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PRELIMINARY DATA ANALYSES USING RESPONSES FROM THE DETAILED INDUSTRY QUESTIONNAIRE: PHASE II COOLING WATER INTAKE STRUCTURES (JANUARY 2000)

Prepared for the May 23, 2001 Public Meeting of Technical Experts to Review EPA's Preliminary Data on Cooling Water Intake Structure Technologies in Place at Existing Facilities and Their Costs

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Engineering and Analysis Division

Purpose of This Draft Report

The U.S. Environmental Protection Agency will conduct a public meeting of technical experts on May 23, 2001, to review the Agency's preliminary data on cooling water intake structure technologies that are in place at existing facilities and the costs associated with the use of available technologies for reducing impingement and entrainment. The purpose of this meeting is to elicit individual comments from the technical experts. The topics for discussion are as follows: there may be occasions when a facility needs to reduce impingement or entrainment of aquatic organisms, on those occasions, what are the technologies that might be used and what are the costs and advantages or limitations associated with their use?

This draft report contains the results of preliminary analyses to determine what cooling water intake structure and cooling system technologies are in place at existing facilities. In a separate report, EPA will provide preliminary information on the costs associated with the use of available technologies for reducing impingement and entrainment.

Background Information

In January 2000, EPA distributed a survey questionnaire, titled *Detailed Industry Questionnaire: Phase II Cooling Water Intake Structures,* to a sample of facilities including traditional steam electric utilities, steam electric nonutility power producers, and manufacturers that use cooling water. Manufacturers surveyed included facilities from the paper and allied products, chemical and allied products, petroleum and coal products, and primary metals sectors. Of the 1,291 questionnaires mailed, EPA received back a total of 1,277. This represents a return rate of over 98 percent.

EPA believes that 955 of the surveyed facilities are potentially within the scope of regulations for cooling water intake structures at existing facilities because they have: 1) an intake structure that withdraws water for cooling purposes from a water of the U.S.; and 2) a National Pollutant Discharge Elimination System (NPDES) permit issued under section 402 of the Clean Water Act. Information was collected from these 955 facilities to characterize the type and nature of facilities using cooling water, specific uses of cooling water, design and configuration of cooling water systems and cooling water intake structures, types of technologies being used, and whether the facilities had previously evaluated the environmental impacts of their cooling water intake structures.

EPA has developed an electronic database containing the responses received from this survey and is continuing to conduct a quality assurance and quality control (QA/QC) review of the database. These data are appropriate for use in preliminary analyses and to identify needs for further research and analyses.

This draft report contains preliminary data analyses from existing utility and non-utility power producers. EPA focused its analysis on these facilities as, under the terms of the amended consent decree in Riverkeeper v. Whitman, the minimum set of facilities for which EPA must propose regulations by February 28, 2002, includes

existing utility and non-utility power producers whose flow levels exceed a minimum to be determined by EPA.

Data Analysis

EPA received questionnaires from a sample of 250 out of 878 traditional utilities and a sample of 42 out of 107 non-utilities identified as potentially within the scope of cooling water intake structure regulations for existing facilities. They were identified as potentially within scope of cooling water intake structure regulations for existing facilities because they withdraw waters of the United States for cooling and have an NPDES permit. The summary tables in this report are based on two preliminary data sets. The first preliminary data set includes responses from 204 traditional utility plants and 29 non-utility power producer plants. Some of the questionnaires (46 utility plants and 13 non-utility power producer plants) were not used for these analyses because responses are still being clarified or corrected by calling respondents or making independent checks. Tables derived from this data set are denoted with an asterisk (*) after the title.

The second preliminary data set is based on responses from 250 traditional utility facilities and 42 non-utility power producer plants. The data in this set are still being verified and therefore, may still contain some inaccurate information. Tables developed with this second set of data are denoted with a double asterisk (**) after the title.

EPA used these preliminary data sets and applied weighting factors derived for each of the facilities based on the survey sample sizes and results to develop draft national estimates of the number of facilities, cooling water systems, and cooling water intake structures.

Table 1. Estimated Distribution of Number of Facilities by the Two Industry Groups and the Corresponding Sample Sizes *

Description: This analysis provides national estimates of the ***number of existing facilities*** in the traditional utility and non-utility power producer industry categories that are potentially in scope and therefore may be subject to the Phase II rule for cooling water intake structures. This analysis does not exclude any facilities that meet a threshold based on total intake flow or a percentage of water withdrawn for cooling purposes.

Industrial Category	Estimated Number of Facilities at National Level	# Respondents (Questionnaires) Used in Developing National Estimates	
		Data Set 1	Data Set 2
Traditional Utilities	566	204	250
Nonutility Power Producers	111	29	42

Total	677	233	292

Table 2. Estimated Distribution of the Number of Facilities by the Number of Cooling Water Systems and the Two Industry Groups *

Description: This analysis provides a national estimate of the ***number and percent of facilities*** that have one, two, or more cooling water systems (CWSs) in the traditional utility and non-utility power producer industry categories.

Number Cooling Water Systems	Traditional Utilities		Non-utility Power Producers	
	Estimated Number Facilities	Percent	Estimated Number Facilities	Percent
1	460	81.3	88	79.3
2	83	14.7	19	17.1
3 or More	23	4	4	3.6
Total	566	100	111	100

Table 3. Estimated Distribution of the Number of Facilities by Number of Cooling Water Intake Structures and the Two Industry Groups *

Description: This analysis provides a national estimate of the ***number and percent of facilities*** that have one, two, or more cooling water intake structures (CWISs) in the traditional utility and non-utility power producer industry categories.

Number of CWIS	Traditional Utilities		Non-utility Power Producers	
	Estimated Number of Facilities	Percent	Estimated Number of Facilities	Percent
1	408	72.1	83	74.8
2	113	20	24	21.6
3	32	5.7	4	3.6
4 or More	13	2.3	0	0
Total	566	100	111	100

Table 4. Estimated Distribution of Number of Facilities by Sources of Surface Water and the Two Industry Groups *

Description: This analysis provides a national estimate of the ***number and percent of facilities*** in the traditional utility and non-utility power producer industry categories that withdraw water for cooling purposes from the following surface water sources: (a) non-tidal rivers/streams/tidal rivers only, (b) lakes, ponds, or reservoirs only, (c) estuaries or oceans only, (d) combinations of a, b, and c, or (e) none of the above.

Source of Surface Water		Traditional Utilities		Non-utility Power Producers	
		Estimated Number of Facilities	Percent	Estimated Number of Facilities	Percent
A	Non-tidal River, Stream, Tidal River Only	339	59.9	57	51.4
B	Lake, Pond, or Reservoir Only	136	24	18	16.2
C	Estuary or Ocean Only	61	10.8	32	28.8
Combinations of A, B, & C		22	3.9	4	3.6
None of the above		8	1.4	0	0
Total		566	100	111	100

Table 5. Estimated Distribution of Number of CWISs by Sources of Surface Water and the Two Industry Groups *

Description: This analysis provides a national estimate of the ***number and percent of cooling water intake structures*** at facilities in the traditional utility and non-utility power producer industry categories that withdraw water for cooling purposes from the following surface water sources: (a) non-tidal rivers/streams/tidal rivers only, (b) lakes, ponds, or reservoirs only, (c) estuaries or oceans only, (d) combinations of a, b, and c, or (e) none of the above.

Source of Surface Water		Traditional Utilities		Non-utility Power Producer	
		Estimated Number CWISs	Percent	Estimated Number CWISs	Percent
A	Non-tidal River/Stream/Tidal River Only	478	59.7	71	49.7
B	Lake, Pond, or Reservoir Only	180	22.5	18	12.6
C	Estuary or Ocean Only	114	14.2	50	35
Combinations of A, B, and C		16	1.9	4	2.8
None of the Above		13	1.6	0	0
Total		801	100	143	100

Table 6. Estimated Distribution of Cooling Water Intake System Design Through-Screen (or Through-Technology) Velocities for Traditional Utilities and Non-utility Power Producers **

Description: This analysis provides a national estimate of the ***number and percent of cooling water intake structures (CWISs)*** that fall within a range of velocities at existing facilities in the traditional utility and non-utility power producer industry categories.

Velocity (ft/sec)	Traditional Utilities	
	Estimated Number CWISs	Percent of CWISs
0 - 0.5	144	17.2
0.5 - 1	181	21.6
1 - 2	299	35.7
2 - 3	155	18.5
3 - 5	39	4.7
5 - 7	6	0.7
> 7	14	1.7
Total	838	100
Velocity (ft/sec)	**Non-utility Power Producers**	
	Estimated Number CWISs	**Percent of CWISs**
0 - 0.5	33	23.6
0.5 - 1	22	16.2
1 - 2	35	25.1
2 - 3	37	26.4
3 - 5	0	0
5 - 7	7	4.7
> 7	6	4
Total	140	100

Note: For facilities with multiple CWISs, the sample weight for each CWIS is assumed to be the same as the survey sample weight for that facility. The distribution of non-respondents (i.e., those identified as "Unknown") is assumed to be the same as the distribution of respondents.

Table 7. Estimated Distribution of Facility Total Daily Average Intake Flows (in MGD) for Traditional Utilities and Non-utility Power Producers *

Description: This analysis provides a national estimate of the ***number and percent of facilities*** that fall within a range of daily average intake flow volumes in the traditional utility and non-utility power producer industry categories.

Total Daily Avg. Flow (MGD)	Traditional Utilities			Non-utility Power Producers		
	Estimated Number Facilities	Percent of Facilities	Cumulative Percent	Estimated Number Facilities	Percent of Facilities	Cumulative Percent
0 - 2	22	3.9	3.9	17	15.3	15.3
2 - 25	105	18.6	22.5	20	18.4	33.7
25 - 50	49	8.6	31.1	3	2.4	36.1
50 - 100	73	12.9	44.0	10	9.3	45.4
100 - 250	84	14.8	58.8	16	14.7	60.1
250 - 500	109	19.2	78.0	16	14.7	74.8
500 - 750	39	7.0	85.0	25	22.6	97.4
750 - 1000	34	6.1	91.1	3	2.6	100
> 1000	51	9.0	100	0	0	100
Total	566	100	-	110	100	-

Table 8-1. Estimated Distribution of Number of Facilities by Average of CWIS Operating Days for Each Year *

Description: This analysis provides a national estimate of the ***number and percent of facilities*** in the traditional utility and nonutility power producer industry categories whose average of all cooling water intake structures shows that they (a) operate greater than, or equal to, 180 days per year or (b) operate less than 180 days per year. Data is provided for each of three years (1996, 1997, and 1998).

Operating Days	Traditional Utilities						Nonutility Power Producers					
	Year 1996		Year 1997		Year 1998		Year 1996		Year 1997		Year 1998	
	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent
≥180 days	442	78.1	441	77.9	444	78.4	85	76.6	86	77.5	88	79.3
<180 days	79	14.0	80	14.1	74	13.1	15	13.5	19	17.1	17	15.3
Unknown	45	8.0	45	8.0	48	8.5	11	9.9	6	5.4	6	5.4
Total	566	100	566	100	566	100	111	100	111	100	111	100

Table 8-2. Estimated Distribution of Number of Facilities by at Least One CWIS Operating Days for Each Year *

Description: This analysis provides a national estimate of the ***number and percent of facilities*** in the traditional utility and nonutility power producer industry categories that (a) operate at least one cooling water intake structure greater than, or equal to, 180 days per year or (b) operate all cooling water intake structures less than 180 days per year. Data is provided for each of three years (1996, 1997, and 1998).

Operating Days	Traditional Utilities						Nonutility Power Producers					
	Year 1996		Year 1997		Year 1998		Year 1996		Year 1997		Year 1998	
	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent	Est. No. of Facilities	Percent
≥180 days	451	78.1	448	79.2	448	79.2	85	76.6	86	77.5	88	79.3
<180 days	70	14.4	73	12.9	70	12.4	15	13.5	19	17.1	17	15.3
Unknown	45	8	45	8	48	8.5	11	9.9	6	5.4	6	5.4
Total	566	100	566	100	566	100	111	100	111	100	111	100

Table 9. Estimated Distribution of Facilities by Major Technology Category and the Two Industry Groups *

Description: This analysis provides a national estimate of the ***number and percent of facilities*** in the traditional utility and non-utility power producer industry categories that employ a technology at their cooling water intake structures from each of the major categories of technologies.

Major Technology Category	Traditional Utilities		Non-utility Power Producers	
	Estimated Number of Facilities	Percent	Estimated Number of Facilities	Percent
Bar Rack/trash Rack	521	92.0	83	74.8
Screening Technologies	527	93.1	81	73.0
Passive Intake Systems	56	9.9	27	24.3
Fish Diversion or Avoidance System	25	4.4	21	18.9
Fish Handling or Return Technologies	146	25.8	18	16.2
None of the Above	8	1.4	0	0
Note: Percent is based on the estimated total number of facilities, which is 566 for traditional utilities and 111 for non-utility power producers.				

Table 10. Estimated Distribution of Number of CWISs by Major Technology Category and the Two Industry Groups *

Description: This analysis provides a national estimate of the ***number and percent of cooling water intake structures*** (CWISs) at facilities in the traditional utility and non-utility power producer industry categories that employ a technology from each of the major categories of technologies.

Major Technology Category	Traditional Utilities		Non-utility Power Producers	
	Estimated Number of CWISs	Percent	Estimated Number of CWISs	Percent
Bar Rack/trash Rack	680	84.9	110	76.9
Screening Technologies	744	92.9	114	79.7
Passive Intake Systems	64	8.0	27	18.9
Fish Diversion or Avoidance System	31	3.9	31	21.7
Fish Handling or Return Technologies	236	29.5	24	16.8
None of the Above	17	2.1	0	0

Note: Percent of CWISs by technology type is based on the total number of estimated CWISs within traditional utilities and non-utility power producers. The total number of estimated CWISs for traditional utilities is 801, and it is 143 for non-utility power producers.

Table 11. Estimated Distribution of the Number of CWISs by "Water Body Type" and "Major Technology Category" for Each of the Two Industry Groups *

Description: This analysis provides a national estimate of ***the number and percent of cooling water intake structures*** at facilities in the traditional utility and nonutility power producer industry categories that employ a technology from each of the major categories of technologies. The cooling water intake structures are also categorized as to whether they are from facilities that withdraw water for cooling purposes from the following surface water sources: (a) nontidal rivers/streams/tidal rivers only, (b) lakes, ponds, or reservoirs only, (c) estuaries or oceans only, (d) combinations of a, b, and c, or (e) none of the above.

Major Technology Category	Traditional Utilities											
	A		B		C		D		E		F	
	Facilities Withdrawing From Nontidal Rivers/Streams/ Tidal Rivers Only		Facilities Withdrawing From Lakes/Ponds/ Reservoirs Only		Facilities Withdrawing From Estuaries /Oceans Only		Facilities Withdrawing From Combinations of A, B, & C		None of These		Total	
	Est. No. CWISs	Percent	Est. No. CWISs	Percent	Est. No. CWISs	Percent	Est. No. CWISs	Percent	Est. No. CWISs	Percent	Est. No. CWISs	Percent
Bar Rack/trash Rack	450	60.3	167	22.4	106	14.2	15	2	8	1.1	746	100
Screening Technology	451	59.7	169	22.4	106	14	16	2.1	13	1.7	755	100
Passive Intake Systems	39	53.4	26	35.6	0	0	3	4.1	5	6.8	73	100
Fish Diversion or Avoidance System	8	24.2	15	45.5	8	24.2	0	0	2	6.1	33	100
Fish Handling or Return	150	61.5	14	5.7	73	29.9	0	0	5	2	244	100
None of the above	6	54.5	5	45.5	0	0	0	0	0	0	11	100
Intake structure technology	**Nonutility Power Producers**											
	A		B		C		D		E		F	
	Facilities Withdrawing From Nontidal Rivers/Streams/Tidal Rivers Only		Facilities Withdrawing From Lakes/Ponds/ Reservoirs Only		Facilities Withdrawing From Estuaries /Oceans Only		Facilities Withdrawing From Combinations of A, B, & C		None of These		Total	
	Est. No. CWISs	Percent	Est. No. CWISs	Percent	Est. No. CWISs	Percent	Est. No. CWISs	Percent	Est. No. CWISs	Percent	Est. No. CWISs	Percent
Bar Rack/trash Rack	56	48.3	6	5.2	50	43.1	0	0	0	0	116	100
Screening Technology	60	52.6	0	0	50	43.9	0	0	0	0	114	100
Passive Intake Systems	14	51.9	13	48.1	0	0	0	0	0	0	27	100
Fish Diversion or Avoidance System	2	6.5	6	19.4	19	61.3	0	0	0	0	31	100
Fish Handling or Return	13	54.2	0	0	7	29.2	0	0	0	0	24	100
None of the above	0	0	0	0	0	0	0	0	0	0	0	0
Note : There were no facilities that reported that they withdrew from B + C or A+ B + C. The percentages across each row add up to 100 percent.												

Table 12. Estimated Distribution of Number of Facilities Having Conducted an Environmental or Technology Study by Industry Group *

Description: This analysis provides a national estimate of the ***number and percent of facilities*** in the traditional utility and non-utility power producer industry categories that have performed any biological studies including discrete or ongoing impingement and/or entrainment monitoring, discrete studies to evaluate the effectiveness of a technology to minimize impingement or entrainment, and Section 316(b) demonstration studies.

Conduct of Any Environmental or Technology Study	Traditional Utilities		Non-utility Power Producers	
	Estimated Number of Facilities	Percent	Estimated Number of Facilities	Percent
Yes	348	61.5	64	57.7
No	218	38.5	47	42.3
Total	566	100	111	100

Table 13. Distribution of Facility Mitigation Activities for Traditional Utilities and Non-utilities **

This analysis provides a national estimate of the ***number and percent of facilities*** in the traditional utility and non-utility power producer industry categories that have carried out any measures to compensate for or to mitigate potential environmental impacts.

Mitigation Measures	Traditional Utilities			Non-utility Power Producers		
	Estimated of Facilities Performing Any Mitigation Alternative	Estimated Number of Facilities	Percent	Estimated of Facilities Performing Any Mitigation Alternative	Estimated Number of Facilities	Percent
Restocking Fisheries	25	3	0.6	10	2	2.2
Maintaining Hatcheries		5	0.9		2	2.2
Habitat Restoration		2	0.3		1	1.0
Designation of Conservation Areas		4	0.7		1	1.0
Other		20	3.5		7	6.1
Total		34	6.0		13	12.5
Note: Some facilities employ more than one mitigation measure. Where this is the case, these facilities have been counted in each mitigation measure category that applies. Thus, the total number of facilities employing the various mitigation measures exceeds the total number of facilities performing mitigation						

Table 14. Estimated Cumulative Distribution of Cooling Water System Configurations as a Function of Age for Traditional Utilities and Non-utility Power Producers **

Description: This analysis provides a national estimate for the configuration of ***cooling water systems (CWSs)*** by type as a function of age in the traditional utility and non-utility power producer industry categories. The percent of cooling water systems from the total national estimates that should exhibit each configuration is also provided.

CWS Age (Years)	CWS Configuration	Traditional Utilities	
		Estimated Number CWSs	Percent of CWSs
≤ 5	Total	0	0
≤ 10	Once-through	3	41.7
	Recirculating	5	58.3
	Combination	0	0
	Total	8	100
≤ 15	Once-through	7	33.4
	Recirculating	13	66.6
	Combination	0	0
	Total	20	100
All	Once-through	516	71.4
	Recirculating	168	23.3
	Combination	38	5.3
	Total	722	100
CWS Age (Years)	**CWS Configuration**	**Non-utility Power Producers**	
		Estimated Number CWSs	**Percent of CWSs**
≤ 5	Once-through	2	24
	Recirculating	7	76
	Combination	0	0
	Total	9	100
≤ 10	Once-through	6	32.2
	Recirculating	12	67.8
	Combination	0	0
	Total	18	100
≤ 15	Once-through	11	34.2
	Recirculating	22	65.8
	Combination	0	0
	Total	33	100
All	Once-through	91	69.5
	Recirculating	40	30.5
	Combination	0	0
	Total	131	100

Note: For facilities with multiple CWSs, the sample weight for each CWS is assumed to be the same as the survey sample weight for that facility. The distribution of non-respondents (i.e., those identified as "Unknown" above) is assumed to be the same as the distribution of respondents.

Table 15. Estimated Distribution of Cooling Water System Configuration as a Function of Water Body Type for Traditional Utilities and Non-utility Power Producers **

Description: This analysis provides a national estimate of ***number and percent of cooling water systems*** in the traditional utility and non-utility power producer industry categories that have a cooling water system (CWS) configuration in each water body type.

Water Body Type	CWS Configuration	Traditional Utilities	
		Estimated Number CWSs	Percent of CWSs
Non-tidal River/Stream/ Tidal River	Once-through	307	62.5
	Recirculating	155	31.6
	Combination	29	5.9
	Total	491	100
Lake/Pond/Reservoir	Once-through	149	81.5
	Recirculating	22	11.9
	Combination	12	6.6
	Total	183	100
Estuary/Ocean	Once-through	72	93.9
	Recirculating	2	2.2
	Combination	3	3.9
	Total	77	100
All	Once-through	516	71.4
	Recirculating	168	23.3
	Combination	38	5.3
	Total	722	100
Water Body Type	**CWS Configuration**	**Non-utility Power Producers**	
		Estimated Number CWSs	**Percent of CWSs**
Non-tidal River/Stream/ Tidal River	Once-through	44	62
	Recirculating	27	38
	Combination	0	0
	Total	71	100
Lake/Pond/Reservoir	Once-through	4	28.1
	Recirculating	11	71.9
	Combination	0	0
	Total	15	100
Estuary/Ocean	Once-through	44	100
	Recirculating	0	0
	Combination	0	0
	Total	44	100
All	Once-through	91	69.5
	Recirculating	40	30.5
	Combination	0	0
	Total	131	100

Note: For facilities with multiple CWSs, the sample weight for each CWS is assumed to be the same as the survey sample weight for that facility. The distribution of non-respondents (i.e., those identified as "Unknown") is assumed to be the same as the distribution of respondents. Some CWS are associated with multiple water body types (for example, river and lake). Where this is the case, these CWSs have been counted separately in each water body category that applies. These CWS have been counted only once in the "All " water body category.

Table 16. Estimated Distribution of Cooling Water Intake Structure Arrangements for Traditional Utilities and Non-utility Power Producers **

Description: This analysis provides a national estimate for the ***number and percent of facilities and cooling water intake structures*** in the traditional utility and non-utility power producer industry categories that have each intake arrangement.

Estimated Number of Facilities	Estimated Number of CWISs	Traditional Utilities				
		Intake Arrangement	**Estimated Number Facilities**	**Percent of Facilities**	**Estimated Number CWISs**	**Percent of CWISs**
566	837	Canal/Channel	172	30.4	253	30.2
		Bay/Cove	48	8.4	60	7.2
		Shoreline	392	69.4	505	60.4
		Offshore	56	10.0	90	10.8
		Total	668	118.2	908	108.6
Estimated Number of Facilities	**Estimated Number of CWISs**	**Non-utility Power Producers**				
		Intake Arrangement	**Estimated Number Facilities**	**Percent of Facilities**	**Estimated Number CWISs**	**Percent of CWISs**
111	139	Canal/Channel	9	8.0	14	10.3
		Bay/Cove	20	18.2	24	17.1
		Shoreline	75	67.7	97	69.4
		Offshore	27	24.1	33	24.0
		Total	131	118.0	168	120.8

Notes: Some facilities/CWISs are associated with multiple intake arrangements (for example, canal and shoreline). Where this is the case, these facilities/CWISs have been counted in each intake category that applies. The percent of facilities/CWISs is based on total number of facilities/CWISs; since some facilities/CWISs have multiple intake arrangements, the total percentages may exceed 100%.

Table 17. Estimated Distribution of Facility Intake Arrangements as a Function of Water Body Type for Traditional Utilities and Non-utility Power Producers **

Description: This analysis provides a national estimate for the ***number and percent of facilities*** in the traditional utility and non-utility power producer industry categories that have an intake arrangement in each water body type.

Water Body Type	Traditional Utilities			
	Estimated Number Facilities	Intake Arrangement	Estimated Number Facilities	Percent of Facilities
Non-tidal River/ Stream/Tidal River	372	Canal/Channel	85	22.8
		Bay/Cove	18	4.7
		Shoreline	281	75.5
		Offshore	35	9.3
		Total	419	112.3
Lake/Pond/ Reservoir	155	Canal/Channel	72	46.4
		Bay/Cove	26	16.7
		Shoreline	96	62.1
		Offshore	22	14.0
		Total	216	139.2
Estuary/Ocean	61	Canal/Channel	31	50.4
		Bay/Cove	10	15.8
		Shoreline	30	49.3
		Offshore	2	3.9
		Total	73	119.4
All	566	Canal/Channel	172	30.4
		Bay/Cove	48	8.4
		Shoreline	392	69.4
		Offshore	56	10.0
		Total	668	118.2
Water Body Type	**Non-utility Power Producers**			
	Estimated Number Facilities	**Intake Arrangement**	**Estimated Number Facilities**	**Percent of Facilities**
Non-tidal River/ Stream/Tidal River	63	Canal/Channel	8	12.3
		Bay/Cove	9	14.4
		Shoreline	46	72.6
		Offshore	8	13.0
		Total	71	112.3
Lake/Pond/ Reservoir	15	Canal/Channel	0	0.0
		Bay/Cove	0	0.0
		Shoreline	6	39.7
		Offshore	9	60.3
		Total	15	100.0
Estuary/Ocean	33	Canal/Channel	1	3.5
		Bay/Cove	14	41.6
		Shoreline	26	79.2
		Offshore	7	20.8
		Total	48	145.1
All	111	Canal/Channel	9	8.0
		Bay/Cove	20	18.2
		Shoreline	75	67.7
		Offshore	27	24.1
		Total	131	118.0

Notes: Some facilities are associated with multiple intake arrangements (for example, canal and shoreline) and/or water body types (for example, river and lake). Where this is the case, these facilities have been counted separately in each intake and/or water body category that applies. The total numbers of facilities reported for the "All" water body categories represent the total universe of facilities. The percent of facilities is based on total number of facilities on that water body type; since some facilities have multiple intake arrangements, the total percentages may exceed 100%.