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COMPANY NAME: NW Natural

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Meter Sampling Program Report for 2019, NW Natural

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February 12<sup>th</sup>, 2020

**VIA ELECTRONIC FILING**

Public Utility Commission of Oregon  
201 High Street SE, Suite 100  
Post Office Box 1088  
Salem, Oregon 97308-1088

Re: RG 41: Meter Sampling Program Report for 2019

At the request of Commission Staff, Northwest Natural Gas Company, dba NW Natural, submits herewith its 2019 Meter Sampling Program Report.

As required by our Meter Testing Standards and Procedures document, the accuracies of all operating families of diaphragm meters with capacities 1000 ft<sup>3</sup>/hr and below have been statistically analyzed for the year 2019. This analysis utilized all relevant meter tests conducted during the five calendar years between January 1, 2014 and December 31, 2019. The results of this analysis are as follows:

- As of December 31, 2019, we had 728,495 installed meters covered under the Meter Sampling Program. These meters formed 410 meter families. This total does not include meters determined to be non-conforming.
- Over the course of 2019, the company tested 5,271 meters. Over the five-year period of 2014 through 2019, the company had a total of 29,353 meter samples from which to base its results.
- 404 meter families either had sufficient meter samples to establish statistical confidence in their accuracy, or are so new that they do not yet require minimum sampling. These meter families amount to 706,867 meters, or 97 percent of the total meter population. The performances of these families are exhibited in Appendix A.
- 9 new meter families were added in 2019. 3 meter families were removed from service due to small family size, during the normal course of business.
- 34 meter families, consisting of a total of 42,046 meters, are not conforming. Due to the number of meters requiring change-out (5.5% of the total population), these meters have been put on the list to be removed over the course of the next 4 years, by December 2023, per Meter Sampling Program (MSP) guidelines outlined in NW Natural Engineering Procedure Z-1. The performance of these families is exhibited in Appendix B.
- A further breakdown of the non-conforming meter families and associated meters described above are as follows, the performance of these families is exhibited in Appendix B:
  - 17 meter families, totaling 41,876 meters had sufficient meter tests available to have their accuracy determined statistically and determined non-conforming.
  - 15 meter families, totaling 52 meters, will be removed from service due to their small population size and age.
  - 2 meter families, totaling 118 meters will be removed from service due to small family size and sampling requirements exceeding 34% of the total family population.
- Compared to the results above, the Year 2018 report resulted in 11,566 meters being put on the list for removal by the end of 2019.

If you have any questions or comments, please contact me at (503) 226-4211 ext. 5542.

Sincerely,  
*/s/ Michael J. McKenzie*

Michael J. McKenzie  
Gas Measurement and Station Design Engineering Supervisor

cc: Andy Fortier                      Dave Weber  
Jon Huddleston                      Kim Heiting  
Cliff Crawford  
Joe Karney



**Appendix A**

**Meter Families in Conformance**

Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
570	0	2018	Rockwell	275	0	1	1		
560	0	2018	American	250	0	3	14	1	
487	0	2018	American	800	0	198	4		
505	507	2018	American	1000	0	356	7	1	
562	0	2018	American	250	0	695			
475	0	2018	American	630	0	4744	18	2	
602	0	2018	Itron	250	0	8178	20		
561	0	2018	American	250	0	9707	51	1	
125	0	2017	Rockwell	200	1	1	3		
470	472	2017	American	425	1	1			
520	0	2017	Rockwell	415	1	1			
560	0	2017	American	250	1	1	14		
570	0	2017	Rockwell	275	1	3	3		
562	0	2017	American	250	1	22			
487	0	2017	American	800	1	58	2		
505	507	2017	American	1000	1	203	7		
475	0	2017	American	630	1	1707	25	2	
602	0	2017	Itron	250	1	4603	30		
561	0	2017	American	250	1	11849	91	2	
140	0	2016	Sprague	175	2	1	3		
485	0	2016	American	800	2	1			
590	0	2016	Lancaster	250	2	1	2		
130	0	2016	American	175	2	2	7		
570	0	2016	Rockwell	275	2	2	2		
595	600	2016	Schlumberger	250	2	2			
572	0	2016	Sensus	275	2	3			
505	507	2016	American	1000	2	533	22	1	
475	0	2016	American	630	2	1650	24	1	
602	0	2016	Itron	250	2	4367	30		
561	0	2016	American	250	2	12685	98		
560	0	2015	American	250	3	1	8		
572	0	2015	Sensus	275	3	2	1		
Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
505	507	2015	American	1000	3	365	21		
475	0	2015	American	630	3	1274	55	1	
561	0	2015	American	250	3	17981	171	3	
120	0	2014	Rockwell	175	4	1	2		
572	0	2014	Sensus	275	4	1	1		
570	0	2014	Rockwell	275	4	2	3		
585	0	2014	Sprague	250	4	2			
130	0	2014	American	175	4	3	2		
560	0	2014	American	250	4	5	5		



505	507	2014	American	1000	4	447	34		
475	0	2014	American	630	4	1581	64		
561	0	2014	American	250	4	14738	205	1	
120	0	2013	Rockwell	175	5	1			
130	0	2013	American	175	5	1			
450	0	2013	Schlumberger	400	5	1			
510	515	2013	Rockwell	310	5	1			
570	0	2013	Rockwell	275	5	1			
572	0	2013	Sensus	275	5	1	1		
560	0	2013	American	250	5	4			
505	507	2013	American	1000	5	384	34		
475	0	2013	American	630	5	1521	83		
561	0	2013	American	250	5	15370	269	1	2
120	0	2012	Rockwell	175	6	1			
470	472	2012	American	425	6	1			
555	0	2012	American	310	6	1			
595	600	2012	Schlumberger	250	6	1			
570	0	2012	Rockwell	275	6	3	1		
572	0	2012	Sensus	275	6	4			
560	0	2012	American	250	6	6			
471	0	2012	American	425	6	10			
505	507	2012	American	1000	6	407	41	1	
475	0	2012	American	630	6	1465	60	1	
561	0	2012	American	250	6	11993	178	1	
485	0	2011	American	800	7	1			
510	515	2011	Rockwell	310	7	1			
520	0	2011	Rockwell	415	7	1			
570	0	2011	Rockwell	275	7	1			
590	0	2011	Lancaster	250	7	1			
140	0	2011	Sprague	175	7	2			
560	0	2011	American	250	7	3			
572	0	2011	Sensus	275	7	86	3		
471	0	2011	American	425	7	109	10		
505	507	2011	American	1000	7	377	44	1	
475	0	2011	American	630	7	1059	43	1	
561	0	2011	American	250	7	10703	166		
120	0	2010	Rockwell	175	8	1	1		
510	515	2010	Rockwell	310	8	1			
<b>Perf</b>	<b>Alt. Perf</b>	<b>Year Set</b>	<b>Manufacturer</b>	<b>Size</b>	<b>Age</b>	<b># Meters in Family</b>	<b># OK</b>	<b># Fast</b>	<b># Slow</b>
590	0	2010	Lancaster	250	8	1			
470	472	2010	American	425	8	2			
560	0	2010	American	250	8	2			
572	0	2010	Sensus	275	8	16	1		
471	0	2010	American	425	8	101	9		
475	0	2010	American	630	8	667	32		
561	0	2010	American	250	8	10129	199	3	
510	515	2009	Rockwell	310	9	1			
555	0	2009	American	310	9	1			



140	0	2009	Sprague	175	9	2			
590	0	2009	Lancaster	250	9	2	1		
125	0	2009	Rockwell	200	9	3			
471	0	2009	American	425	9	3	1		
520	0	2009	Rockwell	415	9	3			
470	472	2009	American	425	9	4			
585	0	2009	Sprague	250	9	5			
570	0	2009	Rockwell	275	9	16	1		
130	0	2009	American	175	9	19	1		
505	507	2009	American	1000	9	295	31	4	
572	0	2009	Sensus	275	9	778	19		
561	0	2008	American	250	10	23031	424	49	
560	0	2007	American	250	11	193	25		
470	472	2007	American	425	11	234	28		2
471	0	2007	American	425	11	482	78	8	
561	0	2007	American	250	11	22000	437	42	1
470	472	2006	American	425	12	34	38	1	
560	0	2006	American	250	12	622	47	1	
561	0	2006	American	250	12	21524	359	24	1
450	0	2005	Schlumberger	400	13	8	7		
300	540	2005	Rockwell	800	13	11	11		
570	0	2005	Rockwell	275	13	12	10		
452	0	2005	Actaris	400	13	17	14		
470	472	2005	American	425	13	23	14		
520	0	2005	Rockwell	415	13	48	19		
560	0	2005	American	250	13	78	32	1	1
561	0	2005	American	250	13	1650	88	13	
572	0	2005	Sensus	275	13	24724	390	48	
450	0	2004	Schlumberger	400	14	8	11		
272	0	2004	Actaris	1000	14	15	33	2	
595	600	2004	Schlumberger	250	14	32	16		
585	0	2004	Sprague	250	14	63	28		
470	472	2004	American	425	14	88	22		
520	0	2004	Rockwell	415	14	107	22		
452	0	2004	Actaris	400	14	437	53	2	3
570	0	2004	Rockwell	275	14	3611	56		
572	0	2004	Sensus	275	14	13950	205	17	2
585	0	2003	Sprague	250	15	13	18		
Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
500	502	2003	American	1000	15	24	21		
450	0	2003	Schlumberger	400	15	29	17		
595	600	2003	Schlumberger	250	15	60	17		1
520	0	2003	Rockwell	415	15	154	74	1	
470	472	2003	American	425	15	209	66	3	
560	0	2003	American	250	15	453	58	1	
570	0	2003	Rockwell	275	15	19865	292	5	2
470	472	2002	American	425	16	434	46	1	
595	600	2002	Schlumberger	250	16	3282	177		2



560	0	2002	American	250	16	8504	123	5	
570	0	2002	Rockwell	275	16	10821	163	3	
500	502	2001	American	1000	17	11	10	1	1
585	0	2001	Sprague	250	17	49	17		
270	0	2001	Schlumberger	1000	17	53	17		
595	600	2001	Schlumberger	250	17	3815	176	3	1
570	0	2001	Rockwell	275	17	8708	123	3	1
560	0	2001	American	250	17	9423	167	1	1
270	0	2000	Schlumberger	1000	18	18	13		
585	0	2000	Sprague	250	18	36	30	2	
470	472	2000	American	425	18	414	73	3	
595	600	2000	Schlumberger	250	18	3266	297	18	10
570	0	2000	Rockwell	275	18	8497	120	19	1
560	0	2000	American	250	18	11261	236	7	1
125	0	1999	Rockwell	200	19	139	21		
590	0	1999	Lancaster	250	19	151	22		
470	472	1999	American	425	19	250	48	1	
570	0	1999	Rockwell	275	19	10534	190	25	3
560	0	1999	American	250	19	11252	166	3	1
140	0	1998	Sprague	175	20	8	10		
270	0	1998	Schlumberger	1000	20	26	16		
590	0	1998	Lancaster	250	20	28	14		
125	0	1998	Rockwell	200	20	82	27		
500	502	1998	American	1000	20	87	47	7	
470	472	1998	American	425	20	160	65	6	
450	0	1998	Schlumberger	400	20	445	50		
585	0	1998	Sprague	250	20	5414	142		
560	0	1998	American	250	20	14450	258	21	2
485	0	1997	American	800	21	8	7		
510	515	1997	Rockwell	310	21	9	10		
520	0	1997	Rockwell	415	21	58	52	4	
450	0	1997	Schlumberger	400	21	64	18		
140	0	1997	Sprague	175	21	474	56	1	2
590	0	1997	Lancaster	250	21	2123	50		3
570	0	1997	Rockwell	275	21	2363	51	1	
585	0	1997	Sprague	250	21	5932	128	1	2
485	0	1996	American	800	22	8	11		
450	0	1996	Schlumberger	400	22	270	49		
Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
130	0	1996	American	175	22	1045	48	1	
585	0	1996	Sprague	250	22	4428	118		
570	0	1996	Rockwell	275	22	7687	140	4	
560	0	1996	American	250	22	11115	253	8	1
480	486	1995	American	800	23	18	14		2
130	0	1995	American	175	23	553	66	3	1
585	0	1995	Sprague	250	23	1520	42		
590	0	1995	Lancaster	250	23	4840	151	7	11
570	0	1995	Rockwell	275	23	6500	136	8	2



560	0	1995	American	250	23	8197	199	12	1
555	0	1994	American	310	24	8	11	1	
510	515	1994	Rockwell	310	24	44	32		3
470	472	1994	American	425	24	225	32		
125	0	1994	Rockwell	200	24	388	80	6	1
120	0	1994	Rockwell	175	24	1375	74	1	2
585	0	1994	Sprague	250	24	1658	51	1	
130	0	1994	American	175	24	2638	118	9	
590	0	1994	Lancaster	250	24	4386	184	9	6
560	0	1994	American	250	24	6174	123	6	
570	0	1993	Rockwell	275	25	61	32	1	
510	515	1993	Rockwell	310	25	98	46	5	2
450	0	1993	Schlumberger	400	25	192	36		
125	0	1993	Rockwell	200	25	483	82	7	1
140	0	1993	Sprague	175	25	653	34		1
120	0	1993	Rockwell	175	25	2664	123	6	3
590	0	1993	Lancaster	250	25	2841	75	1	
130	0	1993	American	175	25	3172	123	13	3
585	0	1993	Sprague	250	25	3842	120		
560	0	1993	American	250	25	4073	123	2	2
470	472	1992	American	425	26	145	28		
140	0	1992	Sprague	175	26	566	35		2
125	0	1992	Rockwell	200	26	617	40	1	
585	0	1992	Sprague	250	26	2107	68		
590	0	1992	Lancaster	250	26	2667	95	1	1
560	0	1992	American	250	26	4806	103		
120	0	1992	Rockwell	175	26	6737	286	9	2
470	472	1991	American	425	27	27	26	2	
480	486	1991	American	800	27	47	36	4	
510	515	1991	Rockwell	310	27	213	24		2
140	0	1991	Sprague	175	27	451	54		3
125	0	1991	Rockwell	200	27	701	39		
590	0	1991	Lancaster	250	27	1724	73		1
120	0	1991	Rockwell	175	27	3858	178	6	5
130	0	1991	American	175	27	4898	138	11	5
560	0	1991	American	250	27	5576	208	4	2
480	486	1990	American	800	28	26	18		
125	0	1990	Rockwell	200	28	294	74	10	
<b>Perf</b>	<b>Alt. Perf</b>	<b>Year Set</b>	<b>Manufacturer</b>	<b>Size</b>	<b>Age</b>	<b># Meters in Family</b>	<b># OK</b>	<b># Fast</b>	<b># Slow</b>
140	0	1990	Sprague	175	28	1021	101		6
590	0	1990	Lancaster	250	28	1323	56	1	
130	0	1990	American	175	28	3121	130	18	1
120	0	1990	Rockwell	175	28	3569	145	12	3
570	0	1990	Rockwell	275	28	5397	133	12	3
560	0	1990	American	250	28	6319	195	2	6
555	0	1989	American	310	29	15	28	2	
125	0	1989	Rockwell	200	29	524	74	2	
140	0	1989	Sprague	175	29	760	40		3



590	0	1989	Lancaster	250	29	1313	72		
130	0	1989	American	175	29	3255	150	10	2
120	0	1989	Rockwell	175	29	3510	147	7	4
560	0	1989	American	250	29	7022	229	4	4
520	0	1988	Rockwell	415	30	49	19		1
585	0	1988	Sprague	250	30	180	22		
140	0	1988	Sprague	175	30	753	59	2	3
120	0	1988	Rockwell	175	30	2189	94	6	2
130	0	1988	American	175	30	3119	137	17	2
560	0	1988	American	250	30	3151	95	1	2
555	0	1987	American	310	31	35	36	3	1
520	0	1987	Rockwell	415	31	43	27	1	2
125	0	1987	Rockwell	200	31	556	81	3	1
120	0	1987	Rockwell	175	31	2220	118	11	2
140	0	1987	Sprague	175	31	2967	125		10
130	0	1987	American	175	31	5904	205	23	2
510	515	1986	Rockwell	310	32	18	13		
555	0	1986	American	310	32	85	34	1	
140	0	1986	Sprague	175	32	964	58	1	1
120	0	1986	Rockwell	175	32	1316	57	2	1
130	0	1986	American	175	32	3992	138	16	2
560	0	1986	American	250	32	6218	194	8	
470	472	1985	American	425	33	24	26	2	
140	0	1985	Sprague	175	33	1147	65	1	7
560	0	1985	American	250	33	1462	42	1	
120	0	1985	Rockwell	175	33	1941	91	13	1
510	515	1984	Rockwell	310	34	15	15	1	1
485	0	1984	American	800	34	72	25		
470	472	1984	American	425	34	109	25		
140	0	1984	Sprague	175	34	708	45		1
125	0	1984	Rockwell	200	34	2109	92	11	1
130	0	1984	American	175	34	4786	182	19	2
470	472	1983	American	425	35	26	16		
140	0	1983	Sprague	175	35	816	93	3	4
125	0	1983	Rockwell	200	35	1763	89	4	1
130	0	1983	American	175	35	3002	127	18	2
470	472	1982	American	425	36	19	11		
520	0	1982	Rockwell	415	36	36	18		
Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
510	515	1982	Rockwell	310	36	85	33		2
120	0	1982	Rockwell	175	36	1172	79	12	1
125	0	1982	Rockwell	200	36	3102	113	8	1
505	507	1981	American	1000	37	9	11		2
555	0	1981	American	310	37	27	26	1	1
485	0	1981	American	800	37	31	15		
520	0	1981	Rockwell	415	37	230	36		1
140	0	1981	Sprague	175	37	632	41		1
125	0	1981	Rockwell	200	37	2469	89	11	2





485	0	1980	American	800	38	19	18	2	1
555	0	1980	American	310	38	63	40	4	
520	0	1980	Rockwell	415	38	75	39	1	
140	0	1980	Sprague	175	38	333	35		3
125	0	1980	Rockwell	200	38	1816	88	12	
130	0	1980	American	175	38	6181	243	17	1
520	0	1979	Rockwell	415	39	74	39	1	2
140	0	1979	Sprague	175	39	132	35	1	2
510	515	1979	Rockwell	310	39	170	49	2	2
120	0	1979	Rockwell	175	39	1617	93	10	4
130	0	1979	American	175	39	6381	203	13	4
520	0	1978	Rockwell	415	40	37	15		
140	0	1978	Sprague	175	40	271	77		4
120	0	1978	Rockwell	175	40	1451	101	6	5
125	0	1978	Rockwell	200	40	1580	94	5	
510	515	1977	Rockwell	310	41	154	39		1
120	0	1977	Rockwell	175	41	1352	89	4	3
130	0	1977	American	175	41	3264	126	3	
510	515	1976	Rockwell	310	42	278	43		1
140	0	1976	Sprague	175	42	1094	64	1	1
130	0	1975	American	175	43	24	14		
140	0	1975	Sprague	175	43	719	94		2
120	0	1975	Rockwell	175	43	1800	98	12	2
140	0	1974	Sprague	175	44	617	39		1
120	0	1974	Rockwell	175	44	2592	158	17	3
120	0	1973	Rockwell	175	45	661	59	2	
130	0	1973	American	175	45	727	83	9	
140	0	1973	Sprague	175	45	2880	143	3	8
140	0	1972	Sprague	175	46	148	37		2
120	0	1972	Rockwell	175	46	846	84	10	1
130	0	1972	American	175	46	2694	95	13	1
140	0	1971	Sprague	175	47	985	59		7
130	0	1971	American	175	47	1067	100	6	1
140	0	1970	Sprague	175	48	346	57		6
140	0	1968	Sprague	175	50	1006	76		16
505	507	2007	American	1000	11	376	71	9	
585	0	1991	Sprague	250	27	746	24		
475	0	2019	American	630	0	467	1		
Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
487	0	2019	American	800	0	18			
505	507	2019	American	1000	0	145			
520	0	2018	Rockwell	415	1	1			
561	0	2019	American	250	0	2991	2		
562	0	2019	American	250	0	31	1		
602	0	2019	Itron	250	0	569	1		
570	0	2019	Rockwell	275	0	2	1		
120	0	1981	Rockwell	175	38	684	80	9	1
120	0	1983	Rockwell	175	36	1355	93	10	1

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	www.nwnatural.com

140	0	1994	Sprague	175	25	591	31	0	3
480	486	2001	American	800	18	13	12	1	0
555	0	1984	American	310	35	214	21	0	1
120	0	1970	Rockwell	175	49	631	85	5	
140	0	1982	Sprague	175	37	581	50	2	3
470	472	1989	American	425	30	33	15	0	0
470	472	1995	American	425	24	87	20	0	0
480	486	1989	American	800	30	25	13	0	0
510	515	1981	Rockwell	310	38	200	62	5	3
520	0	1983	Rockwell	415	36	17	15	1	0
570	0	1994	Rockwell	275	25	5064	107	6	0
570	0	1998	Rockwell	275	21	5447	98	5	1
570	0	2008	Rockwell	275	11	6	1	0	0
120	0	1998	Rockwell	175	21	73	19	0	0
300	540	1996	Rockwell	800	23	29	14	0	1
300	540	2002	Rockwell	800	17	6	1	0	0
450	0	1999	Schlumberger	400	20	99	20	0	0
520	0	1977	Rockwell	415	42	42	15	0	1
520	0	1991	Rockwell	415	28	73	30	1	0
555	0	1997	American	310	22	22	19	2	1
130	0	1978	American	175	41	1553	89	10	1
480	486	1996	American	800	23	7	6	0	0
480	486	2002	American	800	17	22	12	0	0
520	0	1992	Rockwell	415	27	69	18	0	1
570	0	1991	Rockwell	275	28	2883	95	8	0
120	0	1976	Rockwell	175	43	1087	83	7	2
120	0	1980	Rockwell	175	39	1009	87	10	
120	0	1984	Rockwell	175	35	1442	89	11	1
130	0	1985	American	175	34	2087	87	11	3
130	0	1992	American	175	27	1406	92	10	0
452	0	2003	Actaris	400	16	96	31	1	2
505	507	1980	American	1000	39	7	6	0	0
570	0	1989	Rockwell	275	30	751	40	1	0
585	0	1999	Sprague	250	20	243	24	0	0
120	0	1969	Rockwell	175	50	183	66	4	0
125	0	1979	Rockwell	200	40	155	36	1	0
480	486	1992	American	800	27	23	19	1	0
500	502	2002	American	1000	17	36	25	1	1
Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	# OK	# Fast	# Slow
480	486	1993	American	800	26	31	28	3	2
120	0	1996	Rockwell	175	23	735	81	4	0
120	0	1997	Rockwell	175	22	164	36	1	0
125	0	1986	Rockwell	200	33	356	65	3	0
510	515	1973	Rockwell	310	46	87	19	0	1
120	0	1995	Rockwell	175	24	327	75	6	0
125	0	1988	Rockwell	200	31	415	39	1	0
125	0	1996	Rockwell	200	23	233	23	0	0
505	507	2008	American	1000	11	300	71	11	0



510	515	1987	Rockwell	310	32	210	48	2	4
510	515	1992	Rockwell	310	27	118	49	2	5
140	0	1977	Sprague	175	42	313	27	0	2
470	472	1997	American	425	22	286	78	6	0
510	515	1978	Rockwell	310	41	99	47	2	2
510	515	1983	Rockwell	310	36	109	49	2	0
520	0	1996	Rockwell	415	23	97	46	2	1
555	0	1983	American	310	36	90	35	1	0
555	0	1985	American	310	34	109	34	1	0
560	0	1987	American	250	32	430	26	0	0
570	0	1992	Rockwell	275	27	130	55	5	0
572	0	2008	Sensus	275	11	38	28	1	0
470	472	1987	American	425	32	120	52	2	0
510	515	1996	Rockwell	310	23	24	13	0	1
520	0	1995	Rockwell	415	24	287	69	9	2
585	0	2002	Sprague	250	17	44	16	0	0
590	0	1988	Lancaster	250	31	75	19	0	0
590	0	1996	Lancaster	250	23	26	15	0	0
470	472	1993	American	425	26	61	38	6	0
470	472	1996	American	425	23	11	12	1	0
470	472	2001	American	425	18	58	31	1	0
470	472	2008	American	425	11	12	10	0	0
510	515	1990	Rockwell	310	29	204	62	6	3
125	0	1995	Rockwell	200	24	70	45	5	0
130	0	1997	American	175	22	200	47	1	0
470	472	1988	American	425	31	41	36	4	0
471	0	2008	American	425	11	39	34	3	0
510	515	1974	Rockwell	310	45	24	24	0	4
520	0	1994	Rockwell	415	25	91	19	0	1
120	0	1968	Rockwell	175	51	75	31	1	0
470	472	1990	American	425	29	26	13	0	0
510	515	1989	Rockwell	310	30	85	31	1	1
470	472	1986	American	425	33	54	18	0	0
520	0	2000	Rockwell	415	19	84	44	6	0
<b>Totals</b>				<b>706867</b>	<b>23402</b>	<b>1197</b>	<b>346</b>		



**Appendix B**  
**Meter Families Not Conforming (To Be Removed Over 4 Years)**

Perf	Alt. Perf	Year Set	Manufacturer	Size	Age	# Meters in Family	Determination
120	0	2018	Rockwell	175	0	1	Determined
130	0	2018	American	175	0	1	Determined
140	0	2018	Sprague	175	0	1	Determined
561	0	2009	American	250	9	13443	Determined
452	0	2008	Actaris	400	10	1	Small Family
510	515	2008	Rockwell	310	10	1	Small Family
555	0	2008	American	310	10	1	Small Family
590	0	2008	Lancaster	250	10	1	Small Family
595	600	2008	Schlumberger	250	10	1	Small Family
140	0	2008	Sprague	175	10	2	Small Family
120	0	2008	Rockwell	175	10	3	Small Family
130	0	2008	American	175	10	3	Small Family
125	0	2008	Rockwell	200	10	5	Small Family
560	0	2008	American	250	10	6	Small Family
572	0	2006	Sensus	275	12	7584	Determined
125	0	2004	Rockwell	200	14	1	Small Family
561	0	2002	American	250	16	1	Small Family
500	502	1999	American	1000	19	11	Determined
560	0	1997	American	250	21	14257	Determined
475	0	1985	American	630	33	1	Small Family
510	515	1980	Rockwell	310	38	115	Determined
485	0	1978	American	800	40	4	Determined
130	0	1974	American	175	44	4583	Determined
120	0	1971	Rockwell	175	47	462	Determined
510	515	1975	Rockwell	310	43	26	Determined
570	0	2008	Rockwell	275	11	5	Small Family
300	540	2002	Rockwell	800	17	20	Determined
480	486	2000	American	800	19	22	Determined
485	0	1982	American	800	37	36	Determined
130	0	1976	American	175	43	1311	Determined
485	0	1987	American	800	32	11	Determined
300	540	1997	Rockwell	800	22	8	Determined
510	515	1988	Rockwell	310	31	102	Sampling Limit
520	0	1993	Rockwell	415	26	16	Sampling Limit

**Total            42046**