

**APPENDIX F**  
**SUMMARY OF BIOLOGICAL AND PHYSICAL**  
**MONITORING DATA FOR PETER PAN RUN**



Station ID	Date Sampled	Avg. Wetted Width (m)	Avg. Thalweg Depth (m)	Slope	Discharge (cfs)	Discharge (cms)	D50 (mm)	Buffer Width Left Bank (m)	Buffer Width Right Bank (m)
PPAN-01	6/7/99	2.70	0.21	0.006	0.40	0.011	10.0	10-15	15
	4/20/00	3.51	0.29	0.006	5.70	0.161	26.0	20	30
	4/26/01	3.18	0.17	0.007	1.10	0.031	0.2	25	35
	7/12/01	3.10	0.15	ns	1.02	0.029	ns	ns	ns
	3/21/02	3.43	0.26	0.007	1.21	0.034	0.2	50	50
	6/6/03	3.83	0.29	0.008	2.05	0.058	22.6	35	50
	5/17/04	3.60	0.23	0.008	0.87	0.025	23.8	50	50
	3/4/05	3.68	0.21	0.009	1.09	0.031	23.0	50	50
	3/1/06	3.48	0.30	0.009	2.60	0.074	25.0	50	50
	4/9/07	3.28	0.20	0.009	0.56	0.016	30.7	50	50
	4/23/08	2.90	0.31	0.008	0.72	0.020	28.9	50	50
9/9/09	3.90	0.16	0.008	1.09	0.031	16.0	50	50	
PPAN-02	6/8/99	2.20	0.09	0.006	0.36	0.010	8.3	1	10
	4/20/00	2.59	0.13	0.006	3.36	0.095	13.0	>30	10
	4/26/01	3.06	0.14	0.003	1.21	0.034	7.5	15	3
	7/25/01	2.30	0.10	ns	ns	ns	ns	ns	ns
	3/21/02	2.65	0.21	0.007	2.89	0.082	11.8	50	5
	6/6/03	3.25	0.49	0.006	6.00	0.170	16.0	50	12
	5/17/04	2.63	0.24	0.006	1.08	0.031	14.3	50	50
	3/4/05	3.20	0.33	0.007	0.81	0.023	18.0	50	50
	3/1/06	3.25	0.38	0.006	0.91	0.025	22.0	50	50
	4/9/07	2.43	0.24	0.006	0.51	0.014	*	50	50
	4/23/08	2.53	0.22	0.006	0.44	0.012	10.1	50	50
9/9/09	2.43	0.23	0.006	0.94	0.026	*	50	50	
PPAN-03	6/8/99	2.30	0.21	0.012	0.03	0.001	8.5	30	>20
	4/19/00	3.51	0.29	0.007	1.00	0.028	12.0	10	20
	4/26/01	2.49	0.19	0.007	1.92	0.054	4.8	15	50
	7/11/01	2.10	0.15	ns	0.17	0.005	ns	ns	ns
	3/21/02	2.40	0.21	0.007	ns	ns	4.9	12	50
	6/5/03	2.28	0.33	0.007	2.87	0.081	15.8	30	50
	5/13/04	1.78	0.14	0.007	0.40	0.011	13.5	20	50
	5/4/05	1.93	0.17	0.007	0.19	0.005	15.0	50	50
	3/3/06	1.60	0.22	0.008	0.20	0.006	22.7	25	50
	4/13/07	1.93	0.17	0.008	0.16	0.005	24.1	25	50
	4/23/08	2.34	0.12	0.005	0.16	0.005	26.7	25	50
9/15/09	2.13	0.23	0.008	0.94	0.007	26.2	20	50	
PPAN-04	6/21/99	1.40	0.05	0.016	too shallow	too shallow	11.0	>30	15
	4/19/00	1.96	0.06	0.016	0.09	0.003	10.0	50	30

Table F-1. (Continued)

Station ID	Date Sampled	Avg. Wetted Width (m)	Avg. Thalweg Depth (m)	Slope	Discharge (cfs)	Discharge (cms)	D50 (mm)	Buffer Width Left Bank (m)	Buffer Width Right Bank (m)
PPAN-04	4/26/01	1.12	0.06	0.018	0.05	0.001	4.5	10	40
	7/10/01	1.60	0.05	ns	0.14	0.004	ns	ns	ns
	7/22/02	1.68	0.08	0.017	0.04	0.001	14.9	20	50
	6/5/03	1.88	0.16	0.019	0.10	0.003	24.0	40	50
	5/13/04	1.69	0.08	0.015	0.11	0.003	22.0	35	50
	3/4/05	1.98	0.06	0.015	0.05	0.002	25.0	25	50
	3/3/06	1.88	0.08	0.014	0.05	0.001	27.5	25	50
	4/13/07	1.38	0.68	0.014	0.11	0.003	28.5	30	50
	4/23/08	2.54	0.53	0.014	0.05	0.001	10.8	30	50
	9/9/09	1.88	0.06	0.014	0.17	0.003	20.2	20	50

\* = Data not available

ns = Not sampled

Table F-2. Summary of historic qualitative habitat data from Peter Pan Run following Montgomery County, MD protocols																
Station ID	Date Sampled	Instream Cover (Fish) (0-20)	Epifaunal Substrate (0-20)	Embed-dedness (0-20)	Channel Alteration (0-20)	Sediment Deposition (0-20)	Frequency of Riffles (0-20)	Channel Flow Status (0-20)	Bank Vegetative Protection Left Bank (0-10)	Bank Vegetative Protection Right Bank (0-10)	Bank Stability Left Bank (0-10)	Bank Stability Right Bank (0-10)	Riparian Vegetative Zone Width Left Bank (0-10)	Riparian Vegetative Zone Width Right Bank (0-10)	Total Qualitative Habitat Score (Max. 200)	Habitat Assessment Category
PPAN-01	6/7/99	8	14	9	18	15	14	15	8	9	7	8	8	7	140	Sub-Optimal
	10/6/99	6	12	10	18	3	18	16	3	3	3	3	7	8	110	Marginal to Sub-Optimal
	4/20/00	12	18	6	19	8	18	14	3	6	1	3	9	9	126	Sub-Optimal
	10/6/00	11	13	8	18	3	14	15	4	5	2	5	10	4	112	Marginal to Sub-Optimal
PPAN-02	6/8/99	8	11	8	13	7	16	10	7	8	7	7	3	6	111	Marginal to Sub-Optimal
	10/6/99	12	15	6	17	7	9	15	5	5	1	2	1	2	97	Marginal
	4/20/00	14	16	7	18	7	18	11	2	7	1	3	9	5	118	Sub-Optimal
	10/6/00	2	11	5	18	4	18	14	3	5	0	0	8	6	94	Marginal
PPAN-03	6/8/99	11	15	10	16	11	16	10	3	3	3	4	10	10	122	Sub-Optimal
	10/6/99	11	8	4	16	6	12	19	1	2	3	4	9	9	104	Marginal to Sub-Optimal
	4/19/00	8	13	6	17	3	11	10	4	8	2	6	10	9	107	Marginal to Sub-Optimal
	10/6/00	15	16	8	19	9	14	7	2	3	3	4	9	5	114	Sub-Optimal
PPAN-04	6/21/99	10	12	11	18	6	16	12	3	3	2	2	8	3	106	Marginal to Sub-Optimal
	10/7/99	4	12	2	16	3	19	7	2	2	3	4	3	5	82	Marginal
	4/19/00	12	19	8	19	5	18	10	1	1	1	1	10	9	114	Sub-Optimal
	10/3/00	4	14	2	12	2	18	6	2	2	2	2	10	5	81	Marginal

Station ID	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/l)	pH	Specific Conductivity (mS/cm)	Turbidity (NTU)
PPAN-01	06/07/1999	19.26	8.74	7.53	0.250	4.1
	10/06/1999	10.19	10.92	7.43	0.151	12.3
	04/20/2000	10.56	7.51	7.01	0.190	4.0
	09/28/2000	11.63	10.93	6.97	0.224	19.5
	04/26/2001	14.26	11.78	8.16	0.245	0.6
	07/12/2001	16.60	11.20	7.40	0.244	14.4
	03/21/2002	6.80	12.02	5.08	0.226	19.7
	08/22/2002	20.20	7.36	6.89	0.282	4.9
	06/06/2003	14.95	12.70	6.08	0.227	25.0
	07/17/2003	17.87	3.9	6.77	0.288	0.0
	04/29/2004	16.52	**	7.69	0.265	**
	09/27/2004	16.3	8.7	6.60	0.284	9.2
	03/04/2005	4.7	12.0	6.98	0.318	19.6
	06/23/2005	15.7	9.20	7.52	0.318	19.2
	03/01/2006	5.3	12.91	8.60	0.286	3.2
	06/06/2006	18.25	9.6	7.54	0.652	2.3
	04/09/2007	3.4	15.1	6.12	0.632	5.7
	07/03/2007	15.4	9.7	6.47	0.73	10.5
	04/23/2008	12.6	10.1	7.53	0.331	23.0
	08/07/2008	19.1	8.1	7.85	0.377	11.5
03/10/2009	5.9	7.8	7.46	0.469	13.1	
09/09/2009	17.8	8.7	7.74	0.414	16	
PPAN-02	06/08/1999	20.68	8.27	7.37	0.252	32.5
	10/06/1999	10.37	11.00	7.26	0.159	13.3
	04/20/2000	14.50	6.76	7.04	0.193	8.1
	10/06/2000	17.97	8.17	7.97	0.299	8.3
	04/26/2001	14.19	11.62	8.06	0.254	13.3
	07/25/2001	24.50	9.10	7.56	0.261	11.4
	03/21/2002	9.99	11.19	5.54	0.242	18.3
	08/22/2002	22.00	8.27	6.68	0.271	9.4
	06/06/2003	14.07	12.78	6.17	0.242	23.8
	07/17/2003	21.07	5.13	6.83	0.307	0.9
	04/29/2004	18.75	**	7.60	0.275	**
	09/27/2004	16.4	8.8	6.83	0.336	11.6
	03/04/2005	4.6	12.4	6.57	0.552	18.3
	06/23/2005	21.2	11.4	7.84	0.332	63.9
	03/01/2006	3.0	12.90	7.72	0.342	3.2
	06/06/2006	15.6	9.8	7.38	0.682	18.7
	04/09/2007	3.3	15.7	6.08	0.626	5.9
	07/03/2007	18.8	10.5	7.72	1.121	11.7
	04/23/2008	13.4	10.0	7.50	0.346	21.2
	08/07/2008	20.7	8.4	7.91	0.392	11.5
03/11/2009	7.2	12.5	7.99	0.329	16.4	
09/09/2009	19.3	8.6	7.93	0.435	29.8	
PPAN-03	06/08/1999	18.25	7.14	7.10	0.200	172.0

Table F-3. (Continued)						
Station ID	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/l)	pH	Specific Conductivity (mS/cm)	Turbidity (NTU)
PPAN-03	10/06/1999	11.32	11.25	7.47	0.136	2.2
	04/19/2000	14.80	8.37	7.13	0.181	4.9
	09/28/2000	14.75	9.87	6.85	0.229	4.1
	04/26/2001	13.95	12.05	7.80	0.232	0.6
	07/11/2001	18.90	5.80	6.65	0.143	10.6
	03/21/2002	11.26	10.73	5.76	0.218	10.3
	08/22/2002	*	*	*	*	*
	06/05/2003	15.28	**	5.87	0.202	10.3
	07/18/2003	18.02	13.5	6.78	0.260	0.0
	04/29/2004	21.65	**	7.54	0.260	**
	09/24/2004	16.1	13.0	6.83	0.281	4.6
	03/04/2005	4.8	11.70	6.59	0.302	15.6
	06/23/2005	17.0	9.70	6.96	0.300	15.5
	03/03/2006	3.0	12.88	7.19	0.282	4.1
	06/09/2006	16.5	8.20	7.45	0.318	6.8
	04/13/2007	7.1	12.3	6.28	0.558	8.5
	06/26/2007	19.0	9.0	7.61	1.072	15.2
	04/23/2008	15.7	10.0	7.52	0.348	26.5
	08/15/2008	18.8	8.2	7.45	0.369	29.0
	03/11/2009	8.4	13.3	8.06	0.324	15.2
09/15/2009	16.6	8.1	7.65	0.432	14.9	
PPAN-04	06/21/1999	14.04	8.89	7.40	0.197	7.9
	10/07/1999	13.99	9.97	7.51	0.124	164.0
	04/19/2000	9.93	12.87	7.03	0.166	25.0
	10/03/2000	18.22	8.23	7.77	0.160	57.8
	04/26/2001	12.77	11.53	7.85	0.220	14.4
	07/10/2001	23.10	6.50	6.82	0.112	44.3
	03/22/2002	4.46	11.94	5.03	0.341	261.8
	08/22/2002	21.30	7.70	6.63	0.222	14.4
	06/05/2003	15.65	14.89	5.85	0.168	52.8
	07/18/2003	16.86	8.40	6.69	0.224	8.3
	04/29/2004	17.13	**	7.32	0.205	**
	08/27/2004	19.1	10.00	6.84	0.241	37.6
	03/04/2005	5.6	12.90	6.44	0.576	75.6
	06/23/2005	17.1	11.10	7.33	0.257	20.4
	03/03/2006	6.3	13.45	7.63	0.216	5.6
	06/09/2006	16.3	8.9	7.49	0.273	17.0
	04/13/2007	8.4	12.3	5.64	0.558	437.7
	06/26/2007	18.9	6.2	7.69	1.106	21.2
	04/23/2008	16.6	9.0	7.47	0.276	5.30
	08/15/2008	22.0	7.8	7.60	0.173	25.5

Table F-3. (Continued)						
Station ID	Date Sampled	Water Temperature (°C)	Dissolved Oxygen (mg/l)	pH	Specific Conductivity (mS/cm)	Turbidity (NTU)
PPAN-04	03/10/2009	8.2	14.5	7.64	0.403	23.8
	09/09/2009	19	8.3	8	0.272	24.2
*Unsampleable; streambed dry						
** Not measured due to equipment malfunction in the field						

Table F-4. Summary of benthic macroinvertebrate results from Peter Pan Run using the MBSS 2005 IBI				
Station	Date Sampled	Number of Taxa	Benthic IBI Score	Benthic IBI Rating
PPAN-01	04/23/01	20	1.50	Very Poor
	03/21/02	38	3.25	Fair
	03/26/03	16	2.25	Poor
	04/29/04	21	1.50	Very Poor
	03/04/05	24	2.50	Poor
	03/01/06	34	2.50	Poor
	04/08/07	16	2.00	Poor
	04/23/08	25	2.50	Poor
	03/10/09	28	2.25	Poor
PPAN-02	04/23/01	19	2.00	Poor
	03/21/02	33	3.25	Fair
	03/26/03	20	2.25	Poor
	04/29/04	26	2.00	Poor
	03/04/05	32	2.75	Poor
	03/01/06	39	2.25	Poor
	04/09/07	20	2.25	Poor
	04/23/08	39	3.50	Fair
	03/11/09	34	2.25	Poor
PPAN-03	04/23/01	32	3.50	Fair
	03/21/02	29	3.75	Fair
	03/26/03	14	1.75	Very Poor
	04/29/04	24	2.50	Poor
	03/04/05	26	3.25	Fair
	03/03/06	29	2.75	Poor
	04/13/07	29	2.50	Poor
	04/23/08	38	3.00	Fair
	03/11/09	31	2.25	Poor
PPAN-04	04/23/01	25	2.00	Poor
	03/22/02	23	2.50	Poor
	03/26/03	28	2.00	Poor
	04/29/04	11	1.75	Very Poor
	03/04/05	18	2.00	Poor
	03/03/06	34	2.50	Poor
	04/13/07	17	2.00	Poor
	04/23/08	29	2.25	Poor
	03/10/09	22	1.5	Very Poor

Table F-5. Summary of fish results from Peter Pan Run using the MBSS 2005 IBI						
Station ID	Date Sampled	Number of Taxa	Number of Fish Captured	Percent of Tolerant Individuals	Fish IBI Score	Fish IBI Rating
PPAN-01	10/12/99	9	373	81%	3.33	Fair
	09/28/00	11	493	82%	3.33	Fair
	07/12/01	5	684	67%	3.67	Fair
	08/22/02	5	429	74%	3.67	Fair
	07/17/03	12	424	53%	4.33	Good
	09/27/04	11	1166	71%	3.67	Fair
	06/23/05	12	1033	59%	4.33	Good
	06/06/06	11	1059	58%	4.00	Good
	07/03/07	10	901	61%	4.00	Good
	08/07/08	14	645	67%	3.67	Fair
09/09/09	12	703	75%	3.67	Fair	
PPAN-02	07/25/01	9	767	75%	3.67	Fair
	08/22/02	9	555	90%	3.33	Fair
	07/17/03	10	319	70%	3.67	Fair
	09/27/04	12	1013	65%	3.67	Fair
	06/23/05	8	678	63%	4.00	Good
	06/06/06	10	560	64%	3.67	Fair
	07/03/07	9	405	61%	4.00	Good
	08/07/08	14	350	61%	3.67	Fair
	09/09/09	13	320	56%	3.67	Fair
PPAN-03	10/12/99	2	36	94%	2.33	Poor
	09/28/00	5	263	94%	3.00	Fair
	07/11/01	5	403	87%	3.33	Fair
	08/22/02	*	*	*	*	*
	07/18/03	3	157	81%	3.33	Fair
	09/24/04	5	607	88%	3.33	Fair
	06/23/05	7	574	86%	3.33	Fair
	06/09/06	5	521	79%	3.67	Fair
	06/26/07	6	446	77%	3.67	Fair
	08/15/08	5	545	77%	3.67	Fair
09/15/09	4	590	83%	3.33	Fair	
PPAN-04	10/03/00	1	13	100%	1.00	Very Poor
	07/10/01	2	63	100%	1.33	Very Poor
	08/22/02	2	54	100%	1.67	Very Poor
	07/18/03	4	79	100%	1.67	Very Poor
	08/27/04	2	118	100%	1.67	Very Poor
	06/23/05	3	52	100%	1.33	Very Poor
	06/09/06	3	147	99%	2.00	Poor
	06/26/07	3	55	95%	2.00	Poor
	08/15/08	4	249	99%	2.00	Poor

Table F-5. (Continued)						
<b>Station D</b>	<b>Date Sampled</b>	<b>Number of Taxa</b>	<b>Number of Fish Captured</b>	<b>Percent of Tolerant Individuals</b>	<b>Fish IBI Score</b>	<b>Fish IBI Rating</b>
PPAN-04	09/09/09	3	135	100%	1.67	Very Poor
*Unsampleable; streambed dry.						

Table F-6. Qualitative habitat scores using MBSS protocols for Peter Pan Run								
Site	Date	Instream habitat (0-20)	Epifaunal substrate (0-20)	Velocity-depth diversity (0-20)	Pool-glide quality (0-20)	Riffle-run quality (0-20)	Embeddedness	Shading
PPAN-01	07/12/01	13	11	13	8	13	25%	90%
	09/25/01	9	12	10	11	14	15%	85%
	08/22/02	10	14	6	7	8	35%	85%
	07/17/03	10	12	14	12	13	30%	70%
	09/27/04	17	12	13	13	14	50%	60%
	06/23/05	13	11	14	14	13	50%	65%
	06/06/06	13	10	14	13	10	45%	60%
	07/03/07	12	9	13	12	13	50%	65%
	08/07/08	12	10	14	13	12	50%	70%
09/09/09	16	15	15	14	14	60%	65%	
PPAN-02	07/25/01	7	12	14	10	10	70%	20%
	09/25/01	9	12	10	11	12	20%	75%
	08/22/02	8	12	6	7	8	30%	75%
	07/17/03	11	8	14	12	8	30%	75%
	09/27/04	17	12	13	13	14	50%	55%
	06/23/05	13	11	13	13	12	60%	65%
	06/06/06	12	9	13	13	10	40%	70%
	07/03/07	10	8	8	9	11	50%	65%
	08/07/08	11	9	12	12	11	45%	65%
09/09/09	14	13	14	13	13	60%	65%	
PPAN-03	07/11/01	9	10	11	10	9	20%	95%
	09/25/01	8	14	11	11	11	25%	70%
	08/22/02*	ns	ns	ns	ns	ns	ns	ns
	07/18/03	8	7	10	6	8	35%	90%
	09/24/04	13	11	9	8	8	45%	40%
	06/23/05	12	11	8	9	8	60%	70%
	06/09/06	12	8	8	10	7	50%	60%
	06/26/07	13	10	8	8	11	60%	65%
	08/07/08	11	8	8	8	9	70%	65%
09/15/09	12	11	9	9	13	55%	50%	
PPAN-04	07/10/01	9	8	6	2	12	30%	95%
	09/25/01	6	10	6	2	8	40%	95%
	08/22/02	7	15	6	6	10	25%	95%
	07/18/03	7	8	7	6	9	45%	95%
	08/27/04	12	12	8	8	10	45%	95%
	06/23/05	7	5	7	6	6	75%	90%
	06/09/06	12	11	7	8	7	50%	85%
	06/26/07	9	11	7	5	7	70%	90%
	08/07/08	9	5	8	8	7	75%	90%
09/09/09	11	11	7	8	7	60%	90%	

\* Unsampleable, streambed dry  
ns - Not Sampled

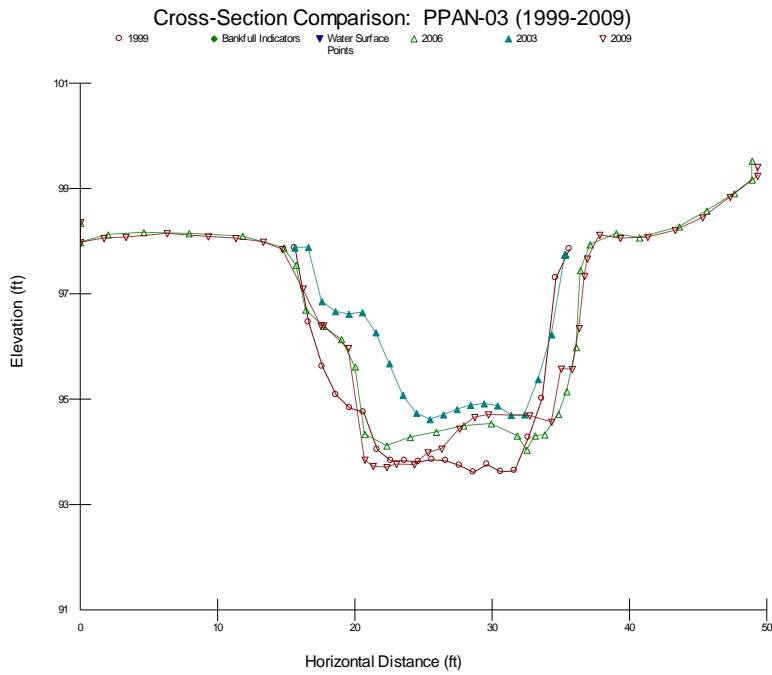


Figure F-1. Cross sectional changes at PPAN-03 between 1999 and 2009. Note that the cross-section is shown facing downstream.

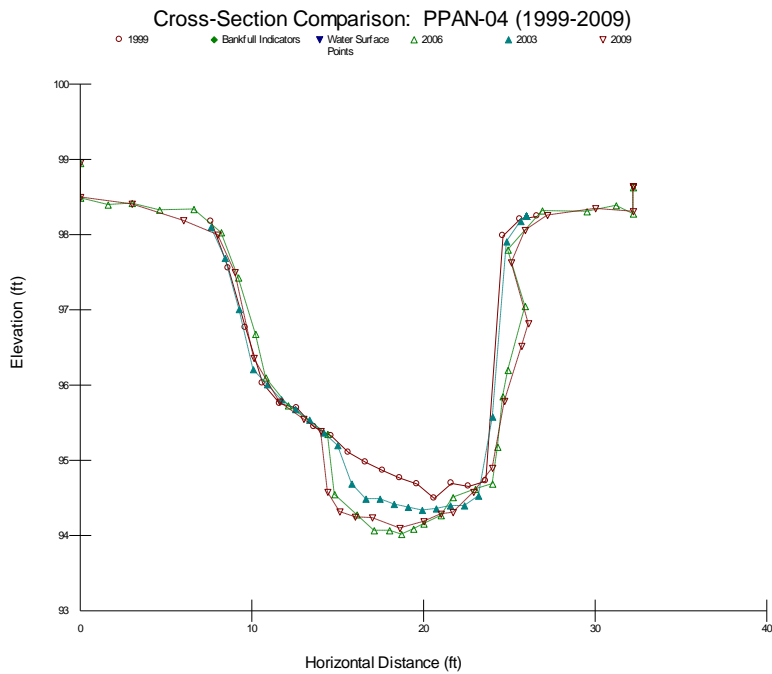


Figure F-2. Cross sectional changes at PPAN-04 between 1999 and 2009. Note that the cross-section is shown facing downstream.

