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FINAL  
MONTHLY PROGRESS REPORT  
TO  
CONSUMERS POWER COMPANY  
JACKSON, MICHIGAN

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)  
FOR  
PALISADES NUCLEAR GENERATING PLANT

PREPARED AND SUBMITTED  
BY  
TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES  
MIDWEST LABORATORY  
PROJECT NO. 8022

Reporting Period: January - December 1994

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# PALISADES

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## PALISADES

### 1.0 INTRODUCTION

The following constitutes the final 1994 Monthly Progress Report for the Radiological Environmental Monitoring Program conducted at the Palisades Nuclear Generating Plant, Covert, Michigan. Results of completed analyses are presented in the attached tables.

Data obtained in the program are well within the ranges previously encountered in the program and to be expected in the environmental media sampled.

For all gamma isotopic analyses, the spectrum is computer scanned from 80 to 2048 KeV. Specifically included are Mn-54, Fe-59, Co-58, Co-60, Zn-65, Zr-95, Nb-95, I-131, Ba-La-140, Cs-134, and Cs-137. Naturally occurring gamma-emitters, such as K-40 and Ra daughters, are frequently detected but not listed here. Data listed as "<" are at the 4.66 sigma level, others are 2 sigma. Unless noted otherwise, the less than value ("<") reported under "Other Gammas" is for Co-60 and may be higher or lower for other radionuclides.

All concentrations, except gross beta, are decay corrected to the time of collection.

All samples were collected within the scheduled period unless noted otherwise in the Listing of Missed Samples.

# PALISADES

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### 2.0 LISTING OF MISSED SAMPLES

Sample Type	Location	Expected Collection Date	Reason
Liquid Radwaste	Palisades	January	Sample not received.
Liquid Radwaste	Palisades	February	Sample not received.
Liquid Radwaste	Palisades	March	Sample not received.
Liquid Radwaste	Palisades	April	Sample not received.
Air Charcoal	9TP	05-01-94	Sample not received.
Liquid Radwaste	Palisades	May	Sample not received.
Liquid Radwaste	Palisades	July	Sample not received.
Liquid Radwaste	Palisades	September	Sample not received.
Liquid Radwaste	Palisades	October	Sample not received.
Liquid Radwaste	Palisades	November	Sample not received.
Liquid Radwaste	Palisades	December	Sample not received.
Air Charcoal	4JS	12-25-94	Sample not received.
Air Particulate			
Air Charcoal	4JS	01-01-95	Sample not received.
Air Particulate			

NOTE: Page 3 is intentionally left out.

# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 1ST - Palisades  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-09-94	302	0.015 ± 0.003	< 0.025	07-10-94	275	0.010 ± 0.002	< 0.014
01-16-94	309	0.025 ± 0.003	< 0.016	07-17-94	280	0.013 ± 0.003	< 0.011
01-23-94	303	0.027 ± 0.003	< 0.014	07-24-94	278	0.012 ± 0.003	< 0.021
01-30-94	306	0.021 ± 0.003	< 0.020	07-31-94	275	0.014 ± 0.003	< 0.016
02-06-94	297	0.021 ± 0.003	< 0.018	08-07-94	275	0.016 ± 0.003	< 0.016
02-13-94	306	0.022 ± 0.003	< 0.010	08-14-94	278	0.012 ± 0.002	< 0.019
02-20-94	289	0.013 ± 0.003	< 0.023	08-21-94	266	0.018 ± 0.003	< 0.020
02-27-94	300	0.024 ± 0.003	< 0.026	08-28-94	283	0.030 ± 0.003	< 0.016
03-06-94	297	0.021 ± 0.003	< 0.016	09-04-94	266 <sup>b</sup>	< 0.003	< 0.011
03-13-94	297	0.018 ± 0.003	< 0.007	09-11-94	167	0.034 ± 0.005	< 0.024
03-20-94	295	0.016 ± 0.003	< 0.008	09-18-94	363	0.024 ± 0.003	< 0.022
03-27-94	297	0.005 ± 0.002	< 0.014	09-25-94	272	0.019 ± 0.003	< 0.014
04-03-94	292	0.014 ± 0.003	< 0.011	10-02-94	286	0.015 ± 0.003	< 0.035
1st Qtr. Mean±s.d.		0.019 ± 0.006	< 0.026	3rd Qtr. Mean±s.d.		0.018 ± 0.007	< 0.035
04-10-94	289	0.018 ± 0.003	< 0.011	10-09-94	292	0.018 ± 0.003	< 0.014
04-17-94	292	0.011 ± 0.002	< 0.015	10-16-94	331	0.023 ± 0.003	< 0.011
04-24-94	283	0.013 ± 0.003	< 0.013	10-23-94	320	0.024 ± 0.003	< 0.009
05-01-94	289	0.009 ± 0.002	< 0.014	10-30-94	334	0.015 ± 0.002	< 0.014
05-08-94	278	0.010 ± 0.002	< 0.009	11-06-94	323	0.017 ± 0.003	< 0.010
05-15-94	283	0.012 ± 0.003	< 0.012	11-13-94	334	0.024 ± 0.003	< 0.012
05-22-94	280	0.008 ± 0.003	< 0.011	11-20-94	331	0.022 ± 0.003	< 0.019
05-29-94	283	0.015 ± 0.003	< 0.010	11-27-94	343	0.020 ± 0.003	< 0.017
06-05-94	278	0.015 ± 0.003	< 0.013	12-04-94	340	0.025 ± 0.003	< 0.016
06-12-94	280	0.013 ± 0.003	< 0.016	12-11-94	363	0.017 ± 0.002	< 0.013
06-19-94	290 <sup>a</sup>	0.016 ± 0.003	< 0.014	12-18-94	346 <sup>b</sup>	< 0.002	< 0.019
06-26-94	272	0.010 ± 0.002	< 0.011	12-25-94	340	0.036 ± 0.003	< 0.016
07-03-94	278	0.010 ± 0.003	< 0.010	01-01-95	360	0.025 ± 0.003	< 0.021
2nd Qtr. Mean±s.d.		0.012 ± 0.003	< 0.016	4th Qtr. Mean±s.d.		0.022 ± 0.005	< 0.021
				Cumulative Average:		0.018	
				Previous Annual Average:		0.018	

<sup>a</sup> Estimated volume.

<sup>b</sup> Filter very light

PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 2TH - Coloma (5 miles SSE)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-09-94	309	0.016 ± 0.003	<0.026	07-10-94	295	0.005 ± 0.002	<0.015
01-16-94	314	0.027 ± 0.003	<0.016	07-17-94	283	0.011 ± 0.002	<0.011
01-23-94	312	0.028 ± 0.003	<0.015	07-24-94	278	0.009 ± 0.002	<0.021
01-30-94	306	0.023 ± 0.003	<0.016	07-31-94	275	0.014 ± 0.003	<0.016
02-06-94	306	0.026 ± 0.003	<0.018	08-07-94	283	0.018 ± 0.003	<0.016
02-13-94	241	0.030 ± 0.004	<0.008	08-14-94	278	0.016 ± 0.003	<0.019
02-20-94	365	0.011 ± 0.003	<0.029	08-21-94	278	0.014 ± 0.003	<0.020
02-27-94	306	0.023 ± 0.003	<0.026	08-28-94	275	0.031 ± 0.003	<0.015
03-06-94	300	0.024 ± 0.003	<0.016	09-04-94	280	0.016 ± 0.003	<0.011
03-13-94	314	0.014 ± 0.003	<0.007	09-11-94	252	0.019 ± 0.003	<0.036
03-20-94	306	0.021 ± 0.003	<0.009	09-18-94	300	0.031 ± 0.003	<0.018
03-27-94	297	0.009 ± 0.002	<0.014	09-25-94	283	0.026 ± 0.003	<0.014
04-03-94	297	0.018 ± 0.003	<0.011	10-02-94	283	0.013 ± 0.003	<0.035
1st Qtr. Mean±s.d.		0.021 ± 0.006	<0.029	3rd Qtr. Mean±s.d.		0.017 ± 0.008	<0.036
04-10-94	295	0.017 ± 0.003	<0.011	10-09-94	295	0.016 ± 0.003	<0.014
04-17-94	297	0.009 ± 0.002	<0.015	10-16-94	297	0.019 ± 0.003	<0.010
04-24-94	278	0.015 ± 0.003	<0.013	10-23-94	303	0.026 ± 0.003	<0.010
05-01-94	306	0.008 ± 0.002	<0.015	10-30-94	334	0.016 ± 0.002	<0.013
05-08-94	289	0.012 ± 0.002	<0.010	11-06-94	331	0.018 ± 0.003	<0.010
05-15-94	259	0.012 ± 0.002	<0.012	11-13-94	337	0.026 ± 0.003	<0.012
05-22-94	289	0.009 ± 0.003	<0.011	11-20-94	337	0.022 ± 0.003	<0.020
05-29-94	283	0.015 ± 0.003	<0.010	11-27-94	343	0.019 ± 0.003	<0.017
06-05-94	278	0.015 ± 0.003	<0.013	12-04-94	334	0.022 ± 0.003	<0.016
06-12-94	280	0.013 ± 0.003	<0.016	12-11-94	348	0.020 ± 0.003	<0.013
06-19-94	275	0.017 ± 0.003	<0.014	12-18-94	334	0.034 ± 0.003	<0.019
06-26-94	289	0.008 ± 0.002	<0.012	12-25-94	346	0.038 ± 0.003	<0.016
07-03-94	278	0.012 ± 0.003	<0.010	01-01-95	354	0.025 ± 0.003	<0.021
2nd Qtr. Mean±s.d.		0.012 ± 0.003	<0.016	4th Qtr. Mean±s.d.		0.023 ± 0.006	<0.021
				Cumulative Average:		0.018	
				Previous Annual Average:		0.018	

# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 3HS - Covert (5 miles SE)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-09-94	218	0.021 ± 0.004	<0.018	07-10-94	283	0.010 ± 0.002	<0.014
01-16-94	215	0.027 ± 0.004	<0.011	07-17-94	283	0.008 ± 0.002	<0.011
01-23-94	210	0.036 ± 0.005	<0.010	07-24-94	272	0.009 ± 0.002	<0.020
01-30-94	204	0.018 ± 0.004	<0.013	07-31-94	275	0.013 ± 0.003	<0.016
02-06-94	201	0.023 ± 0.004	<0.012	08-07-94	280	0.018 ± 0.003	<0.016
02-13-94	204	0.022 ± 0.004	<0.007	08-14-94	283	0.011 ± 0.002	<0.019
02-20-94	190	0.013 ± 0.004	<0.015	08-21-94	280	0.019 ± 0.003	<0.021
02-27-94	187	0.021 ± 0.003	<0.016	08-28-94	278	0.031 ± 0.003	<0.015
03-06-94	227	0.025 ± 0.004	<0.012	09-04-94	295	0.015 ± 0.003	<0.012
03-13-94	300	0.014 ± 0.003	<0.009	09-11-94	283	0.024 ± 0.003	<0.040
03-20-94	303	0.017 ± 0.003	<0.009	09-18-94	275	0.031 ± 0.003	<0.016
03-27-94	297	0.012 ± 0.002	<0.014	09-25-94	283	0.019 ± 0.003	<0.014
04-03-94	295	0.015 ± 0.003	<0.011	10-02-94	286	0.010 ± 0.003	<0.035
1st Qtr. Mean±s.d.		0.020 ± 0.006	<0.018	3rd Qtr. Mean±s.d.		0.017 ± 0.008	<0.040
04-10-94	295	0.019 ± 0.003	<0.011	10-09-94	297	0.023 ± 0.003	<0.015
04-17-94	300	0.008 ± 0.002	<0.015	10-16-94	351	0.016 ± 0.002	<0.012
04-24-94	283	0.015 ± 0.003	<0.013	10-23-94	329	0.025 ± 0.003	<0.009
05-01-94	295	0.009 ± 0.003	<0.014	10-30-94	340	0.012 ± 0.002	<0.013
05-08-94	286	0.011 ± 0.002	<0.010	11-06-94	368*	<0.002	<0.012
05-15-94	289	0.008 ± 0.002	<0.012	11-13-94	346	0.024 ± 0.003	<0.013
05-22-94	289	0.008 ± 0.002	<0.011	11-20-94	346	0.022 ± 0.003	<0.020
05-29-94	286	0.014 ± 0.003	<0.010	11-27-94	351	0.019 ± 0.003	<0.017
06-05-94	283	0.016 ± 0.003	<0.013	12-04-94	340	0.024 ± 0.003	<0.016
06-12-94	286	0.016 ± 0.003	<0.017	12-11-94	346	0.011 ± 0.002	<0.013
06-19-94	286	0.003 ± 0.002	<0.014	12-18-94	388	0.029 ± 0.002	<0.022
06-26-94	283	0.010 ± 0.002	<0.012	12-25-94	354	0.036 ± 0.003	<0.016
07-03-94	278	0.010 ± 0.003	<0.010	01-01-95	360	0.026 ± 0.003	<0.021
2nd Qtr. Mean±s.d.		0.011 ± 0.004	<0.017	4th Qtr. Mean±s.d.		0.022 ± 0.007	<0.022
				Cumulative Average:		0.018	
				Previous Annual Average:		0.017	

\* Filter very light.

# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 4JS - Covert (3.5 miles ESE)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
Required LLD		0.01	0.070			0.01	0.070
01-09-94	295	0.018 ± 0.003	< 0.024	07-10-94	244	0.007 ± 0.002	< 0.012
01-16-94	306	0.026 ± 0.003	< 0.016	07-17-94	258	0.006 ± 0.002	< 0.010
01-23-94	303	0.032 ± 0.004	< 0.014	07-24-94	249	0.014 ± 0.003	< 0.018
01-30-94	309	0.020 ± 0.003	< 0.020	07-31-94	252	0.015 ± 0.003	< 0.015
02-06-94	292	0.023 ± 0.003	< 0.017	08-07-94	244	0.021 ± 0.003	< 0.014
02-13-94	303	0.023 ± 0.003	< 0.010	08-14-94	249	0.015 ± 0.003	< 0.017
02-20-94	289	0.012 ± 0.003	< 0.023	08-21-94	249	0.018 ± 0.003	< 0.018
02-27-94	303	0.022 ± 0.003	< 0.026	08-28-94	246	0.031 ± 0.004	< 0.014
03-06-94	286	0.026 ± 0.003	< 0.015	09-04-94	263	0.013 ± 0.003	< 0.011
03-13-94	295	0.015 ± 0.003	< 0.013	09-11-94	244	0.020 ± 0.003	< 0.034
03-20-94	292	0.020 ± 0.003	< 0.014	09-18-94	244	0.039 ± 0.004	< 0.015
03-27-94	289	0.012 ± 0.003	< 0.009	09-25-94	255	0.027 ± 0.003	< 0.013
04-03-94	289	0.017 ± 0.003	< 0.007	10-02-94	178	0.020 ± 0.004	< 0.022
1st Qtr. Mean±s.d.		0.020 ± 0.006	< 0.026	3rd Qtr. Mean±s.d.		0.019 ± 0.009	< 0.034
04-10-94	244	0.017 ± 0.003	< 0.008	10-09-94	351	0.013 ± 0.002	< 0.017
04-17-94	255	0.009 ± 0.003	< 0.013	10-16-94	326	0.015 ± 0.002	< 0.011
04-24-94	252	0.015 ± 0.003	< 0.010	10-23-94	306	0.026 ± 0.003	< 0.009
05-01-94	263	0.009 ± 0.003	< 0.013	10-30-94	351 <sup>a</sup>	< 0.002	< 0.014
05-08-94	249	0.013 ± 0.003	< 0.008	11-06-94	306	0.017 ± 0.003	< 0.010
05-15-94	266 <sup>a</sup>	< 0.003	< 0.026	11-13-94	320	0.023 ± 0.003	< 0.012
05-22-94	255	0.005 ± 0.003	< 0.010	11-20-94	323	0.023 ± 0.003	< 0.019
05-29-94	258	0.012 ± 0.003	< 0.009	11-27-94	331	0.018 ± 0.003	< 0.016
06-05-94	249	0.018 ± 0.003	< 0.012	12-04-94	331	0.022 ± 0.003	< 0.015
06-12-94	252	0.015 ± 0.003	< 0.015	12-11-94	323	0.019 ± 0.003	< 0.012
06-19-94	246	0.022 ± 0.004	< 0.012	12-18-94	85 <sup>b</sup>	0.031 ± 0.008	< 0.045
06-26-94	244	0.010 ± 0.003	< 0.010	12-25-94	ND <sup>c</sup>	-	-
07-03-94	255	0.013 ± 0.003	< 0.010	01-01-95	ND <sup>c</sup>	-	-
2nd Qtr. Mean±s.d.		0.013 ± 0.004	< 0.026	4th Qtr. Mean±s.d.		0.021 ± 0.005	< 0.045
				Cumulative Average:		0.018	
				Previous Annual Average:		0.018	

<sup>a</sup> Filter very light.

<sup>b</sup> Low volume due to power lines down.

<sup>c</sup> ND = No data; no power to air station.

# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 5PR - Covert (3 miles E)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-09-94	283	0.017 ± 0.003	< 0.023	07-10-94	255	0.007 ± 0.002	< 0.013
01-16-94	289	0.026 ± 0.003	< 0.015	07-17-94	263	0.012 ± 0.003	< 0.010
01-23-94	289	0.033 ± 0.004	< 0.014	07-24-94	261	0.011 ± 0.003	< 0.019
01-30-94	297	0.028 ± 0.003	< 0.019	07-31-94	278	0.014 ± 0.003	< 0.016
02-06-94	280	0.023 ± 0.003	< 0.017	08-07-94	255	0.017 ± 0.003	< 0.015
02-13-94	289	0.020 ± 0.003	< 0.010	08-14-94	266	0.015 ± 0.003	< 0.018
02-20-94	280	0.018 ± 0.003	< 0.022	08-21-94	263	0.019 ± 0.003	< 0.019
02-27-94	289	0.022 ± 0.003	< 0.025	08-28-94	261	0.027 ± 0.003	< 0.014
03-06-94	278	0.023 ± 0.003	< 0.015	09-04-94	278	0.013 ± 0.003	< 0.011
03-13-94	280	0.017 ± 0.003	< 0.012	09-11-94	246	0.022 ± 0.003	< 0.035
03-20-94	280	0.019 ± 0.003	< 0.014	09-18-94	269	0.031 ± 0.003	< 0.016
03-27-94	278	0.013 ± 0.003	< 0.008	09-25-94	266	0.020 ± 0.003	< 0.014
04-03-94	286	0.018 ± 0.003	< 0.006	10-02-94	280	0.014 ± 0.003	< 0.034
1st Qtr. Meant±s.d.		0.021 ± 0.005	< 0.025	3rd Qtr. Meant±s.d.		0.017 ± 0.006	< 0.035
04-10-94	269	0.018 ± 0.003	< 0.009	10-09-94	286 <sup>a</sup>	< 0.003	< 0.014
04-17-94	275	0.011 ± 0.002	< 0.014	10-16-94	303	0.018 ± 0.003	< 0.010
04-24-94	252	0.016 ± 0.003	< 0.010	10-23-94	295	0.026 ± 0.003	< 0.008
05-01-94	303	0.008 ± 0.002	< 0.044	10-30-94	317	0.012 ± 0.002	< 0.012
05-08-94	263	0.014 ± 0.003	< 0.009	11-06-94	283	0.010 ± 0.002	< 0.009
05-15-94	275	0.010 ± 0.002	< 0.026	11-13-94	280	0.008 ± 0.002	< 0.010
05-22-94	269	0.007 ± 0.003	< 0.010	11-20-94	275	0.020 ± 0.003	< 0.016
05-29-94	269	0.012 ± 0.003	< 0.010	11-27-94	283	0.018 ± 0.003	< 0.014
06-05-94	261	0.016 ± 0.003	< 0.012	12-04-94	280	0.024 ± 0.003	< 0.013
06-12-94	266	0.012 ± 0.003	< 0.015	12-11-94	558 <sup>b</sup>	0.010 ± 0.002	< 0.020
06-19-94	258	0.018 ± 0.003	< 0.013	12-18-94	263	0.037 ± 0.004	< 0.015
06-26-94	258	0.012 ± 0.003	< 0.011	12-25-94	286	0.037 ± 0.004	< 0.013
07-03-94	266	0.009 ± 0.003	< 0.010	01-01-94	289	0.029 ± 0.003	< 0.017
2nd Qtr. Meant±s.d.		0.013 ± 0.003	< 0.044	4th Qtr. Meant±s.d.		0.021 ± 0.010	< 0.020
				Cumulative Average:		0.018	
				Previous Annual Average:		0.018	

<sup>a</sup>Filter very light.

<sup>b</sup>Suspect high volume to to faulty timer.



# PALISADES

Table 1. Airborne particulates and charcoal canisters.  
 Analyses: Gross beta and iodine-131.  
 Location: 6RB- South Haven (4.75 miles NE)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
Required LLD		0.01	0.070			0.01	0.070
01-09-94	303	0.017 ± 0.003	< 0.008	07-10-94	272	0.007 ± 0.002	< 0.014
01-16-94	312	0.028 ± 0.003	< 0.011	07-17-94	280	0.013 ± 0.003	< 0.011
01-23-94	309	0.026 ± 0.003	< 0.015	07-24-94	278	0.010 ± 0.002	< 0.021
01-30-94	309	0.022 ± 0.003	< 0.020	07-31-94	283	0.010 ± 0.002	< 0.017
02-06-94	297	0.023 ± 0.003	< 0.018	08-07-94	272	0.013 ± 0.003	< 0.016
02-13-94	286	0.021 ± 0.003	< 0.010	08-14-94	278	0.012 ± 0.002	< 0.019
02-20-94	312	0.012 ± 0.003	< 0.025	08-21-94	278	0.015 ± 0.003	< 0.020
02-27-94	306	0.022 ± 0.003	< 0.026	08-28-94	280	0.027 ± 0.003	< 0.015
03-06-94	295	0.027 ± 0.003	< 0.016	09-04-94	286	0.012 ± 0.003	< 0.012
03-13-94	300	0.019 ± 0.003	< 0.013	09-11-94	343	0.019 ± 0.002	< 0.048
03-20-94	297	0.021 ± 0.003	< 0.014	09-18-94	207	0.047 ± 0.005	< 0.012
03-27-94	286	0.009 ± 0.002	< 0.009	09-25-94	278	0.018 ± 0.003	< 0.014
04-03-94	297	0.017 ± 0.003	< 0.007	10-02-94	292	0.010 ± 0.003	< 0.036
1st Qtr. Mean±s.d.		0.020 ± 0.005	< 0.026	3rd Qtr. Mean±s.d.		0.016 ± 0.010	< 0.048
04-10-94	283	0.017 ± 0.003	< 0.009	10-09-94	289	0.016 ± 0.003	< 0.014
04-17-94	286	0.008 ± 0.002	< 0.015	10-16-94	329	0.020 ± 0.003	< 0.011
04-24-94	283	0.015 ± 0.003	< 0.012	10-23-94	323	0.024 ± 0.003	< 0.009
05-01-94	286	0.006 ± 0.002	< 0.042	10-30-94	343	0.014 ± 0.002	< 0.014
05-08-94	266	0.013 ± 0.003	< 0.009	11-06-94	320	0.017 ± 0.003	< 0.010
05-15-94	286	0.011 ± 0.002	< 0.027	11-13-94	334	0.020 ± 0.003	< 0.012
05-22-94	280	0.006 ± 0.002	< 0.011	11-20-94	331	0.021 ± 0.003	< 0.019
05-29-94	283	0.014 ± 0.003	< 0.010	11-27-94	346	0.015 ± 0.002	< 0.017
06-05-94	278	0.016 ± 0.003	< 0.013	12-04-94	346	0.020 ± 0.003	< 0.016
06-12-94	278	0.010 ± 0.002	< 0.016	12-11-94	334	0.014 ± 0.002	< 0.012
06-19-94	272	0.018 ± 0.003	< 0.013	12-18-94	348 <sup>a</sup>	< 0.002	< 0.019
06-26-94	258	0.011 ± 0.003	< 0.008	12-25-94	232	0.057 ± 0.005	< 0.011
07-03-94	300	0.008 ± 0.003	< 0.011	01-01-95	479 <sup>b</sup>	0.018 ± 0.002	< 0.028
2nd Qtr. Mean±s.d.		0.012 ± 0.004	< 0.042	4th Qtr. Mean±s.d.		0.021 ± 0.011	< 0.028
				Cumulative Average:		0.017	
				Previous Annual Average:		0.017	

<sup>a</sup> Filter very light.

<sup>b</sup> No explanation given for high volume.

# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 7SD - South Haven (7.5 miles NNE)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-09-94	275	0.016 ± 0.003	< 0.007	07-10-94	241	0.010 ± 0.003	< 0.014
01-16-94	280	0.024 ± 0.003	< 0.010	07-17-94	244	0.015 ± 0.003	< 0.020
01-23-94	278	0.027 ± 0.004	< 0.010	07-24-94	241	0.014 ± 01.003	< 0.010
01-30-94	283	0.017 ± 0.003	< 0.019	07-31-94	238	0.011 ± 0.003	< 0.009
02-06-94	269	0.023 ± 0.004	< 0.030	08-07-94	235	0.017 ± 0.003	< 0.020
02-13-94	280	0.020 ± 0.003	< 0.011	08-14-94	241	0.014 ± 0.003	< 0.019
02-20-94	263	0.013 ± 0.003	< 0.014	08-21-94	238	0.019 ± 0.003	< 0.009
02-27-94	280	0.024 ± 0.004	< 0.008	08-28-94	238	0.027 ± 0.003	< 0.010
03-06-94	263	0.022 ± 0.003	< 0.011	09-04-94	252	0.014 ± 0.003	< 0.010
03-13-94	269	0.023 ± 0.004	< 0.012	09-11-94	235	0.025 ± 0.003	< 0.008
03-20-94	266	0.016 ± 0.003	< 0.013	09-18-94	235	0.035 ± 0.004	< 0.023
03-27-94	261	0.011 ± 0.003	< 0.008	09-25-94	238	0.025 ± 0.004	< 0.022
04-03-94	263	0.016 ± 0.003	< 0.006	10-02-94	249	0.011 ± 0.003	< 0.010
1st Qtr. Mean±s.d.		0.019 ± 0.005	< 0.030	3rd Qtr. Mean±s.d.		0.018 ± 0.007	< 0.023
04-10-94	255	0.015 ± 0.003	< 0.008	10-09-94	3 <sup>a</sup>	< 0.321	< 1.047
04-17-94	261	0.008 ± 0.002	< 0.015	10-16-94	241	0.022 ± 0.003	< 0.020
04-24-94	255	0.014 ± 0.003	< 0.010	10-23-94	280	0.023 ± 0.003	< 0.010
05-01-94	153	0.007 ± 0.004	< 0.022	10-30-94	357	0.013 ± 0.002	< 0.016
05-08-94	241	0.010 ± 0.003	< 0.011	11-06-94	329	0.019 ± 0.003	< 0.010
05-15-94	241	0.012 ± 0.003	< 0.023	11-13-94	354	0.024 ± 0.003	< 0.013
05-22-94	252	0.008 ± 0.003	< 0.020	11-20-94	348	0.020 ± 0.003	< 0.016
05-29-94	249	0.016 ± 0.003	< 0.013	11-27-94	360	0.019 ± 0.003	< 0.015
06-05-94	249	0.016 ± 0.003	< 0.015	12-04-94	354	0.020 ± 0.003	< 0.011
06-12-94	249	0.013 ± 0.003	< 0.006	12-11-94	334 <sup>b</sup>	0.018 ± 0.003	< 0.010
06-19-94	238	0.020 ± 0.004	< 0.021	12-18-94	348	0.034 ± 0.003	< 0.009
06-26-94	246	0.011 ± 0.003	< 0.007	12-25-94	363	0.037 ± 0.003	< 0.047
07-03-94	244	0.011 ± 0.003	< 0.023	01-01-95	382	0.027 ± 0.003	< 0.014
2nd Qtr. Mean±s.d.		0.012 ± 0.004	< 0.023	4th Qtr. Mean±s.d.		0.023 ± 0.007	< 1.047
				Cumulative Average:		0.018	
				Previous Annual Average:		0.016	

<sup>a</sup> Low volume due to meter found unplugged. I-131 concentration exceeds required LLD due to low volume.

<sup>b</sup> Estimated volume.



# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 8SP - State Park (1 mile N)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-09-94	314	0.018 ± 0.003	<0.008	07-10-94	280	0.008 ± 0.002	<0.016
01-16-94	320	0.028 ± 0.003	<0.011	07-17-94	283	0.012 ± 0.002	<0.024
01-23-94	314	0.031 ± 0.003	<0.011	07-24-94	283	0.014 ± 0.003	<0.011
01-30-94	314	0.021 ± 0.003	<0.021	07-31-94	278	0.013 ± 0.003	<0.011
02-06-94	312	0.025 ± 0.003	<0.020	08-07-94	280	0.015 ± 0.003	<0.024
02-13-94	314	0.019 ± 0.003	<0.012	08-14-94	292	0.015 ± 0.002	<0.023
02-20-94	303	0.016 ± 0.003	<0.016	08-21-94	331	0.020 ± 0.003	<0.012
02-27-94	314	0.024 ± 0.003	<0.009	08-28-94	329	0.029 ± 0.003	<0.014
03-06-94	300	0.027 ± 0.003	<0.012	09-04-94	360	0.006 ± 0.002	<0.014
03-13-94	303	0.016 ± 0.003	<0.014	09-11-94	329	0.027 ± 0.003	<0.012
03-20-94	306	0.019 ± 0.003	<0.015	09-18-94	323	0.031 ± 0.003	<0.032
03-27-94	300	0.011 ± 0.002	<0.009	09-25-94	329	0.026 ± 0.003	<0.016
04-03-94	303	0.020 ± 0.003	<0.007	10-02-94	340	0.012 ± 0.002	<0.014
1st Qtr. Mean±s.d.		0.021 ± 0.005	< 0.021	3rd Qtr. Mean±s.d.		0.018 ± 0.008	< 0.032
04-10-94	297	0.015 ± 0.002	<0.010	10-09-94	365 <sup>a</sup>	< 0.002	<0.016
04-17-94	297	0.010 ± 0.002	<0.017	10-16-94	343	0.022 ± 0.003	<0.028
04-24-94	295	0.014 ± 0.003	<0.012	10-23-94	329	0.024 ± 0.003	<0.012
05-01-94	139	0.021 ± 0.005	<0.020	10-30-94	331	0.016 ± 0.002	<0.015
05-08-94	292	0.014 ± 0.002	<0.013	11-06-94	323	0.015 ± 0.002	<0.010
05-15-94	292	0.011 ± 0.002	<0.028	11-13-94	334	0.023 ± 0.003	<0.012
05-22-94	207	0.010 ± 0.003	<0.016	11-20-94	334	0.021 ± 0.003	<0.020
05-29-94	377	0.008 ± 0.002	<0.013	11-27-94	337	0.018 ± 0.003	<0.014
06-05-94	286	0.017 ± 0.003	<0.018	12-04-94	343	0.021 ± 0.003	<0.011
06-12-94	286	0.013 ± 0.003	<0.006	12-11-94	326	0.020 ± 0.003	<0.010
06-19-94	278	0.018 ± 0.003	<0.025	12-18-94	286	0.045 ± 0.004	<0.007
06-26-94	278	0.016 ± 0.003	<0.008	12-25-94	159 <sup>b</sup>	0.082 ± 0.007	<0.021
07-03-94	269	0.010 ± 0.003	<0.025	01-01-95	583 <sup>c</sup>	0.016 ± 0.002	<0.021
2nd Qtr. Mean±s.d.		0.014 ± 0.004	< 0.028	4th Qtr. Mean±s.d.		0.027 ± 0.018	< 0.028
				Cumulative Average:		0.020	
				Previous Annual Average:		0.018	

<sup>a</sup>Filter very light.

<sup>b</sup>No explanation given for low volume.

<sup>c</sup>No explanation given for high volume.

# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131.  
 Location: 9TP - Covert Township Park (1.5 miles S)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-09-94	295	0.018 ± 0.003	<0.008	07-10-94	261	0.007 ± 0.002	<0.015
01-16-94	303	0.028 ± 0.003	<0.011	07-17-94	261	0.015 ± 0.003	<0.022
01-23-94	306	0.031 ± 0.004	<0.011	07-24-94	261	0.013 ± 0.003	<0.022
01-30-94	283	0.024 ± 0.003	<0.019	07-31-94	263	0.013 ± 0.003	<0.010
02-06-94	286	0.022 ± 0.003	<0.004	08-07-94	266	0.018 ± 0.003	<0.023
02-13-94	292	0.023 ± 0.003	<0.012	08-14-94	269	0.013 ± 0.002	<0.021
02-20-94	280	0.016 ± 0.003	<0.015	08-21-94	331	0.020 ± 0.003	<0.012
02-27-94	292	0.020 ± 0.003	<0.008	08-28-94	246	0.034 ± 0.004	<0.010
03-06-94	278	0.023 ± 0.003	<0.012	09-04-94	275	0.011 ± 0.003	<0.011
03-13-94	283	0.023 ± 0.004	<0.013	09-11-94	368	0.014 ± 0.002	<0.013
03-20-94	280	0.019 ± 0.003	<0.014	09-18-94	161	0.052 ± 0.006	<0.016
03-27-94	278	0.010 ± 0.002	<0.008	09-25-94	269	0.024 ± 0.003	<0.021
04-03-94	278	0.016 ± 0.003	<0.006	10-02-94	289	0.011 ± 0.003	<0.011
1st Qtr. Mean±s.d.		0.021 ± 0.005	<0.01	3rd Qtr. Mean±s.d.		0.019 ± 0.012	<0.023
04-10-94	275	0.016 ± 0.003	<0.009	10-09-94	269	0.018 ± 0.003	<0.012
04-17-94	278	0.009 ± 0.002	<0.016	10-16-94	283	0.022 ± 0.003	<0.023
04-24-94	272	0.013 ± 0.003	<0.011	10-23-94	292	0.016 ± 0.003	<0.011
05-01-94	269 <sup>a</sup>	0.008 ± 0.002	-	10-30-94	286	0.016 ± 0.003	<0.013
05-08-94	272	0.010 ± 0.002	<0.013	11-06-94	286	0.015 ± 0.003	<0.009
05-15-94	269	0.008 ± 0.002	<0.026	11-13-94	295	0.022 ± 0.003	<0.011
05-22-94	272	0.006 ± 0.003	<0.021	11-20-94	292	0.022 ± 0.003	<0.017
05-29-94	266	0.013 ± 0.003	<0.014	11-27-94	303 <sup>b</sup>	<0.003	<0.013
06-05-94	266	0.016 ± 0.003	<0.016	12-04-94	280	0.022 ± 0.003	<0.009
06-12-94	266	0.017 ± 0.003	<0.006	12-11-94	283	0.017 ± 0.003	<0.008
06-19-94	258	0.019 ± 0.003	<0.023	12-18-94	272	0.035 ± 0.004	<0.007
06-26-94	261	0.011 ± 0.003	<0.008	12-25-94	246 <sup>b</sup>	<0.004	<0.032
07-03-94	261	0.009 ± 0.003	<0.024	01-01-95	297	0.019 ± 0.003	<0.011
2nd Qtr. Mean±s.d.		0.012 ± 0.004	<0.026	4th Qtr. Mean±s.d.		0.020 ± 0.005	<0.032
				Cumulative Average:		0.018	
				Previous Annual Average:		0.018	

<sup>a</sup>Charcoal Canister was not received.

<sup>b</sup>Filter very light.

# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 10GR - Grand Rapids (55 mi NNE)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-12-94	312	0.027 ± 0.003	< 0.015	07-06-94	280	0.013 ± 0.002	< 0.017
01-19-94	317	0.024 ± 0.003	< 0.014	07-13-94	286	0.016 ± 0.003	< 0.030
01-26-94	317	0.038 ± 0.004	< 0.014	07-20-94	278	0.018 ± 0.003	< 0.016
02-02-94	306	0.026 ± 0.003	< 0.012	07-28-94	272	0.015 ± 0.003	< 0.011
02-09-94	314	0.026 ± 0.003	< 0.015	08-03-94	278	0.020 ± 0.003	< 0.023
02-16-94	306	0.033 ± 0.004	< 0.037	08-10-94	292	0.015 ± 0.003	< 0.028
02-23-94	300	0.022 ± 0.003	< 0.012	08-17-94	374	0.019 ± 0.003	< 0.016
03-02-94	309	0.026 ± 0.003	< 0.026	08-24-94	283	0.024 ± 0.003	< 0.014
03-09-94	300	0.019 ± 0.003	< 0.009	08-31-94	280	0.025 ± 0.003	< 0.016
03-16-94	300	0.025 ± 0.003	< 0.016	09-07-94	283	0.020 ± 0.003	< 0.011
03-23-94	300	0.015 ± 0.003	< 0.023	09-14-94	280	0.031 ± 0.003	< 0.015
03-30-94	295	0.015 ± 0.003	< 0.019	09-21-94	280	0.030 ± 0.003	< 0.022
				09-28-94	283	0.021 ± 0.003	< 0.015
1st Qtr. Mean±s.d.		0.025 ± 0.006	< 0.037	3rd Qtr. Mean±s.d.		0.021 ± 0.005	< 0.030
04-06-94	300	0.018 ± 0.003	< 0.020	10-05-94	280	0.011 ± 0.003	< 0.018
04-13-94	292	0.016 ± 0.003	< 0.022	10-12-94	346	0.021 ± 0.003	< 0.022
04-20-94	292	0.015 ± 0.003	< 0.017	10-19-94	337	0.029 ± 0.003	< 0.011
04-27-94	286	0.021 ± 0.003	< 0.027	10-26-94	346	0.020 ± 0.002	< 0.015
05-04-94	295	0.012 ± 0.002	< 0.016	11-02-94	343	0.019 ± 0.002	< 0.010
05-11-94	289	0.014 ± 0.003	< 0.020	11-09-94	346	0.019 ± 0.002	< 0.012
05-18-94	280	0.011 ± 0.003	< 0.019	11-16-94	340	0.025 ± 0.003	< 0.016
05-25-94	283	0.017 ± 0.003	< 0.022	11-23-94	351	0.024 ± 0.003	< 0.011
06-01-94	286	0.018 ± 0.003	< 0.022	11-30-94	354	0.021 ± 0.003	< 0.010
06-08-94	280	0.015 ± 0.003	< 0.008	12-07-94	343 *	0.029 ± 0.003	< 0.010
06-15-94	269	0.017 ± 0.003	< 0.030	12-14-94	357	0.022 ± 0.003	< 0.007
06-22-94	269	0.022 ± 0.003	< 0.020	12-21-94	348	0.039 ± 0.003	< 0.013
06-29-94	280	0.015 ± 0.003	< 0.032	12-28-94	346	0.037 ± 0.003	< 0.013
2nd Qtr. Mean±s.d.		0.016 ± 0.003	< 0.032	4th Qtr. Mean±s.d.		0.024 ± 0.007	< 0.022
				Cumulative Average:		0.021	
				Previous Annual Average:		0.020	

\* Estimated volume.

# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 11KZ - Kalamazoo (35 miles E)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-12-94	331	0.024 ± 0.003	<0.016	07-06-94	300	0.015 ± 0.002	<0.018
01-19-94	329	0.032 ± 0.003	<0.015	07-13-94	280	0.012 ± 0.002	<0.030
01-26-94	320	0.044 ± 0.004	<0.014	07-20-94	292	0.016 ± 0.003	<0.017
02-03-94	371	0.024 ± 0.003	<0.015	07-27-94	297	0.017 ± 0.003	<0.012
02-09-94	286	0.025 ± 0.003	<0.014	08-03-94	280	0.019 ± 0.003	<0.023
02-16-94	317	0.026 ± 0.003	<0.017	08-10-94	295	0.017 ± 0.003	<0.028
02-23-94	312	0.027 ± 0.003	<0.013	08-17-94	295	0.019 ± 0.003	<0.012
03-02-94	320	0.025 ± 0.003	<0.026	08-24-94	292	0.024 ± 0.003	<0.014
03-09-94	317	0.024 ± 0.003	<0.010	08-31-94	292	0.023 ± 0.003	<0.017
03-16-94	320	0.025 ± 0.003	<0.018	09-07-94	303	0.014 ± 0.002	<0.012
03-23-94	317	0.014 ± 0.003	<0.024	09-14-94	300	0.033 ± 0.003	<0.016
03-30-94	303	0.014 ± 0.003	<0.019	09-21-94	286	0.025 ± 0.003	<0.022
				09-28-94	303	0.014 ± 0.002	<0.016
1st Qtr. Mean±s.d.		0.025 ± 0.007	<0.026	3rd Qtr. Mean±s.d.		0.019 ± 0.006	<0.030
04-06-94	297	0.018 ± 0.003	<0.019	10-05-94	303	0.013 ± 0.003	<0.020
04-13-94	309	0.013 ± 0.002	<0.023	10-12-94	343	0.024 ± 0.003	<0.021
04-20-94	297	0.015 ± 0.003	<0.018	10-19-94	334	0.028 ± 0.003	<0.011
04-27-94	295	0.016 ± 0.003	<0.028	10-26-94	351	0.016 ± 0.002	<0.015
05-04-94	314	0.013 ± 0.002	<0.017	11-02-94	351	0.017 ± 0.002	<0.011
05-11-94	292	0.014 ± 0.003	<0.020	11-09-94	351	0.023 ± 0.003	<0.013
05-19-94	351	0.012 ± 0.002	<0.024	11-16-94	374	0.036 ± 0.002	<0.018
05-25-94	244	0.015 ± 0.003	<0.019	11-23-94	351	0.023 ± 0.003	<0.011
06-01-94	303	0.015 ± 0.002	<0.023	11-30-94	371	0.020 ± 0.002	<0.010
06-08-94	289	0.017 ± 0.003	<0.008	12-07-94	343 <sup>a</sup>	0.031 ± 0.003	<0.010
06-15-94	286	0.018 ± 0.003	<0.032	12-14-94	368	0.025 ± 0.003	<0.007
06-22-94	280	0.020 ± 0.003	<0.021	12-21-94	354	0.040 ± 0.003	<0.014
06-29-94	286	0.016 ± 0.003	<0.033	12-28-94	379 <sup>b</sup>	0.006 ± 0.002	<0.014
2nd Qtr. Mean±s.d.		0.016 ± 0.002	<0.033	4th Qtr. Mean±s.d.		0.023 ± 0.009	<0.021
				Cumulative Average:		0.021	
				Previous Annual Average:		0.021	

<sup>a</sup> Estimated volume.

<sup>b</sup> Filter very light.

# PALISADES

Table 1. Airborne particulates and charcoal canisters .  
 Analyses: Gross beta and iodine-131 .  
 Location: 12DG - Dowagiac (30 miles SSE)  
 Units: pCi/m<sup>3</sup>  
 Collection: Continuous, weekly exchange.

Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131	Date Collected	Volume (m <sup>3</sup> )	Gross Beta	Iodine-131
<u>Required LLD</u>		<u>0.01</u>	<u>0.070</u>			<u>0.01</u>	<u>0.070</u>
01-12-94	283	0.033 ± 0.004	< 0.014	07-06-94	261	0.019 ± 0.003	< 0.016
01-19-94	292	0.039 ± 0.004	< 0.013	07-13-94	258	0.015 ± 0.003	< 0.027
01-26-94	275	0.048 ± 0.004	< 0.012	07-20-94	238	0.021 ± 0.003	< 0.014
02-02-94	280	0.032 ± 0.004	< 0.011	07-28-94	261	0.020 ± 0.003	< 0.011
02-09-94	286	0.031 ± 0.004	< 0.014	08-03-94	258	0.025 ± 0.003	< 0.025
02-16-94	286	0.038 ± 0.004	< 0.022	08-10-94	255	0.016 ± 0.003	< 0.025
02-23-94	266	0.029 ± 0.004	< 0.011	08-17-94	263	0.022 ± 0.003	< 0.011
03-02-94	275	0.028 ± 0.004	< 0.047	08-24-94	255	0.027 ± 0.003	< 0.013
03-09-94	292	0.032 ± 0.004	< 0.009	08-31-94	249	0.030 ± 0.004	< 0.014
03-16-94	272	0.031 ± 0.004	< 0.015	09-07-94	263	0.020 ± 0.003	< 0.010
03-23-94	275	0.024 ± 0.003	< 0.021	09-14-94	255	0.039 ± 0.004	< 0.014
03-30-94	269	0.017 ± 0.003	< 0.017	09-21-94	261	0.029 ± 0.003	< 0.020
				09-28-94	255	0.023 ± 0.003	< 0.013
1st Qtr. Mean±s.d.		0.032 ± 0.007	< 0.047	3rd Qtr. Mean±s.d.		0.024 ± 0.006	< 0.027
04-06-94	261	0.026 ± 0.003	< 0.017	10-05-94	261	0.015 ± 0.003	< 0.017
04-13-94	266	0.018 ± 0.003	< 0.020	10-12-94	354	0.021 ± 0.003	< 0.022
04-21-94	283	0.023 ± 0.003	< 0.017	10-19-94	348	0.028 ± 0.003	< 0.012
04-27-94	244	0.023 ± 0.003	< 0.023	10-26-94	351	0.019 ± 0.002	< 0.015
05-04-94	261	0.014 ± 0.003	< 0.014	11-02-94	363	0.021 ± 0.002	< 0.011
05-11-94	258	0.018 ± 0.003	< 0.018	11-09-94	357	0.023 ± 0.003	< 0.013
05-18-94	261	0.017 ± 0.003	< 0.018	11-16-94	374	0.036 ± 0.002	< 0.018
05-25-94	261	0.024 ± 0.003	< 0.020	11-23-94	371	0.024 ± 0.003	< 0.011
06-01-94	261	0.021 ± 0.003	< 0.020	11-30-94	368	0.024 ± 0.003	< 0.010
06-08-94	255	0.021 ± 0.003	< 0.008	12-07-94	343	0.028 ± 0.003	< 0.010
06-15-94	252	0.023 ± 0.004	< 0.028	12-14-94	374	0.029 ± 0.003	< 0.008
06-22-94	261	0.031 ± 0.003	< 0.020	12-21-94	365	0.041 ± 0.003	< 0.014
06-29-94	258	0.015 ± 0.003	< 0.030	12-28-94	357	0.035 ± 0.003	< 0.014
2nd Qtr. Mean±s.d.		0.021 ± 0.005	< 0.030	4th Qtr. Mean±s.d.		0.026 ± 0.007	< 0.022
				Cumulative Average:		0.026	
				Previous Annual Average:		0.027	

# PALISADES

Table 2. Gamma Radiation, as measured by TLDs  
Exposure: Monthly  
Units: mR/30 days net<sup>a</sup>

	<u>January</u>	<u>February</u>	<u>March</u>
Date Placed	01-02-94	01-30-94	02-27-94
Date Removed	01-30-94	02-27-94	04-03-94
In-Transit (mR)	3.6±0.3	2.9±0.2	3.5±0.2
Location			
ST-01	4.1±0.5	3.6±0.2	2.6±0.2
ST-02	4.3±0.4	3.9±0.3	3.9±0.2
ST-03	3.9±0.3	3.6±0.2	3.2±0.2
ST-04	4.2±0.3	4.5±0.2	3.7±0.2
ST-05	4.0±0.3	4.4±0.2	3.4±0.2
ST-06	4.4±0.3	4.0±0.2	3.9±0.2
ST-07A	3.8±0.4	3.6±0.2	3.1±0.2
ST-08	3.7±0.4	4.0±0.2	2.9±0.2
ST-09	3.6±0.3	3.6±0.2	2.7±0.2
ST-10	3.9±0.4 <sup>b</sup>	3.6±0.2 <sup>e</sup>	3.0±0.2 <sup>h</sup>
ST-11	5.1±0.4 <sup>c</sup>	5.3±0.2 <sup>f</sup>	4.6±0.3 <sup>i</sup>
ST-12	3.7±0.3	4.0±0.2	3.3±0.2
ST-13	3.3±0.3	3.5±0.2	2.7±0.2
ST-14	3.3±0.3	3.0±0.2	2.5±0.2
ST-15	3.3±0.3	3.2±0.2	2.5±0.2
ST-16	3.6±0.3	3.2±0.2	2.8±0.2
ST-17	3.4±0.3	3.5±0.2	2.7±0.2
ST-18	3.8±0.3	3.8±0.2	3.4±0.2
ST-19	3.5±0.3	3.5±0.2	3.1±0.2
ST-20	3.6±0.3	3.5±0.2	ND <sup>j</sup>
ST-21	3.7±0.3	3.5±0.2	3.2±0.2
ST-22	1.8±0.3 <sup>d</sup>	2.5±0.2 <sup>g</sup>	2.1±0.2
ST-23	4.2±0.3	3.6±0.2	3.4±0.2
ST-24	3.3±0.3	3.4±0.2	3.1±0.2
ST-33	3.4±0.3	3.0±0.2	2.7±0.2
ST-34	3.2±0.3	3.4±0.2	2.5±0.2
ST-35	3.9±0.3	4.0±0.2	3.7±0.2
ST-36	2.8±0.3	3.5±0.2	2.7±0.2
ST-37	3.5±0.3	3.6±0.2	3.0±0.2
ST-38	3.2±0.3	3.5±0.2	3.0±0.2
Mean ± s.d.	3.7±0.6	3.6±0.5	3.1±0.5
Control 1	1.6±0.3 <sup>d</sup>	2.5±0.2 <sup>g</sup>	2.2±0.2
Control 2	1.5±0.3 <sup>d</sup>	2.5±0.2 <sup>g</sup>	2.2±0.2

<sup>a</sup>In-transit exposure has been subtracted from total exposure.

<sup>b</sup>Placed 01-06-94; removed 02-02-94.

<sup>c</sup>Placed 01-05-94; removed 02-03-94.

<sup>d</sup>Removed 02-03-94.

<sup>e</sup>Placed 02-02-94; removed 03-02-94

<sup>f</sup>Placed 02-03-94; removed 03-04-94.

<sup>g</sup>Placed 02-03-94; removed 02-27-94.

<sup>h</sup>Placed 03-02-94; removed 03-31-94.

<sup>i</sup>Placed 03-04-94; removed 03-30-94.

<sup>j</sup>ND - no data; TLD lost in the field.



# PALISADES

Table 2. Gamma Radiation, as measured by TLDs (continued)  
Exposure: Monthly  
Units: mR/30 days net<sup>a</sup>

	<u>April</u>	<u>May</u>	<u>June</u>
Date Placed	04-03-94	05-01-94	05-29-94
Date Removed	05-01-94	05-29-94	07-03-94
In-Transit (mR)	3.6±0.3	3.7±0.2	4.0±0.2
Location			
ST-01	3.9±0.2	3.8±0.2	3.8±0.2
ST-02	5.1±0.2	5.4±0.2	5.2±0.2
ST-03	4.3±0.2	4.6±0.2	4.1±0.2
ST-04	4.9±0.2	4.9±0.2	4.6±0.2
ST-05	4.6±0.2	4.8±0.2	4.3±0.2
ST-06	4.7±0.2	5.2±0.2	4.5±0.2
ST-07A	4.1±0.2	4.3±0.2	3.7±0.2
ST-08	4.4±0.2	4.2±0.2	4.1±0.2
ST-09	4.0±0.2	3.8±0.2	3.6±0.2
ST-10	4.8±0.2 <sup>b</sup>	3.6±0.2 <sup>d</sup>	3.5±0.2 <sup>g</sup>
ST-11	4.9±0.2 <sup>c</sup>	3.4±0.2 <sup>e</sup>	5.5±0.3 <sup>h</sup>
ST-12	4.6±0.2	4.7±0.2	4.3±0.2
ST-13	3.9±0.2	4.4±0.2	3.5±0.2
ST-14	3.6±0.2	3.9±0.2	3.1±0.2
ST-15	3.5±0.2	3.8±0.2	3.2±0.2
ST-16	3.9±0.2	3.7±0.2	3.2±0.2
ST-17	4.0±0.2	4.2±0.2	3.5±0.2
ST-18	4.3±0.2	3.6±0.2	3.7±0.2
ST-19	4.4±0.2	4.3±0.2	3.8±0.2
ST-20	4.2±0.2	4.3±0.2	3.8±0.2
ST-21	3.7±0.2	3.7±0.2	3.4±0.2
ST-22	2.1±0.2	2.1±0.2 <sup>f</sup>	2.3±0.2 <sup>i</sup>
ST-23	4.4±0.2	4.8±0.2	3.8±0.2
ST-24	4.0±0.2	3.6±0.2	3.2±0.2
ST-33	3.5±0.2	3.6±0.2	3.1±0.2
ST-34	3.7±0.2	3.4±0.2	3.1±0.2
ST-35	4.7±0.2	4.7±0.2	4.0±0.2
ST-36	3.9±0.2	3.8±0.2	3.4±0.2
ST-37	4.0±0.2	3.8±0.2	3.7±0.2
ST-38	4.0±0.2	3.8±0.2	3.5±0.2
Mean ± s.d.	4.1±0.6	4.1±0.6	3.8±0.6
Control 1	2.0±0.2	2.1±0.2 <sup>f</sup>	2.2±0.2 <sup>i</sup>
Control 2	2.5±0.2	2.0±0.2 <sup>f</sup>	2.2±0.2 <sup>i</sup>

<sup>a</sup>In-transit exposure has been subtracted from total exposure.

<sup>b</sup>Placed 03-31-94; removed 05-02-94.

<sup>c</sup>Placed 03-30-94; removed 04-29-94.

<sup>d</sup>Placed 05-02-94; removed 06-01-94.

<sup>e</sup>Placed 04-29-94; removed 06-01-94.

<sup>f</sup>Removed 06-01-94.

<sup>g</sup>Placed 06-01-94; removed 07-01-94.

<sup>h</sup>Placed 06-01-94; removed 06-29-94.

<sup>i</sup>Placed 06-01-94.

# PALISADES

Table 2. Gamma Radiation, as measured by TLDs (continued)  
Exposure: Monthly  
Units: mR/30 days net<sup>a</sup>

	July	August	September
Date Placed	07-03-94	07-31-94	09-04-94
Date Removed	07-31-94	09-04-94	10-02-94
In-Transit (mR)	2.9±0.2	3.0±0.2	5.2±0.2
Location			
ST-01	4.1±0.2	3.6±0.2	3.2±0.2
ST-02	5.7±0.2	4.8±0.2	5.8±0.3
ST-03	4.9±0.2	4.0±0.2	4.3±0.2
ST-04	5.0±0.2	4.6±0.2	4.8±0.2
ST-05	5.0±0.2	4.2±0.2	4.6±0.2
ST-06	5.7±0.2	4.9±0.2	5.2±0.2
ST-07A	4.8±0.2	3.9±0.2	4.3±0.2
ST-08	4.7±0.2	4.3±0.2	3.8±0.2
ST-09	4.3±0.2	3.8±0.2	3.8±0.2
ST-10	3.7±0.2 <sup>b</sup>	4.6±0.3 <sup>e</sup>	3.0±0.2 <sup>h</sup>
ST-11	4.0±0.2 <sup>c</sup>	6.8±0.3 <sup>f</sup>	3.2±0.2 <sup>i</sup>
ST-12	4.8±0.2	4.4±0.2	4.1±0.2
ST-13	4.1±0.2	3.6±0.2	3.5±0.2
ST-14	3.9±0.2	3.1±0.2	3.3±0.3
ST-15	4.0±0.3	3.4±0.2	3.5±0.2
ST-16	4.6±0.2	3.3±0.2	3.5±0.2
ST-17	3.9±0.2	3.4±0.2	3.3±0.3
ST-18	4.6±0.2	3.8±0.2	4.3±0.2
ST-19	4.9±0.2	4.0±0.2	4.2±0.2
ST-20	4.1±0.2	4.0±0.2	3.8±0.2
ST-21	4.6±0.2	3.7±0.2	4.1±0.2
ST-22	2.0±0.2 <sup>d</sup>	2.1±0.2	2.3±0.2
ST-23	5.1±0.3	4.1±0.2	4.5±0.2
ST-24	4.2±0.2	3.6±0.2	3.9±0.2
ST-33	4.0±0.2	3.2±0.2	3.5±0.2
ST-34	3.9±0.2	3.4±0.2	3.6±0.2
ST-35	4.8±0.2	4.2±0.2	4.6±0.2
ST-36	3.8±0.2	3.5±0.2	3.3±0.2
ST-37	4.3±0.2	3.7±0.2	3.4±0.2
ST-38	4.2±0.2	3.6±0.2	3.4±0.2
Mean ± s.d.	4.4±0.7	3.9±0.8	3.9±0.7
Control 1	1.7±0.2 <sup>d</sup>	2.2±0.2 <sup>g</sup>	2.1±0.3
Control 2	1.7±0.2 <sup>d</sup>	2.2±0.2 <sup>g</sup>	2.2±0.2

<sup>a</sup>In-transit exposure has been subtracted from the exposure.

<sup>b</sup>Placed 07-01-94; removed 08-03-94.

<sup>c</sup>Placed 06-29-94; removed 08-03-94.

<sup>d</sup>Removed 08-03-94.

<sup>e</sup>Placed 08-03-94; removed 08-31-94.

<sup>f</sup>Placed 08-03-94; removed 08-26-94.

<sup>g</sup>Placed 08-03-94.

<sup>h</sup>Placed 08-31-94; removed 09-30-94.

<sup>i</sup>Placed 08-26-94; removed 09-29-94.



# PALISADES

Table 2. Gamma Radiation, as measured by TLDs (continued)  
Exposure: Monthly  
Units: mR/30 days net<sup>a</sup>

	<u>October</u>	<u>November</u>	<u>December</u>
Date Placed	10-02-94	10-30-94	12-04-94
Date Removed	10-30-94	12-04-94	01-01-95
In-Transit (mR)	3.9±0.2	3.5±0.2	4.9±0.2
Location			
ST-01	4.7±0.2	3.3±0.2	4.1±0.2
ST-02	5.6±0.2	5.1±0.2	5.0±0.3
ST-03	4.6±0.2	4.2±0.2	4.4±0.2
ST-04	5.5±0.2	4.4±0.2	4.7±0.2
ST-05	5.2±0.2	4.3±0.2	4.3±0.2
ST-06	5.6±0.2	4.8±0.2	4.7±0.2
ST-07A	4.9±0.2	4.1±0.2	4.1±0.2
ST-08	4.7±0.2	4.0±0.2	4.3±0.2
ST-09	4.7±0.2	3.7±0.2	3.9±0.2
ST-10	4.4±0.2 <sup>b</sup>	4.3±0.3 <sup>f</sup>	3.6±0.2 <sup>h</sup>
ST-11	6.2±0.2 <sup>c</sup>	5.0±0.3 <sup>f</sup>	5.2±0.2 <sup>i</sup>
ST-12	5.2±0.2	3.9±0.2	4.2±0.2
ST-13	4.3±0.2	3.5±0.2	3.6±0.2
ST-14	3.7±0.2	3.3±0.2	3.2±0.2
ST-15	3.9±0.2	3.5±0.2	3.1±0.2
ST-16	4.4±0.2	3.9±0.2	3.5±0.2
ST-17	4.5±0.2	3.2±0.2	3.5±0.2
ST-18	4.7±0.2	3.6±0.2	3.9±0.2
ST-19	4.9±0.2	4.0±0.2	3.9±0.2
ST-20	4.5±0.2	3.5±0.2	3.9±0.2
ST-21	4.5±0.2	3.8±0.2	3.8±0.2
ST-22	1.8±0.2 <sup>d</sup>	2.7±0.2 <sup>g</sup>	3.1±0.2
ST-23	4.5±0.2	4.3±0.2	4.1±0.2
ST-24	5.0±0.2 <sup>e</sup>	3.8±0.2	3.7±0.2
ST-33	4.0±0.2	3.3±0.2	3.3±0.2
ST-34	4.3±0.2	3.3±0.2	3.4±0.2
ST-35	5.0±0.2	4.3±0.2	4.1±0.2
ST-36	4.2±0.2	3.3±0.2	3.3±0.2
ST-37	4.4±0.2	3.3±0.2	3.7±0.2
ST-38	<u>4.5±0.2</u>	<u>3.4±0.2</u>	<u>3.5±0.2</u>
Mean ± s.d.	4.6±0.7	3.8±0.6	3.9±0.5
Control 1	1.7±0.2 <sup>d</sup>	4.0±0.2	2.1±0.2
Control 2	1.7±0.2 <sup>d</sup>	2.2±0.2	2.1±0.2

<sup>a</sup>In-transit exposure has been subtracted from total exposure.

<sup>b</sup>Placed 09-30-94; removed 11-02-94.

<sup>f</sup>Placed 11-02-94, removed 11-30-94.

<sup>c</sup>Placed 09-29-94; removed 11-02-94.

<sup>g</sup>Placed 11-02-94.

<sup>d</sup>Placed 10-02-94; removed 11-02-94.

<sup>h</sup>Placed 11-30-94; removed 01-09-95.

<sup>e</sup>Placed 10-05-94; removed 11-02-94.

<sup>i</sup>Placed 11-30-94; removed 01-01-95.

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Table 3. Gamma Radiation, as measured by TLDs  
Exposure: Quarterly  
Units: mR/91 days net<sup>a</sup>

	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>
Date Placed	01-02-94	04-03-94	07-03-94	10-02-94
Date Removed	04-03-94	07-03-94	10-02-94	01-01-95
In-Transit (mR)	4.1±0.6	3.7±0.6	3.8±0.6	3.3±0.6
Location				
ST-01	11.1±0.6	12.5±0.6	11.8±0.6	12.9±0.6
ST-02	13.9±0.6	17.4±0.7	16.0±0.6	17.9±0.6
ST-03	11.9±0.6	13.9±0.6	13.6±0.6	14.4±0.6
ST-04	11.8±0.6	14.9±0.6	13.6±0.6	15.3±0.6
ST-05	12.7±0.6	15.3±0.6	13.2±0.7	15.7±0.7
ST-06	13.8±0.6	16.3±0.6	15.7±0.7	16.4±0.6
ST-07A	11.3±0.6	13.0±0.6	12.6±0.6	13.6±0.6
ST-08	11.2±0.6	13.3±0.7	12.0±0.6	13.6±0.6
ST-09	10.8±0.6	12.8±0.6	11.9±0.6	13.1±0.6
ST-10	10.7±0.6 <sup>b</sup>	12.8±0.6 <sup>c</sup>	11.4±0.6 <sup>e</sup>	11.7±0.5 <sup>g</sup>
ST-11	12.3±0.6 <sup>c</sup>	16.1±0.6 <sup>d</sup>	14.0±0.7 <sup>f</sup>	15.3±0.6 <sup>h</sup>
ST-12	11.2±0.6	14.3±0.6	12.3±0.6	14.2±0.7
ST-13	11.3±0.6	12.6±0.7	11.5±0.6	12.7±0.6
ST-14	10.1±0.6	11.5±0.6	10.3±0.6	11.3±0.6
ST-15	8.8±0.6	11.3±0.6	10.2±0.6	11.8±0.7
ST-16	10.9±0.6	12.7±0.6	12.1±0.7	12.6±0.6
ST-17	10.2±0.6	11.4±0.6	11.2±0.6	11.6±0.6
ST-18	10.8±0.6	12.5±0.6	12.0±0.6	12.7±0.6
ST-19	11.2±0.6	13.2±0.6	13.1±0.6	13.2±0.6
ST-20	11.1±0.6	12.0±0.6	12.5±0.6	12.0±0.7
ST-21	11.4±0.6	12.3±0.6	12.3±0.6	12.0±0.6
ST-22	6.3±0.6	6.3±0.6	6.5±0.6	6.6±0.6
ST-23	12.1±0.6	13.3±0.6	13.5±0.6	13.4±0.6
ST-24	11.1±0.6	13.0±0.8	12.6±0.6	13.2±0.6 <sup>i</sup>
ST-33	10.1±0.6	11.9±0.6	11.0±0.6	11.8±0.7
ST-34	10.7±0.6	11.3±0.6	11.7±0.6	11.9±0.6
ST-35	13.1±0.8	12.8±0.7	13.2±0.6	13.3±0.6
ST-36	10.6±0.6	12.5±0.7	11.5±0.6	11.9±0.6
ST-37	11.1±0.6	12.7±0.6	11.9±0.6	12.8±0.6
ST-38	<u>9.9±0.6</u>	<u>11.9±0.6</u>	<u>10.8±0.6</u>	<u>12.7±0.6</u>
Mean ± s.d.	11.1±1.4	12.9±1.9	12.2±1.7	13.1±1.9
Control 1	7.5±0.6	6.6±0.6	5.7±0.6	6.7±0.6
Control 2	5.5±0.6	6.7±0.6	5.7±0.6	6.7±0.6

<sup>a</sup>In-transit exposure has been subtracted from total exposure.

<sup>b</sup>Placed 01-06-94; removed 03-31-94.

<sup>f</sup>Placed 06-29-94; removed 09-29-94.

<sup>c</sup>Placed 03-31-94; removed 07-01-94.

<sup>g</sup>Placed 09-30-94; removed 01-09-95.

<sup>d</sup>Placed 03-30-94; removed 06-29-94.

<sup>h</sup>Placed 09-29-94; removed 01-05-95.

<sup>e</sup>Placed 07-01-94; removed 09-30-94.

<sup>i</sup>Placed 10-05-94.

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Table 4. Gamma Radiation, as measured by TLDs  
Exposure: Annual  
Units: mR/365 days net<sup>a</sup>

Date Placed	01-02-94
Date Removed	01-01-95
In-Transit (mR)	3.5±2.4
Location	
ST-01	42.2±2.4
ST-02	63.0±2.5
ST-03	52.9±2.4
ST-04	56.7±2.4
ST-05	56.6±2.4
ST-06	61.9±2.5
ST-07A	51.0±2.5
ST-08	50.0±2.4
ST-09	46.2±2.4 <sup>b</sup>
ST-10	45.5±2.4 <sup>c</sup>
ST-11	58.0±2.5
ST-12	54.4±2.6
ST-13	46.6±2.4
ST-14	42.0±2.4
ST-15	43.6±2.4
ST-16	45.1±2.4
ST-17	43.1±2.5
ST-18	47.3±2.5
ST-19	50.2±2.4
ST-20	46.0±2.4
ST-21	47.2±2.4
ST-22	25.7±2.4
ST-23	51.3±2.5
ST-24	47.3±2.4
ST-33	42.7±2.4
ST-34	43.8±2.4
ST-35	52.6±2.4
ST-36	43.6±2.4
ST-37	45.8±2.4
ST-38	44.5±2.4
Mean ± s.d.	48.2±7.1
Control 1	27.2±2.4
Control 2	25.5±2.4

<sup>a</sup> Intransit exposure has been subtracted from the total exposure.

<sup>b</sup> Placed 01-06-94; removed 01-05-95.

<sup>c</sup> Placed 01-05-94; removed 01-05-95.

# PALISADES

Table 5. Lake Water, Intake and Discharge  
Collection: Monthly Composites of daily collections  
Units: pCi/L<sup>a</sup>

1994 Compositing Period	Lab Code	Gross Alpha	Gross Beta	Tritium
<u>Required LLD</u>		<u>1.0</u>	<u>4.0</u>	<u>500</u>
<u>Intake</u>				
January	PALW-5014	<0.5	2.2±0.3	<188
February	-5371	<0.5	1.9±0.3	<193
March	-0179	<0.5	1.8±0.3	<190
April	-1007	<0.3	2.2±0.3	<180
May	-1870	<0.5	1.9±0.3	<185
June	-2903	<0.4	1.8±0.3	<155
July	-3860	<0.4	2.1±0.3	172±85
August	-4596	<0.8	2.1±0.5	<164
September	-5714	<0.6	2.3±0.3	<146
October	-6608	<0.4	2.1±0.3	<162
November	-7635	<0.2	1.9±0.2	<161
December	-8256	<0.3	1.9±0.3	<158
<u>Discharge</u>				
January	PALW-5013	0.8±0.4	2.5±0.3	<188
February	-5370	<0.5	2.4±0.3	<193
March	-0178	<0.4	2.9±0.3	<190
April	-1006	<0.4	2.0±0.3	<180
May	-1869	<0.4	2.1±0.3	<185
June	-2902	<0.5	1.8±0.3	<163
July	-3861	<0.4	2.2±0.3	167±84
August	-4595	<0.4	1.9±0.3	1,820±140
September	-5715	<0.4	2.0±0.3	146±79
October	-6607	<0.5	2.3±0.3	<162
November	-7634	<0.3	2.7±0.2	<169
December	-8255	<0.3	2.3±0.3	181±86

<sup>a</sup>Action required at 10 pCi/L for gross beta; see specifications.

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Table 5. Lake Water (continued)  
Collection: Monthly  
Units: pCi/L  
Location: Ludington Intake (Control)

1994 Compositing Period	Lab Code	Gross Alpha	Gross Beta	Sr-89	Sr-90	Tritium
<u>Required LLD</u>		<u>1.0</u>	<u>4.0</u>	<u>5.0</u>	<u>1.0</u>	<u>500</u>
<u>Ludington (Lake In)</u>						
02-01-94	PALW-5015	<0.5	2.0±0.3	<0.7	<0.7	<184
03-01-94	-5372	<0.4	2.0±0.3	<0.9	1.5±0.5	<193
04-05-94	-0293	<0.4	1.7±0.3	<1.5	<0.6	<193
05-02-94	-0936	<0.3	1.9±0.3	<0.9	1.0±0.4	<186
06-01-94	-1873	NA <sup>a</sup>	1.9±0.5	NA <sup>a</sup>	NA <sup>a</sup>	<188
07-01-94	-2906	--	2.3±0.3	--	--	185±85
08-01-94	-3862	--	2.0±0.3	--	--	<156
09-01-94	-4599	--	1.9±0.5	--	--	<164
10-03-94	-5718	--	1.9±0.5	--	--	<146
11-02-94	-6611	--	2.1±0.5	--	--	<162
12-05-94	-7636	--	2.6±0.6	--	--	<169
01-04-95	-8259	--	2.0±0.5	--	--	<158

<sup>a</sup>NA = Not applicable; specifications changed, dropping analysis from program.

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Table 6. Lake Water, Drinking  
Collection: Monthly Composites of daily collections  
Units: pCi/L<sup>a</sup>

1994 Compositing Period	South Haven Municipal System				
	Treated			Raw	
	Lab Code	Gross Beta	H-3	Lab Code	Gross Beta
<u>Required LLD</u>		<u>4.0</u>	<u>500</u>		<u>4.0</u>
January	PALW-4730	2.1±0.5	<187	PALW-4729	2.0±0.5
February	-5017	2.5±0.6	<184	-5016	2.9±0.5
March	-5374	1.9±0.8	<190	-5373	1.6±0.8
April	-0181	1.6±0.5	<190	-0180	2.1±0.5
May	-1009	2.8±0.5	215±98	-1008	1.7±0.5
June	-1872	2.1±0.5	<188	-1871	2.0±0.5
July	-2905	2.0±0.3	173±88	-2904	2.0±0.5
August	-3968	2.4±0.5	<164	-3967	2.1±0.5
September	-4598	1.9±0.4	<164	-4597	2.1±0.5
October	-5717	2.0±0.5	148±78	-5716	2.1±0.5
November	-6610	<0.8	<162	-6609	2.2±0.6
December	-7490	2.0±0.5	<169	-7489	2.1±0.5

<sup>a</sup> Action required at 10 pCi/L for gross beta; see specifications.

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Table 7. Well Water  
Collection: Monthly  
Units: pCi/L<sup>a</sup>

1994 Collection Period	Lab Code	Gross Beta	H-3	Lab Code	Gross Beta	H-3
<u>Required LLD</u>		<u>4.0</u>	<u>500</u>		<u>4.0</u>	<u>500</u>
<u>Site Wells No. 2 and 3 (Domestic)</u>				<u>State Park</u>		
January	PAWW-5018	1.2±0.5	<174	PAWW-4732	<1.1	<187
February	-5375, 6	1.1±0.5	<193	-5019	<0.9	<184
March	-0182	1.5±0.5	<190	-5377	<0.9	<190
April	-1010	1.2±0.5	<180	-0183	<0.9	<191
May	-1875	1.6±0.4	230±102	-1011	3.7±0.6 <sup>b</sup>	<186
June	-2908	1.9±0.3	<163	-1876	3.8±0.6	<150
July	-3863	4.4±1.7 <sup>c</sup>	165±84	-2909	3.4±0.5	<163
August	-4601	1.9±0.5	<164	-3864	3.6±0.5	<161
September	-5720	2.1±0.6	<146	-4602	3.3±0.5	<164
October	-6613	1.7±0.5	<162	-5721	3.4±0.6	<161
November	-7638	2.2±0.6	<169	-6728	<1.0	<162
December	-8261	1.1±0.6	159±85	-7491	1.5±0.5	<155
<u>Township Park</u>						
January	PAWW-4733	2.4±0.5	<187			
February	-5020	2.3±0.5	<174			
March	-5378	1.4±0.8	<193			
April	-0184	1.9±0.5	<191			
May	-1012	1.8±0.6	<148			
June	-1877	2.1±0.5	<151			
July	-2910,11	1.5±0.3	<160			
August	-3865	2.1±0.5	<161			
September	-4603	2.0±0.5	<165			
October	-5722	2.3±0.8	<161			
November	-6729	1.7±0.6	<154			
December	-7492,3	2.1±0.3	<155			

<sup>a</sup>Action required at 10 pCi/L for gross beta; see specifications.

<sup>b</sup>Sample was reanalyzed; result of reanalysis is 3.8±0.6 pCi/L.

<sup>c</sup>Sample was reanalyzed. Result of reanalysis is 4.1±2.0 pCi/L.

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Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L  
Location: Ludington (Control)

1994 Compositing Period	Lab Code	Gross Alpha	Gross Beta	Sr-89	Sr-90	Tritium
<u>Required LLD</u>		<u>1.0</u>	<u>4.0</u>	<u>5.0</u>	<u>1.0</u>	<u>500</u>
<u>Ludington (Well Water)</u>						
02-01-94	PAWW-5021	<0.6	<0.5	<1.0	<0.9	<188
03-01-94	-5379	<0.5	<0.4	<1.0	0.9±0.4	<193
04-11-94	-0294	<0.5	<0.4	<1.0	<0.6	<193
05-02-94	-0937	<0.4	1.8±0.3	<1.2	<0.7	<186
06-01-94	-1874	NA <sup>a</sup>	0.9±0.4	NA <sup>a</sup>	NA <sup>a</sup>	<188
07-01-94	-2907	--	0.9±0.4	--	--	<163
08-01-94	-3873	--	1.0±0.3	--	--	160±84
09-01-94	-4600	--	<0.8	--	--	<164
10-03-94	-5719	--	1.4±0.5	--	--	<146
11-02-94	-6612	--	<0.8	--	--	<162
12-05-94	-7637	--	<0.9	--	--	<169
01-04-95	-8260	--	<0.8	--	--	<158

<sup>a</sup>NA = Not applicable; specifications changed, dropping analysis from program.



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Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L<sup>a</sup>  
Location: Warehouse (Site Well #7)

Sample Description and Concentration				Required LLD
Date Collected Lab Code	01-11-94 PAWW-4735	02-08-94 PAWW-5022	03-09-94 PAWW-5380	
Gross Beta	6.3±1.2	3.7±0.7	5.4±1.3	4.0
Sr-89	<0.9	<0.6	<0.8	5.0
Sr-90	1.3±0.5	1.1±0.5	1.3±0.4	1.0
H-3	<196	<174	<190	500
I-131	<0.4	<0.4	<0.4	1.0
Cs-134	<3.6	<2.8	<3.5	15.0
Cs-137	<2.8	<4.4	<3.5	18.0
Other Gammas <sup>b</sup>	<2.5	<4.5	<3.1	15.0
Date Collected Lab Code	04-01-94 PAWW-0185	05-10-94 PAWW-1013	06-07-94 PAWW-1878	
Gross Beta	4.7±0.8	5.0±1.1	4.4±0.7	4.0
Sr-89	<0.6	<0.8	NA <sup>b</sup>	5.0
Sr-90	1.0±0.4	1.5±0.4	NA	1.0
H-3	<192	<186	<151	500
I-131	<0.4	<0.2	NA <sup>b</sup>	1.0
Cs-134	<2.7	<3.5	NA <sup>b</sup>	15.0
Cs-137	<3.2	<2.8	NA	18.0
Other Gammas <sup>b</sup>	<2.4	<2.4	NA	15.0

<sup>a</sup> Action required at 10 pCi/L for gross beta; see specifications.

<sup>b</sup>NA = Not applicable; specifications changed, dropping analysis from program.

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Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L  
Location: Warehouse (Site Well #7)

Sample Description and Concentration				Required LLD
Date Collected Lab Code	07-09-94 PAWW-2912	08-10-94 PAWW-3866	09-08-94 PAWW-4604	
Gross Beta	5.3±1.2	4.9±0.7	4.8±0.8	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	5.0
Sr-90	NA	NA	NA	1.0
H-3	<160	<161	<164	500
I-131	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	1.0
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	NA	15.0
Cs-137	NA	NA	NA	18.0
Other Gammas <sup>a</sup>	NA	NA	NA	15.0
Date Collected Lab Code	10-05-94 PAWW-5723	11-08-94 PAWW-6614,5	12-14-94 PAWW-7639,40	
Gross Beta	5.1±0.9	4.4±1.4	5.2±0.6	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	5.0
Sr-90	NA	NA	NA	1.0
H-3	<161	<162	<161	500
I-131	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	1.0
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	15.0
Cs-137	NA	NA	NA	18.0
Other Gammas <sup>a</sup>	NA	NA	NA	15.0

<sup>a</sup> See Introduction.

<sup>b</sup>NA = Not applicable; specifications changed, dropping analysis from program.

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Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L<sup>a</sup>  
Location: Outage Building (Site Wells # 11, 12 and 13)

Sample Description and Concentration				Required LLD
Date Collected Lab Code	01-11-94 PAWW-4736	02-08-94 PAWW-5023	03-09-94 PAWW-5381	
Gross Beta	<0.9	<0.9	<1.4	4.0
Sr-89	<0.8	<0.7	<0.8	5.0
Sr-90	<0.7	<0.7	<0.6	1.0
H-3	<196	<174	<193	500
I-131	<0.4	<0.3	<0.4	1.0
Cs-134	<3.3	<3.0	<2.6	15.0
Cs-137	<4.3	<4.8	<3.4	18.0
Other Gammas <sup>b</sup>	<2.8	<2.1	<3.1	15.0
Date Collected Lab Code	04-01-94 PAWW-0186	05-10-94 PAWW-1014	06-07-94 PAWW-1879	
Gross Beta	<0.8	<1.2	1.0±0.5	4.0
Sr-89	<0.8	<1.0	NA <sup>b</sup>	5.0
Sr-90	<0.6	<0.7	NA <sup>b</sup>	1.0
H-3	<193	<186	167±82	500
I-131	<0.3	<0.5	NA	1.0
Cs-134	<2.7	<1.5	NA	15.0
Cs-137	<3.0	<2.2	NA	18.0
Other Gammas <sup>b</sup>	<2.2	<1.9	NA	15.0

<sup>a</sup>Action required at 10 pCi/L for gross beta; see specifications.

<sup>b</sup>NA = Not applicable; specifications changed, dropping analysis from program.

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Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L  
Location: Outage Building (Site Wells # 11, 12 and 13)

Sample Description and Concentration				Required LLD
Date Collected Lab Code	07-09-94 PAWW-2913	08-10-94 PAWW-3867	09-08-94 PAWW-4605	
Gross Beta	<0.8	1.7±0.6	0.9±0.5	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	5.0
Sr-90	NA	NA	NA	1.0
H-3	<163	<161	<150	500
I-131	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	1.0
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	15.0
Cs-137	NA	NA	NA	18.0
Other Gammas <sup>a</sup>	NA	NA	NA	15.0
Date Collected Lab Code	10-05-94 PAWW-5724	11-08-94 PAWW-6730	12-14-94 PAWW-7641	
Gross Beta	<1.0	0.9±0.4	0.8±0.3	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	5.0
Sr-90	NA	NA	NA	1.0
H-3	<161	<154	<161	500
I-131	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	1.0
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	15.0
Cs-137	NA	NA	NA	18.0
Other Gammas <sup>a</sup>	NA	NA	NA	15.0

<sup>a</sup> See Introduction.

<sup>b</sup>NA = Not applicable; specifications changed, dropping analysis from program.

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Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L<sup>a</sup>  
Location: Site Well #14

Sample Description and Concentration					Required LLD
Date Collected	01-11-94	02-22-94	03-09-94	03-24-94	
Lab Code	PAWW-4737	PAWW-5163	PAWW-5382	PAWW-5490 <sup>d</sup>	
Gross Beta	5.4±0.8	19.8±1.3 <sup>b</sup>	21.4±1.2 <sup>c</sup>	4.8±0.7	4.0
Sr-89	<1.0	<0.8	<0.8	<0.6	5.0
Sr-90	<0.7	<0.6	<0.6	<0.5	1.0
H-3	<197	<188	<193	<194	500
Cs-134	<1.9	<3.2	<3.2	<4.0	15.0
Cs-137	<4.4	<2.4	<3.2	<4.6	18.0
Other Gammas <sup>b</sup>	<2.7	<3.1	<2.7	<2.8	15.0
Date Collected	04-02-94	05-10-94	06-01-94		
Lab Code	PAWW-0187, 8	PAWW-1015	PAWW-1880		
Gross Beta	3.3±0.5	2.3±0.6	2.1±0.6		4.0
Sr-89	<0.8	<0.8	NA <sup>e</sup>		5.0
Sr-90	<0.4	<0.5	NA <sup>e</sup>		1.0
H-3	<191	<186	<151		500
Cs-134	<1.7	<2.5	NA <sup>e</sup>		15.0
Cs-137	<1.8	<4.5	NA		18.0
Other Gammas <sup>b</sup>	<2.2	<5.8	NA		15.0

<sup>a</sup> Action required at 10 pCi/L for gross beta; see specifications.

<sup>b</sup> Sample was reanalyzed; result of reanalysis is 18.0±0.6 pCi/L. Result of subsequent I-131 analysis is 1.4±1.1 pCi/L.

<sup>c</sup> Sample was reanalyzed; result of reanalysis is 21.5±0.6 pCi/L.

<sup>d</sup> Sample was collected twice in March. I-131 result is <0.4 pCi/L.

<sup>e</sup>NA = Not applicable; specifications changed, dropping analysis from program.

NOTE: Page 32 is intentionally left out.

PALISADES

Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L  
Location: Site Well #14

Sample Description and Concentration				Required LLD
Date Collected Lab Code	07-09-94 PAWW-2914	08-10-94 PAWW-3868	09-08-94 PAWW-4606	
Gross Beta	2.0±0.6	1.6±0.5	4.3±1.2	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	5.0
Sr-90	NA	NA	NA	1.0
H-3	<163	<161	<164	500
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	15.0
Cs-137	NA	NA	NA	18.0
Other Gammas <sup>a</sup>	NA	NA	NA	15.0
Date Collected Lab Code	10-05-94 PAWW-5725	11-08-94 PAWW-6616	12-14-94 PAWW-7642	
Gross Beta	1.4±0.7	<0.9	12.9±0.4 <sup>c</sup>	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	<2.1 <sup>d</sup>	5.0
Sr-90	NA	NA	<0.8 <sup>d</sup>	1.0
H-3	<161	<162	<161	500
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	<2.4 <sup>d</sup>	15.0
Cs-137	NA	NA	<2.3 <sup>d</sup>	18.0
Other Gammas <sup>a</sup>	NA	NA	<2.2 <sup>d</sup>	15.0

<sup>a</sup> See Introduction.

<sup>b</sup>NA = Not applicable; specifications changed, dropping analysis from program.

<sup>c</sup>Results of subsequent analyses are: Gross beta reanalysis 12.6±1.0 pCi/L, I-131 <2.2 pCi/L.  
Required LLD of 1.0 pCi/L was not met due to a delay in starting the subsequent analysis.

<sup>d</sup>Subsequent analysis.

# PALISADES

Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L<sup>a</sup>  
Location: Site Well #15

Sample Description and Concentration				Required LLD
Date Collected Lab Code	01-11-94 PAWW-4738	02-22-94 PAWW-5164	03-09-94 PAWW-5383	
Gross Beta	4.6±0.7	5.6±0.7	5.2±1.1	4.0
Sr-89	<0.9	<0.7	<0.7	5.0
Sr-90	<0.7	0.7±0.3	0.9±0.5	1.0
H-3	<196	<188	<193	500
Cs-134	<4.2	<4.5	<1.8	15.0
Cs-137	<4.4	<3.3	<1.8	18.0
Other Gammas <sup>b</sup>	<1.9	<3.8	<1.5	15.0
Date Collected Lab Code	04-02-94 PAWW-189	05-10-94 PAWW-1016	06-07-94 PAWW-1881	
Gross Beta	4.4±0.7	3.9±0.7	4.2±0.8	4.0
Sr-89	<0.8	<0.8	NA <sup>b</sup>	5.0
Sr-90	0.6±0.3	1.0±0.4	NA	1.0
H-3	<191	<146	<151	500
Cs-134	<4.1	<5.6	NA <sup>b</sup>	15.0
Cs-137	<4.8	<3.4	NA	18.0
Other Gammas <sup>b</sup>	<6.3	<4.2	NA	15.0

<sup>a</sup> Action required at 10 pCi/L for gross beta; see specifications.

<sup>b</sup>NA = Not applicable; specifications changed, dropping analysis from program.

NOTE: Page 34 is intentionally left out.

PALISADES

Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L  
Location: Site Well #15

Sample Description and Concentration				Required LLD
Date Collected Lab Code	07-09-94 PAWW-2915	08-10-94 PAWW-3869, 70	09-08-94 PAWW-4607	
Gross Beta	4.1±0.6	3.6±0.5	4.7±0.7	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	5.0
Sr-90	NA	NA	NA	1.0
H-3	<163	<161	<164	500
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	15.0
Cs-137	NA	NA	NA	18.0
Other Gammas <sup>a</sup>	NA	NA	NA	15.0
Date Collected Lab Code	10-05-94 PAWW-5726	11-08-94 PAWW-6617	12-15-94 PAWW-7643	
Gross Beta	2.7±0.7	4.5±0.8	<0.3	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	5.0
Sr-90	NA	NA	NA	1.0
H-3	<161	<162	<161	500
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	15.0
Cs-137	NA	NA	NA	18.0
Other Gammas <sup>a</sup>	NA	NA	NA	15.0

<sup>a</sup>See Introduction.

<sup>b</sup>NA = Not applicable; specifications changed, dropping analysis from program.



PALISADES

Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L<sup>a</sup>  
Location: Site Well #16

Sample Description and Concentration				Required LLD
Date Collected Lab Code	01-11-94 PAWW-4739	02-22-94 PAWW-5165	03-09-94 PAWW-5384	
Gross Beta	4.4±1.0	4.2±0.7	4.3±1.1	4.0
Sr-89	<0.9	<0.8	<0.8	5.0
Sr-90	<0.6	0.7±0.4	<0.5	1.0
H-3	<196	<188	<193	500
Cs-134	<2.7	<3.4	<2.6	15.0
Cs-137	<4.7	<3.7	<3.1	18.0
Other Gammas <sup>b</sup>	<4.1	<1.4	<3.0	15.0
Date Collected Lab Code	04-02-94 PAWW-0190	05-10-94 PAWW-1017	06-07-94 PAWW-1882,3	
Gross Beta	4.8±0.7	3.4±0.6	5.3±0.5	4.0
Sr-89	<1.1	<0.9	NA <sup>b</sup>	5.0
Sr-90	<0.6	<0.6	NA	1.0
H-3	<191	<186	<160	500
Cs-134	<8.1	<3.2	NA <sup>b</sup>	15.0
Cs-137	<6.2	<4.2	NA	18.0
Other Gammas <sup>b</sup>	<6.1	<4.8	NA	15.0

<sup>a</sup> Action required at 10 pCi/L for gross beta; see specifications.

<sup>b</sup>NA = Not applicable; specifications changed, dropping analysis from program.

NOTE: Page 36 is intentionally left out.

# PALISADES

Table 7. Well Water (continued)  
Collection: Monthly  
Units: pCi/L  
Location: Site Well #16

Sample Description and Concentration				Required LLD
Date Collected Lab Code	07-09-94 PAWW-2916	08-10-94 PAWW-3871	09-08-94 PAWW-4608	
Gross Beta	4.9±0.7	4.1±0.6	4.7±0.7	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	5.0
Sr-90	NA	NA	NA	1.0
H-3	<163	<161	<150	500
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	NA <sup>b</sup>	15.0
Cs-137	NA	NA	NA	18.0
Other Gammas <sup>a</sup>	NA	NA	NA	15.0
Date Collected Lab Code	10-05-94 PAWW-5727	11-08-94 PAWW-6618	12-14-94 PAWW-7644	
Gross Beta	4.0±0.8	3.4±0.7	12.4±0.4 <sup>c</sup>	4.0
Sr-89	NA <sup>b</sup>	NA <sup>b</sup>	<1.1 <sup>d</sup>	5.0
Sr-90	NA	NA	0.7±0.4 <sup>d</sup>	1.0
H-3	<161	<162	<161	500
Cs-134	NA <sup>b</sup>	NA <sup>b</sup>	<2.9 <sup>d</sup>	15.0
Cs-137	NA	NA	<2.6 <sup>d</sup>	18.0
Other Gammas <sup>a</sup>	NA	NA	<2.9 <sup>d</sup>	15.0

<sup>a</sup>See Introduction.

<sup>b</sup>NA = Not applicable; specifications changed, dropping analysis from program.

<sup>c</sup>Client notified. I-131 by chemistry, Sr-89, Sr-90 and a reanalysis for gross beta are in progress

<sup>c</sup>Results of subsequent analyses are: Gross beta reanalysis 7.5±0.9 pCi/L, I-131 <2.2 pCi/L.  
Required LLD of 1.0 pCi/L was not met due to a delay in starting the subsequent analysis.

<sup>d</sup>Subsequent analysis.

PALISADES

Table 8. In-Plant Water  
Collection: Monthly Composite; 1994  
Units: pCi/L  
Location: Turbine Sump

Sample Description and Concentration				Required LLD
Collection Period Lab Code	January PACW-5012	February PACW-5369	March PACW-0177	
Gross Alpha	0.3±0.1	0.3±0.2	<0.4	1.0
Gross Beta	1.8±0.3	1.6±0.3	3.1±0.3	1.0
Sr-89	<0.9	<0.9	<0.8	5.0
Sr-90	<0.5	1.2±0.5	<0.6	1.0
H-3	4075±198	3623±195	1866±154	500
Cs-137	<2.9	<2.8	<4.9	10
Other Gammas <sup>a</sup>	<3.0	<1.6	<4.0	10
Collection Period Lab Code	April PACW-1005	May PACW-1868	June <sup>b</sup> PACW-2875	
Gross Alpha	<0.3	<0.4	<0.3	1.0
Gross Beta	1.9±0.3	2.9±0.3	9.9±0.4 <sup>c</sup>	1.0
Sr-89	<0.9	<0.6	<1.0	5.0
Sr-90	<0.6	<0.5	2.6±0.7	1.0
H-3	1508±140	2163±160	1362±127	500
Cs-137	<2.2	<4.2	<5.0	10
Other Gammas <sup>a</sup>	<1.8	<3.9	<1.4	10

<sup>a</sup>See Introduction.

<sup>b</sup>Required LLD's were modified effective starting with samples collected in June. New LLD's are as follows: Gross Alpha 100 pCi/L, Gross Beta 100 pCi/L, Sr-89 50 pCi/L, Sr-90 50 pCi/L, H-3 10,000 pCi/L, Cs-137 500 pCi/L, other gammas 500 pCi/L. Starting with the January 1995 report, these results will be reported in units of µCi/ml

<sup>c</sup>Sample was reanalyzed ;result of reanalysis is 8.9±0.5 pCi/L.

PALISADES

Table 8. In-Plant Water  
Collection: Monthly Composite  
Units: pCi/L  
Location: Turbine Sump

Sample Description and Concentration				Required LLD
Collection Period Lab Code	July PACW-3859	August PACW-4544	September PACW-5713	
Gross Alpha	<0.2	<0.3	<0.4	100
Gross Beta	3.1±0.3	2.7±0.3	1.0±0.3	100
Sr-89	<1.1	<0.8	<1.0	50
Sr-90	<0.6	<0.7	<0.5	50
H-3	2286±148	3263±172	4909±193	10,000
Cs-137	<2.4	<3.7	<4.6	500
Other Gammas <sup>a</sup>	<2.8	<3.5	<1.6	500
Collection Period Lab Code	October PACW-6606	November PACW-7604	December PACW-8253,4	
Gross Alpha	<0.3	<0.2	<0.8	100
Gross Beta	0.7±0.3	1.0±0.2	0.7±0.4	100
Sr-89	<1.2	<1.0	<1.1	50
Sr-90	<0.6	<0.5	<0.7	50
H-3	6292±234	5052±208	6741±168	10,000
Cs-137	<5.0	<2.4	<4.4	500
Other Gammas <sup>a</sup>	<2.0	<2.2	<3.5	500

<sup>a</sup> See Introduction.

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Table 8. In-Plant Water  
Collection: Monthly Composite; 1994  
Units: pCi/L  
Location: Service Water

Sample Description and Concentration				Required LLD
Collection Period Lab Code	January PACW-5010,11	February PACW-5368	March PACW-0176	
Gross Alpha	<0.4	<0.4	0.5±0.3	1.0
Gross Beta	2.4±0.2	2.3±0.3	2.1±0.3	1.0
Sr-89	<0.8	<0.8	<0.9	5.0
Sr-90	0.7±0.2	1.6±0.4	<0.7	1.0
H-3	<188	<193	<192	500
Cs-137	<2.2	<2.6	<5.8	10
Other Gammas <sup>a</sup>	<2.1	<1.2	<3.6	10
Collection Period Lab Code	April PACW-1003, 4	May PACW-1867	June <sup>b</sup> PACW-2901	
Gross Alpha	<0.5	<0.4	<0.4	1.0
Gross Beta	2.7±0.2	2.4±0.3	2.1±0.3	1.0
Sr-89	<0.8	<0.6	<0.8	5.0
Sr-90	<0.6	<0.5	0.4±0.3	1.0
H-3	<180	<185	<163	500
Cs-137	<3.5	<3.2	<5.0	10
Other Gammas <sup>a</sup>	<3.4	<1.6	<2.2	10

<sup>a</sup>See Introduction.

<sup>b</sup>Required LLD's were modified effective starting with samples collected in June. New LLD's are as follows: Gross Alpha 100 pCi/L, Gross Beta 100 pCi/L, Sr-89 50 pCi/L, Sr-90 50 pCi/L, H-3 10,000 pCi/L, Cs-137 500 pCi/L, other gammas 500 pCi/L. Starting with the January 1995 report, these results will be reported in units of µCi/ml.

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Table 8. In-Plant Water  
Collection: Monthly Composite  
Units: pCi/L  
Location: Service Water

Sample Description and Concentration				Required LLD
Collection Period Lab Code	July PACW-3858	August PACW-4594	September PACW-5712	
Gross Alpha	<0.4	<0.4	<0.4	100
Gross Beta	1.9±0.3	2.3±0.3	2.4±0.3	100
Sr-89	<0.8	<0.8	<1.1	50
Sr-90	1.1±0.4	<0.6	<0.6	50
H-3	<156	<164	146±79	10,000
Cs-137	<3.6	<3.9	<3.2	500
Other Gammas <sup>a</sup>	<3.3	<3.9	<3.4	500
Collection Period Lab Code	October PACW-6605	November PACW-7633	December PACW-8252	
Gross Alpha	<0.3	<0.2	<1.2	100
Gross Beta	1.9±0.3	2.2±0.2	2.0±0.6	100
Sr-89	<1.0	<0.7	<0.6	50
Sr-90	<0.5	0.6±0.3	0.5±0.3	50
H-3	<162	<169	<158	10,000
Cs-137	<4.1	<2.5	<4.2	500
Other Gammas <sup>a</sup>	<2.7	<3.2	<1.8	500

<sup>a</sup> See Introduction.

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Table 9.

Milk

Collection: Monthly

Units: pCi/L

Location: GH - Glen Hessey Farm

Sample Description and Concentration					Required LLD
Date Collected Lab Code	01-11-94 PAMI-0201	02-08-94 PAMI-0252	03-09-94 PAMI-0330	04-05-94 PAMI-0175	
I-131	<0.4	<0.2	<0.4	<0.3	1.0
Sr-89	<0.5	<0.6	<0.6	<0.5	5.0
Sr-90	3.5±0.6	3.9±0.6	2.6±0.5	2.3±0.4	1.0
K-40	1530±120	1500±190	1550±130	1390±120	--
Cs-134	<5.3	<6.1	<4.7	<3.9	15.0
Cs-137	<3.3	<7.7	<5.4	<4.8	18.0
Ba-La-140	<1.5	<4.1	<5.0	<1.4	15.0
Date Collected Lab Code	05-10-94 PAMI-1001, 2	06-07-94 PAMI-1887	07-11-94 PAMI-2897	08-09-94 PAMI-3855	
I-131	<0.3	<0.2	<0.3	<0.4	1.0
Sr-89	<0.5	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	5.0
Sr-90	3.1±0.4	NA	NA	NA	1.0
K-40	1310±110	1460±120	1470±130	1450±140	--
Cs-134	<5.0	<3.6	<4.2	<5.5	15.0
Cs-137	<4.7	<4.5	<4.7	<4.6	18.0
Ba-La-140	<2.6	<1.5	<5.0	<6.6	15.0
Date Collected Lab Code	09-08-94 PAMI-4586	10-05-94 PAMI-5611	11-08-94 PAMI-6602	12-07-94 PAMI-7486	
I-131	<0.2	<0.2	<0.2	<0.4	1.0
Sr-89	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	5.0
Sr-90	NA	NA	NA	NA	1.0
K-40	1390±170	1510±140	1530±160	1420±140	--
Cs-134	<5.4	<5.3	<4.3	<6.3	15.0
Cs-137	<4.4	<4.3	<6.5	<5.3	18.0
Ba-La-140	<3.1	<2.6	<5.4	<7.7	15.0

<sup>a</sup>NA = Not applicable; specifications changed, dropping analysis from program.



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Table 9.      Milk  
Collection: Monthly  
Units: pCi/L  
Location: KK - Kenneth Kemp Farm

Sample Description and Concentration					Required LLD
Date Collected	01-11-94	02-07-94	03-08-94	04-05-94	
Lab Code	PAMI-0202	PAMI-0255	PAMI-0332	PAMI-0173	
I-131	<0.2	<0.5	<0.4	<0.3	1.0
Sr-89	<0.5	<0.5	<0.5	<0.4	5.0
Sr-90	2.2±0.4	2.4±0.5	2.5±0.5	2.3±0.5	1.0
K-40	1280±160	1340±170	1510±110	1390±90	--
Cs-134	<6.5	<6.8	<4.1	<3.4	15.0
Cs-137	<3.7	<7.6	<4.7	<3.7	18.0
Ba-La-140	<2.6	<3.5	<2.4	<3.0	15.0
Date Collected	05-07-94	06-06-94	07-06-94	08-09-94	
Lab Code	PAMI-1000	PAMI-1889	PAMI-2899	PAMI-3857	
I-131	<0.5	<0.2	<0.3	<0.4	1.0
Sr-89	<0.8	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	5.0
Sr-90	2.4±0.6	NA	NA	NA	1.0
K-40	1440±200	1460±110	1420±110	1230±140	--
Cs-134	<5.6	<2.4	<3.8	<5.4	15.0
Cs-137	<6.1	<3.6	<3.3	<3.8	18.0
Ba-La-140	<3.8	<1.4	<5.2	<3.0	15.0
Date Collected	09-06-94	10-05-94	11-08-94	12-07-94	
Lab Code	PAMI-4584	PAMI-5608	PAMI-6604	PAMI-7485	
I-131	<0.4	<0.3	<0.3	<0.5	1.0
Sr-89	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	5.0
Sr-90	NA	NA	NA	NA	1.0
K-40	1340±120	1490±120	1420±170	1270±120	--
Cs-134	<4.1	<3.0	<6.4	<5.1	15.0
Cs-137	<4.7	<4.1	<4.9	<3.6	18.0
Ba-La-140	<4.5	<1.7	<3.5	<1.5	15.0

<sup>a</sup>NA = Not applicable; specifications changed, dropping analysis from program.

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Table 9.       Milk  
Collection: Monthly  
Units: pCi/L  
Location: WS - William Shine Farm

Sample Description and Concentration					Required LLD
Date Collected	01-11-94	02-08-94	03-09-94	04-05-94	
Lab Code	PAMI-0203	PAMI-0253	PAMI-0332	PAMI-0171, 2	
I-131	<0.4	<0.4	<0.5	<0.2	1.0
Sr-89	<0.5	<0.6	<0.5	<0.5	5.0
Sr-90	2.1±0.5	2.2±0.5	2.0±0.4	2.2±0.3	1.0
K-40	1310±160	1510±130	1360±150	1500±70	--
Cs-134	<5.0	<4.8	<5.6	<3.6	15.0
Cs-137	<5.2	<4.9	<3.8	<3.5	18.0
Ba-La-140	<2.5	<1.8	<4.3	<3.6	15.0
Date Collected	05-10-94	06-07-94	07-11-94	08-09-94	
Lab Code	PAMI-0998	PAMI-1886	PAMI-2900	PAMI-3856	
I-131	<0.2	<0.2	<0.3	<0.4	1.0
Sr-89	<0.5	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	5.0
Sr-90	1.7±0.5	NA	NA	NA	1.0
K-40	1450±160	1590±160	1630±160	1470±100	--
Cs-134	<3.9	<4.7	<4.6	<4.1	15.0
Cs-137	<6.2	<6.5	<5.8	<4.9	18.0
Ba-La-140	<5.2	<2.2	<2.9	<4.8	15.0
Date Collected	09-08-94	10-05-94	11-08-94	12-07-94	
Lab Code	PAMI-4583	PAMI-5610	PAMI-6601	PAMI-7487	
I-131	<0.2	<0.3	<0.2	<0.4	1.0
Sr-89	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	5.0
Sr-90	NA	NA	NA	NA	1.0
K-40	1480±170	1340±120	1620±130	1470±160	--
Cs-134	<5.6	<4.4	<3.8	<6.4	15.0
Cs-137	<6.9	<5.4	<4.3	<5.4	18.0
Ba-La-140	<2.5	<5.7	<1.7	<3.2	15.0

<sup>a</sup>NA = Not applicable; specifications changed, dropping analysis from program.

PALISADES

Table 9. Milk  
Collection: Monthly  
Units: pCi/L  
Location: FC - Frank Crnkovich Farm

Sample Description and Concentration					Required LLD
Date Collected	01-11-94	02-08-94	03-09-94	04-05-94	
Lab Code	PAMI-0200	PAMI-0254	PAMI-0329	PAMI-0174	
I-131	<0.4	<0.4	<0.4	<0.4	1.0
Sr-89	<0.4	<0.6	<0.6	<0.5	5.0
Sr-90	2.9±0.6	4.3±0.6	3.6±0.6	3.3±0.6	1.0
K-40	1270±110	1230±140	1090±150	1470±180	--
Cs-134	<3.4	<6.0	<3.1	<8.8	15.0
Cs-137	<4.8	<3.5	<6.0	<7.5	18.0
Ba-La-140	<4.0	<3.1	<4.4	<3.1	15.0
Date Collected	05-10-94	06-07-94	07-11-94	08-09-94	
Lab Code	PAMI-0999	PAMI-1888	PAMI-2898	PAMI-3854	
I-131	<0.5	<0.2	<0.3	<0.4	1.0
Sr-89	<0.5	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	5.0
Sr-90	3.8±0.6	NA	NA	NA	1.0
K-40	1680±120	1740±170	1550±180	1410±160	--
Cs-134	<3.8	<5.0	<5.6	<6.9	15.0
Cs-137	<5.7	<5.4	<7.5	<5.7	18.0
Ba-La-140	<2.2	<2.2	<4.3	<3.6	15.0
Date Collected	09-08-94	10-05-94	11-08-94	12-07-94	
Lab Code	PAMI-4585	PAMI-5609	PAMI-6603	PAMI-7488	
I-131	<0.5	<0.4	<0.2	<0.4	1.0
Sr-89	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	5.0
Sr-90	NA	NA	NA	NA	1.0
K-40	1340±140	1130±160	1360±120	1150±90	--
Cs-134	<4.8	<4.7	<3.4	<4.1	15.0
Cs-137	<5.4	<5.4	<5.5	<3.7	18.0
Ba-La-140	<2.7	<3.5	<4.7	<2.1	15.0

<sup>a</sup>NA = Not applicable; specifications changed, dropping analysis from program.

PALISADES

Table 10. Food Crops.  
Collection: Semiannually at time of harvest.  
Units: pCi/g wet

Sample Description and Concentration					Required LLD
Location	Jerry Sarno Farm	Jerry Sarno Farm	Jerry Sarno Farm	Jerry Sarno Farm	
Date Collected	07-17-94	07-17-94	08-11-94	08-11-94	
Sample Collected	Blueberries	Strawberries	Peaches	Pears	
Lab Code	PAVE-3138	PAVE-3139	PAVE-3892,3	PAVE-3894	
Gross Beta	0.73±0.02	1.10±0.03	2.52±0.06	1.25±0.04	1.0
I-131	<0.019	<0.019	<0.012	<0.014	0.06
Mn-54	<0.006	<0.008	<0.008	<0.011	0.08
Co-58	<0.006	<0.009	<0.006	<0.008	0.08
Co-60	<0.006	<0.005	<0.004	<0.009	0.05
Fe-59	<0.012	<0.016	<0.021	<0.017	0.1
Zn-65	<0.007	<0.017	<0.016	<0.005	0.1
Zr-Nb-95	<0.004	<0.009	<0.008	<0.011	0.1
Cs-134	<0.003	<0.008	<0.005	<0.009	0.08
Cs-137	<0.007	<0.009	<0.010	<0.011	0.08
Ba-La-140	<0.010	<0.010	<0.007	<0.005	0.1
Location	Jerry Sarno Farm	Jerry Sarno Farm			
Date Collected	08-11-94	10-11-94			
Sample Collected	Apples	Grapes			
Lab Code	PAVE-3895	PAVE-5822			
Gross Beta	1.37±0.04	1.49±0.06			1.0
I-131	<0.012	<0.022			0.06
Mn-54	<0.011	<0.006			0.08
Co-58	<0.016	<0.007			0.08
Co-60	<0.004	<0.007			0.05
Fe-59	<0.016	<0.009			0.1
Zn-65	<0.011	<0.017			0.1
Zr-Nb-95	<0.013	<0.010			0.1
Cs-134	<0.012	<0.008			0.08
Cs-137	<0.010	<0.007			0.08
Ba-La-140	<0.006	<0.008			0.1

PALISADES

Table 10. Food Crops (continued).

Sample Description and Concentration				Required LLD
Location	Paul Rood Farm	Paul Rood Farm	Paul Rood Farm	
Date Collected	08-11-94	10-11-94	10-11-94	
Sample Collected	Blueberries	Apples	Pears	
Lab Code	PAVE-3891	PAVE-5820	PAVE-5821	
Gross Beta	0.84±0.03	1.00±0.03	1.33±0.04	1.0
I-131	<0.012	<0.026	<0.020	0.06
Mn-54	<0.010	<0.013	<0.015	0.08
Co-58	<0.010	<0.010	<0.019	0.08
Co-60	<0.004	<0.006	<0.012	0.05
Fe-59	<0.012	<0.012	<0.025	0.1
Zn-65	<0.024	<0.010	<0.026	0.1
Zr-Nb-95	<0.010	<0.015	<0.016	0.1
Cs-134	<0.009	<0.013	<0.023	0.08
Cs-137	<0.012	<0.013	<0.010	0.08
Ba-La-140	<0.007	<0.016	<0.012	0.1
Location				
Date Collected				
Sample Collected				
Lab Code				
Gross Beta				1.0
I-131				0.06
Mn-54				0.08
Co-58				0.08
Co-60				0.05
Fe-59				0.1
Zn-65				0.1
Zr-Nb-95				0.1
Cs-134				0.08
Cs-137				0.08
Ba-La-140				0.1

NOTE: Page 47 is intentionally left out.

PALISADES

Table 11. Fish  
Collection: Semiannually  
Units: pCi/g wet

Sample Description and Concentration				Required LLD
Location	<u>Ludington Pumped Storage Plant (Control)</u>			
Date Collected	05-05-94	05-05-94	05-05-94	
Sample Type	Perch	Salmon	White Sucker	
Lab Code	PAF-1052	PAF-1053	PAF-1054	
Gross Beta	2.14±0.08	2.56±0.09	2.59±0.08	1.0
Sr-89	<0.004	<0.003	<0.004	0.025
Sr-90	<0.002	<0.002	<0.002	0.005
Mn-54	<0.019	<0.013	<0.012	0.13
Co-58	<0.011	<0.011	<0.016	0.13
Co-60	<0.012	<0.015	<0.013	0.13
Fe-59	<0.019	<0.026	<0.019	0.26
Zn-65	<0.010	<0.025	<0.029	0.26
Zr-Nb-95	<0.008	<0.016	<0.010	0.1
Cs-134	<0.007	<0.017	<0.011	0.13
Cs-137	0.054±0.018	0.056±0.017	<0.014	0.15
Ba-La-140	<0.011	<0.020	<0.009	0.1
Location	<u>Ludington Pumped Storage Plant (Control)</u>			
Date Collected	10-05-94	10-05-94	10-05-94	10-05-94
Sample Type	Brown Trout	White Sucker	Round Whitefish	Yellow Perch
Lab Code	PAF-7578	PAF-7579	PAF-7580	PAF-7581
Gross Beta	2.05±0.05	2.04±0.06	1.89±0.07	1.89±0.10
Sr-89	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>
Sr-90	NA	NA	NA	NA
Mn-54	<0.014	<0.021	<0.012	<0.017
Co-58	<0.023	<0.037	<0.008	<0.029
Co-60	<0.017	<0.010	<0.020	<0.012
Fe-59	<0.10	<0.050	<0.051	<0.095
Zn-65	<0.027	<0.037	<0.022	<0.028
Zr-Nb-95	<0.065	<0.069	<0.032	<0.067
Cs-134	<0.015	<0.017	<0.008	<0.018
Cs-137	<0.021	<0.019	<0.015	<0.025
Ba-La-140	<0.58 <sup>b</sup>	<0.68 <sup>b</sup>	<0.33 <sup>b</sup>	<0.59 <sup>b</sup>

<sup>a</sup>NA, Specifications changed, analysis no longer required.

<sup>b</sup>Required LLD for Ba-La-140 not reached due to delay in shipping. Sample received 12/13/94.

PALISADES

Table 11. Fish (continued)

Sample Description and Concentration			Required LLD
Location	<u>Palisades Discharge</u>		
Date Collected	05-13-94	05-13-94	
Sample Type	Forage	Sucker	
Lab Code	PAF-1258	PAF-1259	
Gross Beta	2.73±0.10	2.69±0.10	1.0
Sr-89	<0.003	<0.003	0.025
Sr-90	<0.002	<0.002	0.005
Mn-54	<0.012	<0.013	0.13
Co-58	<0.010	<0.012	0.13
Co-60	<0.017	<0.005	0.13
Fe-59	<0.028	<0.020	0.26
Zn-65	<0.013	<0.018	0.26
Zr-Nb-95	<0.008	<0.013	0.1
Cs-134	<0.016	<0.012	0.13
Cs-137	0.040±0.016	<0.012	0.15
Ba-La-140	<0.009	<0.010	0.1

Location	<u>Palisades Discharge</u>				
Date Collected	12-22-94	12-22-94	12-22-94	12-22-94	
Sample Type	Carp	Rainbow Trout	Brown Trout	Brown Trout	
Lab Code	PAF-8210	PAF-8211	PAF-8212	PAF-8213	
Gross Beta	2.96±0.09	2.87±0.12	2.55±0.08	2.56±0.08	1.0
Sr-89	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	0.025
Sr-90	NA	NA	NA	NA	0.005
Mn-54	<0.011	<0.012	<0.013	<0.009	0.13
Co-58	<0.010	<0.010	<0.020	<0.024	0.13
Co-60	<0.007	<0.022	<0.018	<0.013	0.13
Fe-59	<0.043	<0.019	<0.048	<0.040	0.26
Zn-65	<0.017	<0.029	<0.019	<0.032	0.26
Zr-Nb-95	<0.009	<0.024	<0.026	<0.014	0.1
Cs-134	<0.005	<0.009	<0.009	<0.020	0.13
Cs-137	<0.010	<0.020	<0.020	<0.019	0.15
Ba-La-140	<0.034	<0.053	<0.043	<0.042	0.1

<sup>a</sup>NA=Not applicable; specifications changed, analysis has been dropped from program.

NOTE: Page 50 is intentionally left out.



PALISADES

Table 12.      Algae  
Collection: Semiannually  
Units : pCi/g wet

Sample Description and Concentration				Required LLD
Location	<u>Ludington (Control)</u>			
Date Collected	06-17-94	07-26-94	10-05-94	
Lab Code	PASL-2268	PASL-3872	PASL-7582	
Gross Beta	4.17±0.97	1.97±0.15	1.84±0.11	1.0
Mn-54	<0.018	<0.010	<0.015	0.13
Co-58	<0.024	<0.009	<0.014	0.13
Co-60	<0.019	<0.009	<0.020	0.13
Fe-59	<0.040	<0.019	<0.034	0.26
Zn-65	<0.016	<0.007	<0.012	0.26
Zr-Nb-95	<0.031	<0.006	<0.050	0.10
Cs-134	<0.022	<0.007	<0.014	0.13
Cs-137	<0.025	<0.007	<0.017	0.15
Ba-La-140	<0.069	<0.010	<0.30 <sup>a</sup>	0.10
Location	<u>Discharge</u>			
Date Collected	12-22-94	12-22-94		
Lab Code	PASL-8214	PASL-8215		
Gross Beta	3.27±0.46	2.44±0.38		1.0
Mn-54	<0.033	<0.011		0.13
Co-58	<0.040	0.026±0.022		0.13
Co-60	<0.034	0.049±0.016		0.13
Fe-59	<0.075	<0.041		0.26
Zn-65	<0.053	<0.088		0.26
Zr-Nb-95	<0.058	<0.019		0.10
Cs-134	<0.027	<0.022		0.13
Cs-137	<0.033	0.285±0.031		0.15
Ba-La-140	<0.086	<0.032		0.10

<sup>a</sup>Required LLD was not reached due to delay in shipping.

PALISADES

Table 13. Bottom Sediments  
Collection: Semiannually  
Units: pCi/g dry

Sample Description and Concentration			Required LLD
<u>Ludington (Control)</u>			
Location			
Date Collected	04-29-94	10-05-94	
Lab Code	PABS-1051	PABS-7583	
Gross Beta	10.0±2.1	7.14±1.35	1.0
Sr-89	<0.020	NA <sup>a</sup>	0.025
Sr-90	<0.005	NA	0.005
Mn-54	<0.009	<0.009	0.08
Co-58	<0.018	<0.011	0.08
Co-60	<0.015	<0.009	0.05
Fe-59	<0.023	<0.051	0.1
Zn-65	<0.050	<0.037	0.1
Zr-Nb-95	<0.017	<0.020	0.1
Cs-134	<0.022	<0.014	0.15
Cs-137	0.022±0.010	<0.011	0.18
Ba-La-140	<0.014	<0.30 <sup>b</sup>	0.1
<u>South Haven</u>			
Location			
Date Collected	04-27-94		
Lab Code	PABS-0659		
Gross Beta	8.2±1.9		1.0
Sr-89	<0.008		0.025
Sr-90	<0.005		0.005
Mn-54	<0.019		0.08
Co-58	<0.022		0.08
Co-60	<0.020		0.05
Fe-59	<0.033		0.1
Zn-65	<0.068		0.1
Zr-Nb-95	<0.015		0.1
Cs-134	<0.019		0.15
Cs-137	<0.022		0.18
Ba-La-140	<0.006		0.1

<sup>a</sup>NA=Not applicable; specifications changed, analysis has been dropped from program.

<sup>b</sup>Required LLD not reached due to delay in shipping.

# PALISADES

Table 13. Bottom Sediments (continued)

Sample Description and Concentration			Required LLD
<hr/>			
Location	<u>South Property (0.8 mi.)</u>		
Date Collected	04-27-94	11-15-94	
Lab Code	PABS-0656	PABS-8218	
Gross Beta	2.7±1.5	3.8±1.2	1.0
Sr-89	<0.13	NA <sup>a</sup>	0.025
Sr-90	0.010±0.006	NA	0.005
Mn-54	<0.015	<0.013	0.08
Co-58	<0.022	<0.015	0.08
Co-60	<0.012	<0.018	0.05
Fe-59	<0.033	<0.021	0.1
Zn-65	<0.069	<0.059	0.1
Zr-Nb-95	<0.033	<0.015	0.1
Cs-134	<0.014	<0.013	0.15
Cs-137	0.029±0.019	0.018±0.013	0.18
Ba-La-140	<0.009	<0.037	0.1
Location	<u>North Property (0.8 mi.)</u>		
Date Collected	04-27-94	11-15-94	
Lab Code	PABS-0657	PABS-8216	
Gross Beta	4.6±1.7	5.5±1.2	1.0
Sr-89	<0.006	NA <sup>a</sup>	0.025
Sr-90	<0.002	NA	0.005
Mn-54	<0.010	<0.012	0.08
Co-58	<0.009	<0.038	0.08
Co-60	<0.017	<0.012	0.05
Fe-59	<0.020	<0.10	0.1
Zn-65	<0.051	<0.057	0.1
Zr-Nb-95	<0.017	<0.041	0.1
Cs-134	<0.032	<0.026	0.15
Cs-137	<0.015	<0.020	0.18
Ba-La-140	<0.007	<0.60 <sup>b</sup>	0.1

<sup>a</sup>NA=Not applicable; specifications changed, analysis has been dropped from program.

<sup>b</sup>Required LLD not reached due to delay in shipping.

# PALISADES

Table 13. Bottom Sediments (continued)

Sample Description and Concentration			Required LLD
Location	<u>Palisades Discharge</u>		
Date Collected	04-27-94	12-22-94	
Lab Code	PABS-0658	PABS-8220	
Gross Beta	3.4±1.6	6.1±1.4	1.0
Sr-89	<0.012	NA <sup>a</sup>	0.025
Sr-90	0.006±0.005	NA	0.005
Mn-54	<0.014	<0.015	0.08
Co-58	<0.020	<0.018	0.08
Co-60	<0.016	<0.015	0.05
Fe-59	<0.039	<0.060	0.1
Zn-65	<0.063	<0.062	0.1
Zr-Nb-95	<0.016	<0.027	0.1
Cs-134	<0.012	<0.032	0.15
Cs-137	<0.023	0.034±0.016	0.18
Ba-La-140	<0.021	<0.035	0.1
Location	<u>8.9 Km North of Discharge</u>	<u>152 Km North of Discharge</u>	
Date Collected	11-15-94	11-15-94	
Lab Code	PABS-8217	PABS-8219	
Gross Beta	6.8±1.4	4.4±1.2	1.0
Sr-89	NA <sup>a</sup>	NA <sup>a</sup>	0.025
Sr-90	NA	NA	0.005
Mn-54	<0.014	<0.011	0.08
Co-58	<0.023	<0.034	0.08
Co-60	<0.011	<0.016	0.05
Fe-59	<0.037	<0.084	0.1
Zn-65	<0.058	<0.066	0.1
Zr-Nb-95	<0.040	<0.055	0.1
Cs-134	<0.023	<0.025	0.15
Cs-137	0.014±0.011	<0.016	0.18
Ba-La-140	<0.35 <sup>b</sup>	<0.35 <sup>b</sup>	0.1

<sup>a</sup>NA=Not applicable; specifications changed, analysis dropped from program.

<sup>b</sup>Required LLDs not reached due to delay in shipping.

PALISADES

Table 14.1. Liquid Radwaste  
Collection: Monthly Composite, 1994  
Units:  $\mu\text{Ci/mL}$

Sample Description and Concentration				Required LLD
Collection Period	January	February	March	
Lab Code	NS <sup>a</sup>	NS <sup>a</sup>	NS <sup>a</sup>	
Gross alpha	--	--	--	1.0 E-07
Sr-89	--	--	--	5.0 E-08
Sr-90	--	--	--	5.0 E-08
H-3	--	--	--	1.0 E-05
Pu-239	--	--	--	5.0 E-08
Cr-51	--	--	--	5.0 E-07
Mn-54	--	--	--	5.0 E-07
Fe-59	--	--	--	5.0 E-07
Co-58	--	--	--	5.0 E-07
Co-60	--	--	--	5.0 E-07
Zn-65	--	--	--	5.0 E-07
Zr-95	--	--	--	5.0 E-07
Nb-95	--	--	--	5.0 E-07
Ag-110m	--	--	--	5.0 E-07
Sb-124	--	--	--	5.0 E-07
Cs-134	--	--	--	5.0 E-07
Cs-137	--	--	--	5.0 E-07
Ba-140	--	--	--	5.0 E-07
La-140	--	--	--	5.0 E-07
Ce-141	--	--	--	5.0 E-07
Ce-144	--	--	--	5.0 E-07

<sup>a</sup>NS = no sample; sample not received.

PALISADES

Table 14.1. Liquid Radwaste (continued)

Collection Period	Sample Description and Concentration				Required LLD	
	April	May	June			
Lab Code	NS <sup>a</sup>	NS <sup>a</sup>	PARW-2873 <sup>b</sup>	PARW-2874 <sup>c</sup>		
Gross alpha	--	--	<1.0E-09	<1.1E-09	1.0	E-07
Sr-89	--	--	<1.6E-09	<1.7E-09	5.0	E-08
Sr-90	--	--	<1.0E-09	<1.1E-09	5.0	E-08
H-3	--	--	1.9±0.9E-07	2.7±0.9E-07	1.0	E-05
Pu-239	--	--	<2.4E-10	<0.9E-10	5.0	E-08
Cr-51	--	--	<1.5E-07	<1.1E-07	5.0	E-07
Mn-54	--	--	<1.3E-08	4.6±1.0E-08	5.0	E-07
Fe-59	--	--	<2.6E-08	<2.2E-08	5.0	E-07
Co-58	--	--	<1.8E-08	<1.6E-08	5.0	E-07
Co-60	--	--	1.3±0.1E-07	1.1±0.1E-07	5.0	E-07
Zn-65	--	--	<3.2E-08	<2.7E-08	5.0	E-07
Zr-95	--	--	<2.0E-08	<1.5E-08	5.0	E-07
Nb-95	--	--	<1.9E-08	<1.3E-08	5.0	E-07
Ag-110m	--	--	<1.5E-08	<1.1E-08	5.0	E-07
Sb-124	--	--	<2.1E-08	<1.4E-08	5.0	E-07
Cs-134	--	--	<1.4E-08	<9.5E-09	5.0	E-07
Cs-137	--	--	1.3±0.8E-08	9.9±5.4E-09	5.0	E-07
Ba-140	--	--	<2.0E-07	<1.3E-07	5.0	E-07
La-140	--	--	<4.2E-08	<2.9E-08	5.0	E-07
Ce-141	--	--	<2.3E-08	<1.2E-08	5.0	E-07
Ce-144	--	--	<9.1E-08	<4.5E-08	5.0	E-07

<sup>a</sup>NS = No sample; sample not received.

<sup>b</sup>PARW-2873 has a location of "Hotwell".

<sup>c</sup>PARW-2874 has a location of "T-2".

NOTE: Pages 57 and 58 are intentionally left out.

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Table 14.1 Liquid Radwaste (continued)

Sample Description and Concentration				Required LLD
Collection Period	July	August	September	
Lab Code	NS <sup>a</sup>	PARW-4545	NS <sup>a</sup>	
Gross alpha	--	4.3±0.3E-08	--	1.0 E-07
Sr-89	--	<2.2 E-09	--	5.0 E-08
Sr-90	--	2.8±0.2E-08	--	5.0 E-08
H-3	--	7.3±0.1E-02	--	1.0 E-05
Pu-239	--	3.2±0.7E-09	--	5.0 E-08
Cr-51	--	<2.5 E-07	--	5.0 E-07
Mn-54	--	1.1±0.1E-07	--	5.0 E-07
Fe-59	--	<4.2 E-08	--	5.0 E-07
Co-58	--	5.3±0.1E-06	--	5.0 E-07
Co-60	--	4.4±0.1E-06	--	5.0 E-07
Zn-65	--	4.8±2.2E-08	--	5.0 E-07
Zr-95	--	<4.7 E-08	--	5.0 E-07
Nb-95	--	<2.7 E-08	--	5.0 E-07
Ag-110m	--	1.0±0.1E-06	--	5.0 E-07
Sb-124	--	8.4±0.3E-07	--	5.0 E-07
Cs-134	--	1.1±0.1E-06	--	5.0 E-07
Cs-137	--	1.3±0.4E-05	--	5.0 E-07
Ba-140	--	<5.8 E-08	--	5.0 E-07
La-140	--	<3.7 E-08	--	5.0 E-07
Ce-141	--	<4.8 E-08	--	5.0 E-07
Ce-144	--	2.1±0.1E-07	--	5.0 E-07

NS<sup>a</sup> = Sample not received.



Table 14.1 Liquid Radwaste (continued)

Sample Description and Concentration				Required LLD
Collection Period	October	November	December	
Lab Code	NS <sup>a</sup>	NS <sup>a</sup>	NS <sup>a</sup>	
Gross alpha	--	--	--	1.0 E-07
Sr-89	--	--	--	5.0 E-08
Sr-90	--	--	--	5.0 E-08
H-3	--	--	--	1.0 E-05
Pu-239	--	--	--	5.0 E-08
Cr-51	--	--	--	5.0 E-07
Mn-54	--	--	--	5.0 E-07
Fe-59	--	--	--	5.0 E-07
Co-58	--	--	--	5.0 E-07
Co-60	--	--	--	5.0 E-07
Zn-65	--	--	--	5.0 E-07
Zr-95	--	--	--	5.0 E-07
Nb-95	--	--	--	5.0 E-07
Ag-110m	--	--	--	5.0 E-07
Sb-124	--	--	--	5.0 E-07
Cs-134	--	--	--	5.0 E-07
Cs-137	--	--	--	5.0 E-07
Ba-140	--	--	--	5.0 E-07
La-140	--	--	--	5.0 E-07
Ce-141	--	--	--	5.0 E-07
Ce-144	--	--	--	5.0 E-07

<sup>a</sup>NS = Sample not received.

PALISADES

Table 14.2    Stack Filters  
Collection: Monthly Composite  
Units: pCi/composite

1994 Collection Period	Lab Code	Gross Alpha	Cr-89	Sr-90	Pu-239
<u>Required LLD</u>		<u>10</u>	<u>10</u>	<u>10</u>	<u>10</u>
January	PASP-0547	20.5±5.2	<5.4	<13.7	<0.4
February	-0549	2.6±1.0	<1±2.3	<2.4	<0.2
March	-0327	2.3±1.0	<7.5	<8.9	<0.2
April	-1050	<1.9	27.8±5.4	3.0±1.7	<0.4
May	-1890	<0.3	14.1±4.3	<2.6	<0.2
June	-2917	<2.0	<2.4	<2.0	<0.2
July	-4269	<0.5	<3.8	<0.7	<0.1
August	-4609	<2.4	<3.2	<1.8	<0.2
September	-5728,9	<3.5	<3.9	<2.1	<0.4
October	-6619	<2.9	<11.6	9.2±5.2	<0.9
November	-7605	<2.6	<3.0	<2.3	<0.6
December	-8231	<1.2	<5.2	<3.0	<0.4

PALISADES

Table 14.3. Special Samples - NRC Split Samples  
 Units: Strontium - pCi/L  
 Iron-55 - pCi/mL  
 Tritium - pCi/mL

Sample Description	Collection Date	Lab Code	Sr-89	Sr-90
T-91				

Table 14.4. Special Samples - Reactor Water  
 Units:  $\mu\text{Ci/mL}$

Sample Description	Collection Date	Lab Code	Sr-89	Sr-90
E-Bar PCS	07-14-94	3647	<0.7 E-06	<0.3 E-06

Table 14.5. Special Samples - Steam Generator Blowdown  
 Units: pCi/L

Sample Description	Collection Date	Lab Code	Gross Alpha	Sr-89	Sr-90
Hot Well					
AS/G + BS/G					
Hot Well					
AS/G + BS/G					

APPENDIX A  
INTERLABORATORY COMPARISON PROGRAM RESULTS

NOTE: Teledyne's Midwest Laboratory participates in intercomparison studies administered by U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada. The results are reported in Appendix A. Also reported are results of International Intercomparison and Teledyne testing of TLD's, as well as, in-house spikes, blanks and duplicates. Appendix A is updated four times a year; the complete Appendix is included in March, June, September and December monthly progress reports only. Please refer to March, June, September and December progress reports for information.

January, 1994 through December, 1994

APPENDIX B

DATA REPORTING CONVENTIONS

## Data Reporting Conventions

- 1.0 All activities except gross alpha and gross beta are decay corrected to collection time or the end of the collection period.

### 2.0 Single Measurements

Each single measurement is reported as follows:

$$x \pm s$$

where  $x$  = value of the measurement;

$s = 2\sigma$  counting uncertainty (corresponding to the 95% confidence level).

In cases where the activity is found to be below the lower limit of detection  $L$  it is reported as

$$<L$$

where  $L$  = the lower limit of detection based on  $4.66\sigma$  uncertainty for a background sample.

### 3.0 Duplicate analyses

- 3.1 Individual results:  $x_1 \pm s_1$   
 $x_1 \pm s_2$

Reported result:  $x \pm s$

where  $x = (1/2)(x_1 \pm x_2)$

$$s = (1/2) \sqrt{s_1^2 + s_2^2}$$

- 3.2 Individual results:  $<L_1$   
 $<L_2$

Reported result:  $<L$

where  $L$  = lower of  $L_1$  and  $L_2$

- 3.3 Individual results:  $x \pm s$   
 $<L$

Reported result:  $x \pm s$  if  $x \geq L$ ;  
 $<L$  otherwise

#### 4.0. Computation of Averages and Standard Deviations

- 4.1 Averages and standard deviations listed in the tables are computed from all of the individual measurements over the period averaged; for example, an annual standard deviation would not be the average of quarterly standard deviations. The average  $\bar{x}$  and standard deviation(s) of a set of  $n$  numbers  $x_1, x_2 \dots x_n$  are defined as follows:

$$\bar{x} = \frac{1}{n} \sum x$$

$$s = \sqrt{\frac{\sum (\bar{x} - x_i)^2}{n-1}}$$

- 4.2 Values below the highest lower limit of detection are not included in the average.
- 4.3 If all of the values in the averaging group are less than the highest LLD, the highest LLD is reported.
- 4.4 If all but one of the values are less than the highest LLD, the single value  $x$  and associated two sigma error is reported.
- 4.5 In rounding off, the following rules are followed:
- 4.5.1. If the figure following those to be retained is less than 5, the figure is dropped, and the retained figures are kept unchanged. As an example, 11.443 is rounded off to 11.44.
- 4.5.2. If the figure following those to be retained is greater than 5, the figure is dropped and the last retained figure is raised by 1. As an example, 11.446 is rounded off to 11.45.
- 4.5.3. If the figure following those to be retained is 5, and if there are no figures other than zeros beyond the five, the figure five is dropped, and the last-place figure retained is increased by one if it is an odd number or it is kept unchanged if an even number. As an example, 11.435 is rounded off to 11.44, while 11.425 is rounded off to 11.42.



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Enclosure E: EPA Interlaboratory Comparison Program Results

APPENDIX A  
INTERLABORATORY COMPARISON PROGRAM RESULTS

NOTE: Teledyne's Midwest Laboratory participates in intercomparison studies administered by U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada. The results are reported in Appendix A. Also reported are results of International Intercomparison and Teledyne testing of TLD's, as well as, in-house spikes, blanks and duplicates. Appendix A is updated four times a year; the complete Appendix is included in March, June, September and December monthly progress reports only. Please refer to March, June, September and December progress reports for information.

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## Appendix A

### Interlaboratory Comparison Program Results

Teledyne's Midwest Laboratory (formerly Hazleton Environmental Sciences) has participated in interlaboratory comparison (crosscheck) programs since the formulation of its quality control program in December 1971. These programs are operated by agencies which supply environmental type samples (e.g., milk or water) containing concentrations of radionuclides known to the issuing agency but not to participant laboratories. The purpose of such a program is to provide an independent check on the laboratory's analytical procedures and to alert it to any possible problems.

Participant laboratories measure the concentration of specified radionuclides and report them to the issuing agency. Several months later, the agency reports the known values to the participant laboratories and specifies control limits. Results consistently higher or lower than the known values or outside the control limits indicate a need to check the instruments or procedures used.

The results in Table A-1 were obtained through participation in the environmental sample crosscheck program for milk, water and air filters during the past twelve months. Data for previous years is available upon request.

This program is conducted by the U.S. Environmental Protection Agency Intercomparison and Calibration Section, Quality Assurance Branch, Environmental Monitoring and Support Laboratory, Las Vegas, Nevada.

The results in Table A-2 were obtained for Thermoluminescent Dosimeters (TLDs), since 1976 via various International Intercomparisons of Environmental Dosimeters under the sponsorships listed in Table A-2. Also Teledyne testing results are listed.

Table A-3 lists results of the analyses on in-house "spiked" samples for the past twelve months. Data for previous years available upon request.

Table A-4 lists results of the analyses on in-house "blank" samples for the past twelve months. Data for previous years available upon request.

Table A-5 lists results of the in-house "duplicate" program for the past twelve months. Acceptance is based on the difference of the results being less than the sum of the errors. Data for previous years available upon request.

Attachment A lists acceptance criteria for "spiked" samples.

Out-of-limit results are explained directly below the result.

12-31-94

ATTACHMENT A

ACCEPTANCE CRITERIA FOR "SPIKED" SAMPLES

LABORATORY PRECISION: ONE STANDARD DEVIATION VALUES FOR VARIOUS ANALYSES\*

Analysis	Level	One Standard Deviation for single determinations
Gamma Emitters	5 to 100 pCi/liter or kg >100 pCi/liter or kg	5.0 pCi/liter 5% of known value
Strontium-89 <sup>b</sup>	5 to 50 pCi/liter or kg >50 pCi/liter or kg	5.0 pCi/liter 10% of known value
Strontium-90 <sup>b</sup>	2 to 30 pCi/liter or kg >30 pCi/liter or kg	5.0 pCi/liter 10% of known value
Potassium	>0.1 g/liter or kg	5% of known value
Gross alpha	≤20 pCi/liter >20 pCi/liter	5.0 pCi/liter 25% of known value
Gross beta	≤100 pCi/liter >100 pCi/liter	5.0 pCi/liter 5% of known value
Tritium	≤4,000 pCi/liter >4,000 pCi/liter	1s = (pCi/liter) = 169.85 × (known) <sup>0.0933</sup> 10% of known value
Radium-226,-228	<0.1 pCi/liter	15% of known value
Plutonium	0.1 pCi/liter, gram, or sample	10% of known value
Iodine-131, Iodine-129 <sup>b</sup>	≤55 pCi/liter >55 pCi/liter	6.0 pCi/liter 10% of known value
Uranium-238, Nickel-64 <sup>b</sup> Technetium-99 <sup>b</sup>	≤35 pCi/liter >35 pCi/liter	6.0 pCi/liter 15% of known value
Iron-55 <sup>b</sup>	50 to 100 pCi/liter >100 pCi/liter	10 pCi/liter 10% of known value
Others <sup>b</sup>	—	20% of known value

\* From EPA publication, "Environmental Radioactivity Laboratory Intercomparison Studies Program, Fiscal Year, 1981-1982, EPA-600/4-81-004.

<sup>b</sup> Teledyne limit.

Table A-1. U.S. Environmental Protection Agency's crosscheck program, comparison of EPA and Teledyne's Midwest Laboratory results for various sample media<sup>a</sup>.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L <sup>b</sup>		
				Teledyne Results $\pm 2$ Sigma <sup>c</sup>	EPA Result <sup>d</sup> 1s, N=1	Control Limits
STW-702	WATER	Jan, 1994	Sr-89	20.0 $\pm$ 1.7	25.0 $\pm$ 5.0	16.3 - 33.7
STW-702	WATER	Jan, 1994	Sr-90	14.0 $\pm$ 1.0	15.0 $\pm$ 5.0	6.3 - 23.7
STW-703	WATER	Jan, 1994	Gr. Alpha	20.3 $\pm$ 0.6	15.0 $\pm$ 5.0	6.3 - 23.7
STW-703	WATER	Jan, 1994	Gr. Beta	55.3 $\pm$ 3.2	62.0 $\pm$ 10.0	44.7 - 79.3
STW-704	WATER	Feb, 1994	I-131	110.0 $\pm$ 2.7	119.0 $\pm$ 12.0	98.2 - 139.8
STW-705	WATER	Feb, 1994	Ra-226	19.4 $\pm$ 1.5	19.9 $\pm$ 3.0	14.7 - 25.1
STW-705	WATER	Feb, 1994	Ra-228	15.0 $\pm$ 0.8	14.7 $\pm$ 3.7	8.3 - 21.1
STW-705	WATER	Feb, 1994	Uranium	9.7 $\pm$ 0.4	10.1 $\pm$ 3.0	4.9 - 15.3
STW-706	WATER	Mar, 1994	H-3	4,843.3 $\pm$ 231.2	4,936.0 $\pm$ 494.0	4,078.9 - 5,793.1
STW-707	WATER	Mar, 1994	Pu-239	28.2 $\pm$ 0.9	27.6 $\pm$ 2.8	22.7 - 32.5
STW-708	WATER	Apr, 1994	Gr. Alpha	73.3 $\pm$ 2.9	86.0 $\pm$ 22.0	47.8 - 124.2
STW-708	WATER	Apr, 1994	Ra-226	16.9 $\pm$ 1.2	20.0 $\pm$ 3.0	14.8 - 25.2
STW-708	WATER	Apr, 1994	Ra-228	19.7 $\pm$ 0.7	20.1 $\pm$ 5.0	11.4 - 28.8
STW-708	WATER	Apr, 1994	Uranium	25.1 $\pm$ 0.1	25.0 $\pm$ 3.0	19.8 - 30.2
STW-709	WATER	Apr, 1994	Co-60	20.3 $\pm$ 0.6	20.0 $\pm$ 5.0	11.3 - 28.7
STW-709	WATER	Apr, 1994	Cs-134	32.3 $\pm$ 0.6	34.0 $\pm$ 5.0	25.3 - 42.7
STW-709	WATER	Apr, 1994	Cs-137	31.3 $\pm$ 0.6	29.0 $\pm$ 5.0	20.3 - 37.7
STW-709	WATER	Apr, 1994	Gr. Beta	101.0 $\pm$ 10.5	117.0 $\pm$ 18.0	85.8 - 148.2
STW-709	WATER	Apr, 1994	Sr-89	15.0 $\pm$ 1.7	20.0 $\pm$ 5.0	11.3 - 28.7
STW-709	WATER	Apr, 1994	Sr-90	14.3 $\pm$ 0.6	14.0 $\pm$ 5.0	5.3 - 22.7
STW-710	WATER	Jun, 1994	Ba-133	87.3 $\pm$ 0.6	98.0 $\pm$ 10.0	80.7 - 115.3
STW-710	WATER	Jun, 1994	Co-60	48.7 $\pm$ 3.2	50.0 $\pm$ 5.0	41.3 - 58.7
STW-710	WATER	Jun, 1994	Cs-134	35.0 $\pm$ 2.7	40.0 $\pm$ 5.0	31.3 - 48.7
STW-710	WATER	Jun, 1994	Cs-137	51.3 $\pm$ 0.6	49.0 $\pm$ 5.0	40.3 - 57.7
STW-710	WATER	Jun, 1994	Ru-106	184.7 $\pm$ 6.7	252.0 $\pm$ 25.0	208.6 - 295.4
A Letter from the EPA was received with the report. It states, "The Radiation Quality Assurance Program has been experiencing problems with the Ruthenium-106 currently used in the Performance Evaluation (PE) Studies and in the Standards Distribution Program. If these problems can be satisfactorily resolved, this analyte will once again be placed into this PE Study. If the problems cannot be resolved, the Ruthenium-106 will be replaced. Formal written notice will be given to all participants in the Gamma in Water PE Study before the Ruthenium-106 is reintroduced or replaced. At that time, new calibration standards will be available to all participants in the Gamma in Water PE Study." Teledyne will continue to monitor this situation, but at this time, plans to take no additional action.						
STW-710	WATER	Jun, 1994	Zn-65	135.3 $\pm$ 2.3	134.0 $\pm$ 13.0	111.4 - 156.6
STW-711	WATER	Jun, 1994	Ra-226	15.0 $\pm$ 0.4	15.0 $\pm$ 2.3	11.0 - 19.0
STW-711	WATER	Jun, 1994	Ra-228	14.8 $\pm$ 0.3	15.4 $\pm$ 3.9	8.6 - 22.2
STW-711	WATER	Jun, 1994	Uranium	45.7 $\pm$ 0.2	52.6 $\pm$ 5.3	43.4 - 61.8
STW-712	WATER	Jul, 1994	Sr-89	26.0 $\pm$ 1.7	30.0 $\pm$ 5.0	21.3 - 38.7

Table A-1. U.S. Environmental Protection Agency's crosscheck program, comparison of EPA and Teledyne's Midwest Laboratory results for various sample media<sup>a</sup>.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L <sup>b</sup>		
				Teledyne Results $\pm 2$ Sigma <sup>c</sup>	EPA Result <sup>d</sup> 1s, N=1	Control Limits
STW-712	WATER	Jul, 1994	Sr-90	18.7 $\pm$ 0.6	20.0 $\pm$ 5.0	11.3 - 28.7
STW-713	WATER	Jul, 1994	Gr. Alpha	19.3 $\pm$ 1.2	32.0 $\pm$ 8.0	18.1 - 45.9
STW-713	WATER	Jul, 1994	Gr. Beta	12.7 $\pm$ 1.5	10.0 $\pm$ 5.0	1.3 - 18.7
STW-714	WATER	Aug, 1994	H-3	10,186.7 $\pm$ 66.6	9,951.0 $\pm$ 995.0	8,224.7 - 11,677.3
STAF-715	AIR FILTER	Aug, 1994	Cs-137	14.0 $\pm$ 0.0	15.0 $\pm$ 5.0	6.3 - 23.7
STAF-715	AIR FILTER	Aug, 1994	Gr. Alpha	29.3 $\pm$ 1.2	35.0 $\pm$ 9.0	19.4 - 50.6
STAF-715	AIR FILTER	Aug, 1994	Gr. Beta	56.0 $\pm$ 0.0	56.0 $\pm$ 10.0	38.7 - 73.3
STAF-715	AIR FILTER	Aug, 1994	Sr-90	18.0 $\pm$ 1.0	20.0 $\pm$ 5.0	11.3 - 28.7
STW-716	WATER	Sep, 1994	Ra-226	10.1 $\pm$ 0.3	10.0 $\pm$ 1.5	7.4 - 12.6
STW-716	WATER	Sep, 1994	Ra-228	9.8 $\pm$ 0.1	10.2 $\pm$ 2.6	5.6 - 14.7
STW-716	WATER	Sep, 1994	Uranium	31.9 $\pm$ 1.8	35.0 $\pm$ 3.0	29.8 - 40.2
STW-718	WATER	Oct, 1994	I-131	81.3 $\pm$ 3.1	79.0 $\pm$ 8.0	65.1 - 92.9

<sup>a</sup> Results obtained by Teledyne's Midwest Laboratory as a participant in the environmental sample crosscheck program operated by the Intercomparison and Calibration Section, Quality Assurance Branch, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency (EPA), Las Vegas, Nevada.

<sup>b</sup> All results are in pCi/liter, except for elemental potassium (K) data in milk, which are in mg/liter; air filter samples, which are in pCi/filter; and food products, which are in mg/kilogram.

<sup>c</sup> Unless otherwise indicated, the Teledyne results are given as the mean  $\pm$  2 standard deviations for three determinations.

<sup>d</sup> U.S. EPA results are presented as the known values and expected laboratory precision (1s, 1 determination) and control limits are defined by the EPA.

Table A-2. Crosscheck program results; Thermoluminescent Dosimeters. (TLDs).

Lab Code	TLD Type	Date	Measurement	mR		
				Teledyne Results ± 2 Sigma	Known Value ± 2 Sigma	Average ± 2 Sigma (All Participants)
<u>2nd International Intercomparison</u>						
115-2	CaF <sub>2</sub> : Mn Bulb	Apr, 1976	Field	17.0 ± 1.9	17.1	16.4 ± 7.7
115-2	CaF <sub>2</sub> : Mn Bulb	Apr, 1976	Lab	20.8 ± 4.1	21.3	18.8 ± 7.6
Second International Intercomparison of Environmental Dosimeters conducted in April of 1976 by the Health and Safety Laboratory (HASL), New York, New York, and the School of Public Health of the University of Texas, Houston, Texas.						
<u>3rd International Intercomparison</u>						
115-3	CaF <sub>2</sub> : Mn Bulb	Jun, 1977	Field	30.7 ± 3.2	34.9 ± 4.8	31.5 ± 3.0
115-3	CaF <sub>2</sub> : Mn Bulb	Jun, 1977	Lab	89.6 ± 6.4	91.7 ± 14.6	86.2 ± 24.0
Third International Intercomparison of Environmental Dosimeters conducted in the summer of 1977 by Oak Ridge National Laboratory and the School of Public Health of the University of Texas, Houston, Texas.						
<u>4th International Intercomparison</u>						
115-4	CaF <sub>2</sub> : Mn Bulb	Jun, 1979	Field	14.1 ± 1.1	14.1 ± 1.4	16.0 ± 9.0
115-4	CaF <sub>2</sub> : Mn Bulb	Jun, 1979	Lab, High	40.4 ± 1.4	45.8 ± 9.2	43.9 ± 13.2
115-4	CaF <sub>2</sub> : Mn Bulb	Jun, 1979	Lab, Low	9.8 ± 1.3	12.2 ± 2.4	12.0 ± 7.4
Fourth International Intercomparison of Environmental Dosimeters conducted in the summer of 1979 by the School of Public Health of the University of Texas, Houston, Texas.						
<u>5th International Intercomparison</u>						
115-5A	CaF <sub>2</sub> : Mn Bulb	Oct, 1980	Field	31.4 ± 1.8	30.0 ± 6.0	30.2 ± 14.6
115-5A	CaF <sub>2</sub> : Mn Bulb	Oct, 1980	Lab, End	96.6 ± 5.8	88.4 ± 8.8	90.7 ± 31.2
115-5A	CaF <sub>2</sub> : Mn Bulb	Oct, 1980	Lab, Start	77.4 ± 5.8	75.2 ± 7.6	75.8 ± 40.4
Fifth International Intercomparison of Environmental Dosimeters conducted in the fall of 1980 at Idaho Falls, Idaho and sponsored by the School of Public Health of the University of Texas, Houston, Texas and the Environmental Measurements Laboratory, New York, New York, U.S. Department of Energy.						
<u>5th International Intercomparison</u>						
115-5B	LiF-100 Chips	Oct, 1980	Field	30.3 ± 4.8	30.0 ± 6.0	30.2 ± 14.6
115-5B	LiF-100 Chips	Oct, 1980	Lab, End	85.4 ± 11.7	88.4 ± 8.8	90.7 ± 31.2
115-5B	LiF-100 Chips	Oct, 1980	Lab, Start	81.1 ± 7.4	75.2 ± 7.6	75.8 ± 40.4
Fifth International Intercomparison of Environmental Dosimeters conducted in the fall of 1980 at Idaho Falls, Idaho and sponsored by the School of Public Health of the University of Texas, Houston, Texas and the Environmental Measurements Laboratory, New York, New York, U.S. Department of Energy.						
<u>6th International Intercomparison</u>						
115-6						
Teledyne did not participate in the Sixth International Intercomparison of Environmental Dosimeters.						
<u>7th International Intercomparison</u>						
115-7A	LiF-100 Chips	Jun, 1984	Field	75.4 ± 2.6	75.8 ± 6.0	75.1 ± 29.8



Table A-2. Crosscheck program results; Thermoluminescent Dosimeters. (TLDs).

Lab Code	TLD Type	Date	Measurement	mR		
				Teledyne Results $\pm 2$ Sigma	Known Value $\pm 2$ Sigma	Average $\pm 2$ Sigma (All Participants)
115-7A	LiF-100 Chips	Jun, 1984	Lab, Co-60	$80.0 \pm 3.5$	$79.9 \pm 4.0$	$77.9 \pm 27.6$
115-7A	LiF-100 Chips	Jun, 1984	Lab, Cs-137	$66.6 \pm 2.5$	$75.0 \pm 3.8$	$73.0 \pm 22.2$
Seventh International Intercomparison of Environmental Dosimeters conducted in the spring and summer of 1984 at Las Vegas, Nevada, and sponsored by the U.S. Department of Energy, The Nuclear Regulatory Commission, and the U.S. Environmental Protection Agency.						
<u>7th International Intercomparison</u>						
115-7B	LiF-100 Chips	Jun, 1984	Field	$71.5 \pm 2.6$	$75.8 \pm 6.0$	$75.1 \pm 29.8$
115-7B	LiF-100 Chips	Jun, 1984	Lab, Co-60	$84.8 \pm 6.4$	$79.9 \pm 4.0$	$77.9 \pm 27.6$
115-7B	LiF-100 Chips	Jun, 1984	Lab, Cs-137	$78.8 \pm 1.6$	$75.0 \pm 3.8$	$73.0 \pm 22.2$
Seventh International Intercomparison of Environmental Dosimeters conducted in the spring and summer of 1984 at Las Vegas, Nevada, and sponsored by the U.S. Department of Energy, The Nuclear Regulatory Commission, and the U.S. Environmental Protection Agency.						
<u>7th International Intercomparison</u>						
115-7C	CaSO <sub>4</sub> : Dy Cards	Jun, 1984	Field	$76.8 \pm 2.7$	$75.8 \pm 6.0$	$75.1 \pm 29.8$
115-7C	CaSO <sub>4</sub> : Dy Cards	Jun, 1984	Lab, Co-60	$82.5 \pm 3.7$	$79.9 \pm 4.0$	$77.9 \pm 27.6$
115-7C	CaSO <sub>4</sub> : Dy Cards	Jun, 1984	Lab, Cs-137	$79.0 \pm 3.2$	$75.0 \pm 3.8$	$73.0 \pm 22.2$
Seventh International Intercomparison of Environmental Dosimeters conducted in the spring and summer of 1984 at Las Vegas, Nevada, and sponsored by the U.S. Department of Energy, The Nuclear Regulatory Commission, and the U.S. Environmental Protection Agency.						
<u>8th International Intercomparison</u>						
115-8A	LiF-100 Chips	Jan, 1986	Field, Site 1	$29.5 \pm 1.4$	$29.7 \pm 1.5$	$28.9 \pm 12.4$
115-8A	LiF-100 Chips	Jan, 1986	Field, Site 2	$11.3 \pm 0.8$	$10.4 \pm 0.5$	$10.1 \pm 9.1$
115-8A	LiF-100 Chips	Jan, 1986	Lab, Cs-137	$13.7 \pm 0.9$	$17.2 \pm 0.9$	$16.2 \pm 6.8$
Eighth International Intercomparison of Environmental Dosimeters conducted in the fall and winter of 1985-1986 at New York, New York, and sponsored by the U.S. Department of Energy.						
<u>8th International Intercomparison</u>						
115-8B	LiF-100 Chips	Jan, 1986	Field, Site 1	$32.3 \pm 1.2$	$29.7 \pm 1.5$	$28.9 \pm 12.4$
115-8B	LiF-100 Chips	Jan, 1986	Field, Site 2	$9.0 \pm 1.0$	$10.4 \pm 0.5$	$10.1 \pm 9.0$
115-8B	LiF-100 Chips	Jan, 1986	Lab, Cs-137	$15.8 \pm 0.9$	$17.2 \pm 0.9$	$16.2 \pm 6.8$
Eighth International Intercomparison of Environmental Dosimeters conducted in the fall and winter of 1985-1986 at New York, New York, and sponsored by the U.S. Department of Energy.						
<u>8th International Intercomparison</u>						
115-8C	CaSO <sub>4</sub> : Dy Cards	Jan, 1986	Field, Site 1	$32.2 \pm 0.7$	$29.7 \pm 1.5$	$28.9 \pm 12.4$



Table A-2. Crosscheck program results; Thermoluminescent Dosimeters. (TLDs).

Lab Code	TLD Type	Date	Measurement	mR		
				Teledyne Results ± 2 Sigma	Known Value ± 2 Sigma	Average ± 2 Sigma (All Participants)
115-8C	CaSO <sub>4</sub> : Dy Cards	Jan, 1986	Field, Site 2	10.6 ± 0.6	10.4 ± 0.5	10.1 ± 9.0
115-8C	CaSO <sub>4</sub> : Dy Cards	Jan, 1986	Lab, Cs-137	18.1 ± 0.8	17.2 ± 0.9	16.2 ± 6.8

Eighth International Intercomparison of Environmental Dosimeters conducted in the fall and winter of 1985-1986 at New York, New York, and sponsored by the U.S. Department of Energy.

#### 9th International Intercomparison

115-9

The Ninth International Intercomparison of Environmental Dosimeters was not available to Teledyne's Midwest Laboratory.

#### 10th International Intercomparison

115-10A	LiF-100 Chips	Aug, 1993	Field	25.7 ± 1.4	27.0 ± 1.6	26.4 ± 10.2
115-10A	LiF-100 Chips	Aug, 1993	Lab, 1	22.7 ± 1.6	25.9 ± 1.3	25.0 ± 9.4
115-10A	LiF-100 Chips	Aug, 1993	Lab, 2	62.7 ± 2.6	72.7 ± 1.9	69.8 ± 20.3

The Tenth International Intercomparison of Environmental Dosimeters conducted in 1993 at Idaho Stat University and sponsored by the U.S. Department of Energy and the Idaho Stat University.

#### 10th International Intercomparison

115-10B	CaSO <sub>4</sub> : Dy Cards	Aug, 1993	Field	26.0 ± 2.3	27.0 ± 1.6	26.4 ± 10.2
115-10B	CaSO <sub>4</sub> : Dy Cards	Aug, 1993	Lab, 1	24.1 ± 1.7	25.9 ± 1.3	25.0 ± 9.4
115-10B	CaSO <sub>4</sub> : Dy Cards	Aug, 1993	Lab, 2	69.2 ± 3.0	72.7 ± 1.9	69.8 ± 20.3

The Tenth International Intercomparison of Environmental Dosimeters conducted in 1993 at Idaho Stat University and sponsored by the U.S. Department of Energy and the Idaho Stat University.

#### Teledyne Testing

89-1	LiF-100 Chips	Sep, 1989	Lab	21.0 ± 0.4	22.4	ND
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ND = No Data; Teledyne Testing was only performed by Teledyne.

Chips were irradiated by Teledyne Isotopes, Inc., Westwood, New Jersey, in September, 1989.

#### Teledyne Testing

89-2	Teledyne CaSO <sub>4</sub> : Dy Cards	Nov, 1989	Lab	20.9 ± 1.0	20.3	ND
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ND = No Data; Teledyne Testing was only performed by Teledyne.

Cards were irradiated by Teledyne Isotopes, Inc., Westwood, New Jersey, in June, 1990.

Table A-2. Crosscheck program results; Thermoluminescent Dosimeters. (TLDs).

Lab Code	TLD Type	Date	Measurement	mR		
				Teledyne Results ± 2 Sigma	Known Value ± 2 Sigma	Average ± 2 Sigma (All Participants)
<u>Teledyne Testing</u>						
90-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Jun, 1990	Lab	20.6 ± 1.4	19.6	ND
ND = No Data; Teledyne Testing was only performed by Teledyne. Cards were irradiated by Teledyne Isotopes, Inc., Westwood, New Jersey, in June, 1990.						
<u>Teledyne Testing</u>						
90-2	Teledyne CaSO <sub>4</sub> : Dy Cards	Jun, 1990	Lab	100.8 ± 4.3	100.0	ND
ND = No Data; Teledyne Testing was only performed by Teledyne. Cards were irradiated by Dosimetry Associates, Inc., Northville, MI, in October, 1990.						
<u>Teledyne Testing</u>						
91-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Oct, 1990	Lab, 1	33.4 ± 2.0	32.0	ND
91-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Oct, 1990	Lab, 2	55.2 ± 4.7	58.8	ND
91-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Oct, 1990	Lab, 3	87.8 ± 6.2	85.5	ND
ND = No Data; Teledyne Testing was only performed by Teledyne. Cards were irradiated by Teledyne Isotopes, Inc., Westwood, New Jersey, in October, 1991.						
<u>Teledyne Testing</u>						
92-1	LiF-100 Chips	Feb, 1992	Lab, 1	11.1 ± 0.2	10.7	ND
92-1	LiF-100 Chips	Feb, 1992	Lab, 2	25.6 ± 0.5	25.4	ND
92-1	LiF-100 Chips	Feb, 1992	Lab, 3	46.4 ± 0.5	46.3	ND
ND = No Data; Teledyne Testing was only performed by Teledyne. Chips were irradiated by Teledyne Isotopes, Inc., Westwood, New Jersey, in February, 1992.						
<u>Teledyne Testing</u>						
92-2	Teledyne CaSO <sub>4</sub> : Dy Cards	Apr, 1992	Reader 1, #1	20.1 ± 0.1	20.1	ND
92-2	Teledyne CaSO <sub>4</sub> : Dy Cards	Apr, 1992	Reader 1, #2	40.6 ± 0.1	40.0	ND

Table A-2. Crosscheck program results; Thermoluminescent Dosimeters. (TLDs).

Lab Code	TLD Type	Date	Measurement	mR		
				Teledyne Results ± 2 Sigma	Known Value ± 2 Sigma	Average ± 2 Sigma (All Participants)
92-2	Teledyne CaSO <sub>4</sub> : Dy Cards	Apr, 1992	Reader 1, #3	60.0 ± 1.3	60.3	ND
92-2	Teledyne CaSO <sub>4</sub> : Dy Cards	Apr, 1992	Reader 2, #1	20.3 ± 0.3	20.1	ND
92-2	Teledyne CaSO <sub>4</sub> : Dy Cards	Apr, 1992	Reader 2, #2	39.2 ± 0.3	40.0	ND
92-2	Teledyne CaSO <sub>4</sub> : Dy Cards	Apr, 1992	Reader 2, #3	60.7 ± 0.4	60.3	ND

ND = No Data; Teledyne Testing was only performed by Teledyne.

Cards were irradiated by Teledyne Isotopes, Inc., Westwood, New Jersey, in April, 1992.

Teledyne Testing

93-1	Teledyne LiF-100 Chips	Mar, 1993	Lab, 1	10.0 ± 1.0	10.2	ND
93-1	Teledyne LiF-100 Chips	Mar, 1993	Lab, 2	25.2 ± 2.2	25.5	ND
93-1	Teledyne LiF-100 Chips	Mar, 1993	Lab, 3	42.7 ± 5.7	45.9	ND

ND = No Data; Teledyne Testing was only performed by Teledyne.

Chips were irradiated by Teledyne Isotopes, Inc., Westwood, New Jersey, in March, 1993. Due to a potential error of 10-12% when cards were irradiated, results of the testing on the cards will not be published. Data is available upon request.

Teledyne Testing

94-1	Teledyne LiF-100 Chips	Nov, 1994	Lab, 1	15.6 ± 0.4	14.9	ND
94-1	Teledyne LiF-100 Chips	Nov, 1994	Lab, 2	30.2 ± 0.4	29.8	ND
94-1	Teledyne LiF-100 Chips	Nov, 1994	Lab, 3	59.2 ± 0.3	59.7	ND
94-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Nov, 1994	Reader 1, #1	14.9 ± 0.1	14.9	ND
94-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Nov, 1994	Reader 1, #2	30.8 ± 0.1	29.8	ND

Table A-2. Crosscheck program results; Thermoluminescent Dosimeters. (TLDs).

Lab Code	TLD Type	Date	Measurement	mR		
				Teledyne Results $\pm 2$ Sigma	Known Value $\pm 2$ Sigma	Average $\pm 2$ Sigma (All Participants)
94-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Nov, 1994	Reader 1, #3	58.9 $\pm$ 0.3	59.7	ND
94-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Nov, 1994	Reader 2, #1	15.4 $\pm$ 0.2	14.9	ND
94-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Nov, 1994	Reader 2, #2	31.4 $\pm$ 0.2	29.8	ND
94-1	Teledyne CaSO <sub>4</sub> : Dy Cards	Nov, 1994	Reader 2, #3	60.1 $\pm$ 0.3	59.7	ND

ND = No Data; Teledyne Testing was only performed by Teledyne.

Cards were irradiated by Teledyne Isotopes, Inc., Westwood, New Jersey, in November, 1994.

Table A-3. In-house "spike" samples.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L <sup>a</sup>		
				Teledyne Results 2s, n=1 <sup>b</sup>	Known Activity	Control <sup>c</sup> Limits
SPW-4821	WATER	Jan, 1994	Ce-144	2593.1 ± 54.9	2692.5	1615.5 - 2961.8
SPW-4822	WATER	Jan, 1994	Ce-144	1705.1 ± 48.1	1749.8	1049.9 - 1924.8
SPW-4823	WATER	Jan, 1994	Ce-144	55.4 ± 17.5	49.0	29.4 - 59.0
SPW-4825	WATER	Jan, 1994	Gr. Alpha	34.4 ± 1.6	41.7	20.9 - 62.6
SPW-4825	WATER	Jan, 1994	Gr. Beta	33.6 ± 1.2	30.2	20.2 - 40.2
SPW-4826	WATER	Jan, 1994	Gr. Alpha	66.8 ± 2.1	83.4	41.7 - 125.1
SPW-4826	WATER	Jan, 1994	Gr. Beta	63.8 ± 1.5	60.4	50.4 - 70.4
SPMI-4848	MILK	Jan, 1994	Cs-134	27.2 ± 5.7	31.7	21.7 - 41.7
SPMI-4848	MILK	Jan, 1994	Cs-137	34.6 ± 8.2	34.8	24.8 - 44.8
SPMI-4848	MILK	Jan, 1994	Sr-89	28.2 ± 3.8	35.0	25.0 - 45.0
SPMI-4848	MILK	Jan, 1994	Sr-90	41.2 ± 1.2	40.7	32.6 - 48.8
SPMI-4849	MILK	Jan, 1994	Sr-89	9.5 ± 1.6	11.9	1.9 - 21.9
SPMI-4849	MILK	Jan, 1994	Sr-90	19.4 ± 0.8	20.1	10.1 - 30.1
SPMI-4862	MILK	Jan, 1994	Cs-134	328.3 ± 15.3	338.0	304.2 - 371.8
SPMI-4862	MILK	Jan, 1994	Cs-137	1019.6 ± 18.3	1114.4	1003.0 - 1225.8
SPAP-4953	AIR FILTER	Jan, 1994	Gr. Beta	4.8 ± 0.1	4.2	0.0 - 14.2
SPAP-4954	AIR FILTER	Jan, 1994	Cs-137	1.4 ± 0.1	1.3	0.8 - 1.8
SPW-4955	WATER	Jan, 1994	H-3	17080.0 ± 364.0	17163.0	13730.4 - 20595.6
SPW-4956	WATER	Jan, 1994	Co-60	1514.0 ± 46.2	1545.0	1390.5 - 1699.5
SPW-4956	WATER	Jan, 1994	Cs-134	433.7 ± 25.5	479.0	431.1 - 526.9
SPW-4956	WATER	Jan, 1994	Cs-137	742.7 ± 45.9	732.0	658.8 - 805.2
SPCH-4928	CHARCOAL CANISTER	Feb, 1994	I-131(g)	1449.9 ± 65.1	1452.8	871.7 - 1598.1
SPW-4934	WATER	Feb, 1994	I-131	76.4 ± 1.4	90.8	72.6 - 109.0
SPW-4934	WATER	Feb, 1994	I-131(g)	90.2 ± 7.6	90.8	54.5 - 100.8
SPMI-4935	MILK	Feb, 1994	I-131	40.4 ± 1.0	43.6	31.6 - 55.6
SPMI-4935	MILK	Feb, 1994	I-131(g)	41.8 ± 6.7	43.6	26.2 - 53.6
SPBS-5102	SEDIMENT	Mar, 1994	H-3	97.2 ± 1.0	105.4	0.0 - 630.0
SPW-5146	WATER	Mar, 1994	Sr-89	25.5 ± 3.9	26.4	16.4 - 36.4
SPW-5146	WATER	Mar, 1994	Sr-90	16.2 ± 1.1	18.8	8.8 - 28.8
SPW-646	WATER	Apr, 1994	H-3	9847.8 ± 294.9	9855.0	7884.0 - 11826.0
SPW-648	WATER	Apr, 1994	Co-60	21.6 ± 6.6	22.6	12.6 - 32.6
SPW-648	WATER	Apr, 1994	Cs-134	33.3 ± 8.5	33.6	23.6 - 43.6
SPW-648	WATER	Apr, 1994	Cs-137	37.6 ± 9.8	36.3	26.3 - 46.3
SPMI-650	MILK	Apr, 1994	Cs-134	52.0 ± 5.3	50.6	40.6 - 60.6

Table A-3. In-house "spike" samples.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L <sup>a</sup>		
				Teledyne Results 2s, n=1 <sup>b</sup>	Known Activity	Control <sup>c</sup> Limits
SPMI-650	MILK	Apr, 1994	Cs-137	61.6 ± 8.3	54.5	44.5 - 64.5
SPW-652	WATER	Apr, 1994	Gr. Alpha	44.8 ± 1.2	41.6	20.8 - 62.4
SPW-652	WATER	Apr, 1994	Gr. Beta	24.1 ± 1.0	25.4	15.4 - 35.4
SPAP-654	AIR FILTER	Apr, 1994	Cs-137	1.3 ± 0.1	1.3	0.8 - 1.8
SPW-974	WATER	May, 1994	Fe-55	56.7 ± 12.0	58.5	38.5 - 78.5
SPF-1023	FISH (JELLO)	May, 1994	Cs-137	6.9 ± 0.1	6.8	0.0 - 16.8
SPBS-1024	SEDIMENT	May, 1994	Cs-137	6.2 ± 0.1	6.0	0.0 - 16.0
SPW-1850	WATER	Jun, 1994	I-131	46.0 ± 0.7	51.8	39.8 - 63.8
SPW-1850	WATER	Jun, 1994	I-131(g)	50.9 ± 8.3	51.8	31.1 - 61.8
SPMI-1851	MILK	Jun, 1994	I-131	51.7 ± 0.6	51.8	39.8 - 63.8
SPMI-1851	MILK	Jun, 1994	I-131(g)	51.3 ± 10.8	51.8	31.1 - 61.8
SPVE-1854	VEGETATION (SAWDUST)	Jun, 1994	I-131(g)	0.9 ± 0.1	1.0	0.6 - 1.4
SPCH-1855	CHARCOAL CANISTER	Jun, 1994	I-131(g)	1.9 ± 0.1	1.8	1.1 - 2.5
SPW-3278	WATER	Jun, 1994	Gr. Alpha	20.8 ± 1.1	23.4	11.7 - 35.1
SPW-3278	WATER	Jun, 1994	Gr. Beta	29.5 ± 1.1	31.8	21.8 - 41.8
SPW-3276	WATER	Jul, 1994	H-3	24504.6 ± 421.7	25019.0	20015.2 - 30022.8
SPMI-3282	MILK	Jul, 1994	Sr-89	16.4 ± 4.8	22.5	12.5 - 32.5
SPMI-3282	MILK	Jul, 1994	Sr-90	25.3 ± 1.4	25.4	15.4 - 35.4
SPW-3284	WATER	Jul, 1994	Cs-137	240.8 ± 19.3	221.5	199.4 - 243.7
SPAP-3388	AIR FILTER	Jul, 1994	Gr. Beta	7.9 ± 0.1	8.3	0.0 - 18.3
SPAP-3390	AIR FILTER	Jul, 1994	Cs-137	1.3 ± 0.1	1.3	0.8 - 1.8
SPF-3603	FISH (JELLO)	Jul, 1994	Cs-137	8.3 ± 1.3	8.5	0.0 - 18.5
SPW-5549	WATER	Oct, 1994	I-131	77.4 ± 0.9	79.9	63.9 - 95.9
SPW-5549	WATER	Oct, 1994	I-131(g)	85.5 ± 9.5	79.9	47.9 - 89.9
SPMI-5550	MILK	Oct, 1994	Cs-134	35.0 ± 6.0	36.4	26.4 - 46.4
SPMI-5550	MILK	Oct, 1994	Cs-137	46.1 ± 9.4	44.1	34.1 - 54.1
SPMI-5550	MILK	Oct, 1994	I-131	65.2 ± 0.9	63.9	51.1 - 76.7
SPMI-5550	MILK	Oct, 1994	I-131(g)	68.4 ± 11.1	63.9	38.3 - 73.9
SPW-5594	WATER	Oct, 1994	I-131	92.5 ± 1.0	95.8	76.6 - 115.0
SPW-5594	WATER	Oct, 1994	I-131(g)	98.2 ± 10.1	95.8	57.5 - 105.8
SPVE-6067	VEGETATION (SAWDUST)	Oct, 1994	I-131(g)	1.7 ± 0.1	1.6	1.0 - 2.2
SPS-5946	SEDIMENT (BOTTOM)	Oct, 1994	Cs-134	0.3 ± 24.2	0.3	0.2 - 0.5
SPF-6208	FISH (JELLO)	Oct, 1994	Cs-137	11.6 ± 0.1	12.1	2.1 - 22.1

Table A-3. In-house "spike" samples.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L <sup>a</sup>		
				Teledyne Results 2s, n=1 <sup>b</sup>	Known Activity	Control <sup>c</sup> Limits
SPW-6955	WATER	Nov, 1994	Ni-63	1851.6 ± 34.3	1931.0	1158.6 - 2703.4
SPW-6994	WATER	Nov, 1994	Tc-99	63.2 ± 7.8	66.0	46.2 - 85.7
SPW-7440	WATER	Nov, 1994	H-3	24099.2 ± 423.9	24260.0	19408.0 - 29112.0
SPAP-7507	AIR FILTER	Nov, 1994	Cs-137	2.2 ± 0.0	1.9	1.2 - 2.7



Table A-4. In-house "blank" samples.

Lab Code	Sample Type	Sample Date	Analysis	Concentration pCi/L <sup>a</sup>		
				Teledyne Results (4.66 Sigma)		Acceptance Criteria (4.66 Sigma)
				LLD	Activity <sup>b</sup>	
SPW-4820	WATER	Jan 1994	Cs-134	<1.9	-1.76 ± 7.24	<10.0
SPW-4820	WATER	Jan 1994	Cs-137	<4.4	-0.31 ± 2.67	<10.0
SPW-4824	WATER	Jan 1994	Gr. Alpha	<0.3	0.00 ± 0.20	<1.0
SPW-4824	WATER	Jan 1994	Gr. Beta	<0.9	0.40 ± 0.59	<3.2
SPW-4827	WATER	Jan 1994	Co-60	<1.8	1.10 ± 1.04	<10.0
SPW-4827	WATER	Jan 1994	Cs-134	<1.9	0.51 ± 6.76	<10.0
SPW-4827	WATER	Jan 1994	Cs-137	<2.0	0.43 ± 0.84	<10.0
SPW-4827	WATER	Jan 1994	Gr. Alpha	<0.4	0.12 ± 0.25	<1.0
SPW-4827	WATER	Jan 1994	Gr. Beta	<0.8	0.21 ± 0.55	<3.2
SPW-4827	WATER	Jan 1994	H-3	<192.0	133.90 ± 101.00	<200.0
SPW-4827	WATER	Jan 1994	I-131	<0.3	-0.12 ± 0.14	<0.5
SPMI-4846	MILK	Jan 1994	Co-60	<3.6	0.62 ± 2.67	<10.0
SPMI-4846	MILK	Jan 1994	Cs-134	<5.4	0.52 ± 3.83	<10.0
SPMI-4846	MILK	Jan 1994	Cs-137	<3.4	-0.74 ± 2.93	<10.0
SPMI-4846	MILK	Jan 1994	I-131	<0.5	0.27 ± 0.34	<0.5
SPMI-4846	MILK	Jan 1994	Sr-89	<0.5	-0.54 ± 0.79	<5.0
SPMI-4846	MILK	Jan 1994	Sr-90	N/A	1.93 ± 0.44	<1.0
Low level of Sr-90 concentration in milk (1-5 pCi/L) is not unusual.						
SPAP-4950	AIR FILTER	Jan 1994	Co-60	<2.2	-2.61 ± 2.19	<10.0
SPAP-4950	AIR FILTER	Jan 1994	Cs-134	<3.1	-0.31 ± 3.65	<10.0
SPAP-4950	AIR FILTER	Jan 1994	Cs-137	<2.9	2.78 ± 23.94	<10.0
SPAP-4952	AIR FILTER	Jan 1994	Gr. Beta	<0.9	0.00 ± 0.58	<3.2
SPCH-4951	CHARCOAL CANISTER	Feb 1994	I-131(g)	<7.0	0.64 ± 4.80	<9.6
SPW-5054	WATER	Mar 1994	Ra-226	<0.1	0.01 ± 0.03	<1.0
SPW-5054	WATER	Mar 1994	Ra-228	<1.0	0.54 ± 0.67	<1.0
SPBS-5101	SEDIMENT	Mar 1994	Co-60	<5.9	-0.19 ± 1.63	<10.0
SPBS-5101	SEDIMENT	Mar 1994	Cs-134	<6.2	-31.20 ± 13.10	<10.0
SPBS-5101	SEDIMENT	Mar 1994	Cs-137	<4.4	-0.26 ± 2.75	<10.0
SPW-647	WATER	Apr 1994	Co-60	<5.8	0.56 ± 0.53	<10.0
SPW-647	WATER	Apr 1994	Cs-134	<3.4	0.86 ± 0.72	<10.0
SPW-647	WATER	Apr 1994	Cs-137	<5.1	2.65 ± 2.75	<10.0
SPW-647	WATER	Apr 1994	H-3	<191.5	148.40 ± 100.90	<200.0
SPW-647	WATER	Apr 1994	I-131	<0.5	-0.34 ± 0.22	<0.5
SPMI-649	MILK	Apr 1994	Co-60	<6.5	0.55 ± 1.39	<10.0



Table A-4. In-house "blank" samples.

Lab Code	Sample Type	Sample Date	Analysis	Concentration pCi/L <sup>a</sup>		
				Teledyne Results (4.66 Sigma)		Acceptance Criteria (4.66 Sigma)
				LLD	Activity <sup>b</sup>	
SPMI-649	MILK	Apr 1994	Cs-134	<3.4	-3.45 ± 5.60	< 10.0
SPMI-649	MILK	Apr 1994	Cs-137	<4.6	0.59 ± 3.98	< 10.0
SPMI-649	MILK	Apr 1994	I-131	<0.5	-0.11 ± 0.19	< 0.5
SPW-651	WATER	Apr 1994	Gr. Alpha	<0.4	0.14 ± 0.25	< 1.0
SPW-651	WATER	Apr 1994	Gr. Beta	<0.8	0.12 ± 0.54	< 3.2
SPAP-653	AIR FILTER	Apr 1994	Cs-134	<2.1	-0.12 ± 0.18	< 10.0
SPAP-653	AIR FILTER	Apr 1994	Cs-137	<3.4	1.05 ± 1.55	< 10.0
SPCH-654	CHARCOAL CANISTER	Apr 1994	I-131(g)	<6.1	0.96 ± 3.84	< 9.6
SPAP-4956	AIR FILTER	Apr 1994	Gr. Beta	<1.0	0.32 ± 0.96	< 3.2
SPW-974	WATER	May 1994	Fe-55	<0.8	0.10 ± 0.47	< 1000.0
SPF-1022	FISH (JELLO)	May 1994	Cs-134	<9.2	12.70 ± 31.70	< 10.0
SPF-1022	FISH (JELLO)	May 1994	Cs-137	<10.0	27.30 ± 58.30	< 10.0
SPW-1075	WATER	May 1994	Ra-226	<0.1	0.01 ± 0.04	< 1.0
SPBS-3254	SEDIMENT	May 1994	Co-60	<5.8	5.93 ± 8.06	< 10.0
SPBS-3254	SEDIMENT	May 1994	Cs-134	<2.0	5.67 ± 6.69	< 10.0
SPBS-3254	SEDIMENT	May 1994	Cs-137	<5.0	-2.11 ± 4.69	< 10.0
SPVE-1852	VEGETATION (SAWDUST)	Jun 1994	Cs-134	<5.4	-1.47 ± 2.14	< 10.0
SPVE-1852	VEGETATION (SAWDUST)	Jun 1994	Cs-137	<6.6	2.12 ± 3.44	< 10.0
SPVE-1852	VEGETATION (SAWDUST)	Jun 1994	I-131(g)	<5.6	-0.73 ± 1.08	< 20.0
SPW-3277	WATER	Jun 1994	Gr. Alpha	<0.3	0.10 ± 0.22	< 1.0
SPW-3277	WATER	Jun 1994	Gr. Beta	<0.8	0.14 ± 0.54	< 3.2
SPW-3275	WATER	Jul 1994	H-3	<154.9	22.81 ± 77.81	< 200.0
SPMI-3281	MILK	Jul 1994	Co-60	<3.6	0.87 ± 2.22	< 10.0
SPMI-3281	MILK	Jul 1994	Cs-134	<2.3	-0.45 ± 2.61	< 10.0
SPMI-3281	MILK	Jul 1994	Cs-137	<4.2	0.07 ± 2.28	< 10.0
SPMI-3281	MILK	Jul 1994	I-131	<0.2	0.10 ± 0.16	< 0.5
SPMI-3281	MILK	Jul 1994	Sr-89	<0.9	-0.54 ± 1.32	< 5.0
SPMI-3281	MILK	Jul 1994	Sr-90	N/A	2.29 ± 0.56	< 1.0
Low level of Sr-90 concentration in milk (1-5 pCi/L) is not unusual.						
SPW-3283	WATER	Jul 1994	Co-60	<2.2	-3.09 ± 3.52	< 10.0
SPW-3283	WATER	Jul 1994	Cs-134	<5.4	0.79 ± 3.13	< 10.0

Table A-4. In-house "blank" samples.

Lab Code	Sample Type	Sample Date	Analysis	Concentration pCi/L <sup>a</sup>		
				Teledyne Results (4.66 Sigma)		Acceptance Criteria (4.66 Sigma)
				LLD	Activity <sup>b</sup>	
SPW-3283	WATER	Jul 1994	Cs-137	<5.0	-0.10 ± 3.05	< 10.0
SPW-3283	WATER	Jul 1994	I-131	<0.4	0.14 ± 0.22	< 0.5
SPAP-3389	AIR FILTER	Jul 1994	Gr. Beta	<0.2	0.16 ± 0.26	< 3.2
SPAP-3391	AIR FILTER	Jul 1994	Co-60	<1.7	-0.74 ± 1.44	< 10.0
SPAP-3391	AIR FILTER	Jul 1994	Cs-134	<2.3	0.95 ± 4.86	< 10.0
SPAP-3391	AIR FILTER	Jul 1994	Cs-137	<4.1	-3.03 ± 3.15	< 10.0
SPF-3602	FISH (JELLO)	Jul 1994	Co-60	<3.6	-4.45 ± 4.27	< 10.0
SPF-3602	FISH (JELLO)	Jul 1994	Cs-134	<4.1	-3.91 ± 5.63	< 10.0
SPF-3602	FISH (JELLO)	Jul 1994	Cs-137	<4.7	-5.17 ± 5.80	< 10.0
SPMI-5551	MILK	Oct 1994	Cs-134	<4.3	0.90 ± 3.34	< 10.0
SPMI-5551	MILK	Oct 1994	Cs-137	<4.1	-0.55 ± 3.43	< 10.0
SPMI-5551	MILK	Oct 1994	I-131	<0.2	-0.03 ± 0.16	< 0.5
SPSO-5947	SOIL	Oct 1994	Cs-134	<2.3	-4.84 ± 4.84	< 10.0
SPSO-5947	SOIL	Oct 1994	Cs-137	<6.4	-0.50 ± 4.71	< 10.0
SPW-6995	WATER	Nov 1994	Tc-99	<4.2	1.24 ± 2.19	< 10.0
SPW-7441	WATER	Nov 1994	H-3	<169.0	-74.64 ± 80.38	< 200.0
SPW-7442	WATER	Nov 1994	H-3	<169.0	-37.02 ± 82.14	< 200.0
SPAP-7506	AIR FILTER	Nov 1994	Co-60	<2.1	0.17 ± 1.63	< 10.0
SPAP-7506	AIR FILTER	Nov 1994	Cs-134	<1.6	-1.08 ± 1.70	< 10.0
SPAP-7506	AIR FILTER	Nov 1994	Cs-137	<3.0	-0.55 ± 1.65	< 10.0

<sup>a</sup> Liquid sample results are reported in pCi/Liter, air filter sample results are in pCi/filter, charcoal sample results are in pCi/charcoal, and solid sample results are in pCi/kilogram.

<sup>b</sup> The activity reported is the net activity result.

Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
WATER-4607, 4608	Jan, 1994	Gr. Beta	1.35 ± 0.70	1.38 ± 0.70	1.37 ± 0.49
MILK-166, 167	Jan, 1994	Co-60	1.42 ± 3.73	-1.13 ± 4.25	0.15 ± 2.83
MILK-166, 167	Jan, 1994	Cs-137	-0.26 ± 3.42	-0.65 ± 2.61	-0.46 ± 2.15
MILK-166, 167	Jan, 1994	I-131(G)	-0.10 ± 0.22	0.22 ± 0.22	0.06 ± 0.16
WATER-4711, 4712	Jan, 1994	Gr. Beta	1.70 ± 0.60	1.80 ± 0.60	1.75 ± 0.42
MILK-187, 188	Jan, 1994	Co-60	0.05 ± 2.88	-1.43 ± 3.35	-0.69 ± 2.21
MILK-187, 188	Jan, 1994	Cs-137	0.16 ± 1.87	1.86 ± 2.61	1.01 ± 1.61
MILK-187, 188	Jan, 1994	I-131	0.16 ± 0.18	0.13 ± 0.23	0.15 ± 0.15
WATER-4664, 4665	Jan, 1994	Gr. Beta	8.80 ± 1.80	4.40 ± 1.40	6.60 ± 1.14
A review of the raw data revealed no errors or discrepancies. The sample was reanalyzed. The result of the reanalysis was 6.6 ± 1.5 pCi/L. No further action is planned.					
WATER-4664, 4665	Jan, 1994	H-3	92.98 ± 95.90	37.19 ± 93.63	65.09 ± 67.01
WATER-4687, 4688	Jan, 1994	Gr. Alpha	1.57 ± 1.48	0.00 ± 1.19	0.79 ± 0.95
WATER-4687, 4688	Jan, 1994	Gr. Beta	3.23 ± 0.82	2.51 ± 0.79	2.87 ± 0.57
WATER-4687, 4688	Jan, 1994	H-3	171.80 ± 98.99	183.40 ± 99.44	177.60 ± 70.16
WATER-4741, 4742	Jan, 1994	H-3	105.00 ± 101.00	127.00 ± 102.00	116.00 ± 71.77
MILK-208, 209	Jan, 1994	K-40	1,396.00 ± 148.00	1,586.00 ± 162.00	1,491.00 ± 109.71
MILK-208, 209	Jan, 1994	Sr-90	2.96 ± 0.56	3.58 ± 0.68	3.27 ± 0.44
WATER-4830, 4831	Jan, 1994	H-3	73.80 ± 89.38	79.33 ± 89.60	76.57 ± 63.28
WATER-4865, 4866	Jan, 1994	Gr. Beta	1.93 ± 0.19	1.94 ± 0.18	1.94 ± 0.13
WATER-5052, 5053	Jan, 1994	Gr. Beta	2.20 ± 0.55	2.58 ± 0.56	2.39 ± 0.39
WATER-4890, 4891	Jan, 1994	H-3	421.90 ± 109.00	454.80 ± 106.60	438.35 ± 76.23
WATER-4919, 4920	Jan, 1994	Gr. Beta	2.80 ± 0.80	3.40 ± 0.80	3.10 ± 0.57
WATER-4952, 4953	Feb, 1994	Gr. Beta	2.66 ± 0.55	2.14 ± 0.52	2.40 ± 0.38
WATER-5010, 5011	Feb, 1994	H-3	142.00 ± 99.00	119.00 ± 98.00	130.50 ± 69.65
MILK-250, 251	Feb, 1994	K-40	1,087.00 ± 77.00	1,036.00 ± 98.00	1,061.50 ± 62.32
MILK-250, 251	Feb, 1994	Sr-90	3.68 ± 0.62	4.09 ± 0.61	3.89 ± 0.43
MILK-271, 272	Feb, 1994	K-40	1,510.00 ± 90.00	1,520.00 ± 110.00	1,515.00 ± 71.06
WATER-4978, 4979	Feb, 1994	H-3	83.75 ± 96.98	69.00 ± 96.41	76.78 ± 68.37
MILK-229, 230	Feb, 1994	Co-60	-1.48 ± 4.16	-1.60 ± 5.54	-1.54 ± 3.46
MILK-229, 230	Feb, 1994	Cs-137	-0.67 ± 3.05	-1.96 ± 3.72	-1.32 ± 2.41
MILK-229, 230	Feb, 1994	I-131	0.17 ± 0.24	0.10 ± 0.17	0.14 ± 0.15
WATER-5081, 5082	Feb, 1994	H-3	28.00 ± 95.00	72.00 ± 96.00	50.00 ± 67.53
WATER-5124, 5125	Feb, 1994	H-3	465.80 ± 113.65	358.00 ± 109.80	411.90 ± 79.01
WATER-5212, 5213	Feb, 1994	Gr. Beta	2.86 ± 0.67	2.22 ± 0.59	2.54 ± 0.45
WATER-5183, 5184	Feb, 1994	Co-60	1.46 ± 1.64	-0.70 ± 2.04	0.38 ± 1.31
WATER-5183, 5184	Feb, 1994	Cs-137	0.33 ± 1.63	0.37 ± 2.05	0.35 ± 1.31
WATER-5183, 5184	Feb, 1994	Gr. Beta	4.92 ± 1.09	4.52 ± 1.07	4.72 ± 0.76
MILK-292, 293	Mar, 1994	K-40	1,377.00 ± 85.00	1,364.00 ± 100.00	1,370.50 ± 65.62
MILK-292, 293	Mar, 1994	Sr-90	1.20 ± 0.38	1.49 ± 0.41	1.35 ± 0.28
MILK-5246, 5247	Mar, 1994	Gr. Beta	6.54 ± 0.83	6.42 ± 0.88	6.48 ± 0.60

Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
WATER-5270, 5271	Mar, 1994	Gr. Beta	3.28 ± 0.98	2.84 ± 0.96	3.06 ± 0.69
WATER-5293, 5294	Mar, 1994	H-3	620.18 ± 118.74	582.33 ± 117.46	601.26 ± 83.51
MILK-313, 314	Mar, 1994	I-131(G)	1.26 ± 47.70	-0.30 ± 0.78	0.48 ± 23.85
MILK-334, 335	Mar, 1994	K-40	1,392.00 ± 95.00	1,437.00 ± 115.00	1,414.50 ± 74.58
WATER-5400, 5401	Mar, 1994	H-3	77.70 ± 97.20	66.76 ± 96.54	72.23 ± 68.50
WATER-5485, 5486	Mar, 1994	H-3	336.00 ± 107.00	272.00 ± 105.00	304.00 ± 74.96
WATER-5446, 5447	Mar, 1994	Co-60	1.84 ± 4.35	0.07 ± 0.45	0.96 ± 2.19
WATER-5446, 5447	Mar, 1994	Cs-137	0.68 ± 1.61	1.01 ± 1.91	0.85 ± 1.25
WATER-5446, 5447	Mar, 1994	Gr. Beta	3.84 ± 1.25	3.72 ± 1.25	3.78 ± 0.88
WATER-5510, 5511	Mar, 1994	H-3	396.00 ± 89.00	458.51 ± 113.14	427.26 ± 71.98
WATER-5538, 5539	Mar, 1994	Gr. Beta	2.58 ± 0.62	2.02 ± 0.60	2.30 ± 0.43
WATER-5593, 5594	Mar, 1994	H-3	139.87 ± 101.14	169.37 ± 101.75	154.62 ± 71.73
WATER-5614, 5615	Mar, 1994	Co-60	0.36 ± 1.04	0.22 ± 2.15	0.29 ± 1.19
WATER-5614, 5615	Mar, 1994	Cs-137	0.90 ± 3.78	-0.39 ± 2.59	0.26 ± 2.29
WATER-5566, 5567	Mar, 1994	Gr. Beta	2.76 ± 0.50	2.20 ± 0.48	2.48 ± 0.35
WATER-72, 73	Mar, 1994	Gr. Beta	1.58 ± 0.50	1.46 ± 0.48	1.52 ± 0.35
WATER-49, 50	Apr, 1994	Gr. Beta	3.43 ± 0.92	3.43 ± 0.92	3.43 ± 0.65
WATER-102, 103	Apr, 1994	Gr. Beta	2.02 ± 0.50	2.05 ± 0.47	2.04 ± 0.34
WATER-102, 103	Apr, 1994	H-3	165.00 ± 102.00	79.00 ± 98.00	122.00 ± 70.72
WATER-187, 188	Apr, 1994	Gr. Beta	3.38 ± 0.66	3.19 ± 0.64	3.29 ± 0.46
MILK-246, 247	Apr, 1994	Co-60	1.75 ± 1.61	1.76 ± 1.61	1.76 ± 1.14
MILK-246, 247	Apr, 1994	Cs-137	0.10 ± 1.86	0.10 ± 1.86	0.10 ± 1.32
MILK-246, 247	Apr, 1994	I-131	0.07 ± 0.23	0.15 ± 0.34	0.11 ± 0.21
WATER-257, 258	Apr, 1994	Gr. Beta	3.28 ± 0.74	3.28 ± 0.79	3.28 ± 0.54
WATER-267, 268	Apr, 1994	Cs-137	0.19 ± 2.69	1.22 ± 2.18	0.71 ± 1.73
WATER-281, 282	Apr, 1994	Gr. Beta	15.73 ± 2.02	30.38 ± 2.60	23.06 ± 1.65
A review of the raw data revealed no errors or discrepancies. Both samples were recounted. The results of the recounts were in agreement with the initial results. The sample was reanalyzed. The result of the reanalysis was 30.7 ± 2.1 pCi/L. No further action is planned.					
WATER-281, 282	Apr, 1994	H-3	381,181.00 ± 1,740.00	378,406.00 ± 1,733.00	379,793.50 ± 1,227.89
WATER-454, 455	Apr, 1994	Gr. Beta	3.34 ± 2.10	3.67 ± 2.20	3.51 ± 1.52
WATER-405, 406	Apr, 1994	H-3	65.90 ± 98.21	61.95 ± 98.05	63.93 ± 69.39
MILK-464, 465	Apr, 1994	K-40	1,630.00 ± 130.00	1,589.00 ± 162.00	1,609.50 ± 103.86
WATER-516, 517	Apr, 1994	H-3	37.60 ± 94.95	69.26 ± 95.77	53.43 ± 67.43
WATER-267, 268	Apr, 1994	Cs-137	0.19 ± 2.69	1.22 ± 2.18	0.71 ± 1.73
WATER-616, 617	Apr, 1994	Gr. Beta	2.50 ± 0.52	3.04 ± 0.55	2.77 ± 0.38
WATER-616, 617	Apr, 1994	H-3	193.00 ± 102.00	203.00 ± 103.00	198.00 ± 72.48
WATER-739, 740	Apr, 1994	Co-60	0.84 ± 11.40	0.31 ± 0.43	0.58 ± 5.70
WATER-739, 740	Apr, 1994	Cs-137	-0.30 ± 3.59	0.77 ± 3.23	0.24 ± 2.41
WATER-739, 740	Apr, 1994	Cs-137	-0.30 ± 3.59	0.77 ± 3.23	0.24 ± 2.41
WATER-697, 698	Apr, 1994	Co-60	3.41 ± 4.36	2.05 ± 2.79	2.73 ± 2.59

Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
WATER-697, 698	Apr, 1994	Gr. Beta	2.93 ± 0.98	3.09 ± 0.78	3.01 ± 0.63
WATER-1003, 1004	May, 1994	Gr. Beta	2.77 ± 0.29	2.57 ± 0.34	2.67 ± 0.22
WATER-796, 797	May, 1994	Gr. Beta	1.66 ± 0.47	2.13 ± 0.48	1.90 ± 0.34
WATER-931, 932	May, 1994	H-3	531.26 ± 109.73	554.52 ± 110.55	542.89 ± 77.88
WATER-893, 894	May, 1994	Co-60	-1.45 ± 4.08	1.27 ± 3.23	-0.09 ± 2.60
WATER-893, 894	May, 1994	Cs-137	0.85 ± 2.25	1.46 ± 3.09	1.16 ± 1.91
WATER-893, 894	May, 1994	Gr. Beta	1.34 ± 1.85	-0.22 ± 1.75	0.56 ± 1.27
WATER-893, 894	May, 1994	H-3	158.96 ± 95.60	118.25 ± 93.99	138.61 ± 67.03
MILK-900, 901	May, 1994	Co-60	-2.76 ± 2.98	-1.74 ± 6.09	-2.25 ± 3.39
MILK-900, 901	May, 1994	Cs-137	-0.14 ± 1.31	0.54 ± 1.67	0.20 ± 1.06
MILK-900, 901	May, 1994	I-131	0.10 ± 0.17	0.11 ± 0.19	0.11 ± 0.13
MILK-1001, 1002	May, 1994	K-40	1,250.00 ± 180.00	1,370.00 ± 140.00	1,310.00 ± 114.02
WATER-1171, 1172	May, 1994	Gr. Beta	9.69 ± 2.01	7.49 ± 2.21	8.59 ± 1.49
WATER-1171, 1172	May, 1994	H-3	950.00 ± 108.00	1,012.00 ± 109.00	981.00 ± 76.72
MILK-1214, 1215	May, 1994	Co-60	0.72 ± 2.41	0.21 ± 0.58	0.47 ± 1.24
MILK-1214, 1215	May, 1994	Cs-137	-0.42 ± 1.47	1.42 ± 1.82	0.50 ± 1.17
MILK-1214, 1215	May, 1994	I-131	0.10 ± 0.19	0.06 ± 0.17	0.08 ± 0.13
WATER-1565, 1566	May, 1994	Gr. Beta	2.63 ± 0.88	2.61 ± 0.91	2.62 ± 0.63
WATER-1399, 1400	May, 1994	Gr. Beta	5.97 ± 0.67	5.46 ± 0.65	5.72 ± 0.47
MILK-1301, 1302	May, 1994	I-131(G)	-0.10 ± 0.18	0.00 ± 0.18	-0.05 ± 0.13
SEDIMENTS-1550, 1551	May, 1994	Gr. Beta	2.10 ± 0.10	2.15 ± 0.10	2.13 ± 0.07
WATER-1545, 1546	May, 1994	Gr. Beta	6.63 ± 0.62	5.38 ± 0.63	6.01 ± 0.44
WATER-1670, 1671	May, 1994	Co-60	-0.33 ± 0.55	1.35 ± 2.44	0.51 ± 1.25
WATER-1670, 1671	May, 1994	Cs-137	1.73 ± 2.95	-1.73 ± 2.64	0.00 ± 1.98
MILK-1510, 1511	May, 1994	I-131(G)	0.08 ± 0.13	-0.07 ± 0.12	0.01 ± 0.09
WATER-1520, 1521	May, 1994	H-3	48.44 ± 97.26	79.87 ± 98.52	54.16 ± 69.22
MILK-1744, 1745	Jun, 1994	I-131	0.90 ± 0.15	0.10 ± 0.15	0.50 ± 0.11
WATER-1786, 1787	Jun, 1994	Gr. Beta	31.36 ± 3.13	31.37 ± 2.98	31.37 ± 2.16
WATER-1786, 1787	Jun, 1994	H-3	236,078.00 ± 1,364.00	235,776.00 ± 1,363.00	235,927.00 ± 964.14
WATER-1843, 1844	Jun, 1994	Co-60	1.25 ± 1.03	0.48 ± 2.23	0.87 ± 1.23
WATER-1843, 1844	Jun, 1994	Cs-137	-0.02 ± 1.10	1.02 ± 1.79	0.50 ± 1.05
WATER-1843, 1844	Jun, 1994	H-3	138.74 ± 79.60	69.64 ± 76.69	104.19 ± 55.27
MILK-1818, 1819	Jun, 1994	Co-60	-1.28 ± 3.11	0.16 ± 4.48	-0.56 ± 2.73
MILK-1818, 1819	Jun, 1994	Cs-137	0.34 ± 2.27	1.92 ± 3.45	1.13 ± 2.06
MILK-1818, 1819	Jun, 1994	I-131(G)	-0.15 ± 0.16	0.04 ± 0.14	-0.06 ± 0.11
WATER-1882, 1883	Jun, 1994	Gr. Beta	5.00 ± 0.72	5.61 ± 0.77	5.31 ± 0.53
WATER-1882, 1883	Jun, 1994	H-3	-32.60 ± 76.90	-55.80 ± 76.90	-44.20 ± 54.38
GRASS-1900, 1901	Jun, 1994	Be-7	0.51 ± 0.08	0.49 ± 0.07	0.50 ± 0.05
GRASS-1900, 1901	Jun, 1994	K-40	4.31 ± 0.17	4.28 ± 0.17	4.30 ± 0.12
MILK-1932, 1983	Jun, 1994	I-131	0.00 ± 0.23	0.08 ± 0.13	0.04 ± 0.13
MILK-1982, 1983	Jun, 1994	K-40	1,562.00 ± 98.00	1,553.00 ± 116.00	1,557.50 ± 75.93



Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
WATER-1972, 1973	Jun, 1994	Gr. Beta	25.66 ± 2.41	23.67 ± 2.33	24.67 ± 1.68
MILK-2092, 2093	Jun, 1994	K-40	1,430.00 ± 170.00	1,430.00 ± 140.00	1,430.00 ± 110.11
WATER-2116, 2117	Jun, 1994	C-14	-28.00 ± 49.00	-9.00 ± 52.00	-18.50 ± 35.72
WATER-2116, 2117	Jun, 1994	Gr. Alpha	0.60 ± 0.50	1.10 ± 0.60	0.85 ± 0.39
WATER-2116, 2117	Jun, 1994	Gr. Beta	8.40 ± 0.80	7.20 ± 0.70	7.80 ± 0.53
WATER-2116, 2117	Jun, 1994	H-3	2,544.00 ± 152.00	2,522.00 ± 152.00	2,533.00 ± 107.48
WATER-2116, 2117	Jun, 1994	U-233/4	1.54 ± 0.20	1.46 ± 0.19	1.50 ± 0.14
WATER-2116, 2117	Jun, 1994	U-235	0.00 ± 0.06	0.00 ± 0.06	0.00 ± 0.04
WATER-2116, 2117	Jun, 1994	U-238	0.91 ± 0.16	1.07 ± 0.17	0.99 ± 0.12
WATER-2198, 2199	Jun, 1994	Gr. Beta	5.31 ± 0.92	5.16 ± 0.84	5.24 ± 0.62
MILK-2156, 2157	Jun, 1994	Co-60	-0.51 ± 3.05	1.54 ± 3.95	0.52 ± 2.50
MILK-2156, 2157	Jun, 1994	Cs-137	1.27 ± 3.59	1.16 ± 5.91	1.22 ± 3.46
MILK-2156, 2157	Jun, 1994	I-131(G)	-0.08 ± 0.23	0.01 ± 0.18	-0.04 ± 0.15
MILK-2194, 2195	Jun, 1994	I-131	0.15 ± 0.32	0.08 ± 0.21	0.12 ± 0.19
WATER-2238, 2239	Jun, 1994	Gr. Beta	1.50 ± 0.63	1.68 ± 0.62	1.59 ± 0.44
WATER-2363, 2364	Jun, 1994	Gr. Beta	69.49 ± 84.03	5.89 ± 81.31	37.69 ± 58.46
WATER-2336, 2337	Jun, 1994	Gr. Beta	6.17 ± 1.26	6.44 ± 1.27	6.31 ± 0.89
WATER-2336, 2337	Jun, 1994	H-3	23.60 ± 80.07	-20.93 ± 78.21	1.34 ± 55.96
SLIME-2480, 2481	Jun, 1994	Be-7	0.41 ± 0.20	0.40 ± 0.17	0.41 ± 0.13
SLIME-2480, 2481	Jun, 1994	Cs-137	0.03 ± 0.01	0.03 ± 0.01	0.03 ± 0.01
SLIME-2480, 2481	Jun, 1994	K-40	1.31 ± 0.20	1.33 ± 0.19	1.32 ± 0.14
MILK-2334, 2335	Jun, 1994	I-131	0.06 ± 0.17	0.04 ± 0.20	0.05 ± 0.13
WATER-2733, 2734	Jun, 1994	Gr. Beta	1.98 ± 0.45	1.57 ± 0.44	1.78 ± 0.31
WATER-3056, 3057	Jun, 1994	Sr-89	-0.64 ± 1.05	-0.12 ± 0.76	-0.38 ± 0.65
WATER-3056, 3057	Jun, 1994	Sr-90	0.47 ± 0.36	0.28 ± 0.25	0.38 ± 0.22
MILK-2405, 2406	Jun, 1994	K-40	1,730.00 ± 190.00	1,710.00 ± 120.00	1,720.00 ± 112.36
WATER-2432, 2433	Jun, 1994	H-3	26.85 ± 81.89	123.15 ± 85.91	75.00 ± 59.34
WATER-3000, 3001	Jun, 1994	H-3	213.55 ± 86.19	192.43 ± 85.32	202.99 ± 60.64
WATER-2459, 2460	Jun, 1994	Gr. Alpha	0.12 ± 0.20	0.02 ± 0.18	0.07 ± 0.13
WATER-2459, 2460	Jun, 1994	Gr. Beta	2.26 ± 0.15	2.03 ± 0.17	2.15 ± 0.11
WATER-2712, 2713	Jun, 1994	H-3	260.00 ± 90.00	170.00 ± 80.00	215.00 ± 60.21
WATER-2501, 2502	Jun, 1994	H-3	70.00 ± 80.00	137.00 ± 80.00	103.50 ± 56.57
WATER-2662, 2663	Jun, 1994	Gr. Beta	5.01 ± 0.89	5.53 ± 0.88	5.27 ± 0.63
WATER-2691, 2692	Jun, 1994	Gr. Beta	2.41 ± 0.52	2.12 ± 0.46	2.27 ± 0.35
WATER-2691, 2692	Jun, 1994	H-3	192.56 ± 87.03	108.28 ± 83.56	150.42 ± 60.33
MILK-2522, 2523	Jul, 1994	Co-60	5.72 ± 4.46	-3.21 ± 5.27	1.26 ± 3.45
MILK-2522, 2523	Jul, 1994	Cs-137	0.22 ± 3.28	2.03 ± 3.29	1.13 ± 2.32
MILK-2522, 2523	Jul, 1994	I-131(G)	0.08 ± 0.20	0.09 ± 0.23	0.09 ± 0.15
WATER-2543, 2544	Jul, 1994	Gr. Beta	1.13 ± 0.31	1.11 ± 0.44	1.12 ± 0.27
WATER-2543, 2544	Jul, 1994	K-40	1.20 ± 0.12	1.20 ± 0.12	1.20 ± 0.08
WATER-2631, 2632	Jul, 1994	Gr. Alpha	0.28 ± 0.87	0.84 ± 0.98	0.56 ± 0.66

Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
WATER-2631, 2632	Jul, 1994	Gr. Beta	8.05 ± 1.01	7.13 ± 0.99	7.59 ± 0.71
MILK-2863, 2864	Jul, 1994	I-131	0.10 ± 0.21	0.03 ± 0.20	0.07 ± 0.15
MILK-2863, 2864	Jul, 1994	K-40	1,360.00 ± 130.00	1,450.00 ± 100.00	1,405.00 ± 82.01
GRASS-2754, 2755	Jul, 1994	Be-7	2.15 ± 0.18	2.18 ± 0.08	2.17 ± 0.10
GRASS-2754, 2755	Jul, 1994	K-40	7.29 ± 0.35	6.93 ± 0.16	7.11 ± 0.19
WATER-2775, 2776	Jul, 1994	Co-60	-0.53 ± 3.13	0.30 ± 3.26	-0.12 ± 2.26
WATER-2775, 2776	Jul, 1994	Cs-134	-0.76 ± 3.35	-1.03 ± 3.16	-0.90 ± 2.30
WATER-2775, 2776	Jul, 1994	Cs-137	1.94 ± 3.03	0.65 ± 2.91	1.30 ± 2.10
WATER-2775, 2776	Jul, 1994	Gr. Beta	3.03 ± 0.52	2.94 ± 0.54	2.99 ± 0.37
WATER-2775, 2776	Jul, 1994	I-131	0.01 ± 0.15	0.07 ± 0.20	0.04 ± 0.13
MILK-2889, 2890	Jul, 1994	I-131	0.11 ± 0.21	0.15 ± 0.22	0.13 ± 0.15
WATER-2842, 2843	Jul, 1994	Gr. Beta	3.97 ± 1.14	5.20 ± 1.19	4.59 ± 0.82
WATER-2842, 2843	Jul, 1994	H-3	65.78 ± 83.65	32.30 ± 82.23	49.04 ± 58.65
WATER-2910, 2911	Jul, 1994	Gr. Beta	1.58 ± 0.44	1.48 ± 0.45	1.53 ± 0.31
WATER-2910, 2911	Jul, 1994	H-3	74.86 ± 82.57	146.79 ± 85.57	110.83 ± 59.46
WATER-2930, 2931	Jul, 1994	Gr. Beta	1.66 ± 0.56	2.19 ± 0.58	1.93 ± 0.40
MILK-2958, 2959	Jul, 1994	I-131	-0.07 ± 0.24	-0.06 ± 0.24	-0.07 ± 0.17
MILK-2958, 2959	Jul, 1994	K-40	1,445.00 ± 122.00	1,445.00 ± 134.00	1,445.00 ± 90.61
MILK-3010, 3011	Jul, 1994	Sr-89	-0.54 ± 1.01	-0.36 ± 0.73	-0.45 ± 0.62
MILK-3010, 3011	Jul, 1994	Sr-90	1.64 ± 0.55	1.34 ± 0.39	1.49 ± 0.34
WATER-3031, 3032	Jul, 1994	I-131	0.23 ± 0.24	0.24 ± 0.28	0.24 ± 0.18
MILK-3083, 3084	Jul, 1994	I-131	0.21 ± 0.22	0.08 ± 0.22	0.15 ± 0.16
MILK-3083, 3084	Jul, 1994	K-40	1,420.00 ± 170.00	1,380.00 ± 150.00	1,400.00 ± 113.36
WATER-3106, 3107	Jul, 1994	H-3	79.09 ± 80.43	98.42 ± 81.27	88.76 ± 57.17
WATER-3154, 3155	Jul, 1994	Gr. Beta	1.73 ± 0.76	2.20 ± 0.78	1.97 ± 0.54
URINE-3748, 3749	Jul, 1994	C-14	76.00 ± 83.00	74.00 ± 96.00	75.00 ± 63.45
URINE-3748, 3749	Jul, 1994	Gr. Alpha	0.30 ± 2.30	2.10 ± 2.50	1.20 ± 1.70
URINE-3748, 3749	Jul, 1994	Gr. Beta	3.90 ± 2.50	3.30 ± 2.70	3.60 ± 1.84
URINE-3748, 3749	Jul, 1994	H-3	175.00 ± 583.00	198.00 ± 584.00	186.50 ± 412.60
WATER-3209, 3210	Jul, 1994	H-3	-25.26 ± 82.29	0.87 ± 83.39	-12.20 ± 58.58
WATER-3234, 3235	Jul, 1994	H-3	7.67 ± 82.81	-38.33 ± 80.82	-15.33 ± 57.86
WATER-3261, 3262	Jul, 1994	Gr. Beta	4.42 ± 0.82	4.79 ± 0.87	4.61 ± 0.60
WATER-3310, 3311	Jul, 1994	Gr. Beta	2.60 ± 1.30	1.40 ± 1.20	2.00 ± 0.88
VEGETATION-3403, 3404	Jul, 1994	K-40	3.38 ± 0.41	3.50 ± 0.44	3.44 ± 0.30
WATER-3469, 3470	Jul, 1994	H-3	563.13 ± 99.60	510.56 ± 97.74	536.85 ± 69.77
WATER-3811, 3812	Jul, 1994	Co-60	5.57 ± 4.23	0.12 ± 2.26	2.85 ± 2.40
WATER-3811, 3812	Jul, 1994	Cs-137	2.93 ± 3.99	-0.35 ± 2.27	1.29 ± 2.30
WATER-3358, 3359	Jul, 1994	H-3	180.00 ± 100.00	200.00 ± 100.00	190.00 ± 70.71
WATER-3559, 3560	Aug, 1994	Gr. Beta	2.10 ± 0.78	1.41 ± 0.74	1.76 ± 0.54
GRASS-3586, 3587	Aug, 1994	Be-7	3.52 ± 0.51	3.68 ± 0.51	3.60 ± 0.36
GRASS-3586, 3587	Aug, 1994	Gr. Beta	7.42 ± 0.25	7.07 ± 0.23	7.25 ± 0.17

Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
GRASS-3586, 3587	Aug, 1994	K-40	7.39 ± 0.78	7.07 ± 0.79	7.23 ± 0.56
GRASS-3586, 3587	Aug, 1994	Sr-89	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01
GRASS-3586, 3587	Aug, 1994	Sr-90	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
WATER-3611, 3612	Aug, 1994	Gr. Beta	1.87 ± 0.57	2.02 ± 0.49	1.95 ± 0.38
MILK-3942, 3943	Aug, 1994	I-131	-0.14 ± 0.23	0.18 ± 0.25	0.02 ± 0.17
MILK-3942, 3943	Aug, 1994	K-40	1,544.00 ± 128.00	1,416.00 ± 191.00	1,480.00 ± 114.96
WATER-3638, 3639	Aug, 1994	H-3	147.41 ± 86.26	38.61 ± 81.71	93.01 ± 59.41
WATER-3683, 3684	Aug, 1994	H-3	7.07 ± 80.96	38.90 ± 82.34	22.99 ± 57.74
WATER-3727, 3728	Aug, 1994	Gr. Beta	4.47 ± 0.77	4.82 ± 0.84	4.65 ± 0.57
MILK-3842, 3843	Aug, 1994	K-40	1,419.00 ± 120.00	1,411.00 ± 142.00	1,415.00 ± 92.96
WATER-3869, 3870	Aug, 1994	Gr. Beta	4.15 ± 0.67	3.15 ± 0.64	3.65 ± 0.46
WATER-3869, 3870	Aug, 1994	H-3	43.82 ± 81.84	33.30 ± 81.38	38.56 ± 57.71
VEGETATION-3892, 3893	Aug, 1994	Gr. Beta	2.49 ± 0.08	2.54 ± 0.08	2.52 ± 0.06
VEGETATION-3892, 3893	Aug, 1994	K-40	1.89 ± 0.26	2.27 ± 0.28	2.08 ± 0.19
WATER-3964, 3965	Aug, 1994	Gr. Beta	3.91 ± 0.73	4.90 ± 0.83	4.41 ± 0.55
WATER-3913, 3914	Aug, 1994	Gr. Beta	4.26 ± 0.83	3.84 ± 0.73	4.05 ± 0.55
WATER-3991, 3992	Aug, 1994	Tc-99	84.90 ± 9.30	96.40 ± 9.90	90.65 ± 6.79
MILK-4016, 4017	Aug, 1994	Co-60	0.96 ± 3.58	-0.90 ± 0.43	0.03 ± 1.80
MILK-4016, 4017	Aug, 1994	Cs-137	-0.30 ± 2.66	2.33 ± 3.87	1.02 ± 2.35
MILK-4016, 4017	Aug, 1994	I-131	0.17 ± 0.22	0.04 ± 0.23	0.11 ± 0.16
MILK-4040, 4041	Aug, 1994	Sr-89	0.91 ± 1.05	-0.05 ± 0.82	0.43 ± 0.67
MILK-4040, 4041	Aug, 1994	Sr-90	0.92 ± 0.45	1.05 ± 0.40	0.99 ± 0.30
MILK-4459, 4460	Aug, 1994	K-40	1,528.00 ± 170.00	1,481.00 ± 151.00	1,504.50 ± 113.69
WATER-4061, 4062	Aug, 1994	Gr. Beta	4.56 ± 0.84	4.57 ± 0.79	4.57 ± 0.58
WATER-4113, 4114	Aug, 1994	Gr. Beta	1.62 ± 0.61	1.83 ± 0.64	1.73 ± 0.44
MILK-4168, 4169	Aug, 1994	K-40	1,300.00 ± 140.00	1,390.00 ± 140.00	1,345.00 ± 98.99
WATER-4284, 4285	Aug, 1994	Gr. Beta	5.42 ± 0.92	5.17 ± 0.89	5.30 ± 0.64
WATER-4504, 4505	Aug, 1994	H-3	378.00 ± 99.00	428.00 ± 100.00	403.00 ± 70.36
WATER-4259, 4260	Aug, 1994	Gr. Beta	2.92 ± 0.53	2.48 ± 0.50	2.70 ± 0.36
WATER-4308, 4309	Aug, 1994	Gr. Beta	2.07 ± 0.49	2.05 ± 0.50	2.06 ± 0.35
WATER-4308, 4309	Aug, 1994	H-3	172.74 ± 88.95	148.06 ± 87.97	160.40 ± 62.55
WATER-4333, 4334	Aug, 1994	Gr. Beta	5.13 ± 2.14	4.07 ± 2.03	4.60 ± 1.47
WATER-4333, 4334	Aug, 1994	H-3	161.29 ± 87.44	97.95 ± 84.86	129.62 ± 60.92
VEGETATION-4402, 4403	Aug, 1994	K-40	2.73 ± 0.12	2.95 ± 0.96	2.84 ± 0.48
MILK-4459, 4460	Aug, 1994	K-40	1,528.00 ± 170.00	1,481.00 ± 151.00	1,504.50 ± 113.69
WATER-4475, 4476	Aug, 1994	Gr. Beta	2.80 ± 0.28	2.85 ± 0.27	2.83 ± 0.19
WATER-4475, 4476	Aug, 1994	H-3	51.05 ± 80.26	56.34 ± 80.50	53.70 ± 56.84
MILK-4423, 4424	Sep, 1994	Co-60	-0.96 ± 5.00	-0.88 ± 4.05	-0.92 ± 3.22
MILK-4423, 4424	Sep, 1994	Cs-137	0.70 ± 4.06	-0.64 ± 2.83	0.03 ± 2.47
MILK-4423, 4424	Sep, 1994	I-131	0.21 ± 0.23	0.22 ± 0.23	0.22 ± 0.16
WATER-4446, 4447	Sep, 1994	H-3	186.23 ± 88.96	223.36 ± 90.42	204.80 ± 63.42



Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
MILK-4525, 4526	Sep, 1994	Co-60	2.80 ± 3.47	1.23 ± 2.86	2.02 ± 2.25
MILK-4525, 4526	Sep, 1994	Cs-137	0.39 ± 3.22	1.27 ± 2.36	0.83 ± 2.00
MILK-4525, 4526	Sep, 1994	I-131	0.16 ± 0.26	-0.05 ± 0.25	0.06 ± 0.18
WATER-4571, 4572	Sep, 1994	Gr. Beta	0.09 ± 0.22	0.12 ± 0.23	0.11 ± 0.16
WATER-4571, 4572	Sep, 1994	K-40	7.20 ± 1.00	7.20 ± 1.00	7.20 ± 0.71
WATER-3636, 3637	Sep, 1994	H-3	445.19 ± 99.02	529.66 ± 101.98	487.43 ± 71.07
MILK-4550, 4551	Sep, 1994	I-131	-0.01 ± 0.24	0.25 ± 0.28	0.12 ± 0.18
MILK-4550, 4551	Sep, 1994	K-40	1,410.90 ± 109.00	1,398.10 ± 155.00	1,404.50 ± 94.74
SLUDGE-4613, 4614	Sep, 1994	Ra-226	1.38 ± 0.04	1.39 ± 0.05	1.39 ± 0.03
WATER-4810, 4811	Sep, 1994	H-3	36,966.34 ± 557.20	37,782.99 ± 563.06	37,374.67 ± 396.08
WATER-4688, 4689	Sep, 1994	H-3	62.77 ± 82.11	-9.39 ± 78.95	26.69 ± 56.95
MILK-4836, 4887	Sep, 1994	I-131	-0.04 ± 0.25	-0.06 ± 0.24	-0.05 ± 0.17
MILK-4886, 4887	Sep, 1994	K-40	1,397.90 ± 152.00	1,319.00 ± 171.00	1,358.45 ± 114.40
WATER-4744, 4745	Sep, 1994	Gr. Alpha	7.10 ± 2.30	7.60 ± 2.20	7.35 ± 1.59
WATER-4744, 4745	Sep, 1994	Gr. Beta	16.40 ± 1.70	16.00 ± 1.70	16.20 ± 1.20
SEDIMENTS-6570, 6571	Sep, 1994	K-40	7.80 ± 0.59	7.68 ± 0.56	7.74 ± 0.41
MILK-4934, 4935	Sep, 1994	K-40	1,519.50 ± 170.00	1,421.30 ± 190.00	1,470.40 ± 127.48
SEDIMENT-5000, 5001	Sep, 1994	Gr. Beta	8.57 ± 2.00	8.57 ± 2.00	8.57 ± 1.41
MILK-5022, 5023	Sep, 1994	I-131	0.17 ± 0.19	0.29 ± 0.33	0.23 ± 0.19
VEGETATION-5253, 5254	Sep, 1994	Sr-89	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
VEGETATION-5253, 5254	Sep, 1994	Sr-90	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
WATER-5952, 5953	Sep, 1994	Co-60	1.73 ± 2.46	1.15 ± 2.36	1.44 ± 1.70
WATER-5952, 5953	Sep, 1994	Cs-137	1.75 ± 2.38	0.32 ± 2.24	1.03 ± 1.63
AIR FILTER-5348, 5349	Sep, 1994	Sr-89	420.10 ± 11.40	439.40 ± 22.00	429.75 ± 12.39
FILTER-5348, 5349	Sep, 1994	Sr-89	420.10 ± 11.40	439.40 ± 22.00	429.75 ± 12.39
AIR FILTER-5348, 5349	Sep, 1994	Sr-90	5.60 ± 1.20	7.10 ± 2.00	6.35 ± 1.17
FILTER-5728, 5729	Sep, 1994	Gr. Alpha	-0.83 ± 2.56	1.90 ± 2.63	0.54 ± 1.84
FILTER-5728, 5729	Sep, 1994	Gr. Alpha	-0.83 ± 2.56	1.90 ± 2.63	0.54 ± 1.84
FILTER-5728, 5729	Sep, 1994	Sr-89	2.02 ± 6.30	-3.02 ± 3.57	-0.50 ± 3.62
FILTER-5728, 5729	Sep, 1994	Sr-90	0.86 ± 1.94	1.66 ± 1.26	1.26 ± 1.16
WATER-5373, 5374	Sep, 1994	H-3	565.00 ± 96.00	561.00 ± 96.00	563.00 ± 67.88
MILK-5274, 5275	Oct, 1994	I-131	0.16 ± 0.21	0.18 ± 0.25	0.17 ± 0.16
SOIL-5394, 5395	Oct, 1994	Be-7	0.66 ± 0.36	0.87 ± 0.52	0.77 ± 0.32
SOIL-5394, 5395	Oct, 1994	Cs-137	0.24 ± 0.06	0.20 ± 0.05	0.22 ± 0.04
SOIL-5394, 5395	Oct, 1994	Cs-137	0.24 ± 0.06	0.20 ± 0.05	0.22 ± 0.04
SOIL-5394, 5395	Oct, 1994	Gr. Alpha	8.89 ± 2.52	9.72 ± 2.71	9.30 ± 1.85
SOIL-5394, 5395	Oct, 1994	Gr. Beta	27.15 ± 2.36	27.83 ± 2.24	27.49 ± 1.63
SOIL-5394, 5395	Oct, 1994	K-40	22.93 ± 1.20	22.40 ± 1.36	22.67 ± 0.91
SOIL-5394, 5395	Oct, 1994	Sr-89	0.00 ± 0.03	0.02 ± 0.03	0.01 ± 0.02
SOIL-5394, 5395	Oct, 1994	Sr-90	0.09 ± 0.01	0.08 ± 0.01	0.08 ± 0.01
WATER-5421, 5422	Oct, 1994	Gr. Beta	2.56 ± 0.53	3.54 ± 0.51	3.05 ± 0.37

Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
WATER-5421, 5422	Oct, 1994	K-40	0.87 ± 0.09	0.95 ± 0.10	0.91 ± 0.06
MILK-5527, 5528	Oct, 1994	Co-60	-1.11 ± 3.26	0.89 ± 3.88	-0.11 ± 2.53
MILK-5527, 5528	Oct, 1994	Cs-137	3.21 ± 2.44	-0.55 ± 3.51	1.33 ± 2.14
MILK-5527, 5528	Oct, 1994	I-131	0.00 ± 0.18	-0.03 ± 0.20	-0.02 ± 0.13
VEGETATION-5573, 5574	Oct, 1994	K-40	3.00 ± 0.30	2.82 ± 0.37	2.91 ± 0.24
MILK-5552, 5553	Oct, 1994	Co-60	2.04 ± 3.26	1.32 ± 4.10	1.68 ± 2.62
MILK-5552, 5553	Oct, 1994	Cs-134	-0.79 ± 2.79	0.25 ± 2.99	-0.27 ± 2.04
MILK-5552, 5553	Oct, 1994	Cs-137	1.03 ± 2.58	-0.53 ± 3.59	0.25 ± 2.21
MILK-5552, 5553	Oct, 1994	I-131	0.10 ± 0.22	-0.09 ± 0.21	0.01 ± 0.15
MILK-5552, 5553	Oct, 1994	I-131	0.10 ± 0.22	-0.09 ± 0.21	0.01 ± 0.15
MILK-5552, 5553	Oct, 1994	K-40	1,468.10 ± 122.00	1,322.00 ± 146.00	1,395.05 ± 95.13
MILK-5552, 5553	Oct, 1994	Sr-89	0.69 ± 1.06	-0.08 ± 0.88	0.31 ± 0.69
MILK-5552, 5553	Oct, 1994	Sr-90	1.73 ± 0.45	1.37 ± 0.39	1.55 ± 0.29
WATER-5595, 5596	Oct, 1994	I-131	0.13 ± 0.21	0.12 ± 0.26	0.12 ± 0.17
FISH-5637, 5638	Oct, 1994	Co-60	-0.06 ± 1.28	-0.82 ± 1.92	-0.44 ± 1.15
FISH-5637, 5638	Oct, 1994	Cs-137	0.27 ± 1.25	2.02 ± 1.65	1.15 ± 1.04
SEDIMENT-5850, 5851	Oct, 1994	Cs-137	0.22 ± 0.04	0.22 ± 0.05	0.22 ± 0.03
SEDIMENT-5850, 5851	Oct, 1994	K-40	13.53 ± 0.85	12.20 ± 0.85	12.87 ± 0.60
WATER-5658, 5659	Oct, 1994	Gr. Beta	7.42 ± 1.07	7.97 ± 1.03	7.70 ± 0.74
WATER-5682, 5683	Oct, 1994	Co-60	0.16 ± 3.36	2.01 ± 3.54	1.09 ± 2.44
WATER-5682, 5683	Oct, 1994	Cs-137	0.23 ± 3.07	0.70 ± 3.68	0.47 ± 2.40
WATER-5682, 5683	Oct, 1994	H-3	78.63 ± 76.44	-41.76 ± 71.13	18.44 ± 52.21
WATER-5707, 5708	Oct, 1994	H-3	12,727.10 ± 1,756.35	12,799.14 ± 1,766.14	12,763.12 ± 1,245.39
SEDIMENTS-5829, 5830	Oct, 1994	Co-60	0.40 ± 1.51	-0.58 ± 1.68	-0.09 ± 1.13
SEDIMENTS-5829, 5830	Oct, 1994	Cs-137	0.19 ± 0.04	0.19 ± 0.05	0.19 ± 0.03
GRASS-5879, 5880	Oct, 1994	Be-7	2.40 ± 0.12	2.40 ± 0.13	2.40 ± 0.09
GRASS-5879, 5880	Oct, 1994	K-40	6.55 ± 0.22	6.58 ± 0.25	6.56 ± 0.17
VEGETATION-5903, 5904	Oct, 1994	K-40	3.40 ± 0.38	3.13 ± 0.29	3.26 ± 0.24
VEGETATION-5903, 5904	Oct, 1994	Sr-89	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
VEGETATION-5903, 5904	Oct, 1994	Sr-90	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
WATER-5928, 5929	Oct, 1994	H-3	402.89 ± 94.65	446.30 ± 96.23	424.59 ± 67.49
WATER-6018, 6019	Oct, 1994	Gr. Beta	2.40 ± 0.69	1.59 ± 0.44	1.99 ± 0.41
SEDIMENTS-6301, 6302	Oct, 1994	Co-60	1.07 ± 0.06	1.07 ± 0.06	1.07 ± 0.04
SEDIMENTS-6301, 6302	Oct, 1994	Cs-137	1.64 ± 0.10	1.57 ± 0.08	1.60 ± 0.06
SEDIMENTS-6301, 6302	Oct, 1994	Gr. Beta	11.82 ± 1.72	8.28 ± 1.83	10.05 ± 1.26
SEDIMENTS-6301, 6302	Oct, 1994	Mn-54	0.74 ± 0.06	0.79 ± 0.08	0.77 ± 0.05
WATER-6070, 6071	Oct, 1994	I-131	0.07 ± 0.22	-0.17 ± 0.21	-0.05 ± 0.15
WATER-6116, 6117	Oct, 1994	H-3	-7.55 ± 76.85	-21.48 ± 76.21	-14.51 ± 54.12
SEDIMENT-6256, 6257	Oct, 1994	Gr. Beta	5.47 ± 1.69	7.44 ± 1.37	6.46 ± 1.09
SEDIMENT-6256, 6257	Oct, 1994	K-40	9.34 ± 0.27	9.34 ± 0.29	9.34 ± 0.19
SEDIMENT-6256, 6257	Oct, 1994	Ra-226	0.13 ± 0.02	0.11 ± 0.02	0.12 ± 0.01

Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
SEDIMENT-6256, 6257	Oct, 1994	Ra-228	0.06 ± 0.01	0.05 ± 0.01	0.05 ± 0.01
MILK-6091, 6092	Oct, 1994	I-131	0.22 ± 0.24	0.03 ± 0.22	0.12 ± 0.16
WATER-6139, 6140	Oct, 1994	H-3	23,478.00 ± 782.00	23,509.00 ± 782.00	23,493.50 ± 552.96
FISH-6162, 6163	Oct, 1994	Co-60	0.00 ± 0.01	0.01 ± 0.02	0.01 ± 0.01
FISH-6162, 6163	Oct, 1994	Co-60	0.09 ± 0.03	0.08 ± 0.02	0.09 ± 0.02
WATER-6635, 6636	Oct, 1994	Co-60	1.83 ± 2.42	-0.20 ± 1.66	0.81 ± 1.47
WATER-6635, 6636	Oct, 1994	Cs-137	1.07 ± 3.38	0.68 ± 2.25	0.88 ± 2.03
GRASS-6235, 6236	Oct, 1994	Be-7	1.89 ± 0.14	1.93 ± 0.12	1.91 ± 0.09
GRASS-6235, 6236	Oct, 1994	K-40	7.03 ± 0.28	6.80 ± 0.24	6.91 ± 0.19
WATER-6277, 6278	Oct, 1994	Gr. Beta	2.38 ± 0.56	2.37 ± 0.56	2.38 ± 0.40
WATER-6277, 6278	Oct, 1994	H-3	-4.11 ± 79.62	66.30 ± 89.86	31.10 ± 60.03
WATER-6489, 6490	Oct, 1994	Gr. Beta	1.98 ± 0.49	2.04 ± 0.46	2.01 ± 0.34
WATER-6489, 6490	Oct, 1994	H-3	742.19 ± 106.47	763.16 ± 107.15	752.68 ± 75.53
WATER-6214, 6215	Oct, 1994	H-3	4,466.00 ± 189.00	4,595.00 ± 191.00	4,530.50 ± 134.35
WATER-6327, 6328	Oct, 1994	H-3	131.64 ± 82.83	147.29 ± 83.49	139.46 ± 58.80
SOIL-6447, 6448	Oct, 1994	AC-228	0.72 ± 0.06	0.68 ± 0.05	0.70 ± 0.04
SOIL-6447, 6448	Oct, 1994	BI-212	0.67 ± 0.17	0.67 ± 0.10	0.67 ± 0.10
SOIL-6447, 6448	Oct, 1994	BI-214	0.52 ± 0.02	0.53 ± 0.02	0.53 ± 0.02
SOIL-6447, 6448	Oct, 1994	Gr. Alpha	6.54 ± 2.67	6.62 ± 2.51	6.58 ± 1.83
SOIL-6447, 6448	Oct, 1994	Gr. Beta	21.52 ± 2.41	20.61 ± 2.42	21.06 ± 1.71
SOIL-6447, 6448	Oct, 1994	K-40	18.07 ± 0.37	18.72 ± 0.31	18.40 ± 0.24
SOIL-6447, 6448	Oct, 1994	PB-212	0.71 ± 0.02	0.68 ± 0.02	0.70 ± 0.02
SOIL-6447, 6448	Oct, 1994	PB-214	0.58 ± 0.03	0.60 ± 0.03	0.59 ± 0.02
SOIL-6447, 6448	Oct, 1994	RA-226	1.15 ± 0.17	0.96 ± 0.16	1.06 ± 0.11
SOIL-6447, 6448	Oct, 1994	TL-208	0.24 ± 0.02	0.25 ± 0.01	0.24 ± 0.01
FISH-6372, 6373	Oct, 1994	Co-60	0.00 ± 0.02	0.01 ± 0.02	0.00 ± 0.01
FISH-6372, 6373	Oct, 1994	Cs-137	0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01
WATER-6468, 6469	Oct, 1994	Gr. Beta	1.76 ± 0.47	1.79 ± 0.49	1.78 ± 0.34
WATER-6468, 6469	Oct, 1994	H-3	137.58 ± 84.56	90.36 ± 82.58	113.97 ± 59.10
WATER-6401, 6402	Nov, 1994	Gr. Beta	1.78 ± 0.47	1.67 ± 0.64	1.72 ± 0.40
SEDIMENTS-6422, 6423	Nov, 1994	Gr. Beta	6.06 ± 0.61	6.44 ± 0.59	6.25 ± 0.42
SEDIMENTS-6422, 6423	Nov, 1994	K-40	8.18 ± 0.49	7.18 ± 0.56	7.68 ± 0.37
SEDIMENTS-6422, 6423	Nov, 1994	Sr-89	0.01 ± 0.01	0.00 ± 0.02	0.00 ± 0.01
SEDIMENTS-6422, 6423	Nov, 1994	Sr-90	0.00 ± 0.00	0.00 ± 0.01	0.00 ± 0.00
WATER-6534, 6535	Nov, 1994	H-3	67.94 ± 82.60	36.31 ± 81.24	52.13 ± 57.93
WATER-6614, 6615	Nov, 1994	Gr. Beta	4.97 ± 2.01	3.94 ± 1.82	4.45 ± 1.35
WATER-6614, 6615	Nov, 1994	H-3	30.68 ± 81.46	-4.05 ± 79.96	13.31 ± 57.07
WATER-6746, 6747	Nov, 1994	H-3	2,734.00 ± 176.00	2,851.00 ± 178.00	2,792.50 ± 125.16
WATER-6767, 6768	Nov, 1994	H-3	107.00 ± 83.00	95.00 ± 82.00	101.00 ± 58.34
WATER-6788, 6789	Nov, 1994	Co-60	-1.87 ± 2.17	-0.16 ± 3.22	-1.01 ± 1.94
WATER-6788, 6789	Nov, 1994	Cs-137	1.60 ± 3.68	-1.81 ± 3.04	-0.11 ± 2.39

Table A-5. In-house "duplicate" samples.

Lab Codes <sup>b</sup>	Sample Date	Analysis	Concentration in pCi/L <sup>a</sup>		
			First Result	Second Result	Averaged Result
WATER-6788, 6789	Nov, 1994	Gr. Beta	5.20 ± 1.30	3.00 ± 0.90	4.10 ± 0.71
WATER-6985, 6986	Nov, 1994	Gr. Beta	2.02 ± 0.46	1.99 ± 0.48	2.00 ± 0.33
WATER-7059, 7060	Nov, 1994	Gr. Beta	8.62 ± 1.30	7.68 ± 1.70	8.15 ± 1.07
WATER-7059, 7060	Nov, 1994	H-3	0.00 ± 100.12	0.00 ± 100.12	0.00 ± 70.79
WATER-7615, 7616	Nov, 1994	Co-60	1.33 ± 2.68	1.43 ± 3.14	1.38 ± 2.06
WATER-7615, 7616	Nov, 1994	Cs-137	-1.64 ± 3.77	1.05 ± 3.01	-0.30 ± 2.41
MILK-7144, 7145	Nov, 1994	I-131	0.24 ± 0.28	0.27 ± 0.32	0.26 ± 0.21
MILK-7144, 7145	Nov, 1994	K-40	1,226.80 ± 161.00	1,298.20 ± 152.00	1,262.50 ± 110.71
MILK-7144, 7145	Nov, 1994	Sr-89	0.52 ± 0.73	-0.47 ± 0.75	0.03 ± 0.52
MILK-7144, 7145	Nov, 1994	Sr-90	0.79 ± 0.40	1.12 ± 0.46	0.96 ± 0.30
SOIL-7193, 7194	Nov, 1994	Cs-137	0.08 ± 0.04	0.09 ± 0.03	0.09 ± 0.02
SOIL-7193, 7194	Nov, 1994	Gr. Alpha	11.65 ± 4.05	8.15 ± 3.44	9.90 ± 2.66
SOIL-7193, 7194	Nov, 1994	Gr. Beta	21.96 ± 2.80	18.00 ± 2.63	19.98 ± 1.92
SOIL-7193, 7194	Nov, 1994	K-40	15.93 ± 0.83	17.12 ± 0.78	16.53 ± 0.57
WATER-7594, 7595	Nov, 1994	Co-60	2.38 ± 3.00	-2.71 ± 3.15	-0.17 ± 2.18
WATER-7594, 7595	Nov, 1994	Cs-137	1.52 ± 2.62	1.55 ± 2.89	1.54 ± 1.95
GRASS-7246, 7247	Nov, 1994	Be-7	5.25 ± 0.19	5.30 ± 0.21	5.27 ± 0.14
GRASS-7246, 7247	Nov, 1994	K-40	5.76 ± 0.29	5.96 ± 0.35	5.86 ± 0.23
WATER-7367, 7368	Nov, 1994	Gr. Beta	6.00 ± 0.61	4.93 ± 0.51	5.46 ± 0.40
WATER-7367, 7368	Nov, 1994	H-3	-67.81 ± 80.94	-98.69 ± 79.54	-83.25 ± 56.74
WATER-7288, 7289	Dec, 1994	Gr. Beta	2.21 ± 0.72	2.57 ± 0.73	2.39 ± 0.52
WATER-7330, 7331	Dec, 1994	Co-60	-0.29 ± 2.79	-0.97 ± 2.68	-0.63 ± 1.93
WATER-7330, 7331	Dec, 1994	Cs-137	1.37 ± 2.82	1.22 ± 2.44	1.30 ± 1.86
WATER-7330, 7331	Dec, 1994	Gr. Beta	2.55 ± 0.75	2.38 ± 0.77	2.46 ± 0.54
MILK-7391, 7392	Dec, 1994	I-131(G)	1.57 ± 2.82	-2.96 ± 4.55	-0.70 ± 2.68
WATER-7536, 7537	Dec, 1994	H-3	142.34 ± 83.52	61.00 ± 79.84	101.67 ± 57.77
WATER-7639, 7640	Dec, 1994	Gr. Beta	5.52 ± 0.83	4.83 ± 0.77	5.18 ± 0.57
WATER-7639, 7640	Dec, 1994	H-3	60.87 ± 82.65	23.60 ± 80.95	42.24 ± 57.84
WATER-7691, 7692	Dec, 1994	H-3	117.13 ± 84.51	89.90 ± 83.26	103.51 ± 59.32
WATER-7838, 7839	Dec, 1994	Co-60	3.81 ± 2.82	-0.32 ± 2.18	1.74 ± 1.78
WATER-7838, 7839	Dec, 1994	Cs-137	1.16 ± 2.94	-0.24 ± 2.72	0.46 ± 2.00
WATER-7838, 7839	Dec, 1994	Gr. Beta	2.68 ± 0.83	3.88 ± 0.96	3.28 ± 0.63
WATER-7940, 7941	Dec, 1994	Gr. Beta	1.96 ± 0.42	2.39 ± 0.46	2.18 ± 0.31
MILK-7889, 7890	Dec, 1994	K-40	1,468.10 ± 191.00	1,373.20 ± 160.00	1,420.65 ± 124.58
WATER-7961, 7962	Dec, 1994	Gr. Beta	2.01 ± 1.06	2.57 ± 1.06	2.29 ± 0.75
WATER-7961, 7962	Dec, 1994	H-3	49.77 ± 82.72	-9.95 ± 79.98	19.91 ± 57.53
WATER-8107, 8108	Dec, 1994	Gr. Alpha	0.26 ± 0.77	0.59 ± 0.82	0.43 ± 0.56
WATER-8107, 8108	Dec, 1994	Gr. Beta	1.21 ± 0.69	1.54 ± 0.69	1.38 ± 0.49
WATER-8086, 8087	Dec, 1994	Gr. Beta	3.30 ± 0.64	2.51 ± 0.57	2.91 ± 0.43
WATER-8009, 8010	Dec, 1994	H-3	71.38 ± 82.32	11.79 ± 79.58	41.59 ± 57.25

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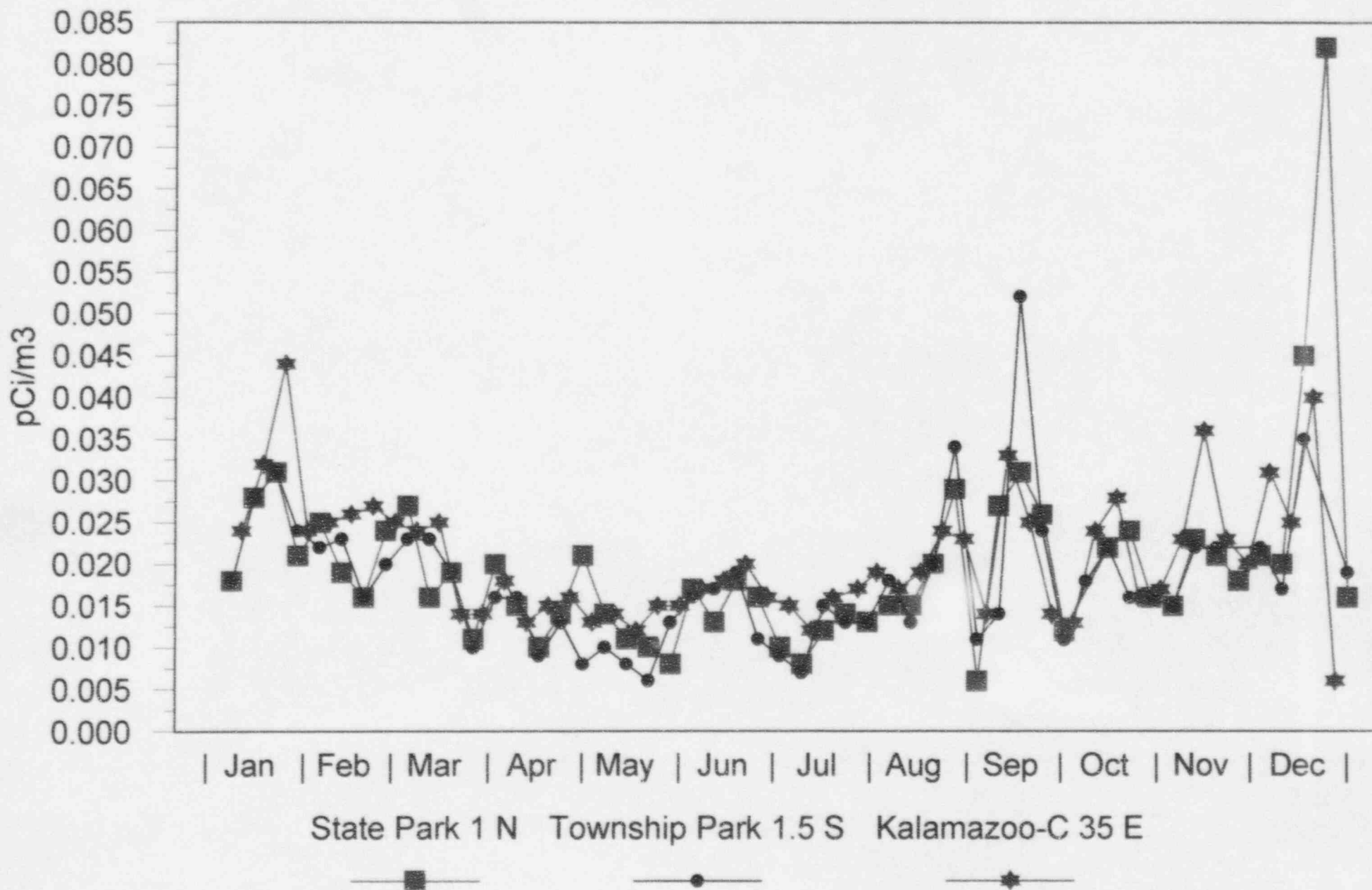
Enclosure F: Data Graphs



# 1994 PALISADES AIR PARTICULATE

## Weekly Gross Beta

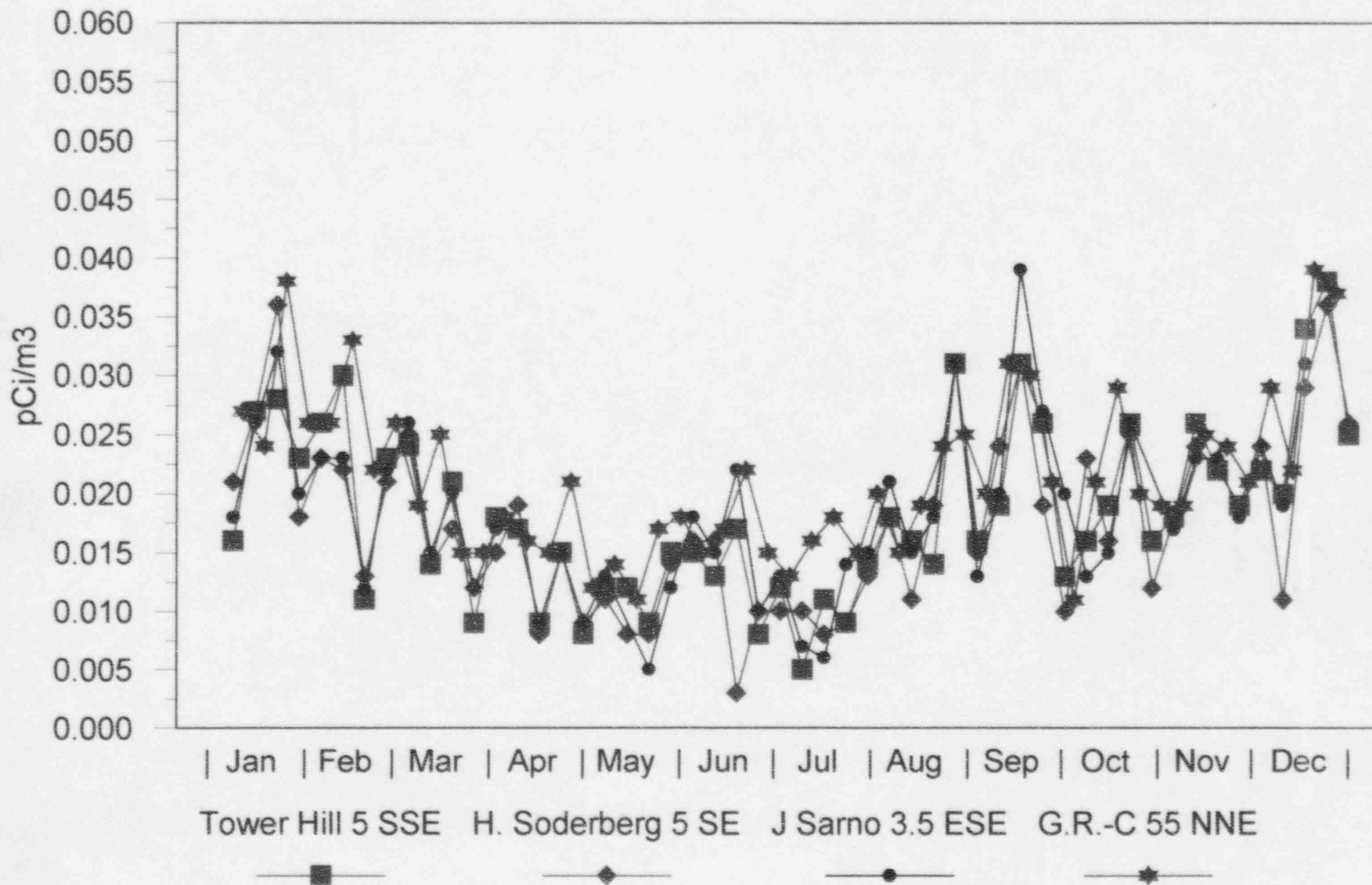
Kalamazoo-Control vs Township Park, State Park



# 1994 PALISADES AIR PARTICULATE

## Weekly Gross Beta

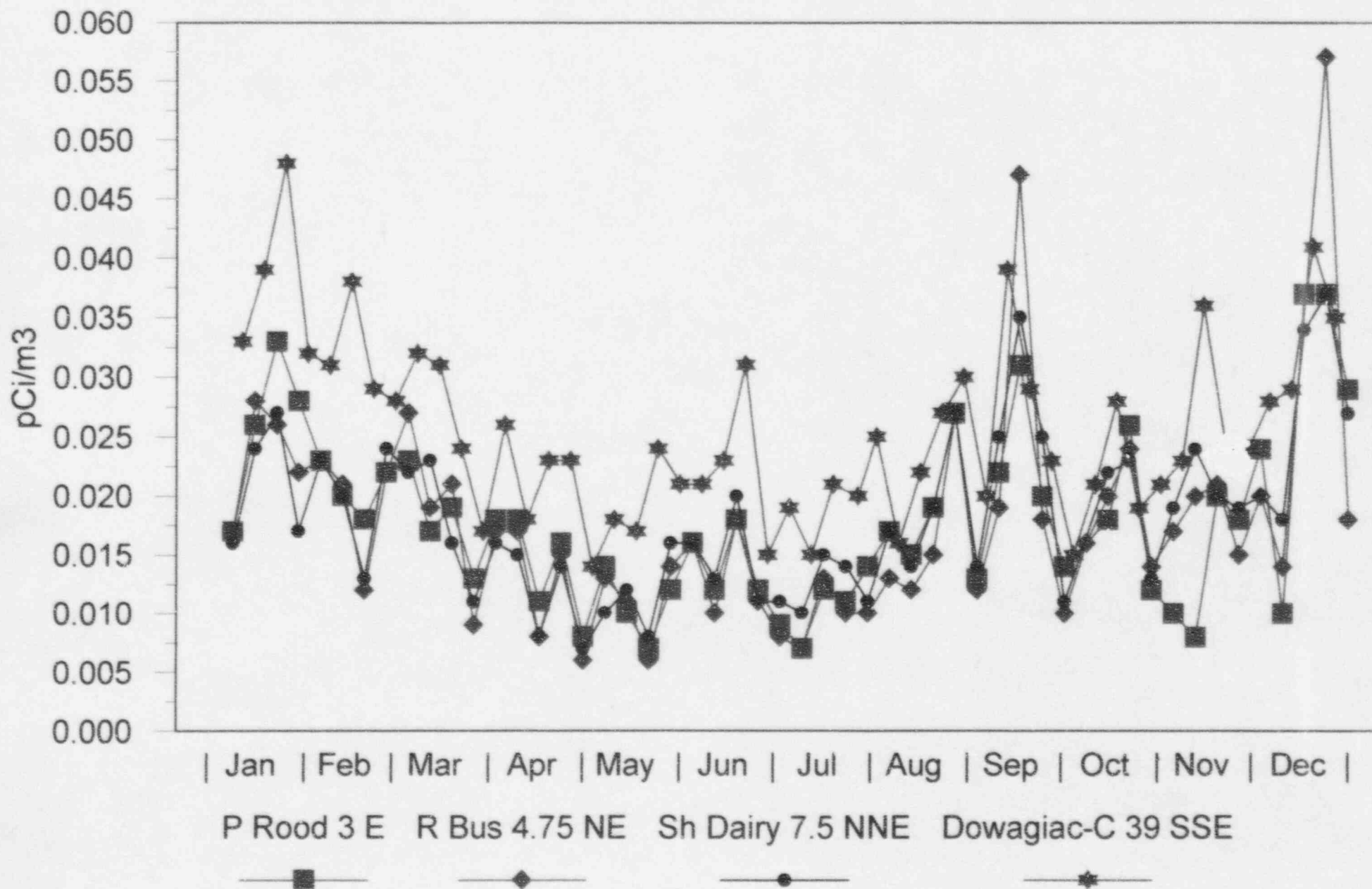
Grand Rapids-Control vs Tower Hill, H Soderberg, J Sarno



# 1994 PALISADES AIR PARTICULATE

## Weekly Gross Beta

Dowagiac-Control vs Sherman Dairy, R Bus, P Rood

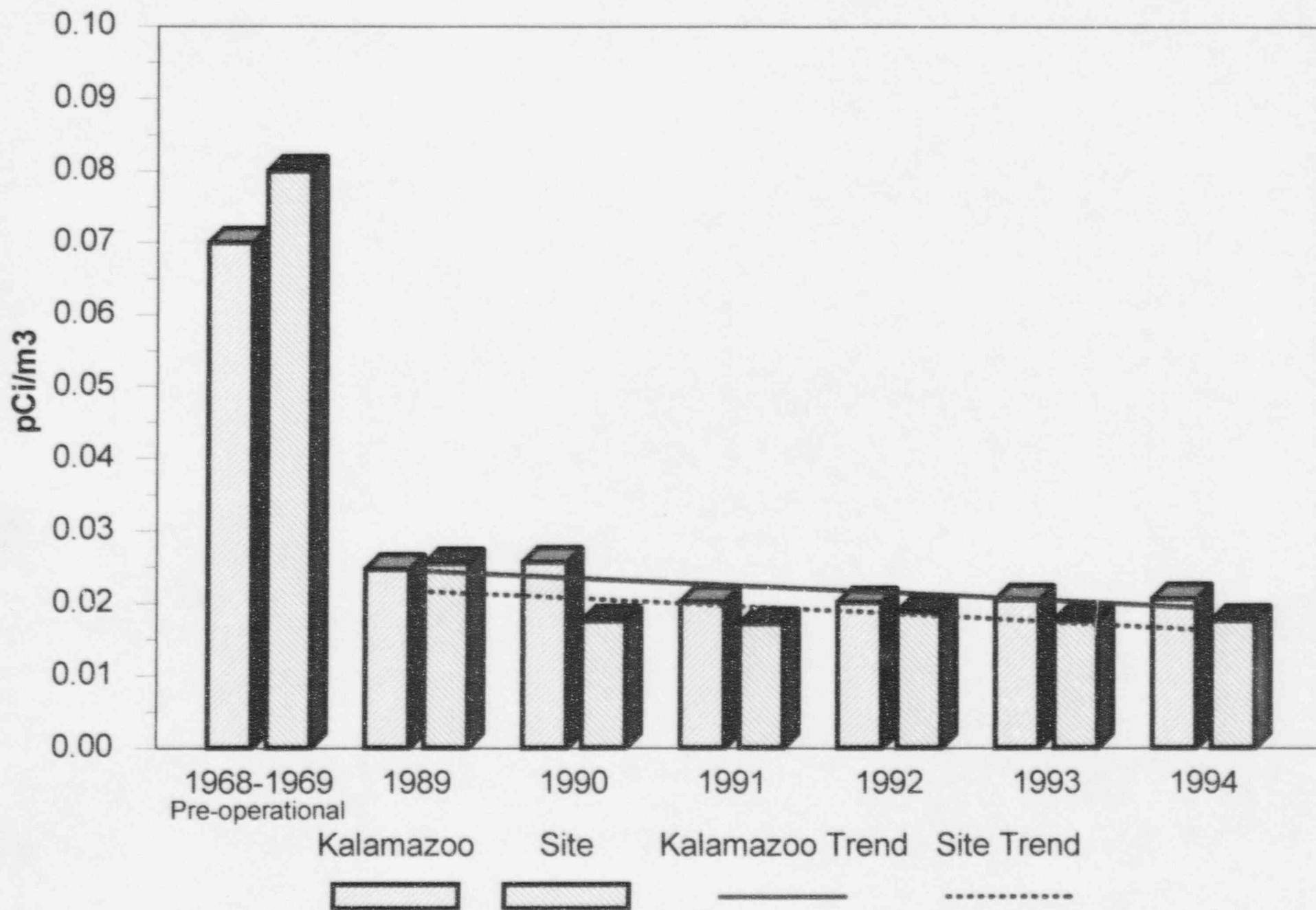




# Palisades Air Particulate

## Gross Beta

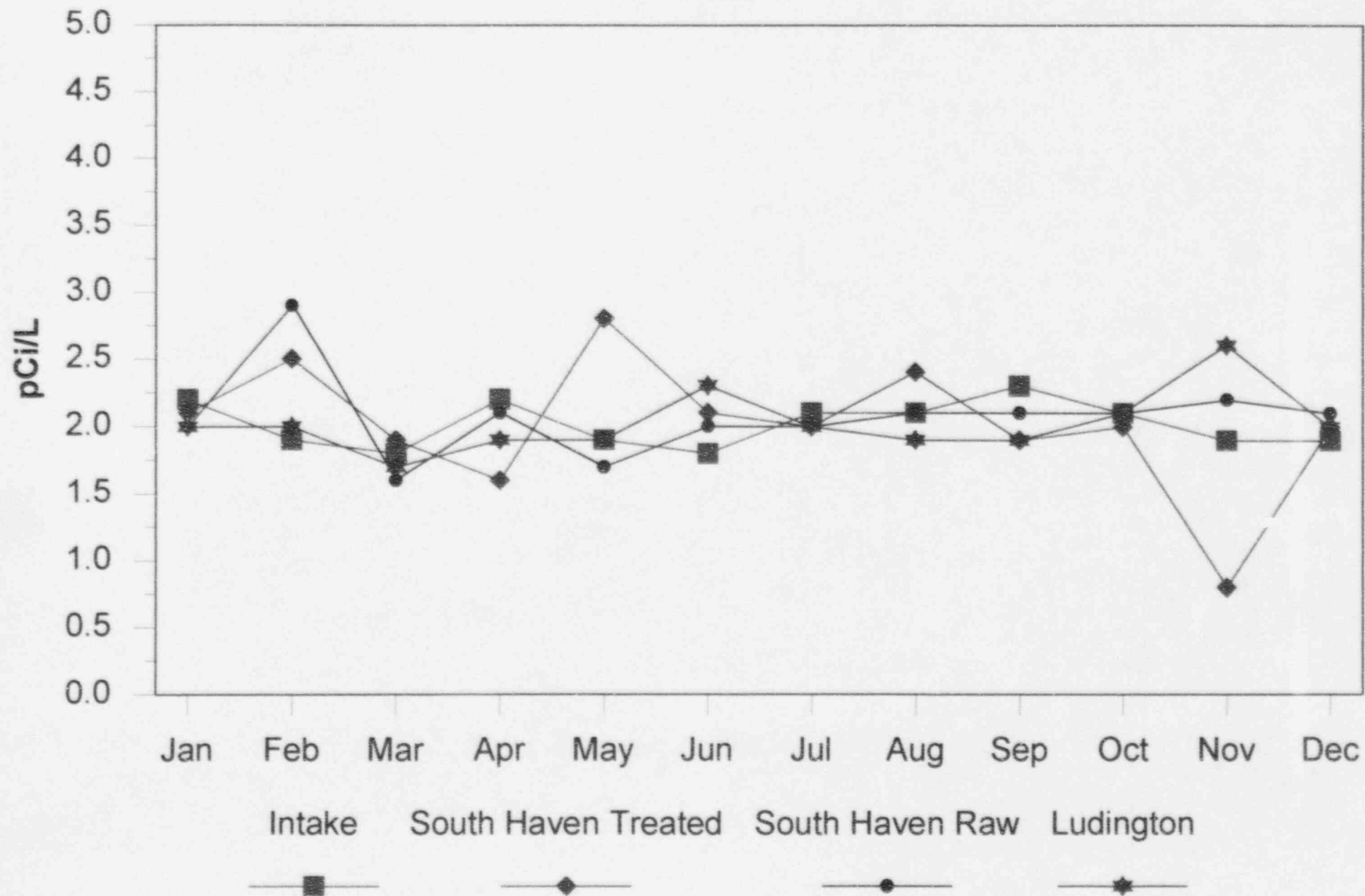
Pre-Operational vs. Operational



# 1994 Palisades Lake Water Samples

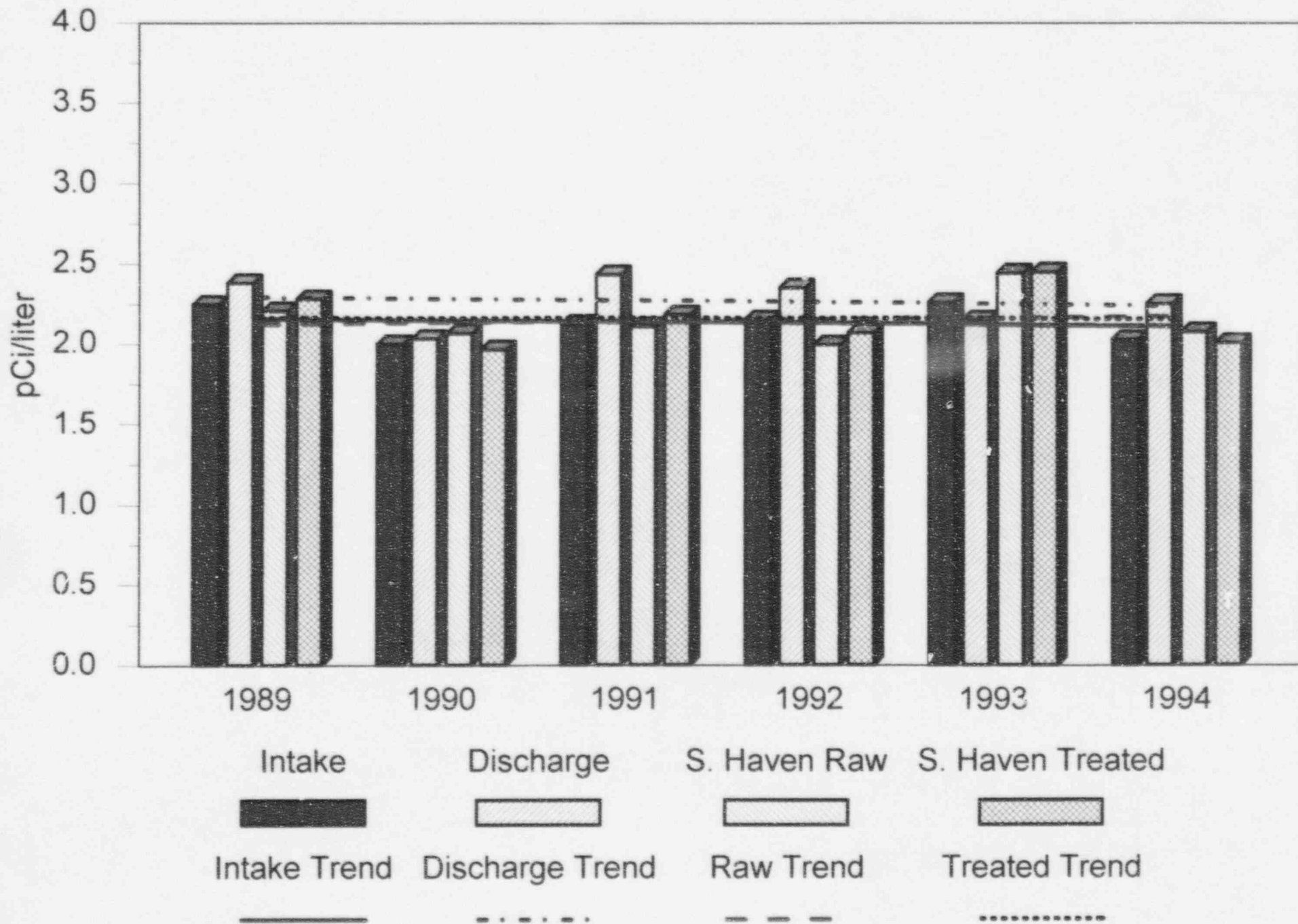
Gross Beta pCi/L

Ludington Control vs Intake, South Haven Treated & Raw



# Palisades Lake Water Gross Beta

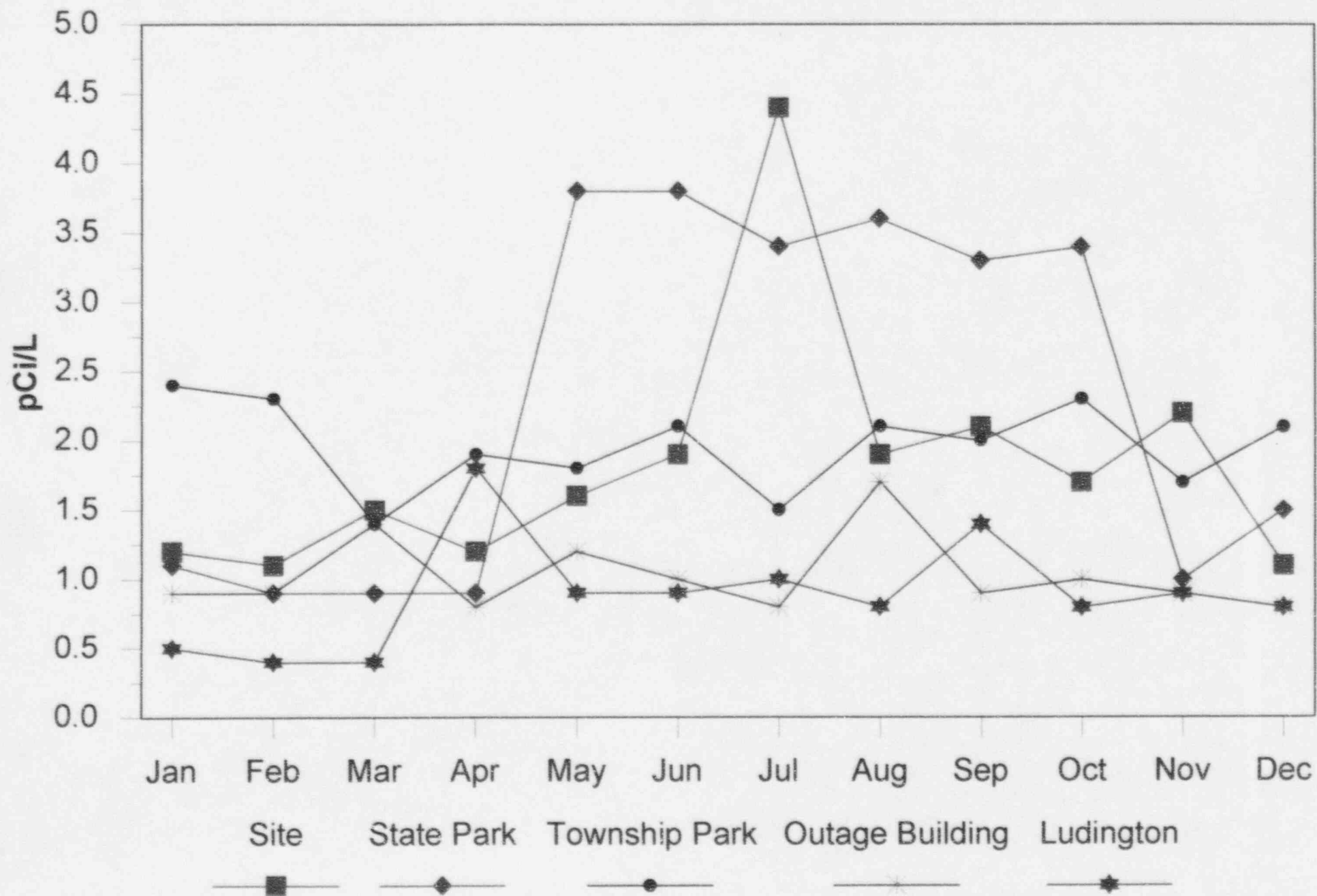
1989 - 1994



# 1994 Palisades Well Water Samples

## Gross Beta pCi/L

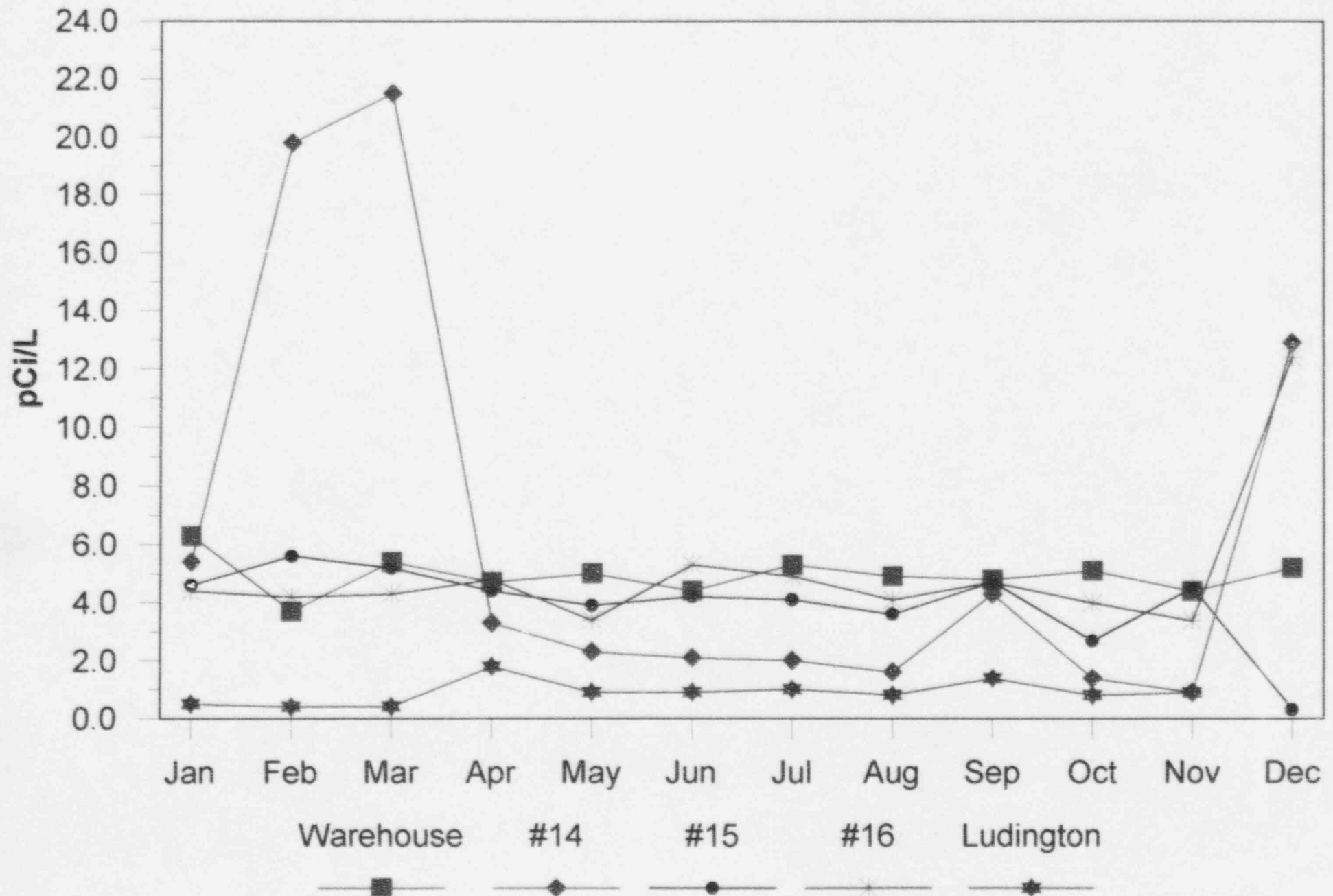
Ludington Control vs Site, Outage Building, State Park and Township Park



# 1994 Palisades Well Water Samples

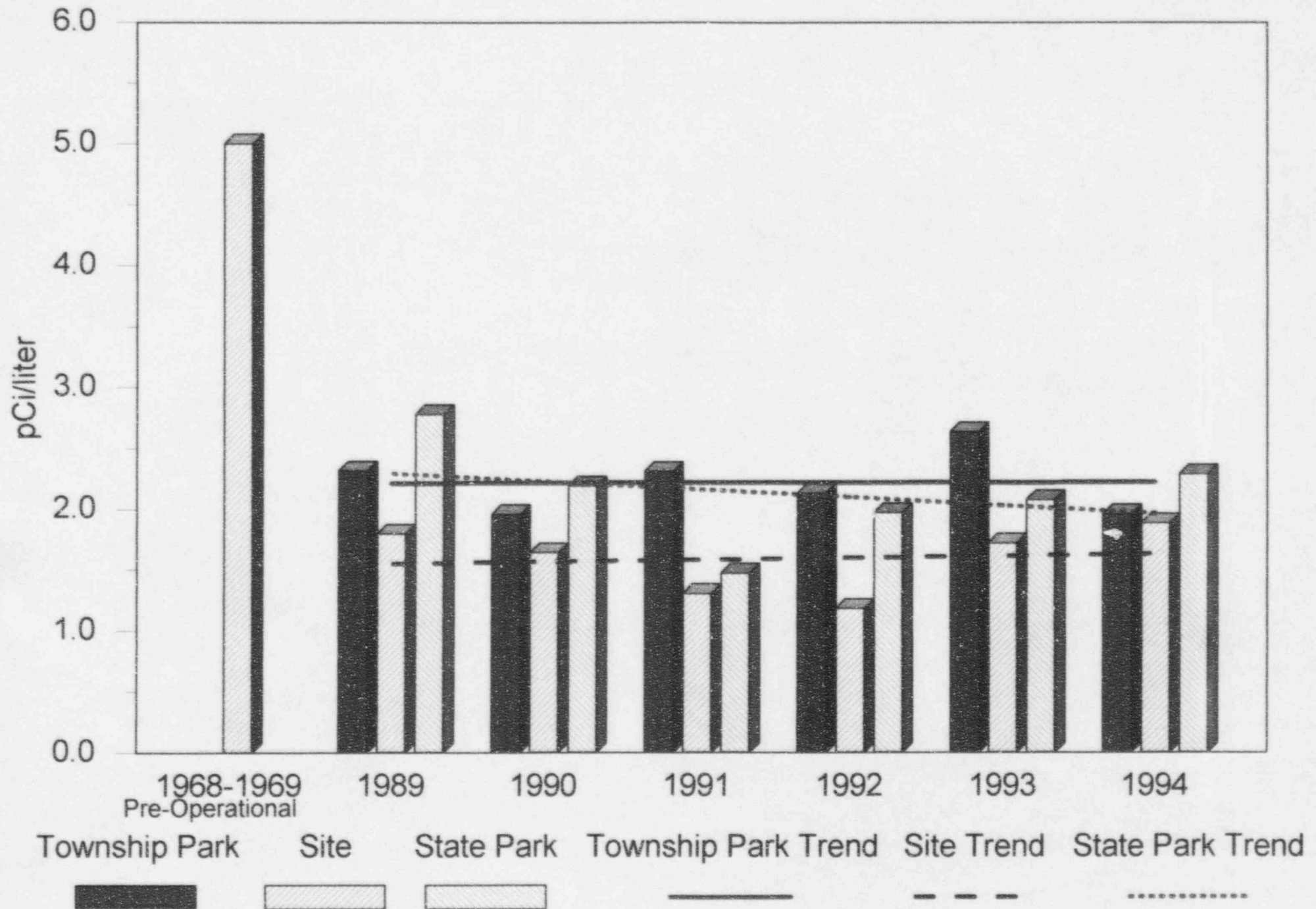
## Gross Beta pCi/L

Ludington Control vs Warehouse, Well #14, Well#15 and Well #16



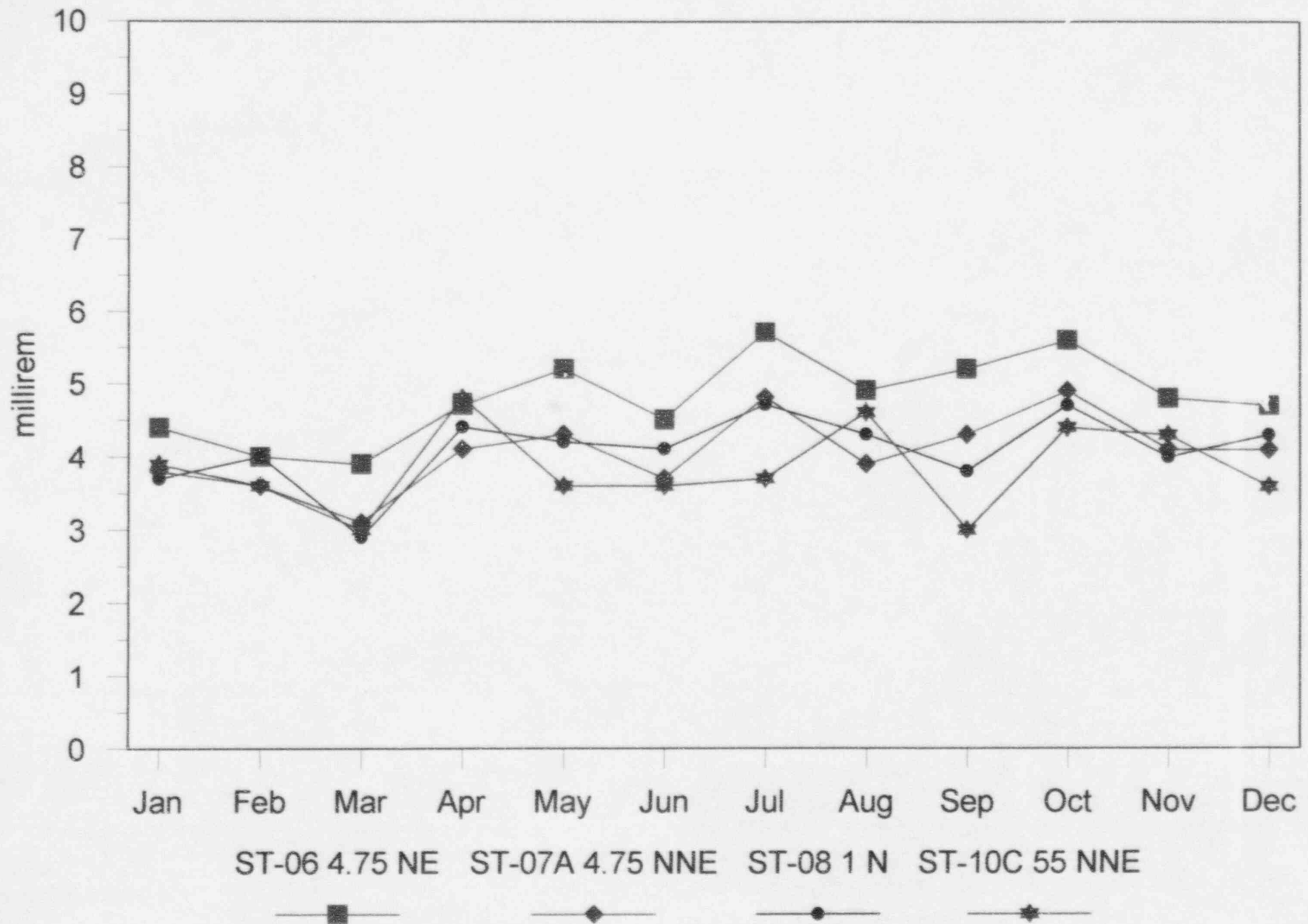
# Palisades Well Water Gross Beta

Pre-Operational vs. Operational



# 1994 Palisades TLDs

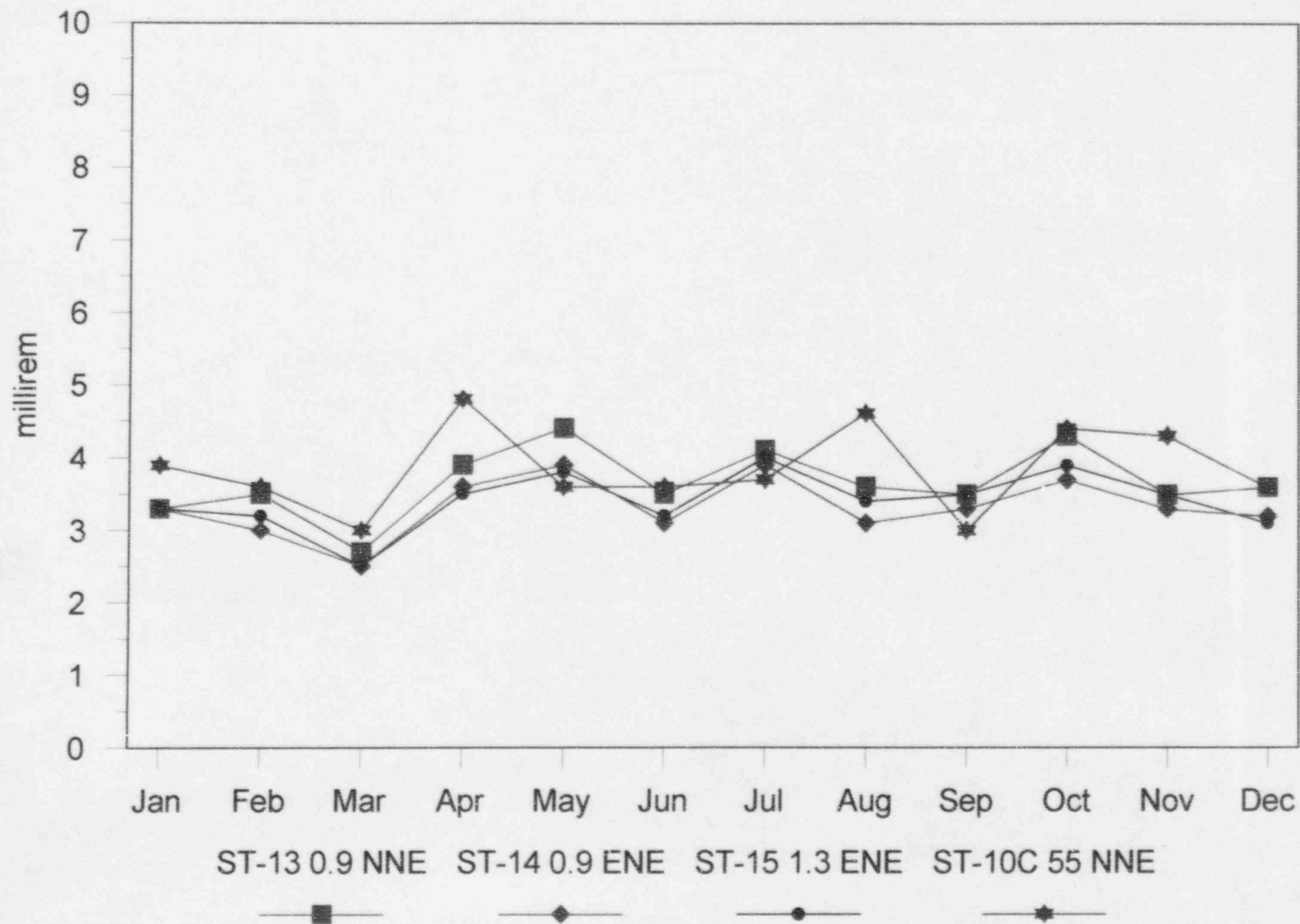
## ST10 Control vs ST06, ST07A, ST08





# 1994 Palisades TLDs

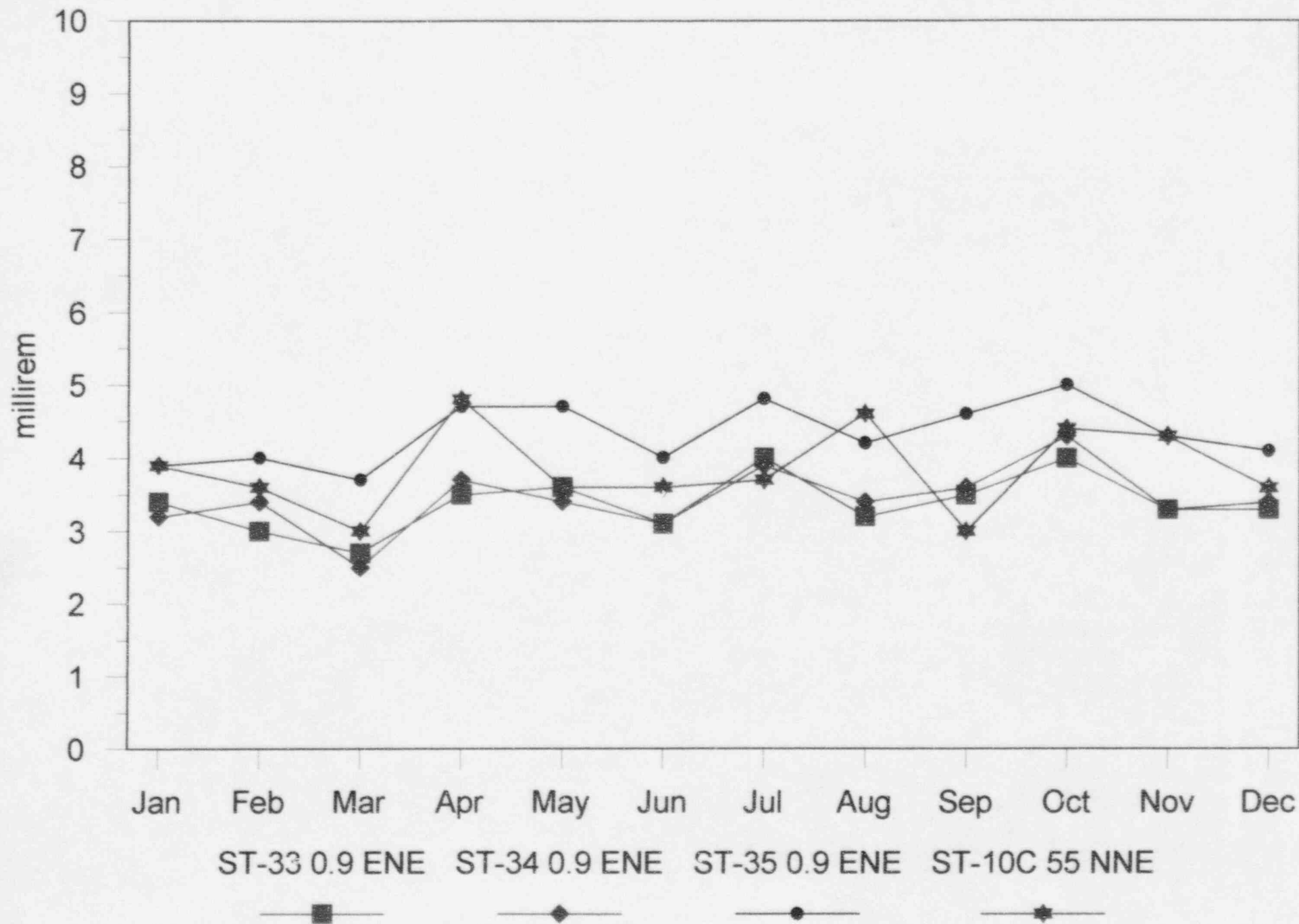
## ST10 Control vs ST13, ST14, ST15





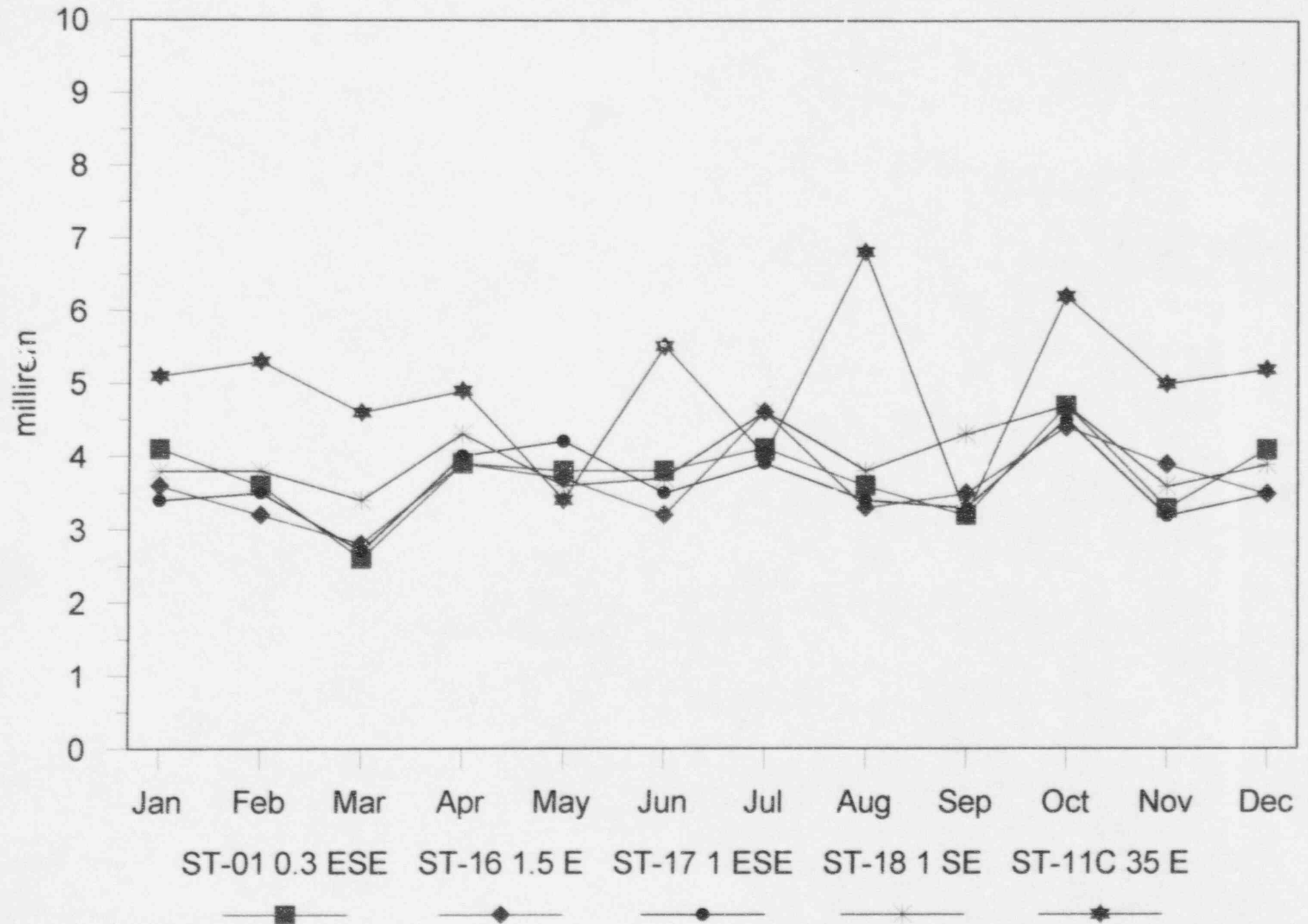
# 1994 Palisades TLDs

## ST10 Control vs ST33, ST34, ST35



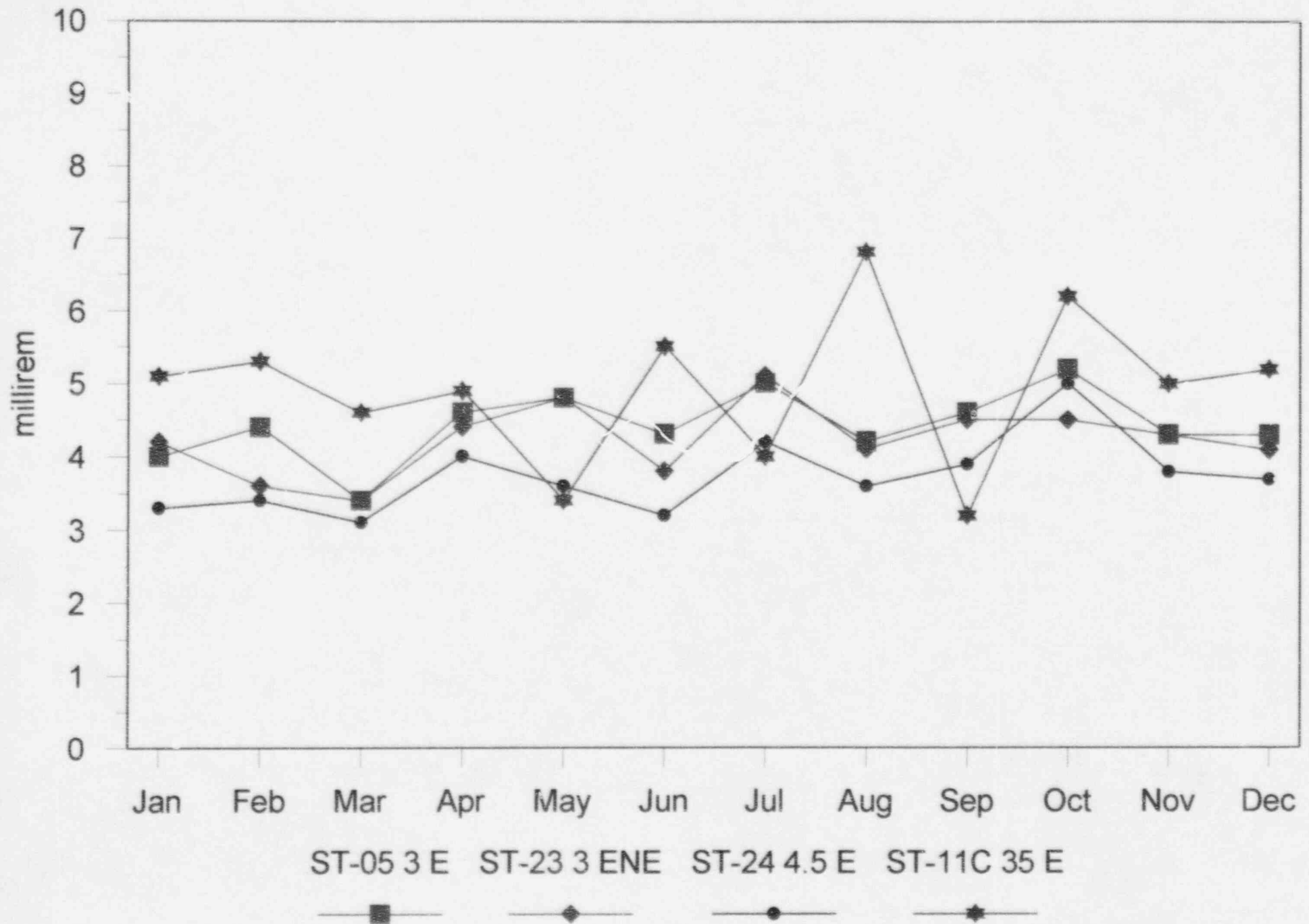
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## ST11 Control vs ST01, ST16, ST17, ST18



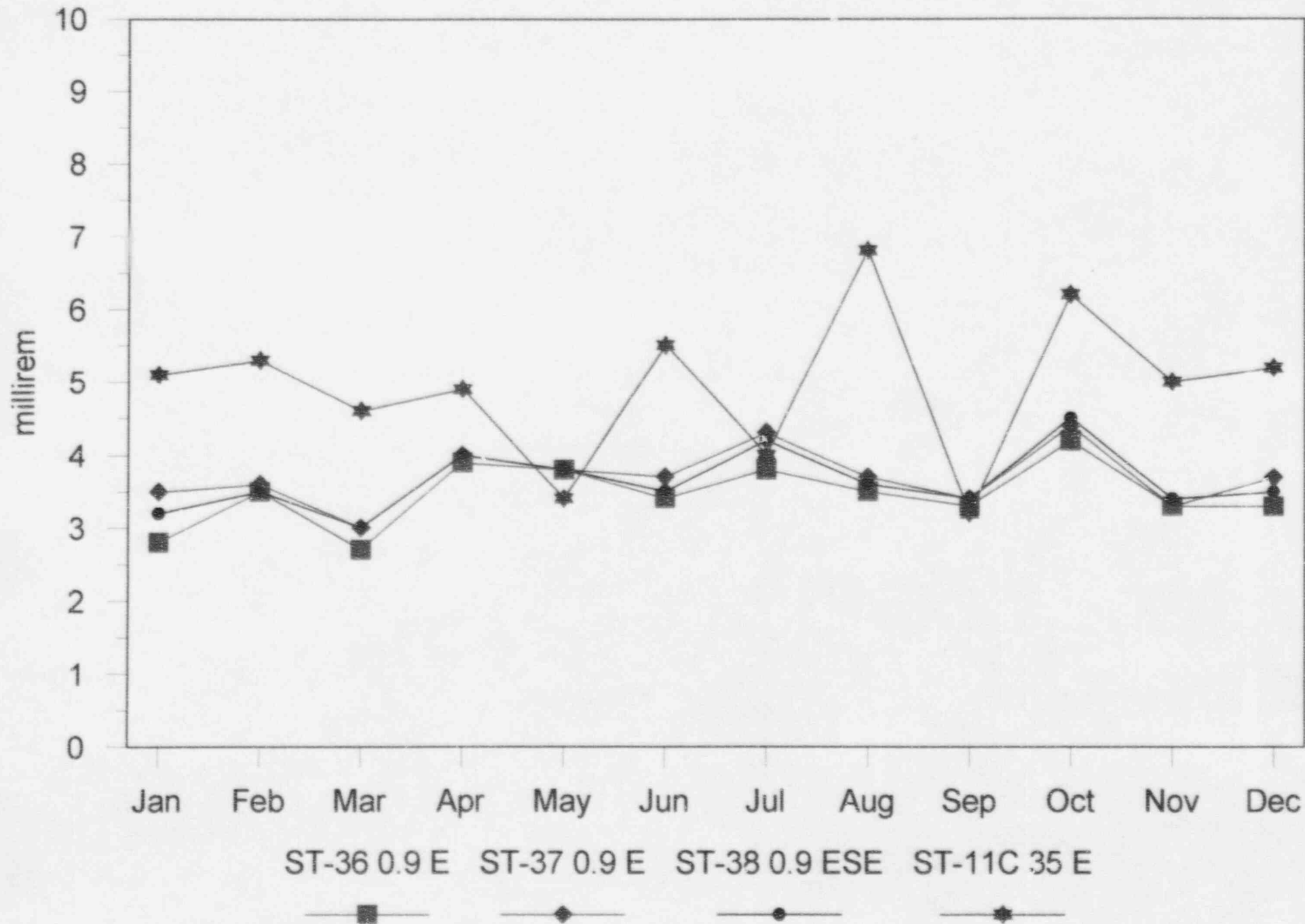
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## ST11 Control vs ST05, ST23, ST24



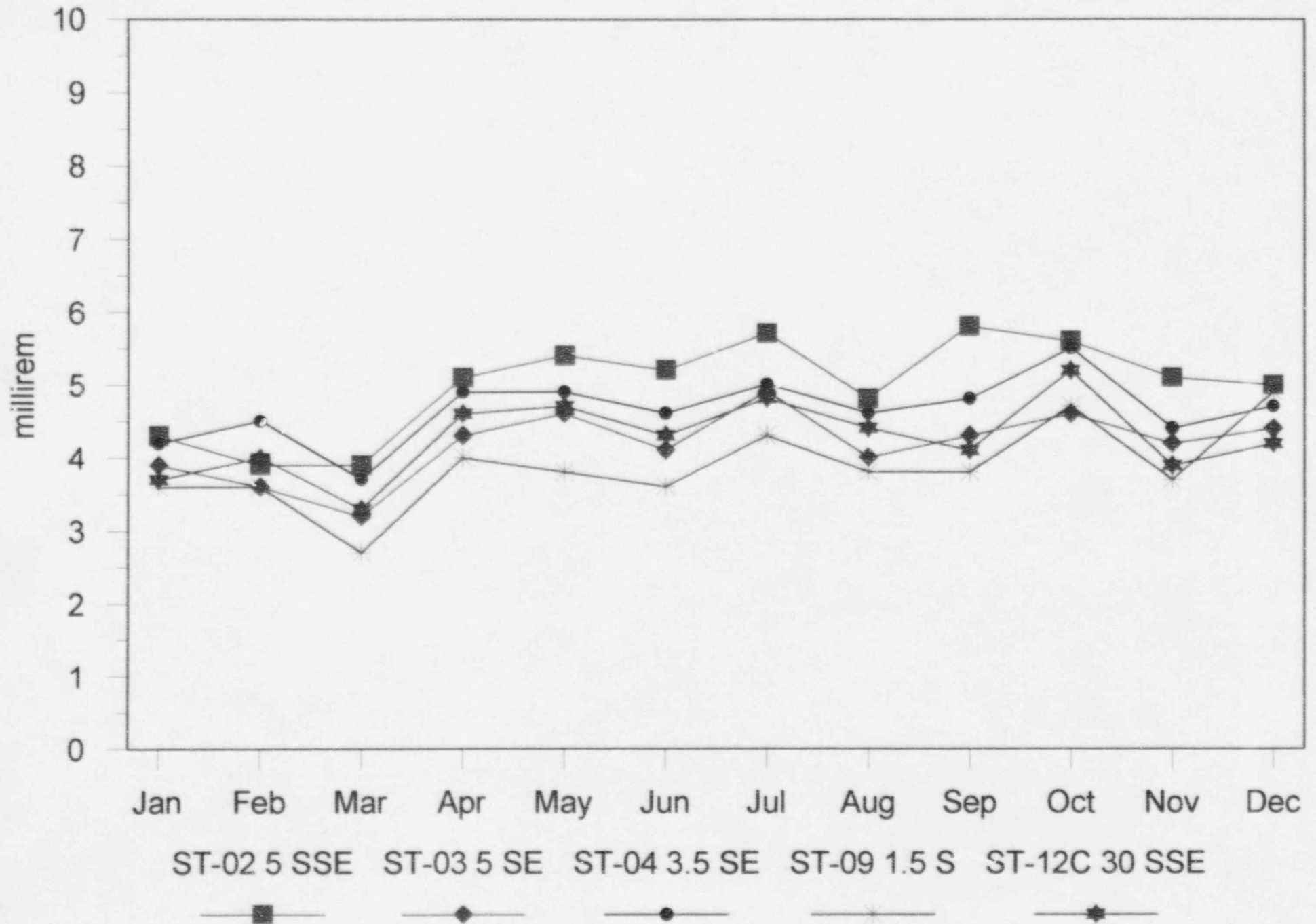
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## ST11 Control vs ST36, ST37, ST38



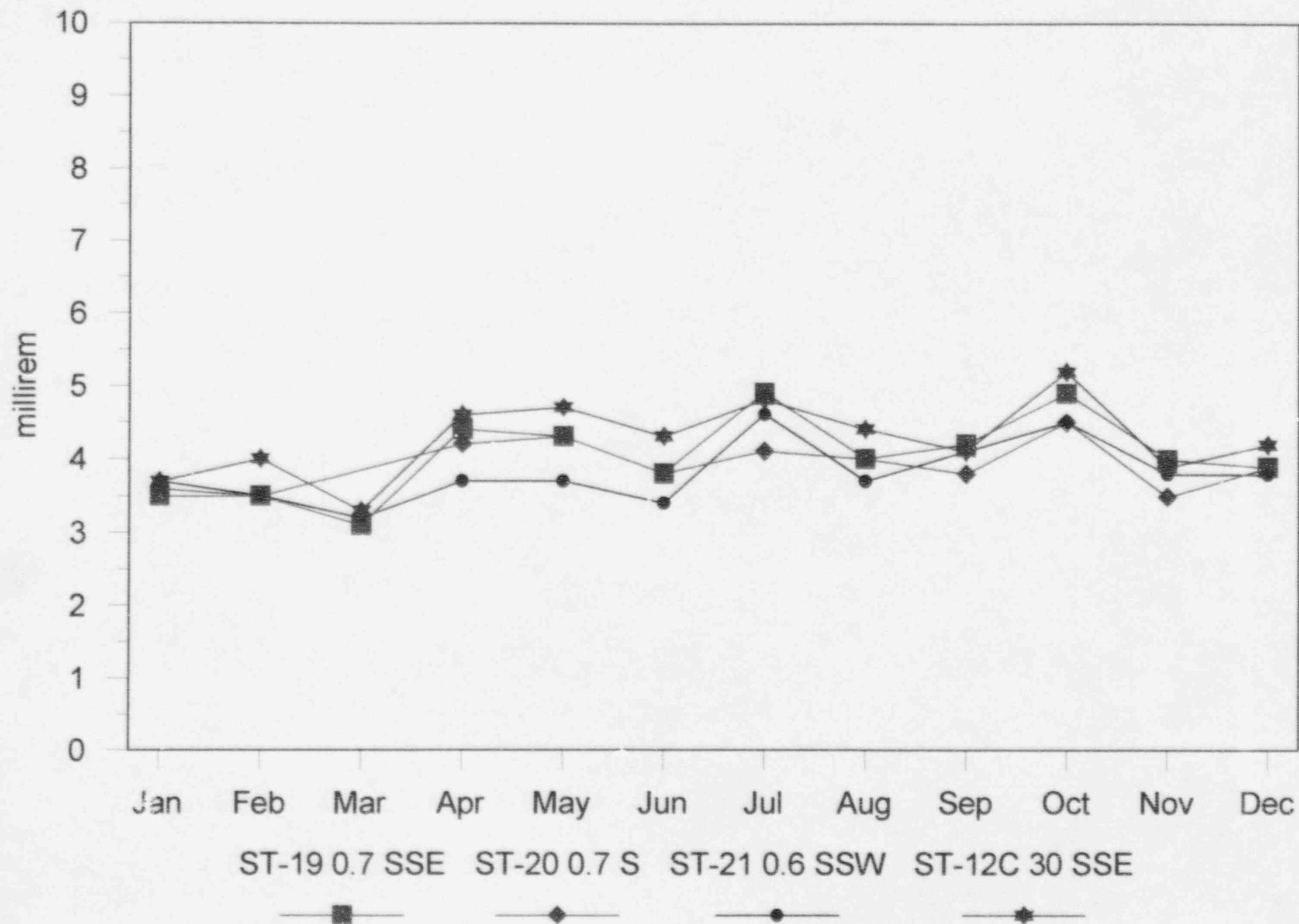
# 1994 Palisades TLDs

## ST12 Control vs ST02, ST03, ST04, ST09



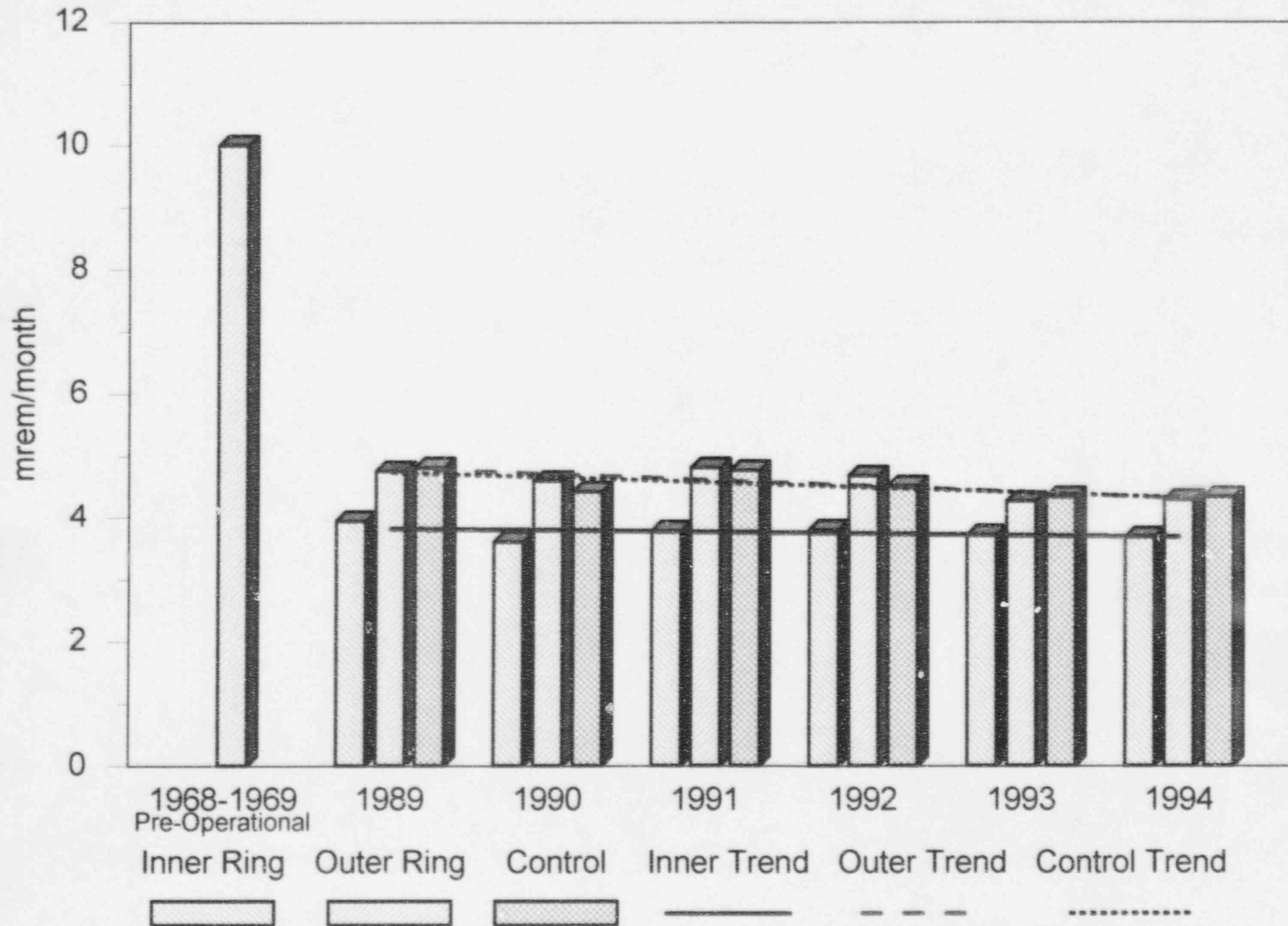
# 1994 Palisades TLDs

## ST12 Control vs ST19, ST20, ST21



# Palisades Monthly Thermoluminescent Dosimeters

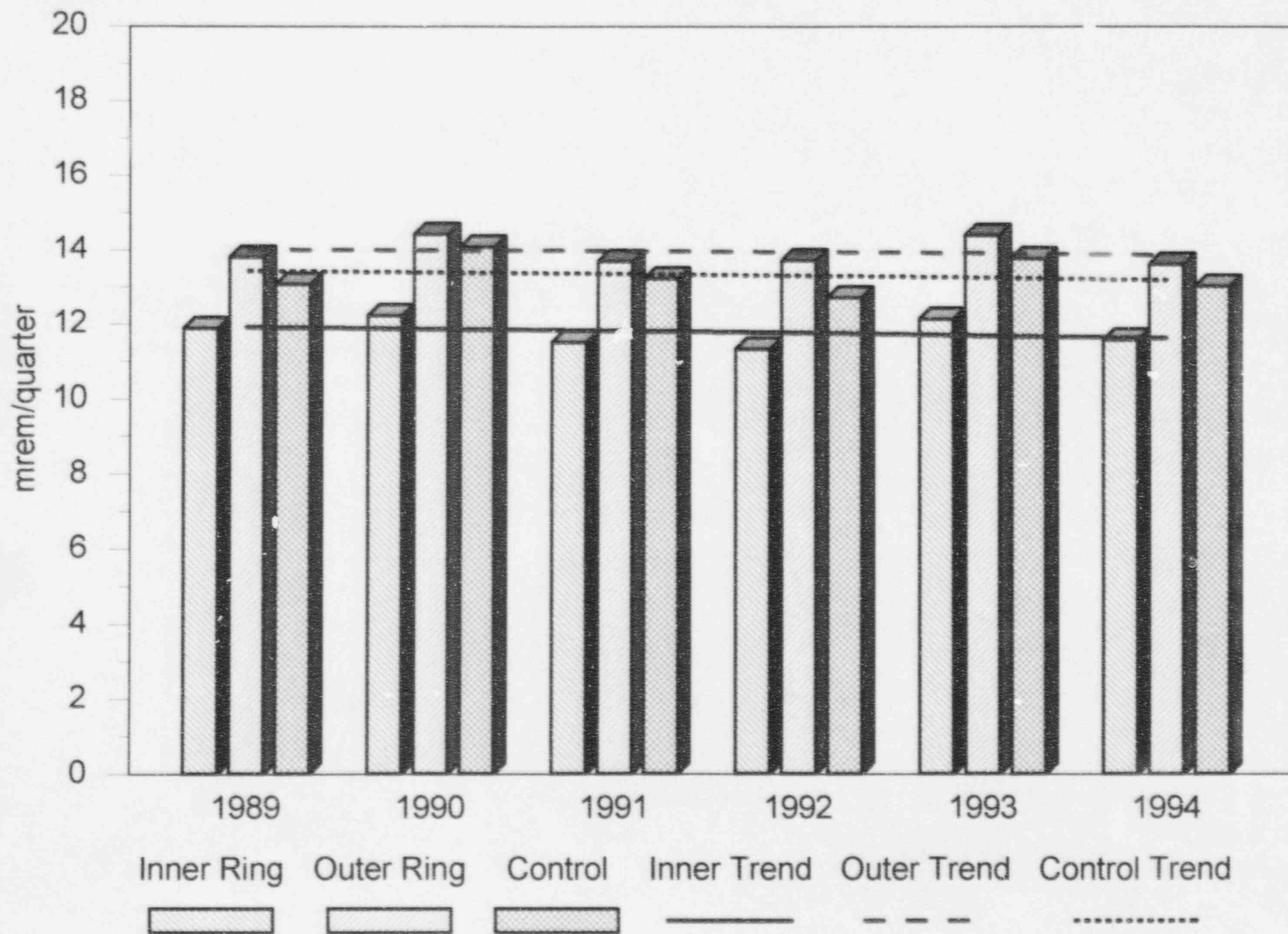
## Pre-Operational vs. Operational





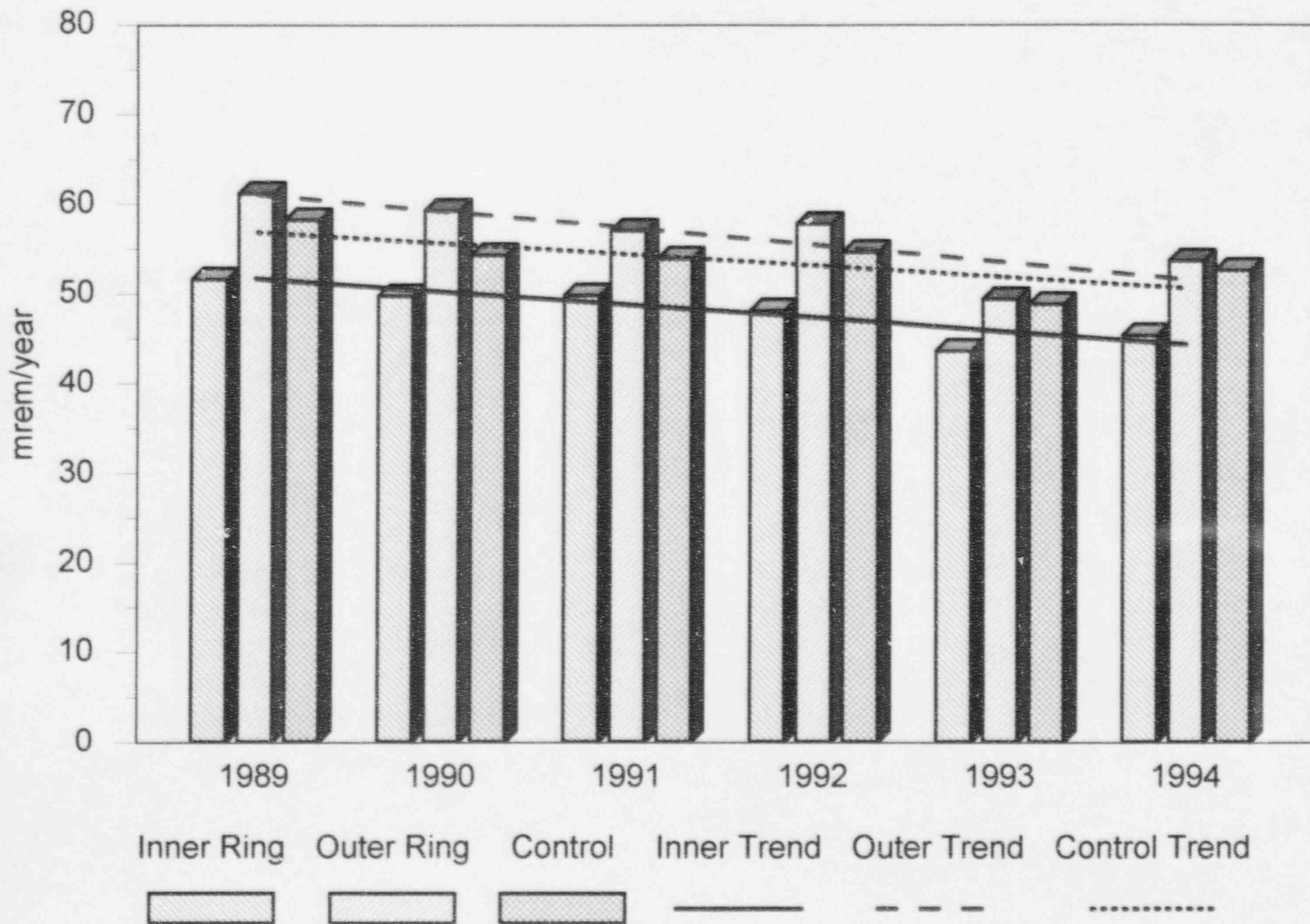
# Palisades Quarterly Thermoluminescent Dosimeters

1989 - 1994



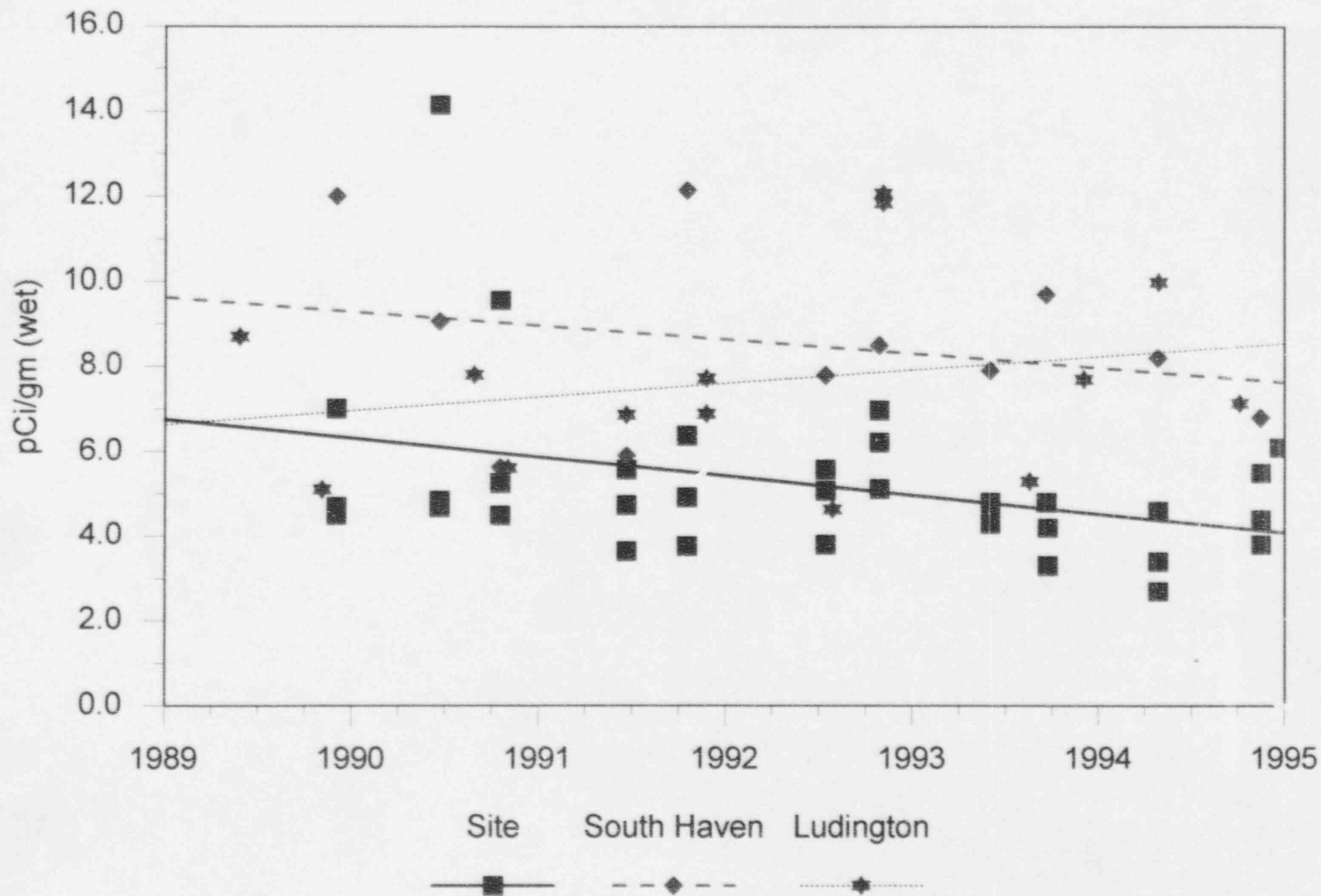
# Palisades Annual Thermoluminescent Dosimeters

1989 - 1994



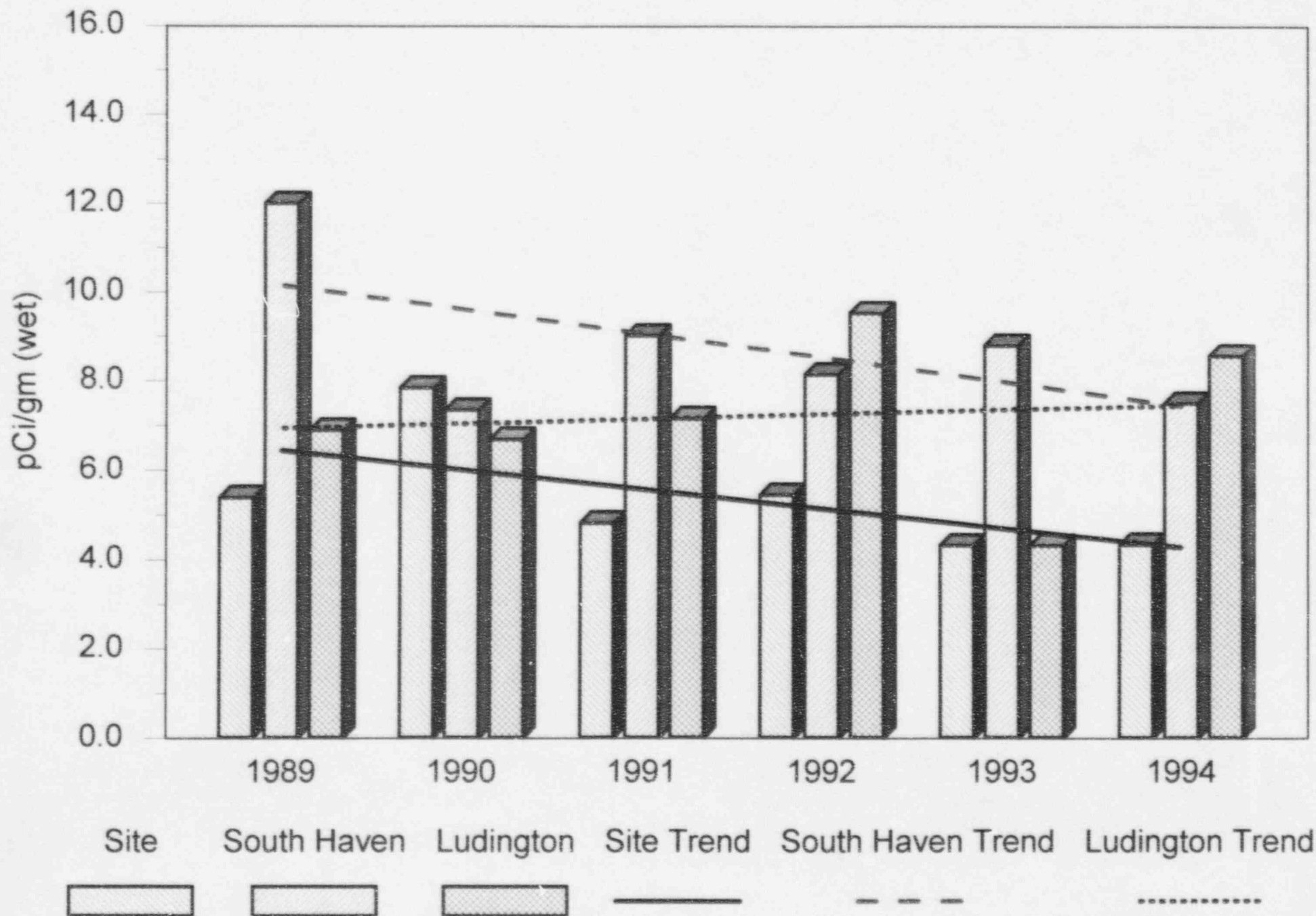
# Palisades Sediment Gross Beta

1989 - 1994



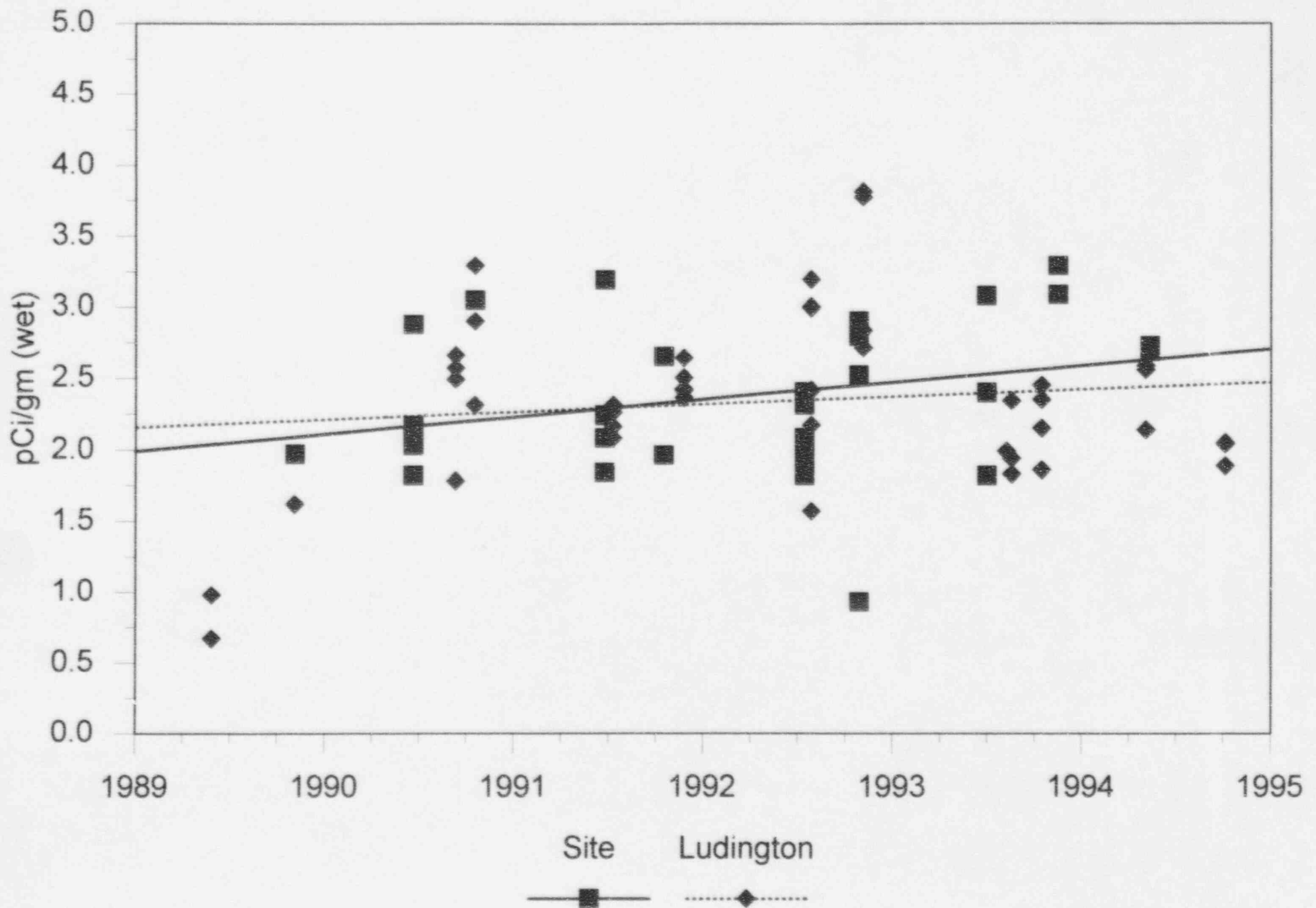
# Palisades Sediment Gross Beta

1989 - 1994



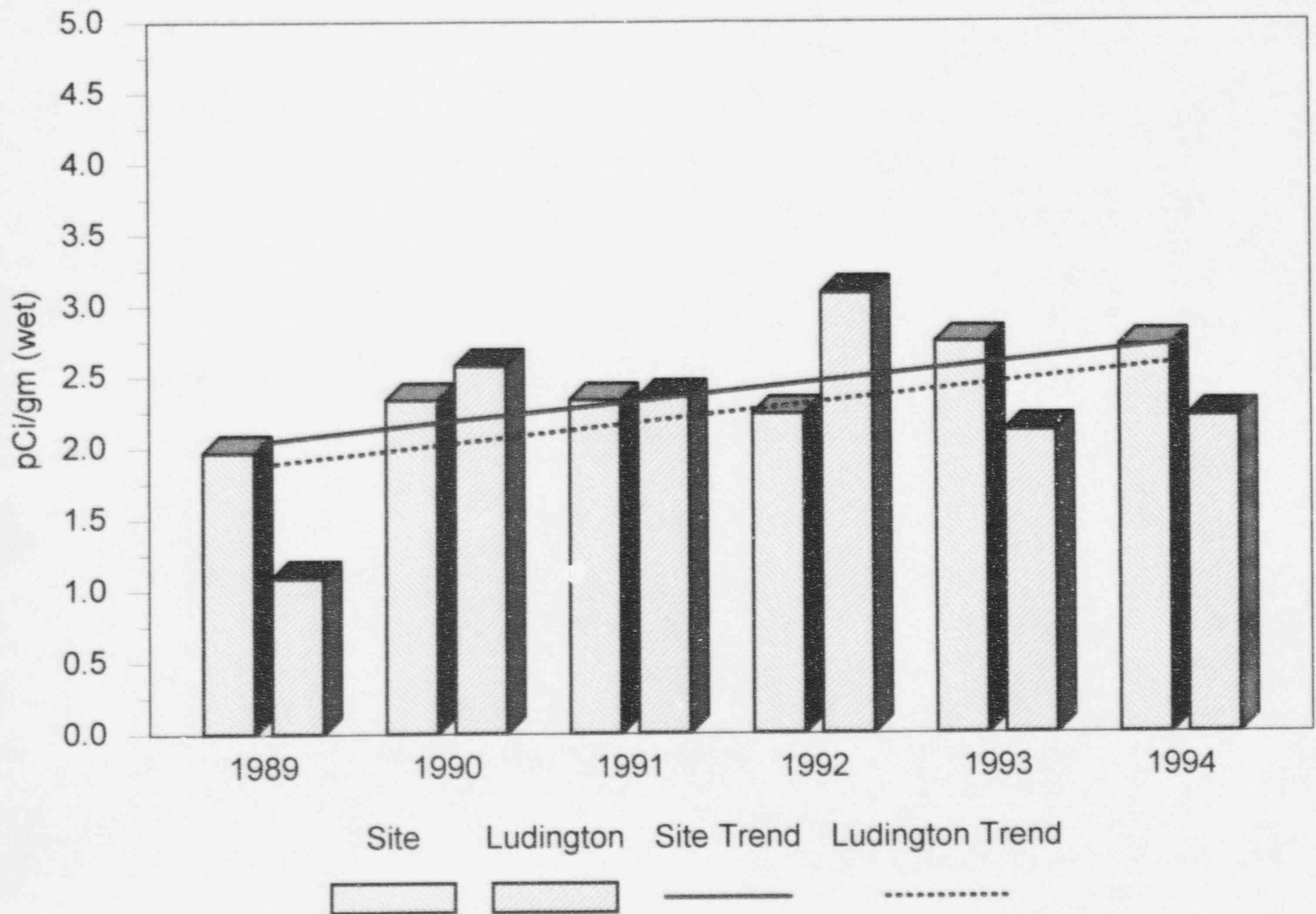
# Palisades Fish Gross Beta

1989 - 1994



# Palisades Fish Gross Beta

1989 - 1994





# Palisades Fish Cs-137

## Pre-Operational vs. Operational

