

APPENDIX F:

Volume & Shoreline Change Tables

This appendix contains the volume and shoreline change tables. The tables and their contents are summarized in **Table F.1**. For purposes of analysis and discussion, the south Amelia Island monitoring shoreline is qualitatively broken into four shoreline segments (or zones of interest, each with significantly varying physiographic characteristics. The four zones are as follows:

- **“SAISS Project Area” (14,820 ft):** R-59 to Detached Breakwater (R-75 + 250ft)
- **“AISP Atlantic Shoreline” (3,420 ft):** Detached Breakwater to Terminal Groin (R-79D)
- **“AISP Sound Shoreline” (4,750 ft):** Terminal Groin (R-79D) to R-82
- **“North of Project Area” (5,220 ft):** R-55 to R-59 (Northern Limit of 2011 project)

Volume changes between the monitoring surveys were computed above the MHWL (+2.0 ft-NAVD) and the presumed depth of closure (-20 ft-NAVD). Shoreline position changes were computed at the nominal fill berm elevation of +6.5 ft-NAVD, 2.0 feet below the seaward elevation of the construction berm, the MHWL (+2.0 ft-NAVD) and the MLWL (-3.1 ft-NAVD).

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Table F.2: Year 4 and Year 5 volume changes north of 2011 Project Area (R-55 to R-59)

Monuments	Reach (FT)	Volume Change (CY)					
		YEAR 4 (May 2014 to June 2015)			YEAR 5 (June 2015 to May 2016)		
		MHWL	MHWL to -20 FT	Total Above -20 ft	MHWL	MHWL to -20 FT	Total Above -20 ft
R-55 to R-56	1,190	-5,600	+8,200	+2,600	+2,500	+28,100	+30,600
R-56 to R-57	1,060	-4,800	+5,400	+600	+400	+18,200	+18,600
R-57 to R-58	990	-4,400	+500	-3,900	-2,300	+23,200	+20,900
R-58 to R-59	960	-3,600	-700	-4,300	-2,600	+23,900	+21,300
Total (R-55 to R-59):	4,200	-18,400	+13,400	-5,000	-2,000	+91,400	+93,400

Table F.3: Combined Year 4 and Year 5 and post-construction to Year 5 volume changes north of the 2011 Project Area (R-55 to R-59)

Monuments	Reach (FT)	Volume Change (CY)					
		YEAR 4 & YEAR 5 (May 2014 to May 2016)			POST THROUGH YEAR 5 (August 2011 to May 2016)		
		MHWL	MHWL to -20 FT	Total Above -20 ft	MHWL	MHWL to -20 FT	Total Above -20 ft
R-55 to R-56	1,190	-3,100	+36,300	+33,200	-800	+61,100	+60,300
R-56 to R-57	1,060	-4,400	+23,600	+19,200	-1,100	+46,000	+44,900
R-57 to R-58	990	-6,700	+23,700	+17,000	-1,500	+50,300	+48,800
R-58 to R-59	960	-6,200	+23,200	+17,000	-2,000	+50,600	+48,600
Total (R-55 to R-59):	4,200	-20,400	+104,800	+88,400	-5,400	+208,000	+202,600

Table F.4: BERM positions relative to April 2011 pre-construction positions north of 2011 Project Area (R-55 to R-59).

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	Berm (+6.5 ft-NAVD)					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
R-55	-9.9	-18.7	-2.1	-5.4	-26.5	-28.8
R-56	+0.4	-13.6	-5.6	-10.1	-22.8	-26.4
R-57	-3.7	-14.2	-10.1	+1.7	-22.5	-35.3
R-58	+0.6	-16.8	+11.4	+2.9	-12.3	-19.7
R-59	-1.3	-20.7	-8.4	+3.4	-10.4	-29.9
Wt. Avg⁽¹⁾	-2.2	-16.0	-2.6	-1.9	-19.3	-27.8

- (1) Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.
- (2) Values in red indicate positions landward of the April 2011 position.

Table F.5: MHWL positions relative to April 2011 pre-construction positions north of 2011 Project Area (R-55 to R-59).

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	MHWL (+2.0 ft-NAVD)					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
R-55	-21.3	-3.5	-20.1	-18.8	-34.2	-31.1
R-56	-16.4	-5.8	-12.9	-21.7	-33.4	-28.2
R-57	-10.6	-2.9	-17.0	-6.1	-11.1	-40.5
R-58	-6.7	+8.7	-12.4	-5.7	-3.4	-27.3
R-59	-15.1	-3.0	-14.2	-7.1	-9.2	-30.8
Wt. Avg⁽¹⁾	-13.3	-1.1	-15.0	-12.1	-18.3	-31.7

- (1) Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.
- (2) Values in red indicate positions landward of the April 2011 position.

Table F.6: MLWL positions relative to April 2011 pre-construction positions north of 2011 Project Area (R-55 to R-59).

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	MHWL (-3.1 ft-NAVD)					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
R-55	+16.9	-96.7	-21.5	+19.2	+51.9	+51.7
R-56	+43.8	-113.8	-6.5	+18.6	+53.0	+45.4
R-57	+55.4	-111.0	+0.1	+25.2	+44.2	+31.8
R-58	+9.2	-79.4	+14.5	+35.4	+32.9	+53.7
R-59	+74.8	+19.2	+24.7	+38.7	+54.2	+47.7
Wt. Avg⁽¹⁾	+48.6	-86.7	+1.6	+26.6	+46.2	+45.2

- (1) Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.
- (2) Values in red indicate positions landward of the April 2011 position.

Table F.7: Year 4 and Year 5 volume changes within the 2011 project area from R-59 to the detached breakwater (R-75+250 feet).

Monuments	Reach (FT)	Volume Change (CY)					
		YEAR 4 (May 2014 to June 2015)			YEAR 5 (June 2015 to May 2016)		
		MHWL	MHWL to -20 FT	Total Above -20 ft	MHWL	MHWL to -20 FT	Total Above -20 ft
R-59 to R-60	1,020	-6,800	-4,300	-11,100	-1,000	+26,000	+25,000
R-60 to R-61	940	-5,900	-3,800	-9,700	-500	+24,400	+23,900
R-61 to R-62	1,080	-3,900	+400	-3,500	-4,100	+13,500	+9,400
R-62 to R-63	910	-3,500	+3,100	-400	-3,800	+8,700	+4,900
R-63 to R-64	950	-3,300	-1,300	-4,600	-2,800	+14,700	+11,900
R-64 to R-65	940	-2,700	-6,100	-8,800	-4,400	+10,400	+6,000
R-65 to R-66	920	-2,400	-4,400	-6,800	-5,100	+11,000	+5,900
R-66 to R-67	930	-900	-4,100	-5,000	-4,600	+12,300	+7,700
R-67 to R-68	990	-2,600	+1,100	-1,500	-4,900	+13,000	+8,100
R-68 to R-69	1,050	-8,400	+4,200	-4,200	-4,900	+22,700	+17,800
R-69 to R-70	970	-8,900	-300	-9,200	-3,700	+16,500	+12,800
R-70 to R-71	1,000	-6,300	-7,800	-14,100	-4,900	+13,100	+8,200
R-71 to R-72	900	-4,800	-7,600	-12,400	-2,600	+7,400	+4,800
R-72 to AP-19	990	-5,600	+3,100	-2,500	-300	+9,400	+9,100
AP-19 to AP-20	490	-3,300	+11,000	+7,700	-400	+8,200	+7,800
AP-20 to AP-21	540	-3,500	+16,800	+13,300	-900	+9,200	+8,300
AP-21 to AP-22	510	-2,900	+9,800	+6,900	-1,500	+13,400	+11,900
AP-22 to R-75	460	-4,700	+4,400	-300	-200	+12,700	+12,500
R-75 to Detached Breakwater	250	-4,200	-8,000	-12,200	+300	+7,700	+8,000
Total (R-59 to Detached Breakwater):	15,840	-84,600	+6,200	-78,400	-50,300	+254,300	+204,000

Table F.8: Combined Year 4 and Year 5 and post-construction to Year 5 volume changes within the 2011 project area from R-59 to the detached breakwater (R-75+250 feet).

Monuments	Reach (FT)	Volume Change (CY)					
		YEAR 4 & YEAR 5 (May 2014 to May 2016)			POST THROUGH YEAR 5 (August 2011 to May 2016)		
		MHWL	MHWL to -20 FT	Total Above -20 ft	MHWL	MHWL to -20 FT	Total Above -20 ft
R-59 to R-60	1,020	-7,800	+21,700	+13,900	-11,500	+43,800	+32,300
R-60 to R-61	940	-6,400	+20,600	14,200	-25,100	+34,400	+9,300
R-61 to R-62	1,080	-8,000	+13,900	5,900	-47,500	+31,600	-15,900
R-62 to R-63	910	-7,300	+11,800	4,500	-52,600	+25,300	-27,300
R-63 to R-64	950	-6,100	+13,400	7,300	-53,700	+30,500	-23,200
R-64 to R-65	940	-7,100	+4,300	-2,800	-49,700	+23,400	-26,300
R-65 to R-66	920	-7,500	+6,600	-900	-49,000	+24,200	-24,800
R-66 to R-67	930	-5,500	+8,200	2,700	-46,900	+40,100	-6,800
R-67 to R-68	990	-7,500	+14,100	6,600	-51,300	+52,500	+1,200
R-68 to R-69	1,050	-13,300	+26,900	13,600	-62,400	+39,500	-22,900
R-69 to R-70	970	-12,600	+16,200	3,600	-59,400	+19,900	-39,500
R-70 to R-71	1,000	-11,200	+5,300	-5,900	-60,100	+22,200	-37,900
R-71 to R-72	900	-7,400	-200	-7,600	-49,100	+7,800	-41,300
R-72 to AP-19	990	-5,900	+12,500	6,600	-43,600	+25,200	-18,400
AP-19 to AP-20	490	-3,700	+19,200	15,500	-16,900	+31,800	+14,900
AP-20 to AP-21	540	-4,400	+26,000	21,600	-15,800	+43,700	+27,900
AP-21 to AP-22	510	-4,400	+23,200	18,800	-14,000	+39,300	+25,300
AP-22 to R-75	460	-4,900	+17,100	12,200	-9,100	+34,000	+24,900
R-75 to Detached Breakwater	250	-3,900	-300	-4,200	-2,100	+31,900	+29,800
Total (R-59 to Detached Breakwater):	15,840	-134,900	+260,500	+125,600	-719,800	+601,100	-118,700

Table F.9: BERM positions relative to April 2011 Pre-Construction positions within the 2011 project area from R-59 to the detached breakwater (R-75+250 feet).

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	BERM					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
R-59	-1.3	-20.7	-8.4	+3.4	-10.4	-29.9
R-60	+81.2	-11.6	+10.4	+29.5	-4.8	-5.2
R-61	+132.5	-11.0	-15.4	+27.5	+15.5	-4.3
R-62	+202.5	+1.4	-6.2	+41.0	+29.4	+6.3
R-63	+241.5	+46.7	+27.7	+44.6	+32.4	+9.2
R-64	+222.6	+76.4	+42.7	+51.5	+48.7	+29.8
R-65	+239.5	+79.4	+62.4	+73.3	+66.6	+43.3
R-66	+224.7	+82.3	+71.7	+54.8	+57.6	+43.1
R-67	+242.5	+103.1	+116.0	+62.7	+70.9	+46.8
R-68	+278.7	+122.4	+136.6	+76.0	+69.7	+53.6
R-69	+277.9	+146.7	+133.9	+99.5	+70.9	+57.2
R-70	+292.9	+174.3	+148.6	+107.7	+85.9	+76.6
R-71	+276.9	+166.7	+154.6	+105.8	+89.5	+73.5
R-72	+265.6	+177.5	+173.1	+108.6	+87.2	+86.7
AP-19	+240.1	+109.6	+120.3	+73.3	+66.3	+59.7
AP-20	+186.9	+93.8	+87.1	+117.4	+65.4	+60.3
AP-21	+173.3	+90.3	+99.6	+64.2	+82.4	+64.9
AP-22	+135.8	+72.7	+48.7	+64.5	+69.0	+55.3
R-75	+84.5	+57.0	+50.2	+112.8	+63.4	+55.7
DETACHED BREAKWATER						
Wt. Avg⁽¹⁾	+211.5	+84.7	+79.0	+68.8	+55.4	+40.7

(1) Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.

(2) Values in red indicate positions landward of the April 2011 position.

Table F.10: MHWL positions relative to April 2011 Pre-Construction positions within the 2011 project area from R-59 to the detached breakwater (R-75+250 feet).

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	MHWL					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
R-59	-15.1	-3.0	-14.2	-7.1	-9.2	-30.8
R-60	+78.5	+11.1	+34.1	+17.3	-8.3	+3.5
R-61	+119.1	-12.8	+30.6	+11.2	+5.7	+7.3
R-62	+213.9	+6.9	+66.5	+37.2	+34.6	+11.8
R-63	+228.8	+51.7	+47.4	+33.5	+25.5	+23.4
R-64	+232.0	+87.3	+81.0	+60.1	+49.3	+43.6
R-65	+246.9	+95.1	+107.6	+69.6	+66.3	+44.2
R-66	+240.3	+145.9	+156.4	+63.2	+72.8	+51.6
R-67	+241.4	+123.8	+155.3	+85.0	+76.7	+71.7
R-68	+270.3	+179.8	+180.8	+137.6	+87.1	+82.2
R-69	+297.6	+213.2	+160.5	+143.5	+86.5	+66.0
R-70	+288.2	+212.7	+145.2	+147.7	+91.7	+80.7
R-71	+318.6	+226.7	+168.5	+149.5	+123.4	+80.4
R-72	+288.2	+200.0	+149.3	+124.5	+92.9	+92.9
AP-19	+220.8	+143.2	+116.7	+130.3	+120.1	+102.3
AP-20	+175.6	+117.9	+71.6	+114.9	+89.4	+93.5
AP-21	+184.1	+107.7	+65.5	+126.0	+91.4	+101.8
AP-22	+160.1	+103.0	+47.5	+143.2	+92.4	+65.9
R-75	+157.0	+91.9	+42.2	+142.3	+68.3	+92.1
DETACHED BREAKWATER						
Wt. Avg⁽¹⁾	+218.1	+113.9	+102.8	+88.6	+65.1	+55.2

⁽¹⁾ Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.

⁽²⁾ Values in red indicate positions landward of the April 2011 position.

Table F.11: MLWL positions relative to April 2011 Pre-Construction positions within the 2011 project area from R-59 to the detached breakwater (R-75+250 feet).

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	MLWL					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
R-59	+74.8	+19.2	+24.7	+38.7	+54.2	+47.7
R-60	+112.4	+59.0	+28.7	+49.9	+77.7	+50.8
R-61	+110.8	+26.7	+16.4	+42.6	+70.5	+60.4
R-62	+179.7	+84.2	+38.3	+80.8	+102.8	+76.4
R-63	+188.4	+118.5	+65.2	+79.8	+89.5	+65.6
R-64	+194.8	+98.6	+70.6	+99.1	+94.1	+99.2
R-65	+204.0	+126.0	+86.2	+105.4	+112.0	+91.8
R-66	+204.5	+115.0	+95.2	+101.9	+50.1	+112.3
R-67	+206.1	+143.4	+115.1	+136.6	+147.6	+121.4
R-68	+216.3	+125.4	+112.8	+119.8	+188.2	+124.7
R-69	+243.3	+128.9	+89.4	+142.6	+180.3	+125.0
R-70	+229.8	+133.3	+85.8	+136.8	+154.1	+144.5
R-71	+261.6	+159.8	+102.3	+137.8	+148.8	+129.5
R-72	+228.2	+120.7	+120.4	+101.8	+127.5	+100.4
AP-19	+183.8	+90.8	+121.2	+116.2	+169.1	+140.7
AP-20	+125.4	+45.0	+28.4	+68.8	+152.0	+93.1
AP-21	+117.5	+15.4	+69.0	+74.4	+198.0	+103.1
AP-22	+104.9	+25.0	+49.1	+111.9	+213.1	+124.5
R-75	+93.9	+224.9	+115.3	+119.0	+177.7	+110.4
DETACHED BREAKWATER						
Wt. Avg⁽¹⁾	+182.4	+102.0	+77.1	+99.9	+127.8	+101.3

⁽¹⁾ Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.

Table F.12: Year 4 and Year 5 volume changes south of the detached breakwater to the terminal groin.

Monuments	Reach (FT)	Volume Change (CY)					
		YEAR 4 (May 2014 to June 2015)			YEAR 5 (June 2015 to May 2016)		
		MHWL	MHWL to -20 FT	Total Above -20 ft	MHWL	MHWL to -20 FT	Total Above -20 ft
Detached Breakwater to A-23	260	-4,000	-11,500	-15,500	0	+10,200	+10,200
A-23 to A-24	430	-6,000	-17,400	-23,400	-200	+17,500	+17,300
A-24 to A-25	410	-1,000	-8,400	-9,400	-800	+19,400	+18,600
A-25 to R-77	470	+1,200	-16,200	-15,000	-1,300	+14,200	+12,900
R-77 to R-77.5	510	-700	-10,200	-10,900	0	+23,400	+23,400
R-77.5 to R-78	480	-200	+15,000	+14,800	+1,600	+8,100	+9,700
R-78 to R-78.5	410	+2,900	+6,400	+9,300	+1,100	-13,800	-12,700
R-78.5 to D-79	360	+4,900	-900	+4,000	-3,600	-3,900	-7,500
D-79 to Terminal Groin	90	+1,400	+900	+2,300	-2,000	-100	-2,100
Total (Detached Breakwater to Terminal Groin):	3,420	-1,500	-42,300	-43,800	-5,200	+75,000	+69,800

Table F.13: Combined Year 4 and Year 5 and post-construction to Year 5 volume changes south of the detached breakwater to the terminal groin.

Monuments	Reach (FT)	Volume Change (CY)					
		YEAR 4 & YEAR 5 (May 2014 to May 2016)			POST THROUGH YEAR 5 (August 2011 to May 2016)		
		MHWL	MHWL to -20 FT	Total Above -20 ft	MHWL	MHWL to -20 FT	Total Above -20 ft
Detached Breakwater to A-23	260	-4,000	-1,300	-5,300	-3,400	+39,100	+35,700
A-23 to A-24	430	-6,200	+100	-6,100	-7,200	+64,500	+57,300
A-24 to A-25	410	-1,800	+11,000	+9,200	-6,500	+44,100	+37,600
A-25 to R-77	470	-100	-2,000	-2,100	-500	+18,800	+18,300
R-77 to R-77.5	510	-700	+13,200	+12,500	4,300	+36,800	+41,100
R-77.5 to R-78	480	+1,400	+23,100	+24,500	8,700	+50,500	+59,200
R-78 to R-78.5	410	+4,000	-7,400	-3,400	9,600	+33,400	+43,000
R-78.5 to D-79	360	+1,300	-4,800	-3,500	3,500	+34,200	+37,700
D-79 to Terminal Groin	90	-600	+800	+200	-600	+9,600	+9,000
Total (Detached Breakwater to Terminal Groin):	3,420	-6,700	+32,700	+26,000	+7,900	+331,000	+338,900

Table F.14: Shoreline positions relative to April 2011 Pre-Construction positions south of the detached breakwater to the terminal groin.

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	Berm (+6.5 ft-NAVD)					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
DETACHED BREAKWATER						
AP-23	+46.0	+15.1	+3.2	+25.5	+7.3	+42.1
AP-24	+107.3	-15.3	-72.7	+130.4	+86.5	+30.9
AP-25	+76.0	-39.2	-131.4	+79.5	+79.1	+11.0
R-77	+55.3	-18.1	-67.1	-46.7	NA	+2.5
R-77.5	+99.5	+72.6	+75.1	+77.9	NA	+115.4
R-78	+92.2	+56.5	+138.5	+82.4	NA	+129.0
R-78.5	+2.3	+17.6	+169.8	+198.5	+197.4	+203.2
D-79	-1.6	+3.8	+7.2	NA(2)	NA	+195.2
TERMINAL GROIN						
Wt. Avg⁽¹⁾	+63.8	+12.7	+13.6	+67.4	NA	+83.2

- (1) Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.
- (2) Upland beach access in the vicinity of R-79 was limited by the Park for the May 2014 survey due to concerns regarding potential impacts to nearby nesting shorebirds.
- (3) Values in red indicate positions landward of the April 2011 position.

Table F.15: MHWL positions relative to April 2011 Pre-Construction positions south of the detached breakwater to the terminal groin.

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	MHWL (+2.0 ft-NAVD)					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
DETACHED BREAKWATER						
AP-23	+92.0	+76.9	-0.6	+219.1	+80.2	+118.0
AP-24	+99.1	-38.1	-34.0	+174.1	+84.2	+116.5
AP-25	+98.4	-33.8	-45.7	+112.6	+72.9	+132.2
R-77	+66.4	-19.7	-82.7	+106.2	+110.2	+100.8
R-77.5	+22.5	+19.9	-0.1	+142.1	+141.5	+148.5
R-78	-5.4	-4.6	+52.1	+160.2	+191.8	+171.9
R-78.5	+22.6	+14.5	+117.8	+118.6	+254.3	+188.3
D-79	+94.7	+111.4	+171.5	+179.5	+329.5	+246.4
TERMINAL GROIN						
Wt. Avg⁽¹⁾	+59.7	+11.5	+11.6	+150.5	+146.7	+146.7

- (1) Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.
- (2) Upland beach access in the vicinity of R-79 was limited by the Park for the May 2014 survey due to concerns regarding potential impacts to nearby nesting shorebirds.
- (3) Values in red indicate positions landward of the April 2011 position.

Table F.16: MLWL positions relative to April 2011 Pre-Construction positions south of the detached breakwater to the terminal groin.

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	MLWL (-3.1 ft-NAVD)					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
DETACHED BREAKWATER						
AP-23	+78.7	+111.8	+121.8	+336.6	+177.7	+110.4
AP-24	+91.3	+24.6	+68.9	+239.0	+281.0	+182.6
AP-25	+98.4	-36.9	+76.3	+288.6	+302.1	+167.2
R-77	+55.9	-34.3	-62.9	+199.3	+270.4	+164.4
R-77.5	+24.2	+158.3	+43.3	+233.9	+153.1	+119.3
R-78	-20.0	+116.2	+144.5	+247.1	+227.0	+169.6
R-78.5	-11.9	+78.8	+203.0	+326.2	+242.0	+156.2
D-79	-51.1	-34.7	+35.6	+217.7	+234.4	+152.2
TERMINAL GROIN						
Wt. Avg⁽¹⁾	+38.3	+53.0	+76.9	+261.7	+240.9	+154.9

- (1) Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.
- (2) Upland beach access in the vicinity of R-79 was limited by the Park for the May 2014 survey due to concerns regarding potential impacts to nearby nesting shorebirds.
- (3) Values in red indicate positions landward of the April 2011 position.

Table F.17: Year 4 and Year 5 volume changes along the 4,750 feet of shoreline between the terminal groin and the A1A bridge at R-82 (AISP Sound Shoreline).

Monument Range	Reach (FT)	Volume Change (CY)					
		YEAR 4 (May 2014 to June 2015)			YEAR 5 (June 2015 to May 2016)		
		MHWL	MHWL to -20 FT	Total Above -20 ft	MHWL	MHWL to -20 FT	Total Above -20 ft
Terminal Groin to R-79	560	+2,300	+25,900	+28,200	+800	+29,300	+30,100
R-79 to B-79	400	+2,600	+8,200	+10,800	-2,100	+38,200	+36,100
B-79 to C-79	400	+1,100	-1,200	-100	-2,500	+25,800	+23,300
C-79 to A-79	480	-800	-3,000	-3,800	-100	-1,100	-1,200
A-79 to R-79.5	390	+300	+16,300	+16,600	+100	+9,100	+9,200
R-79.5 to R-80	560	-100	+23,800	+23,700	+800	+13,500	+14,300
R-80 to R-80.5	490	0	-900	-900	+400	+18,900	+19,300
R-80.5 to R-81	470	+500	+1,200	+1,700	-100	+17,600	+17,500
R-81 to R-81.5	500	+100	-1,600	-1,500	+200	+1,600	+1,800
R-81.5 to R-82	500	+100	-1,200	-1,100	+100	-200	-100
Total (Terminal Groin to R-82):	4,750	+6,100	+67,500	+73,600	-2,400	+152,700	+150,300

Table F.18: Combined Year 4 and Year 5 and post-construction to Year 5 volume changes along the 4,750 feet of shoreline between the terminal groin and the A1A bridge at R-82 (AISP Sound Shoreline).

Monument Range	Reach (FT)	Volume Change (CY)					
		YEAR 4 & YEAR 5 (May 2014 to May 2016)			POST THROUGH YEAR 5 (August 2011 to May 2016)		
		MHWL	MHWL to -20 FT	Total Above -20 ft	MHWL	MHWL to -20 FT	Total Above -20 ft
Terminal Groin to R-79	560	+3,100	+55,200	+58,300	+9,400	+43,100	+52,500
R-79 to B-79	400	+500	+46,400	+46,900	+1,600	+95,000	+96,600
B-79 to C-79	400	-1,400	+24,600	+23,200	-3,400	+77,900	+74,500
C-79 to A-79	480	-900	-4,100	-5,000	+300	+16,600	+16,900
A-79 to R-79.5	390	+400	+25,400	+25,800	+2,900	+49,100	+52,000
R-79.5 to R-80	560	+700	+37,300	+38,000	+2,100	+48,200	+50,300
R-80 to R-80.5	490	+400	+18,000	+18,400	+1,000	+14,600	+15,600
R-80.5 to R-81	470	+400	+18,800	+19,200	+300	+15,100	+15,400
R-81 to R-81.5	500	+300	0	+300	0	+700	+700
R-81.5 to R-82	500	+200	-1,400	-1,200	+600	-400	+200
Total (Terminal Groin to R-82):	4,750	+3,700	+220,200	+223,900	+14,800	+359,900	+374,700

Table F.19: BERM positions relative to April 2011 Pre-Construction positions between the terminal groin and the A1A bridge at R-82 (AISP Sound Shoreline).

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	BERM (+6.5 ft-NAVD)					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
TERMINAL GROIN						
R-79	-3.4	+4.4	NA	NA	NA	+93.1
B-79	+2.6	+101.1	NA	NA	NA	+95.6
C-79	-0.8	+41.9	NA	NA	NA	+9.1
A-79	+0.5	+24.8	+36.9	+43.5	NA	+47.9
R-79.5	+1.9	+4.8	-43.4	+13.6	+18.7	+22.5
R-80	-12.4	+7.4	-8.8	-7.9	-13.5	-6.4
R-80.5	-2.6	+2.3	+3.5	+3.7	+1.9	+3.0
R-81	-1.3	-7.4	-12.4	-15.6	-13.4	-11.3
R-81.5	+0.8	-1.0	-0.5	-0.3	-0.8	-0.4
R-82	+1.4	+3.3	+4.4	+7.3	+7.9	+4.7
Wt. Avg⁽¹⁾	-1.8	+16.2	-4.0	+5.4	-0.5	+29.1

- (1) Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.
- (2) Upland beach access in the vicinity of R-79 was limited by the Park for the May 2014 and June 2015 surveys due to concerns regarding potential impacts to nearby nesting shorebirds.

Table F.20: MHWL positions relative to April 2011 Pre-Construction positions between the terminal groin and the A1A bridge at R-82 (AISP Sound Shoreline).

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	MHWL (+2.0 ft-NAVD)					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
TERMINAL GROIN						
R-79	+5.9	+136.6	+123.9	+94.0	+191.1	+234.5
B-79	-28.6	+60.7	-7.2	-32.5	+55.8	+232.6
C-79	-43.1	-71.7	+3.0	-76.3	-126.7	-136.6
A-79	+12.2	+7.9	+29.2	+18.7	NA	-16.2
R-79.5	+3.6	+4.9	-7.7	-2.8	-6.3	+2.6
R-80	-30.7	-18.7	-27.0	-25.9	-34.4	-27.4
R-80.5	+6.3	-0.7	-3.4	-6.8	-4.1	+1.9
R-81	-1.4	-0.5	+3.4	+6.0	+6.4	+21.6
R-81.5	+4.3	-0.6	+5.5	+8.9	+10.2	+13.5
R-82	+10.6	+4.5	+14.8	+14.4	+16.4	+32.6
Wt. Avg⁽¹⁾	-5.9	+19.5	+19.8	+5.4	+21.3	+45.7

- (3) Given the non-uniform alongshore spacing of survey monuments, the shoreline positions were spatially weighted based upon the distance between monuments.
- (4) Upland beach access in the vicinity of R-79 was limited by the Park for the May 2014 survey due to concerns regarding potential impacts to nearby nesting shorebirds.

Table 2.21: MLWL positions relative to April 2011 Pre-Construction positions between the terminal groin and the A1A bridge at R-82 (AISP Sound Shoreline).

R-Mon	Position Relative to April 2011 (Pre-Construction)					
	MLWL (-3.1 ft-NAVD)					
	Aug. 2011 (POST)	June 2012 (YR 1)	June 2013 (YR 2)	May 2014 (YR 3)	June 2015 (YR 4)	May 2016 (YR 5)
TERMINAL GROIN						
R-79	<i>-85.9</i>	+44.1	+56.0	+196.3	+246.9	+259.6
B-79	<i>-108.1</i>	<i>-32.0</i>	<i>-42.8</i>	+38.4	+115.5	+272.0
C-79	<i>-39.9</i>	<i>-11.8</i>	+43.0	<i>-3.2</i>	+0.2	<i>-31.2</i>
A-79	+12.4	+24.7	+35.1	+26.3	NA	<i>-8.8</i>
R-79.5	+4.1	+10.1	+2.5	<i>-4.3</i>	<i>-2.2</i>	<i>-3.1</i>
R-80	<i>-10.3</i>	+3.1	<i>-6.4</i>	<i>-5.1</i>	<i>-16.8</i>	<i>-9.8</i>
R-80.5	+7.8	+11.6	+3.1	<i>-3.5</i>	<i>-2.6</i>	+11.2
R-81	+1.9	+6.6	+4.4	+0.8	<i>-1.0</i>	+2.3
R-81.5	+3.4	+8.9	+3.3	+2.5	+2.0	+3.9
R-82	+6.9	+12.6	+6.7	+4.7	+6.7	+5.6
Wt. Avg⁽¹⁾	-24.4	+10.3	+13.6	+36.0	+47.5	+61.4