.6	0.7	2.4	3.0	1.3	1.6	1.6	2.0	0.4	0.4	1.3	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.3	0.4	0.6	0.8	0.6	0.7	2.3	3.0	1.3	1.6	1.6	2.0	0.4	0.4	1.3	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.3	0.4	0.5	0.7	0.5	0.6	2.1	2.7	1.1	1.5	1.4	1.8	0.4	0.4	1.2	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.3	0.4	0.5	0.7	0.5	0.6	1.9	2.6	1.1	1.5	1.3	1.8	0.4	0.4	1.1	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	0.2	0.3	0.4	0.6	0.4	0.6	1.7	2.4	1.0	1.3	1.2	1.7	0.3	0.3	1.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	0.2	0.3	0.4	0.6	0.4	0.5	1.6	2.2	0.9	1.2	1.1	1.5	0.3	0.3	0.9	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.2	0.3	0.4	0.5	0.4	0.5	1.6	2.1	0.9	1.2	1.1	1.5	0.3	0.3	0.9	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.2	0.3	0.4	0.5	0.3	0.5	1.4	1.9	0.8	1.1	1.0	1.3	0.3	0.3	0.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.2	0.2	0.3	0.5	0.3	0.4	1.4	1.8	0.8	1.0	0.9	1.2	0.2	0.2	0.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.2	0.2	0.3	0.4	0.3	0.4	1.3	1.7	0.7	1.0	0.9	1.2	0.2	0.2	0.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.2	0.2	0.3	0.4	0.3	0.4	1.2	1.6	0.7	0.9	0.8	1.1	0.2	0.2	0.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	0.2	0.2	0.3	0.4	0.3	0.3	1.1	1.4	0.6	0.8	0.8	1.0	0.2	0.2	0.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.2	0.2	0.3	0.4	0.3	0.3	1.1	1.4	0.6	0.8	0.8	1.0	0.2	0.2	0.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
37	0.1	0.2	0.3	0.3	0.2	0.3	1.0	1.2	0.6	0.7	0.7	0.9	0.2	0.2	0.6	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	0.1	0.1	0.2	0.3	0.2	0.3	0.9	1.1	0.5	0.7	0.6	0.8	0.2	0.2	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39	0.1	0.1	0.2	0.3	0.2	0.3	0.9	1.0	0.5	0.6	0.6	0.7	0.2	0.2	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	0.1	0.1	0.2	0.2	0.2	0.2	0.6	0.8	0.4	0.5	0.5	0.6	0.1	0.1	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 4-55

Employment (Direct, Indirect, and Induced) Projected for the OCS Program

SubArea:	TX-1	TX-2	WGOM	LA-1	LA-2	LA-3	MA-1	CGOM	FL-1	FL-2	FL-3	FL-4	EGOM
Year:	Low - High	Low - High	Low - High	Low - High	Low - High	Low - High	Low - High	Low - High	Low - High	Low - High	Low - High	Low - High	Low - High
1	2,620 - 3,626	34,006 - 46,626	36,626 - 50,253	16,001 - 22,279	13,018 - 17,991	20,744 - 28,787	3,890 - 3,890	53,653 - 72,947	103 - 140	22 - 29	160 - 219	51 - 69	335 - 457
2	2,941 - 3,846	36,710 - 49,000	39,652 - 52,846	16,746 - 22,912	13,865 - 18,708	21,850 - 29,718	4,193 - 4,193	56,654 - 75,531	108 - 146	23 - 30	169 - 228	53 - 71	353 - 475
3	2,836 - 3,985	36,129 - 50,498	38,965 - 54,483	16,632 - 23,355	13,685 - 19,153	21,622 - 30,324	4,364 - 4,364	56,304 - 77,196	108 - 149	23 - 31	168 - 233	53 - 73	352 - 485
4	2,730 - 3,844	35,177 - 49,226	37,907 - 53,070	16,182 - 22,761	13,316 - 18,659	21,027 - 29,535	4,227 - 4,227	54,752 - 75,181	105 - 145	23 - 30	163 - 226	52 - 71	343 - 473
5	3,118 - 3,888	38,479 - 49,862	41,597 - 53,750	17,146 - 22,953	14,345 - 18,851	22,420 - 29,780	4,284 - 4,284	58,195 - 75,868	111 - 147	24 - 31	174 - 230	55 - 72	364 - 480
6	2,540 - 3,642	33,883 - 47,680	36,423 - 51,323	15,732 - 22,097	12,871 - 18,075	20,357 - 28,601	4,020 - 4,020	52,980 - 72,793	103 - 142	23 - 31	159 - 220	52 - 70	337 - 462
7	3,161 - 4,115	38,740 - 52,209	41,901 - 56,324	16,980 - 23,646	14,348 - 19,584	22,272 - 30,692	4,570 - 4,570	58,169 - 78,492	112 - 152	24 - 32	173 - 237	55 - 75	364 - 496
8	3,057 - 3,943	38,020 - 50,681	41,077 - 54,624	16,800 - 23,028	14,119 - 19,022	21,970 - 29,833	4,384 - 4,384	57,273 - 76,268	111 - 148	24 - 32	172 - 230	55 - 73	361 - 483
9	2,803 - 3,911	35,904 - 50,373	38,707 - 54,284	16,067 - 22,846	13,409 - 18,886	20,938 - 29,597	4,355 - 4,355	54,769 - 75,685	106 - 147	24 - 32	164 - 229	53 - 73	347 - 480
10	2,809 - 3,742	35,908 - 48,608	38,717 - 52,350	16,204 - 22,123	13,467 - 18,256	21,015 - 28,618	4,169 - 4,169	54,856 - 73,167	105 - 143	24 - 31	162 - 221	53 - 71	344 - 466
11	3,161 - 3,905	38,666 - 50,171	41,828 - 54,076	16,771 - 22,510	14,238 - 18,705	22,005 - 29,199	4,379 - 4,379	57,393 - 74,792	111 - 146	24 - 31	172 - 227	55 - 72	363 - 476
12	2,983 - 3,846	37,138 - 49,373	40,121 - 53,219	16,256 - 22,074	13,763 - 18,409	21,289 - 28,658	4,330 - 4,330	55,638 - 73,472	110 - 145	25 - 32	169 - 225	55 - 72	359 - 473
13	2,902 - 3,609	36,310 - 47,054	39,211 - 50,662	16,053 - 21,156	13,491 - 17,560	20,897 - 27,398	4,063 - 4,063	54,503 - 70,176	105 - 138	24 - 30	162 - 213	52 - 68	343 - 449
14	2,855 - 3,640	35,727 - 47,178	38,582 - 50,819	15,596 - 20,999	13,187 - 17,508	20,407 - 27,233	4,122 - 4,122	53,312 - 69,862	104 - 137	23 - 30	160 - 211	52 - 68	339 - 446
15	2,944 - 3,492	36,539 - 45,713	39,483 - 49,205	16,041 - 20,549	13,559 - 17,088	20,914 - 26,600	3,937 - 3,937	54,452 - 68,174	107 - 136	24 - 31	165 - 210	53 - 68	349 - 444
16	2,405 - 3,245	31,735 - 43,170	34,141 - 46,414	14,181 - 19,525	11,872 - 16,181	18,457 - 25,224	3,665 - 3,665	48,175 - 64,595	97 - 129	23 - 30	147 - 198	49 - 65	317 - 422
17	2,905 - 3,595	35,393 - 46,143	38,297 - 49,738	15,065 - 20,252	12,932 - 17,027	19,820 - 26,338	4,099 - 4,099	51,915 - 67,716	102 - 134	23 - 29	156 - 207	51 - 66	331 - 436
18	2,688 - 3,263	33,853 - 42,942	36,540 - 46,205	14,915 - 19,119	12,605 - 15,990	19,417 - 24,766	3,713 - 3,713	50,650 - 63,588	102 - 129	23 - 30	155 - 198	51 - 64	331 - 421
19	2,302 - 3,228	30,199 - 42,328	32,501 - 45,556	13,361 - 18,692	11,252 - 15,682	17,410 - 24,241	3,690 - 3,690	45,713 - 62,304	92 - 125	22 - 29	140 - 192	47 - 63	302 - 409
20	2,603 - 3,235	32,592 - 42,156	35,194 - 45,391	14,116 - 18,510	12,024 - 15,568	18,491 - 24,023	3,703 - 3,703	48,333 - 61,804	97 - 124	22 - 28	150 - 191	49 - 62	318 - 406
21	2,464 - 2,971	31,019 - 39,398	33,483 - 42,370	13,383 - 17,389	11,409 - 14,573	17,527 - 22,512	3,410 - 3,410	45,729 - 57,883	92 - 117	21 - 27	140 - 178	46 - 58	299 - 380
22	2,051 - 2,731	27,498 - 36,961	29,549 - 39,693	12,249 - 16,511	10,299 - 13,783	15,932 - 21,319	3,131 - 3,131	41,610 - 54,744	87 - 113	22 - 27	130 - 171	44 - 57	282 - 367
23	2,480 - 2,749	30,762 - 36,862	33,242 - 39,611	13,141 - 16,230	11,307 - 13,662	17,265 - 21,088	3,173 - 3,173	44,887 - 54,153	93 - 114	22 - 27	142 - 173	46 - 57	303 - 370
24	2,050 - 2,402	27,001 - 33,269	29,052 - 35,671	11,911 - 14,873	10,054 - 12,401	15,513 - 19,230	2,777 - 2,777	40,254 - 49,280	84 - 103	20 - 25	127 - 156	42 - 52	274 - 337
25	2,163 - 2,579	27,573 - 34,706	29,735 - 37,285	11,844 - 15,180	10,211 - 12,886	15,558 - 19,792	3,007 - 3,007	40,620 - 50,867	87 - 110	22 - 27	131 - 166	44 - 55	284 - 359
26	1,831 - 2,260	24,471 - 31,382	26,302 - 33,642	10,695 - 13,804	9,185 - 11,741	14,018 - 17,990	2,674 - 2,674	36,572 - 46,209	82 - 103	22 - 27	121 - 154	42 - 53	266 - 337
27	1,693 - 2,355	23,136 - 32,025	24,829 - 34,380	10,212 - 13,846	8,743 - 11,929	13,347 - 18,140	2,798 - 2,798	35,100 - 46,712	80 - 107	22 - 28	118 - 159	41 - 54	260 - 349
28	1,430 - 2,146	20,616 - 29,660	22,046 - 31,806	9,306 - 12,924	7,884 - 11,100	12,102 - 16,909	2,557 - 2,557	31,849 - 43,490	74 - 100	21 - 27	107 - 148	38 - 51	240 - 326
29	1,379 - 1,963	19,747 - 27,500	21,126 - 29,463	8,852 - 12,040	7,566 - 10,331	11,549 - 15,733	2,345 - 2,345	30,313 - 40,450	72 - 94	21 - 26	105 - 139	37 - 48	235 - 308
30	1,413 - 1,892	19,593 - 26,251	21,006 - 28,142	8,724 - 11,534	7,469 - 9,922	11,399 - 15,094	2,247 - 2,247	29,839 - 38,798	70 - 93	19 - 25	103 - 137	36 - 47	229 - 302
31	1,274 - 1,725	17,760 - 24,070	19,034 - 25,796	7,851 - 10,536	6,798 - 9,106	10,297 - 13,809	2,067 - 2,067	27,012 - 35,518	66 - 86	19 - 24	96 - 126	34 - 44	214 - 280
32	1,262 - 1,598	17,438 - 22,652	18,699 - 24,250	7,691 - 9,986	6,686 - 8,650	10,110 - 13,093	1,922 - 1,922	26,409 - 33,652	65 - 84	19 - 24	95 - 123	34 - 43	213 - 274
33	1,280 - 1,579	17,410 - 22,225	18,690 - 23,804	7,573 - 9,677	6,635 - 8,442	9,971 - 12,706	1,907 - 1,907	26,087 - 32,732	65 - 83	19 - 24	95 - 121	33 - 43	212 - 271
34	1,174 - 1,468	16,180 - 20,947	17,355 - 22,414	7,002 - 9,085	6,184 - 7,979	9,241 - 11,956	1,796 - 1,796	24,223 - 30,815	62 - 80	18 - 24	90 - 116	32 - 41	202 - 261
35	1,105 - 1,271	15,241 - 18,735	16,347 - 20,007	6,510 - 8,164	5,782 - 7,140	8,595 - 10,697	1,570 - 1,570	22,457 - 27,571	58 - 72	17 - 22	83 - 104	30 - 37	189 - 235
36	1,161 - 1,317	15,606 - 18,974	16,768 - 20,291	6,596 - 8,201	5,921 - 7,226	8,744 - 10,781	1,618 - 1,618	22,879 - 27,827	61 - 74	18 - 22	88 - 107	31 - 38	197 - 241
37	1,030 - 1,170	14,111 - 17,409	15,140 - 18,579	5,892 - 7,456	5,351 - 6,656	7,828 - 9,831	1,478 - 1,478	20,548 - 25,421	56 - 71	17 - 22	80 - 101	29 - 37	182 - 232
38	987 - 1,101	13,519 - 16,488	14,506 - 17,589	5,566 - 6,984	5,091 - 6,242	7,405 - 9,197	1,400 - 1,400	19,461 - 23,823	54 - 66	17 - 21	76 - 94	28 - 34	174 - 215
39	972 - 1,020	13,237 - 15,507	14,209 - 16,527	5,408 - 6,465	5,002 - 5,865	7,222 - 8,541	1,325 - 1,325	18,957 - 22,195	54 - 64	17 - 21	76 - 91	28 - 34	175 - 210
40	787 - 782	10,595 - 12,516	11,382 - 13,299	4,083 - 5,014	3,886 - 4,668	5,484 - 6,663	1,071 - 1,071	14,523 - 17,417	42 - 54	14 - 18	58 - 75	22 - 29	135 - 175

Table 4-56

Employment (Direct, Indirect, and Induced) Projected for the OCS Program as a Percent of Total Employment

SubArea:	TX-1	TX-2	WGOM	LA-1	LA-2	LA-3	MA-1	CGOM	FL-1	FL-2	FL-3	FL-4	EGOM
Year:	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High	Low High
1	0.6 - 0.8	1.1 - 1.5	1.0 - 1.4	4.3 - 6.1	2.3 - 3.1	2.7 - 3.8	0.7 - 0.7	2.4 - 3.3	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
2	0.6 - 0.8	1.2 - 1.6	1.1 - 1.5	4.5 - 6.2	2.4 - 3.2	2.8 - 3.9	0.8 - 0.8	2.5 - 3.4	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
3	0.6 - 0.8	1.1 - 1.6	1.1 - 1.5	4.4 - 6.3	2.3 - 3.3	2.8 - 3.9	0.8 - 0.8	2.5 - 3.4	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
4	0.6 - 0.8	1.1 - 1.5	1.0 - 1.4	4.2 - 6.0	2.2 - 3.1	2.7 - 3.8	0.8 - 0.8	2.4 - 3.3	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
5	0.6 - 0.8	1.2 - 1.5	1.1 - 1.4	4.4 - 6.0	2.4 - 3.1	2.8 - 3.8	0.8 - 0.8	2.5 - 3.3	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
6	0.5 - 0.7	1.0 - 1.4	0.9 - 1.3	4.0 - 5.7	2.1 - 3.0	2.5 - 3.6	0.7 - 0.7	2.2 - 3.1	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
7	0.6 - 0.8	1.1 - 1.5	1.1 - 1.4	4.2 - 6.0	2.3 - 3.2	2.8 - 3.8	0.8 - 0.8	2.4 - 3.3	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
8	0.6 - 0.8	1.1 - 1.5	1.0 - 1.4	4.1 - 5.8	2.2 - 3.0	2.7 - 3.7	0.8 - 0.8	2.4 - 3.2	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
9	0.5 - 0.8	1.0 - 1.4	1.0 - 1.4	3.9 - 5.6	2.1 - 3.0	2.6 - 3.6	0.7 - 0.7	2.2 - 3.1	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
10	0.5 - 0.7	1.0 - 1.4	0.9 - 1.3	3.9 - 5.4	2.1 - 2.8	2.5 - 3.5	0.7 - 0.7	2.2 - 3.0	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
11	0.6 - 0.7	1.1 - 1.4	1.0 - 1.3	4.0 - 5.4	2.2 - 2.9	2.6 - 3.5	0.7 - 0.7	2.3 - 3.0	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
12	0.6 - 0.7	1.0 - 1.3	1.0 - 1.3	3.8 - 5.2	2.1 - 2.8	2.5 - 3.4	0.7 - 0.7	2.2 - 2.9	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
13	0.5 - 0.7	1.0 - 1.3	0.9 - 1.2	3.7 - 4.9	2.0 - 2.6	2.5 - 3.2	0.7 - 0.7	2.1 - 2.7	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
14	0.5 - 0.7	0.9 - 1.2	0.9 - 1.2	3.5 - 4.8	1.9 - 2.6	2.4 - 3.2	0.7 - 0.7	2.0 - 2.7	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
15	0.5 - 0.6	1.0 - 1.2	0.9 - 1.1	3.6 - 4.6	2.0 - 2.5	2.4 - 3.1	0.6 - 0.6	2.1 - 2.6	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
16	0.4 - 0.6	0.8 - 1.1	0.8 - 1.0	3.1 - 4.3	1.7 - 2.3	2.1 - 2.9	0.6 - 0.6	1.8 - 2.4	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
17	0.5 - 0.6	0.9 - 1.2	0.8 - 1.1	3.3 - 4.5	1.8 - 2.4	2.2 - 3.0	0.6 - 0.6	1.9 - 2.5	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
18	0.5 - 0.6	0.8 - 1.1	0.8 - 1.0	3.2 - 4.1	1.7 - 2.2	2.2 - 2.8	0.6 - 0.6	1.8 - 2.3	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
19	0.4 - 0.6	0.7 - 1.0	0.7 - 1.0	2.8 - 4.0	1.5 - 2.2	1.9 - 2.7	0.6 - 0.6	1.6 - 2.2	0.0 - 0.0	0.0 - 0.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
20	0.4 - 0.5	0.8 - 1.0	0.7 - 1.0	2.9 - 3.9	1.6 - 2.1	2.0 - 2.6	0.5 - 0.5	1.7 - 2.2	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
21	0.4 - 0.5	0.7 - 0.9	0.7 - 0.9	2.8 - 3.6	1.5 - 1.9	1.9 - 2.4	0.5 - 0.5	1.6 - 2.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
22	0.3 - 0.5	0.6 - 0.9	0.6 - 0.8	2.5 - 3.4	1.3 - 1.8	1.7 - 2.3	0.4 - 0.4	1.4 - 1.9	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
23	0.4 - 0.4	0.7 - 0.8	0.7 - 0.8	2.6 - 3.3	1.5 - 1.8	1.8 - 2.2	0.4 - 0.4	1.5 - 1.9	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
24	0.3 - 0.4	0.6 - 0.8	0.6 - 0.7	2.4 - 3.0	1.3 - 1.6	1.6 - 2.0	0.4 - 0.4	1.4 - 1.7	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
25	0.3 - 0.4	0.6 - 0.8	0.6 - 0.7	2.3 - 3.0	1.3 - 1.6	1.6 - 2.0	0.4 - 0.4	1.4 - 1.7	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
26	0.3 - 0.4	0.5 - 0.7	0.5 - 0.6	2.1 - 2.7	1.1 - 1.5	1.4 - 1.8	0.4 - 0.4	1.2 - 1.5	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
27	0.3 - 0.4	0.5 - 0.7	0.5 - 0.7	1.9 - 2.6	1.1 - 1.5	1.3 - 1.8	0.4 - 0.4	1.1 - 1.5	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
28	0.2 - 0.3	0.4 - 0.6	0.4 - 0.6	1.7 - 2.4	1.0 - 1.3	1.2 - 1.7	0.3 - 0.3	1.0 - 1.4	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
29	0.2 - 0.3	0.4 - 0.6	0.4 - 0.5	1.6 - 2.2	0.9 - 1.2	1.1 - 1.5	0.3 - 0.3	1.0 - 1.3	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
30	0.2 - 0.3	0.4 - 0.5	0.4 - 0.5	1.6 - 2.1	0.9 - 1.2	1.1 - 1.5	0.3 - 0.3	0.9 - 1.2	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
31	0.2 - 0.3	0.4 - 0.5	0.3 - 0.5	1.4 - 1.9	0.8 - 1.1	1.0 - 1.3	0.3 - 0.3	0.8 - 1.1	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
32	0.2 - 0.2	0.3 - 0.5	0.3 - 0.4	1.4 - 1.8	0.8 - 1.0	0.9 - 1.2	0.2 - 0.2	0.8 - 1.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
33	0.2 - 0.2	0.3 - 0.4	0.3 - 0.4	1.3 - 1.7	0.7 - 1.0	0.9 - 1.2	0.2 - 0.2	0.8 - 1.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
34	0.2 - 0.2	0.3 - 0.4	0.3 - 0.4	1.2 - 1.6	0.7 - 0.9	0.8 - 1.1	0.2 - 0.2	0.7 - 0.9	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
35	0.2 - 0.2	0.3 - 0.4	0.3 - 0.3	1.1 - 1.4	0.6 - 0.8	0.8 - 1.0	0.2 - 0.2	0.7 - 0.8	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
36	0.2 - 0.2	0.3 - 0.4	0.3 - 0.3	1.1 - 1.4	0.6 - 0.8	0.8 - 1.0	0.2 - 0.2	0.7 - 0.8	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
37	0.1 - 0.2	0.3 - 0.3	0.2 - 0.3	1.0 - 1.2	0.6 - 0.7	0.7 - 0.9	0.2 - 0.2	0.6 - 0.7	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
38	0.1 - 0.1	0.2 - 0.3	0.2 - 0.3	0.9 - 1.1	0.5 - 0.7	0.6 - 0.8	0.2 - 0.2	0.5 - 0.7	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
39	0.1 - 0.1	0.2 - 0.3	0.2 - 0.3	0.9 - 1.0	0.5 - 0.6	0.6 - 0.7	0.2 - 0.2	0.5 - 0.6	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0
40	0.1 - 0.1	0.2 - 0.2	0.2 - 0.2	0.6 - 0.8	0.4 - 0.5	0.5 - 0.6	0.1 - 0.1	0.4 - 0.5	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0	0.0 - 0.0