

**APPENDIX E. TABLES DEPICTING SOURCES AND DESTINATION OF
BALLAST WATER DISCHARGES IN U.S. GREAT LAKES**

Table E-1. Source of ballast water discharges (prior to ballast water exchange) into U.S. Great Lakes ports (2006-2007). Includes only discharges from vessels whose source of ballast water (prior to ballast water exchange) came from outside the Great Lakes.

Source of Ballast Water	Country	Ballast Tanks Discharged	Volume Discharged (metric tons)	Vessels Discharging
Not from POC	--	79	31,323	20
Port Cartier	Canada	57	80,233	8
Antwerpen	Belgium	40	14,134	4
Baie Comeau	Canada	34	46,353	5
Port Alfred	Canada	34	18,699	2
Puerto Cabello	Venezuela	29	14,267	3
Sept Iles	Canada	28	16,014	5
Haraholmen	Sweden	22	3,586	1
Bremen	Germany	20	5,858	1
Manfredonia	Italy	18	4,364	1
St John	Canada	15	3,680	1
Ghent	Belgium	14	7,332	1
Amsterdam	Netherlands	13	3,613	1
New Haven	US	13	17,252	1
Safi	Morocco	13	7,231	1
Casablanca	Morocco	12	10,552	2
Hafnarfjordur	Iceland	12	9,718	1
Santander	Spain	12	10,633	2
Albany	US	11	1,427	1
Rotterdam	Netherlands	8	1,389	2
Hamburg	Germany	7	4,374	1
Houston	US	7	1,593	2
Thisvi	Greece	7	1,998	1
Workington	UK	7	1,477	1
Yokkaichi	Japan	7	1,512	1
Agadir	Morocco	6	3,383	1

Source of Ballast Water	Country	Ballast Tanks Discharged	Volume Discharged (metric tons)	Vessels Discharging
Rouen	France	6	2,006	1
South Shields	UK	6	1,926	1
Bahia Quintero	Chile	5	16,839	1
Mostaganem	Algeria	5	1,196	1
Philadelphia	US	5	5,299	1
Porsgrunn	Norway	5	877	1
Algeciras	Spain	4	490	1
Baltimore	US	4	8	1
Barranquilla	Colombia	4	5,098	2
Ciwandan	Indonesia	4	491	1
Dunkerque (east)	France	4	2,194	1
Hancock	US	4	9,632	1
Troy	US	4	57	4
Brake	Germany	3	970	1
Shuwaikh	Kuwait	3	739	1
Al Burayqah	Libya	2	350	1
Dammam	Saudi Arabia	2	360	1
Gros Cacouna	Canada	2	2,426	1
Holyhead	UK	2	1,374	1
Mina Jabal Ali	UAE	2	577	1
Mobile	US	2	612	1
Oulu	Finland	2	182	1
Searsport	US	2	395	1
Southampton	UK	2	548	1
Chiba Ko	Japan	1	379	1
Halifax	Canada	1	910	1
Montevideo	Uruguay	1	237	1
Port Of Pasajes	Spain	1	126	1
Santa Marta	Colombia	1	160	1

Source of Ballast Water	Country	Ballast Tanks Discharged	Volume Discharged (metric tons)	Vessels Discharging
Sundsvall	Sweden	1	254	1
Thessaloniki	Greece	1	1,000	1
Veracruz	Mexico	1	719	1
Wilmington	US	1	1,500	1
TOTAL		618	381,927	107

Table E-2. Ballast water discharges at U. S. Great Lakes during 2006-2007. Includes only vessels whose original source of ballast water (prior to ballast water exchange) came from outside the Great Lakes.

US Great Lake Port	Tanks Discharged	Volume Discharged (metric tons)	Vessels Discharging
Duluth	407	184,844	58
Toledo	85	65,335	13
Superior	50	78,085	10
Green Bay	18	5,984	4
Gary	17	11,154	4
Milwaukee	11	10,768	2
Oswego	8	1,239	5
Chicago	7	17,916	3
Ludington	5	1,913	1
Erie	4	490	1
Lorain	3	2,320	3
Menominee	2	380	2
Ashtabula	1	1,500	1
TOTAL	618	381,927	107

Table E-3. Source of 2006-2007 ballast water discharges from vessels whose original source of ballast water (prior to ballast water exchange) came from outside the Great Lakes.
Sorted by U.S. Great Lake port of call.

US Great Lake Port	Source of Ballast Water	Country	Tanks Discharged	Volume Discharged (metric tons)	Vessels Discharging
Ashtabula	Wilmington	US	1	1,500	1
Chicago	Bahia Quintero	Chile	5	16,839	1
Chicago	Not from POC	--	1	77	1
Chicago	Thessaloniki	Greece	1	1,000	1
Duluth	Agadir	Morocco	6	3,383	1
Duluth	Al Burayqah	Libya	2	350	1
Duluth	Albany	US	11	1,427	1
Duluth	Amsterdam	Netherlands	13	3,613	1
Duluth	Antwerpen	Belgium	33	11,668	2
Duluth	Baie Comeau	Canada	3	1,922	1
Duluth	Casablanca	Morocco	12	10,552	2
Duluth	Chiba Ko	Japan	1	379	1
Duluth	Ciwandan	Indonesia	4	491	1
Duluth	Dammam	Saudi Arabia	2	360	1
Duluth	Dunkerque (east)	France	4	2,194	1
Duluth	Ghent	Belgium	14	7,332	1
Duluth	Hamburg	Germany	7	4,374	1
Duluth	Haraholmen	Sweden	22	3,586	1
Duluth	Houston	US	7	1,593	2
Duluth	Manfredonia	Italy	18	4,364	1
Duluth	Mina Jabal Ali	UAE	2	577	1
Duluth	Mobile	US	2	612	1
Duluth	Montevideo	Uruguay	1	237	1
Duluth	Mostaganem	Algeria	5	1,196	1
Duluth	New Haven	US	13	17,252	1
Duluth	Not from POC	--	66	27,054	13
Duluth	Oulu	Finland	2	182	1

U.S. Great Lake Port	Source of Ballast Water	Country	Tanks Discharged	Volume Discharged (metric tons)	Vessels Discharging
Duluth	Philadelphia	US	5	5,299	1
Duluth	Port Alfred	Canada	27	11,679	1
Duluth	Port Cartier	Canada	13	15,803	2
Duluth	Puerto Cabello	Venezuela	26	11,719	2
Duluth	Rotterdam	Netherlands	6	1,249	1
Duluth	Safi	Morocco	13	7,231	1
Duluth	Santa Marta	Colombia	1	160	1
Duluth	Santander	Spain	12	10,633	2
Duluth	Searsport	US	2	395	1
Duluth	Sept Iles	Canada	11	6,024	2
Duluth	Shuwaikh	Kuwait	3	739	1
Duluth	Southampton	UK	2	548	1
Duluth	St John	Canada	15	3,680	1
Duluth	Thisvi	Greece	7	1,998	1
Duluth	Workington	UK	7	1,477	1
Duluth	Yokkaichi	Japan	7	1,512	1
Erie	Algeciras	Spain	4	490	1
Gary	Baie Comeau	Canada	9	10,077	1
Gary	Not from POC	--	1	60	1
Gary	Porsgrunn	Norway	5	877	1
Gary	Rotterdam	Netherlands	2	140	1
Green Bay	Antwerpen	Belgium	3	1,082	1
Green Bay	Brake	Germany	3	970	1
Green Bay	Rouen	France	6	2,006	1
Green Bay	South Shields	UK	6	1,926	1
Lorain	Barranquilla	Colombia	1	780	1
Lorain	Not from POC	--	1	821	1
Lorain	Veracruz	Mexico	1	719	1

U.S. Great Lake Port	Source of Ballast Water	Country	Tanks Discharged	Volume Discharged (metric tons)	Vessels Discharging
Ludington	Sept Iles	Canada	5	1,913	1
Menominee	Port Of Pasajes	Spain	1	126	1
Menominee	Sundsvall	Sweden	1	254	1
Milwaukee	Baie Comeau	Canada	9	10,077	1
Milwaukee	Not from POC	--	2	691	1
Oswego	Not from POC	--	4	1,182	1
Oswego	Troy	US	4	57	4
Superior	Baie Comeau	Canada	8	16,988	1
Superior	Barranquilla	Colombia	3	4,318	1
Superior	Hancock	US	4	9,632	1
Superior	Not from POC	--	1	95	1
Superior	Port Cartier	Canada	28	42,855	4
Superior	Puerto Cabello	Venezuela	3	2,548	1
Superior	Sept Iles	Canada	3	1,649	1
Toledo	Antwerpen	Belgium	4	1,384	1
Toledo	Baie Comeau	Canada	5	7,290	1
Toledo	Baltimore	US	4	8	1
Toledo	Bremen	Germany	20	5,858	1
Toledo	Gros Cacouna	Canada	2	2,426	1
Toledo	Hafnarfjordur	Iceland	12	9,718	1
Toledo	Halifax	Canada	1	910	1
Toledo	Holyhead	UK	2	1,374	1
Toledo	Not from POC	--	3	1,343	1
Toledo	Port Alfred	Canada	7	7,020	1
Toledo	Port Cartier	Canada	16	21,576	2
Toledo	Sept Iles	Canada	9	6,428	1
TOTAL			618	381,927	107

Table E-4. Number of vessel-trips including specified port as a last five ports of call, for NOBOB-RM vessels (2006). NOBOB-RM vessels are vessels that entered the Seaway without ballast on board, picked up ballast water in the Great Lakes, and then discharged the ballast water along with residual material at a Great Lake port. NOBOB-RM vessels must also have visited a port outside the Great Lakes during one of the last five ports of call.

Port outside St. Lawrence Seaway	Country	NOBOB L5POC
Sept Iles	Canada	145
Port Cartier	Canada	77
Ijmuiden	Netherlands	23
Baie Comeau	Canada	23
Pointe Noire	Canada	22
Halifax	Canada	12
Europa Point	Gibraltar	10
Belledune	Canada	10
Antwerpen	Belgium	9
Casablanca	Morocco	9
Riga	Latvia	8
Santos	Brazil	8
Rotterdam	Netherlands	7
Stephenville	Canada	7
Amsterdam	Netherlands	7
Ashdod	Israel	7
Police	Poland	6
Praia Mole	Brazil	6
Tynemouth	UK	5
Dunkerque (east)	France	5
Tunis	Tunisia	5
Ghent	Belgium	5
Gdansk	Poland	5
Swinoujscie	Poland	5
Oran	Algeria	5

Port outside St. Lawrence Seaway	Country	NOBOB L5POC
Syros Island	Greece	5
Puerto Quetzal	Guatemala	4
Magdalen	Canada	4
Sankt-peterburg	Russia	4
Kao-hsiung	Taiwan	3
Vitoria	Brazil	3
Charlottetown	Canada	3
Hamburg	Germany	3
La Goulette	Tunisia	3
Richards Bay	South Africa	3
Coatzacoalcos	Mexico	2
Balboa	Panama	2
Corinto	Nicaragua	2
Piombino	Italy	2
Barranquilla	Colombia	2
Bahia San Nicolas	Peru	2
Arkhangelsk	Russia	2
Puerto Cabello	Venezuela	2
Rocky Point	Jamaica	2
Rouen	France	2
Tarragona	Spain	2
Puntarenas	Costa Rica	2
Summerside	Canada	2
Porto De Maceio	Brazil	2
Paranagua	Brazil	2
Santander	Spain	2
Shanghai	China	1
Chi-lung	Taiwan	1
Setubal	Portugal	1
Bunbury	Australia	1

Port outside St. Lawrence Seaway	Country	NOBOB L5POC
Singapore	Singapore	1
Cartagena	Spain	1
Campana	Argentina	1
Ceuta	Spain	1
Brunsbüttel	Germany	1
Sao Francisco	Brazil	1
Sluiskil	Netherlands	1
Fos	France	1
Szczecin	Poland	1
Terneuzen	Netherlands	1
Avonmouth	UK	1
Trieste	Italy	1
Venezia	Italy	1
Argentia	Canada	1
Aratu	Brazil	1
Xingang	China	1
Annaba	Algeria	1
Bremen	Germany	1
Recife	Brazil	1
Port Alfred	Canada	1
Port St Joe	USA	1
Point Tupper	Canada	1
Yosu-bando	Republic of Korea	1
Porto Empedocle	Italy	1
Map Ta Phut	Thailand	1
Liverpool	UK	1
Las Palmas	Spain	1
La Plata	Argentina	1
Durban	South Africa	1
Kingston Upon Hull	UK	1

Port outside St. Lawrence Seaway	Country	NOBOB L5POC
Djen-djen	Algeria	1
Itea	Greece	1
Reka Luga	Russia	1
Huelva	Spain	1
Hong Kong	Hong Kong	1
Guayaquil	Ecuador	1
Safi	Morocco	1
Geraldton	Australia	1
San Lorenzo	Argentina	1
Port Of Spain	Trinidad and Tobago	1
Santa Marta	Colombia	1
Pusan	Republic of Korea	1
TOTAL		544

Table E-5. Frequency and volume of ballast tank discharges into U.S. Great Lakes ports of call from NOBOB-RM vessels (2006). NOBOB-RM vessels are vessels that entered the Seaway without ballast on board, picked up ballast water in the Great Lakes, and then discharged the ballast water along with residual material at a Great Lake port. NOBOB-RM vessels must also have visited a port outside the Great Lakes during one of the last five ports of call.

U.S. Great Lake port	Ballast Tanks Discharged	Volume Discharged (metric tons)
Toledo	353	511,181
Superior	340	524,446
Ashtabula	297	579,785
Duluth	289	379,999
Sandusky	116	243,137
Milwaukee	89	68,522
Gary	60	52,987
Chicago	48	76,607
Conneaut	43	76,335
Buffalo	37	73,197
Calumet	30	33,974
Lorain	13	25,729
Two Harbors	8	13,444
Brevort	7	20,914
TOTAL	1730	2,680,255