Table 2 **Disposal of Dredged Material at Mouth of the Columbia River ODMDSs (1956-2003)**

(MCR & Tongue Point Dredged Material Deposited at Cited Disposal Areas)

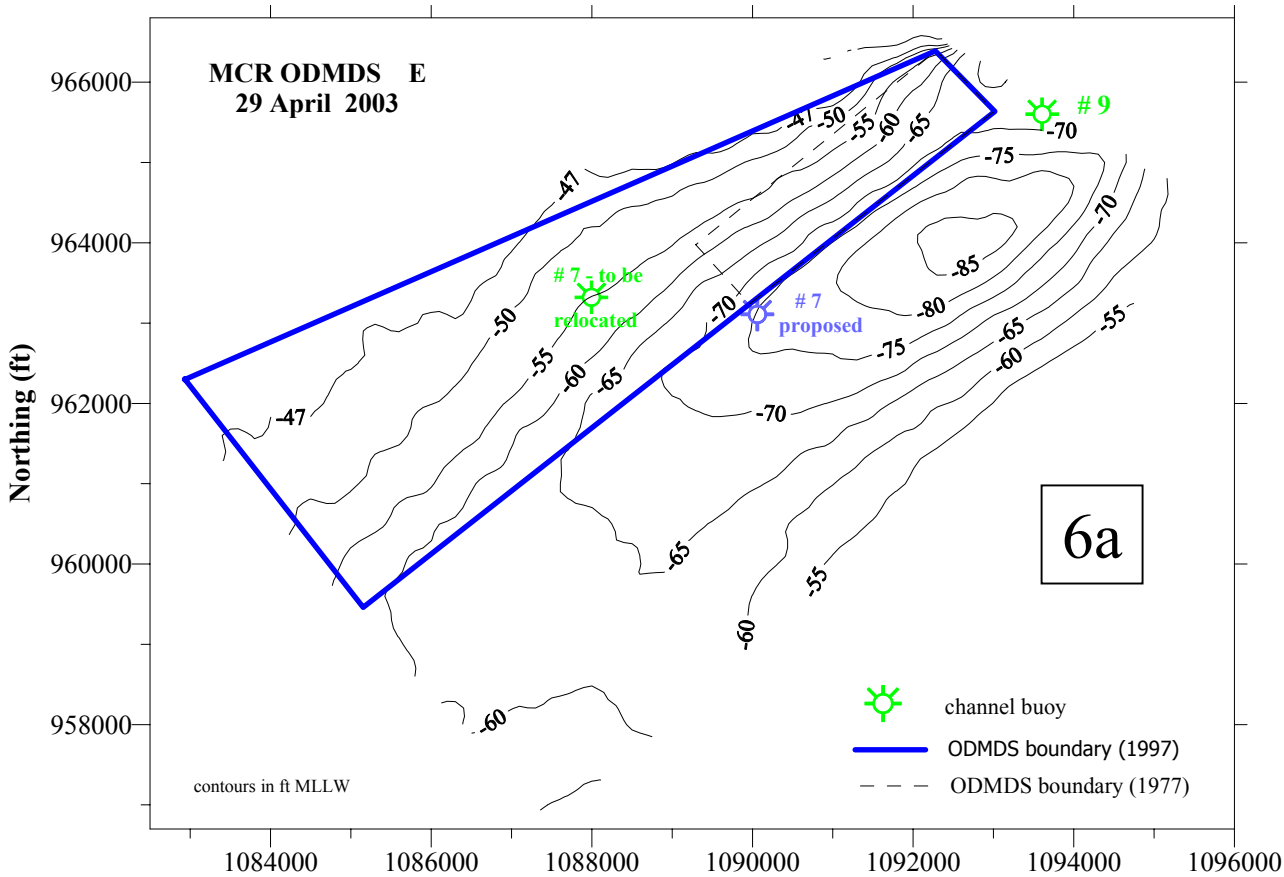
Disposal Site	A	B	C*	D *	E	F	G	Total cubic yards
Fiscal Year	cy	cy	cy	cy	cy	cy	cy	cy
1956	12,096,000	1,296,000	504,000	504,000	0	0	0	14,400,000
1957	1,605,643	1,221,307	422,071	838,428	0	0	0	4,087,449
1958	6,135	2,274,704	0	326,753	0	0	0	2,607,592
1959	0	1,914,964	0	661,021	0	0	0	2,575,985
1960	0	1,927,208	0	612,636	0	0	0	2,539,844
1961	0	1,837,879	0	297,066	0	0	0	2,134,945
1962	0	2,322,256	2,838	632,618	0	0	0	2,957,712
1963	0	1,725,851	724,630	234,735	0	0	0	2,685,216
1964	0	514,900	1,459,186	683,151	0	0	0	2,657,237
1965	0	675,921	1,205,090	1,606,671	0	0	0	3,487,682
1966	0	2,010,673	29,891	2,437,451	0	215,002	0	4,693,017
1967	0	1,463,573	1,067	354,700	0	422,066	0	2,241,406
1968	0	1,919,199	0	109,592	0	0	0	2,028,791
1969	0	2,021,562	0	89,042	0	0	0	2,110,604
1970	0	1,489,795	0	3,060	0	0	0	1,492,855
1971	51,047	1,439,042	13,818	241,689	0	0	0	1,745,596
1972	12,995	2,579,688	0	287,646	0	1,886	0	2,882,215
1973	0	3,051,662	0	409,640	291,439	3,060	0	3,755,801
1974	0	994,059	0	506,711	2,168,543	29,123	0	3,698,436
1975	0	333,462	0	895,594	4,886,792	27,539	0	6,143,387
1976	2,574	1,017,100	0	758,743	4,257,150	53,250	602,895	6,691,712
1977	2,867,393	1,868,579	0	710,373	3,678,429	0	0	9,124,774
1978	3,060	187,704	0	312,635	3,925,986	0	0	4,429,385
1979	0	116,502	0	158,466	4,930,840	0	0	5,205,808
1980	11,142	118,686	0	0	2,675,722	0	0	2,805,550
1981	2,254,321	9,180	0	0	3,042,896	0	0	5,306,397
1982	971,209	12,240	0	0	3,086,514	0	0	4,069,963
1983	1,124,466	199,969	0	0	606,218	0	0	1,930,653
1984	4,060,853	3,864,247	0	0	989,600	0	0	8,914,700
1985	1,326,150	2,068,927	0	0	4,126,429	0	0	7,521,506
1986	2,037,455	3,387,376	0	0	2,926,412	0	0	8,351,243
1987	1,593,550	1,209,358	0	0	1,183,050	0	0	3,985,958
1988	1,447,240	4,533,756	0	0	478,864	0	0	6,459,860
1989	647,458	3,456,285	0	0	568,522	2,030,954	0	6,703,219
1990	2,729,358	1,119,663	0	0	507,201	0	0	4,356,222
1991	1,486,938	1,956,570	0	0	380,142	0	0	3,823,650
1992	874,700	2,888,028	0	0	796,198	0	0	4,558,926
1993	0	1,629,208	0	0	988,208	2,288,431	0	4,905,847
1994	408,924	1,002,668	0	0	397,621	1,500,407	0	3,309,620
1995	0	2,480,664	0	0	988,547	0	0	3,469,211
1996	0	1,693,145	0	0	726,336	2,205,113	0	4,624,594
1997	0	326,824	0	0	1,071,246	174,883	0	1,572,953
1998	0	0	0	0	3,444,656	820,722	0	4,265,378
1999	0	0	1,050,000	0	3,750,000	262,000	0	5,062,000
2000	0	0	504,000	0	2,896,000	465,500	0	3,865,500
2001	0	0	498,000	0	2,176,000	1,390,000	0	4,064,000
2002**	0	0	498,800	0	1,503,800	2,270,668	0	4,273,268
2003	0	0	448,000	0	2,848,300	0	0	3,296,300
Totals	37,618,611	68,160,384	7,361,391	13,672,421	66,297,661	14,160,604	602,895	207,873,967
Volume of **sediment** placed in Ocean Dredged Material Disposal Sites for 1956-2002 (cy)								***186,840,155***

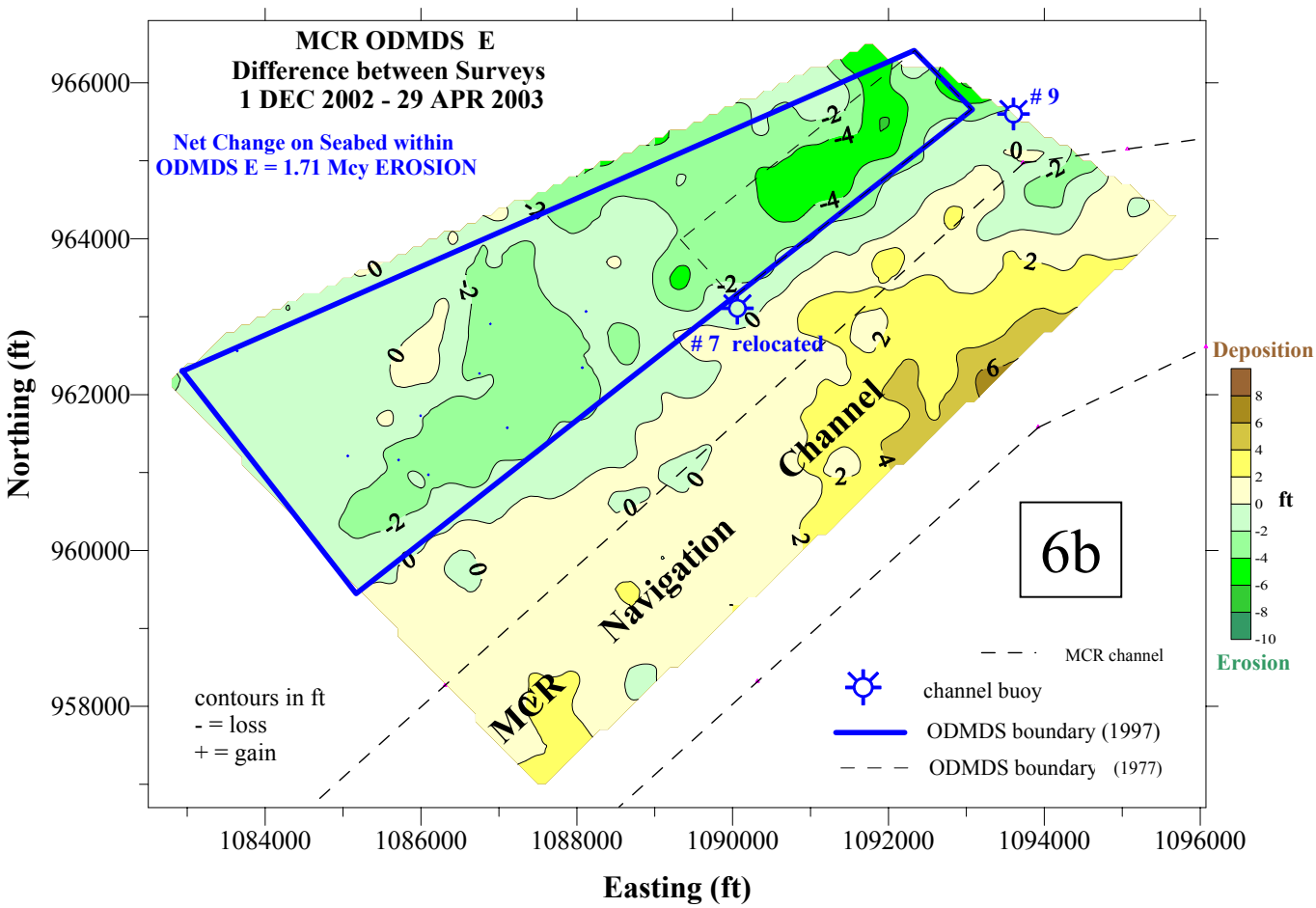
Annual Avg	North Jetty	ODMDS E	ODMDS F	Annual avg. for	
1997-2003	**599,760**	**2,527,143**	**897,296**	1990-2003	3,960,534
				1986-1989	6,375,070
				1977-1985	5,478,748
				1956-1976	3,696,071

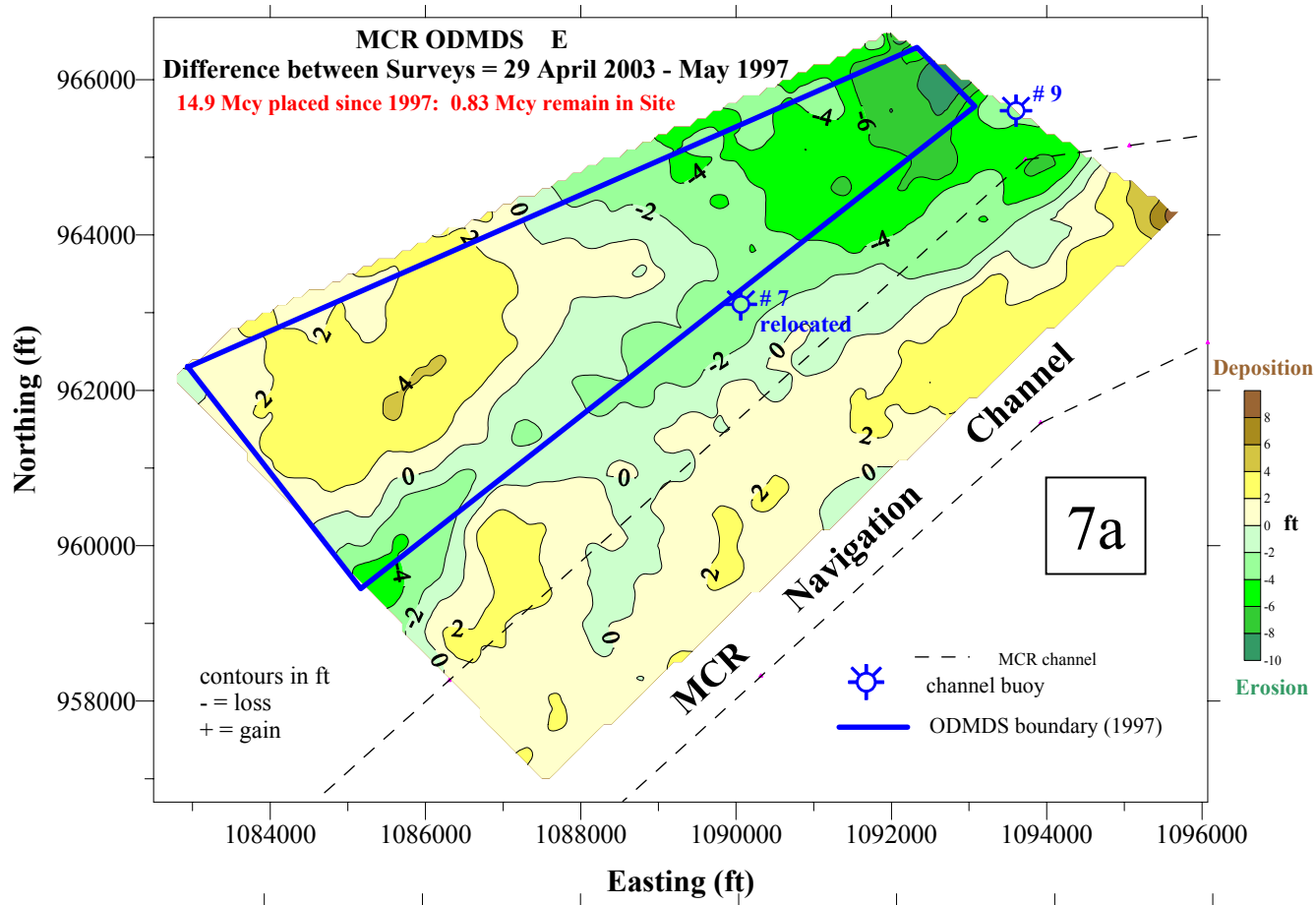
Note 1 : ODMDSs receive *Interim* designation in 1977 .

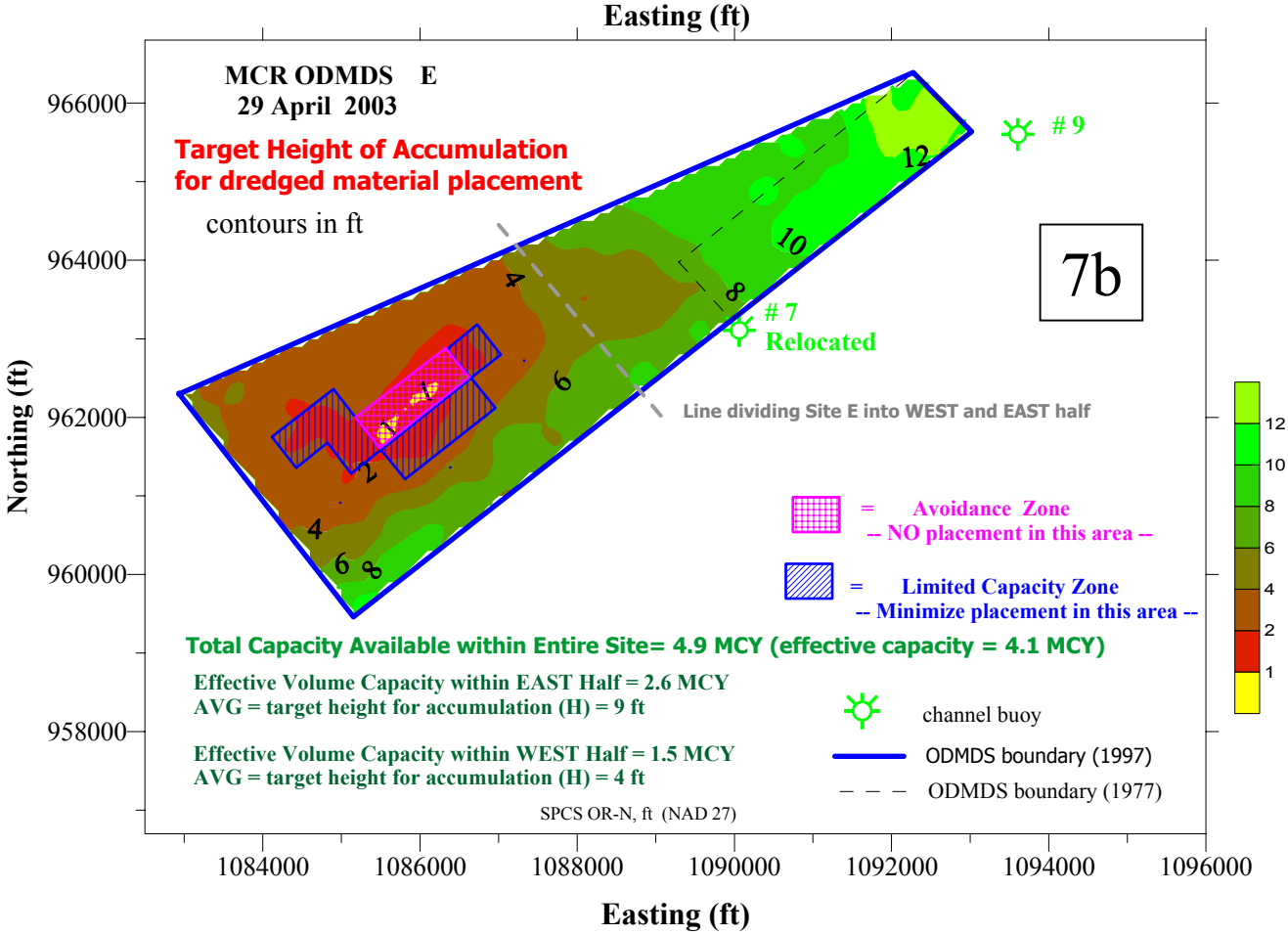
Note 2: Final designation of ODMDSs in 1986 .

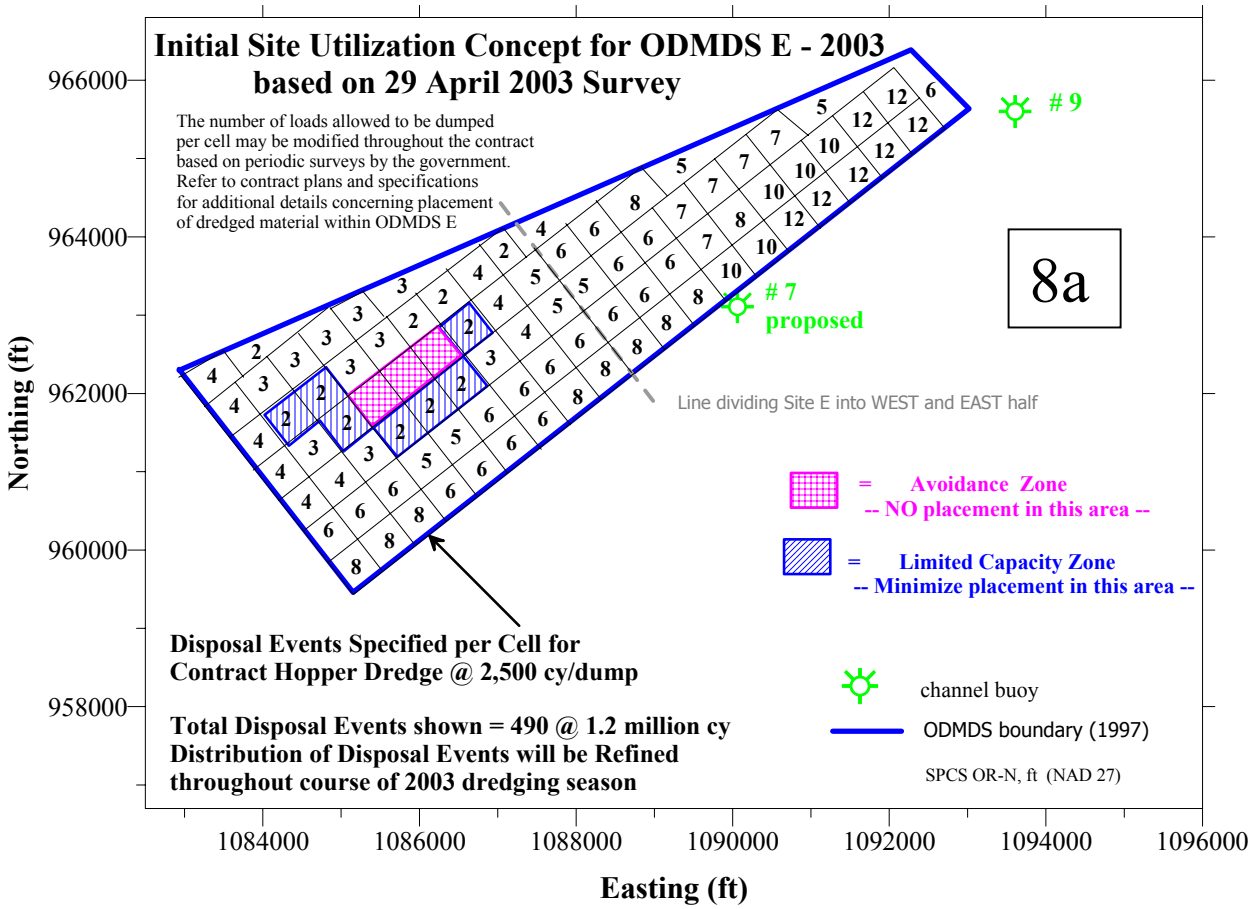
Note 3: * Estuarine disposal site.; ** 43,500 cy placed on Benson Beach

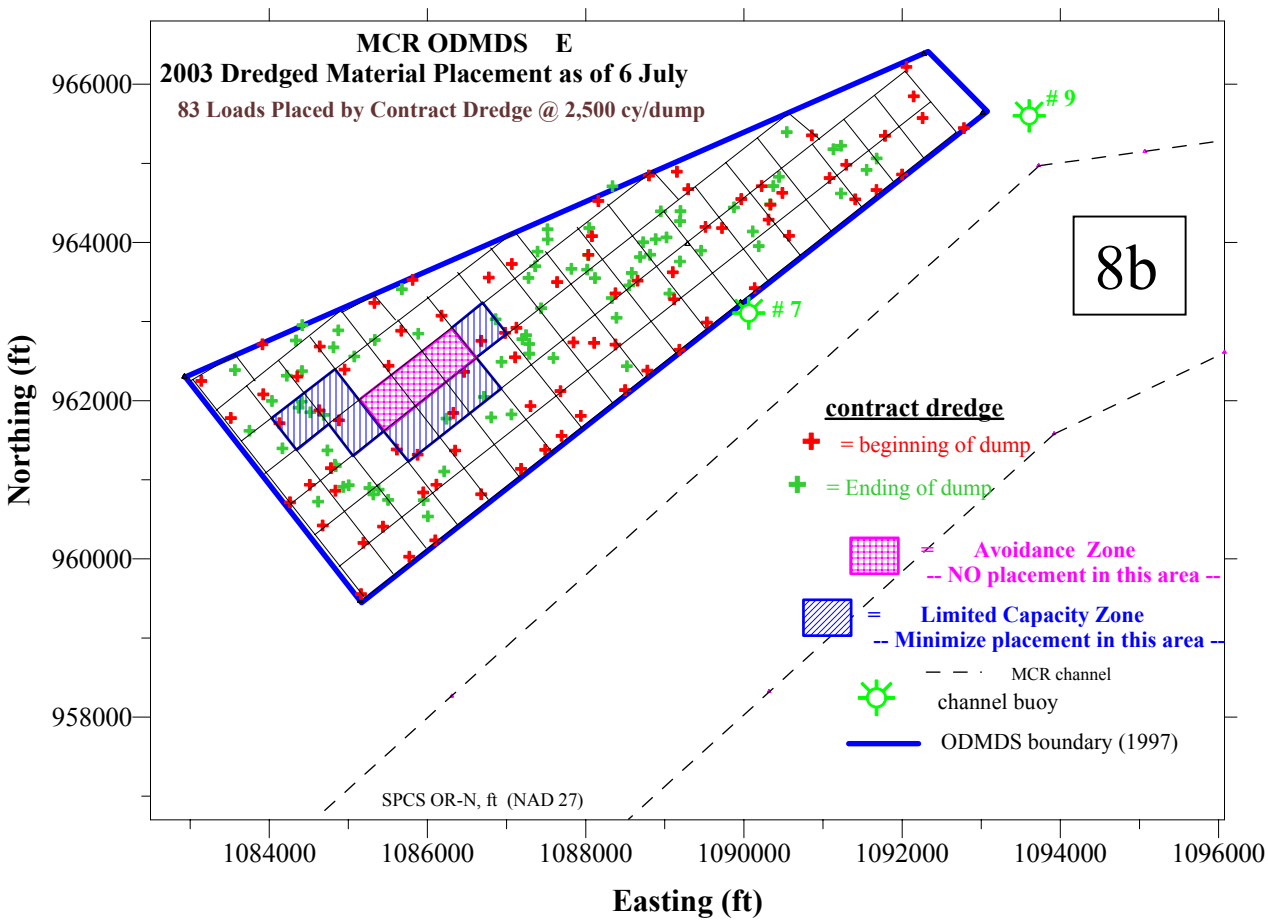

MCR ODMDS E
29 April 2003
9
7 - to be relocated
7 proposed
6a
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
contours in ft MLLW
Northing (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

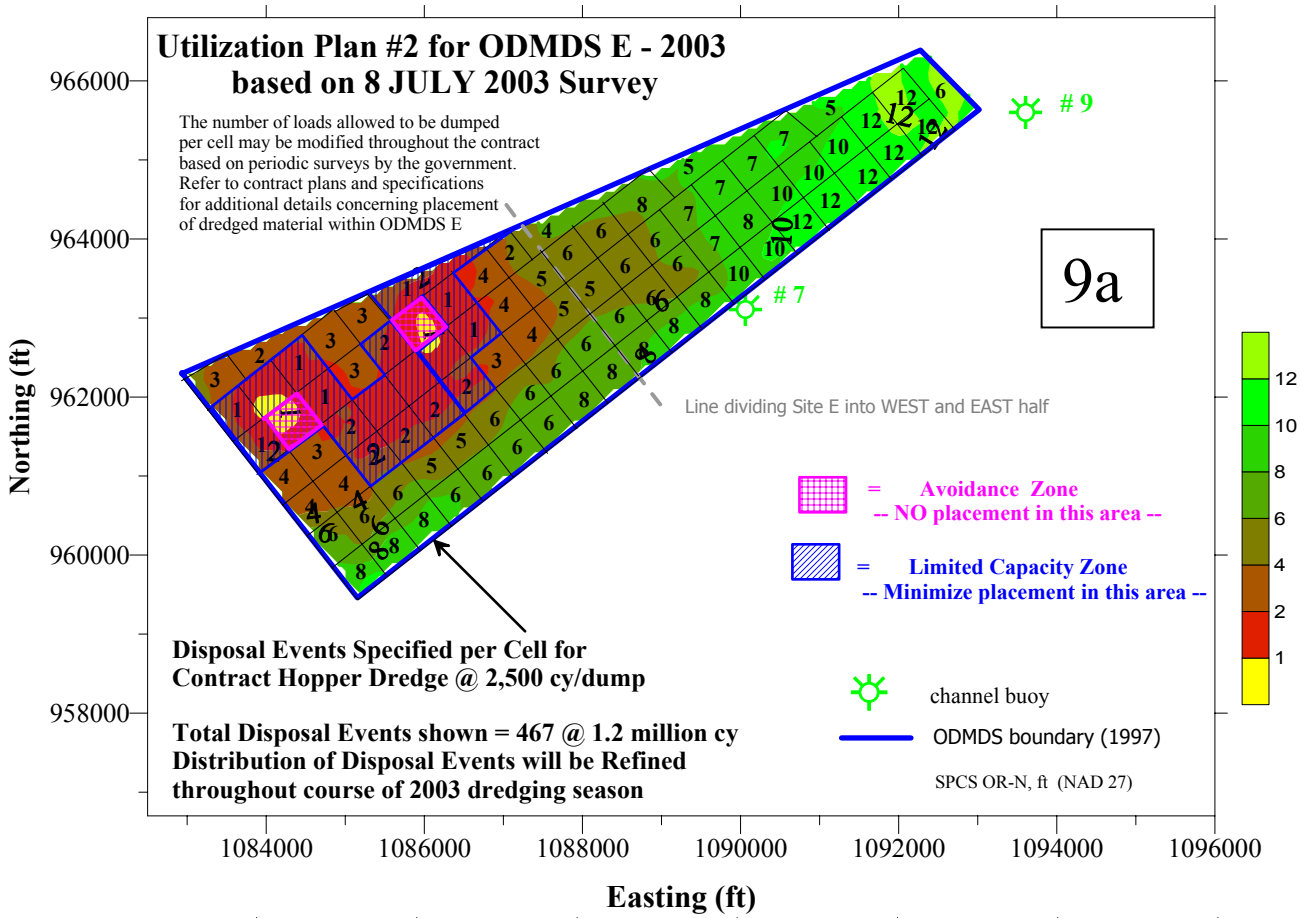

MCR ODMDS E
Difference between Surveys
1 DEC 2002 - 29 APR 2003
Net Change on Seabed within
ODMDS E = 1.71 Mcy EROSION
9
7 relocated
MCR Navigation Channel
6b
MCR channel
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
contours in ft
- = loss
+ = gain
Deposition
Erosion
ft
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

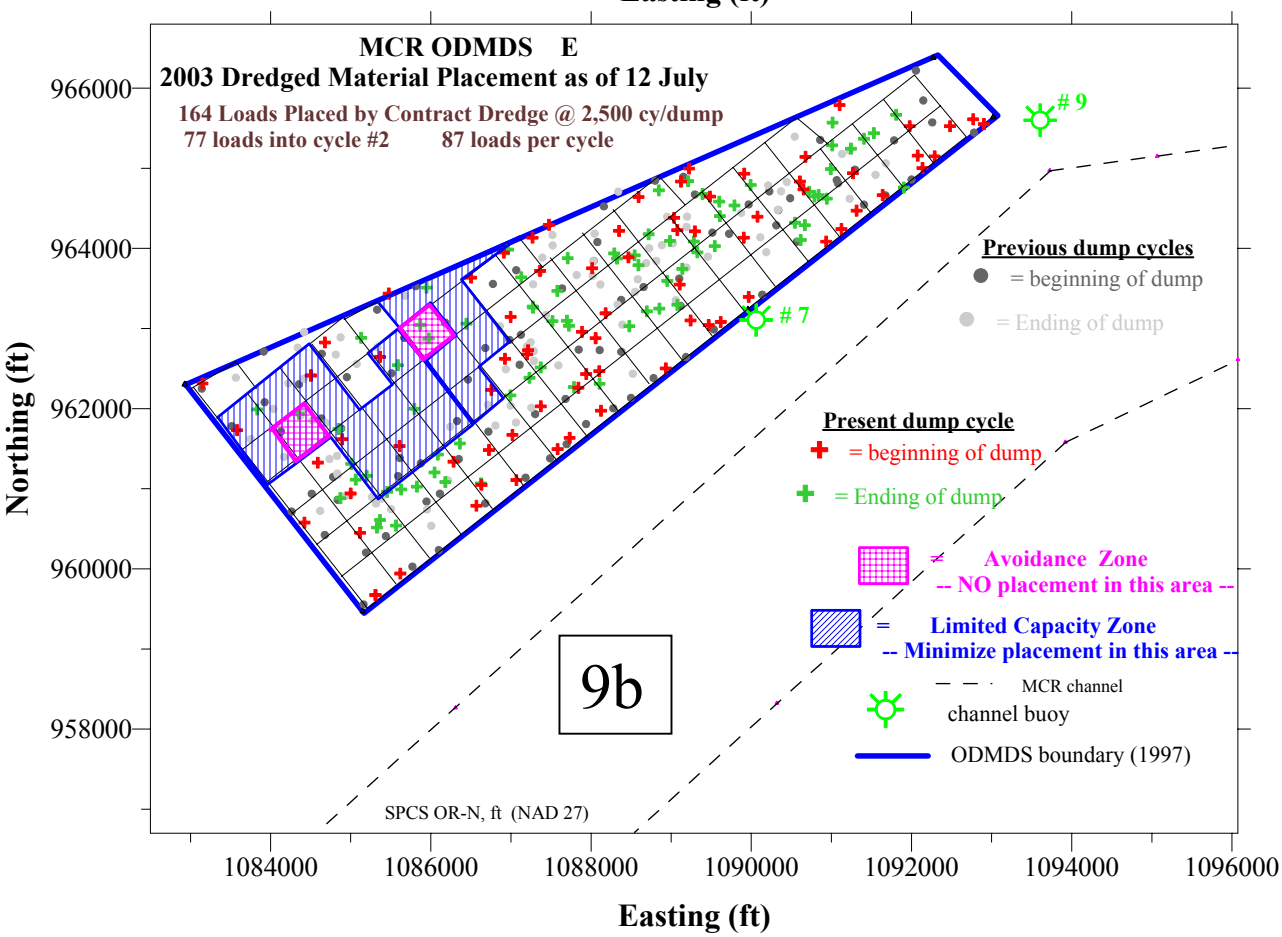

MCR ODMDS E
Difference between Surveys = 29 April 2003 - May 1997
14.9 Mcy placed since 1997: 0.83 Mcy remain in Site
9
7
relocated
MCR Navigation Channel
7a
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
Deposition
Erosion
ft
Northing (ft)
Easting (ft)

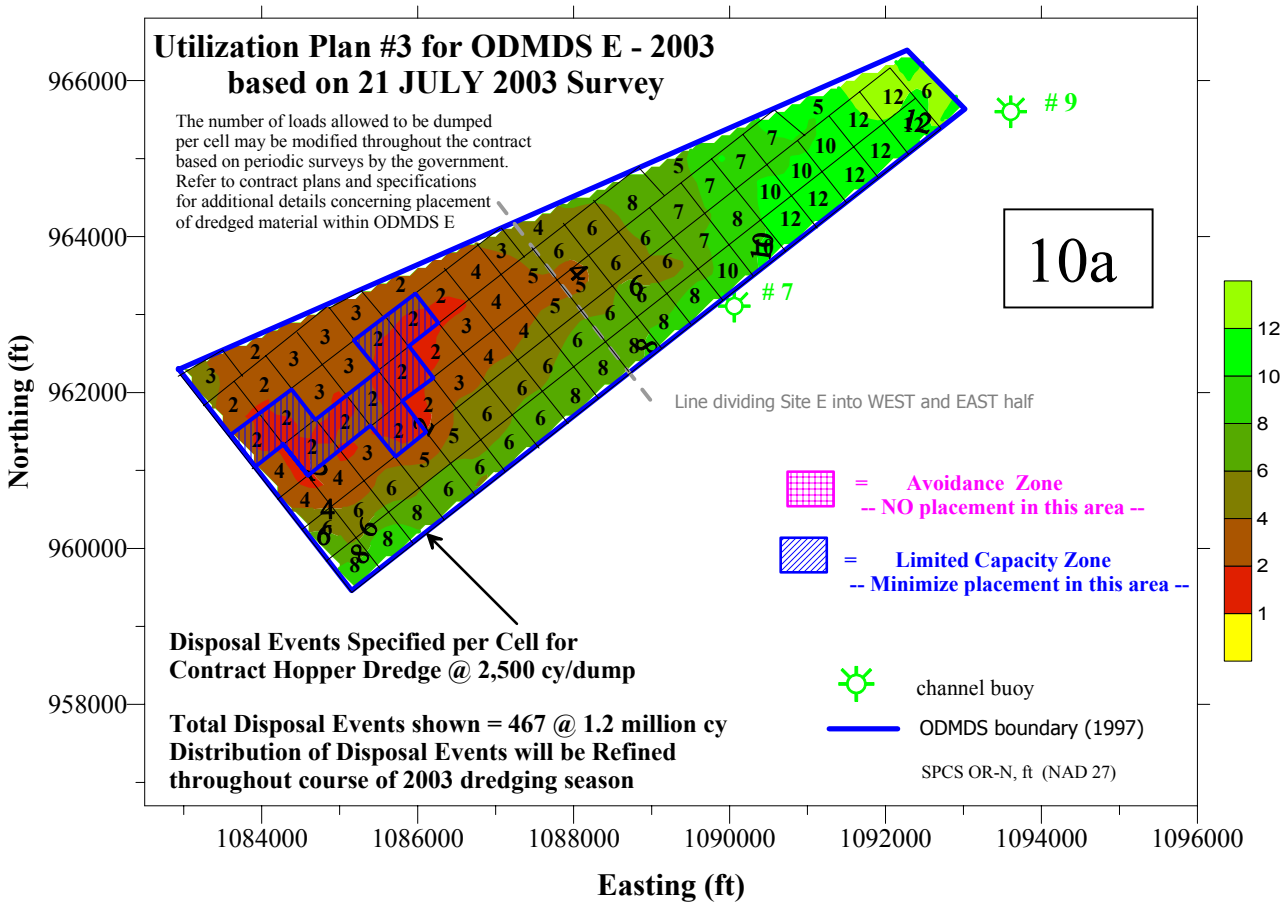

MCR ODMDS E
29 April 2003
Target Height of Accumulation
for dredged material placement
contours in ft
9
7
Relocated
7b
Line dividing Site E into WEST and EAST half
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
Total Capacity Available within Entire Site= 4.9 MCY (effective capacity = 4.1 MCY)
Effective Volume Capacity within EAST Half = 2.6 MCY
AVG = target height for accumulation (H) = 9 ft
Effective Volume Capacity within WEST Half = 1.5 MCY
AVG = target height for accumulation (H) = 4 ft
channel buoy
ODMDS boundary (1997)
ODMDS boundary (1977)
SPCS OR-N, ft (NAD 27)
Northing (ft)
Easting (ft)

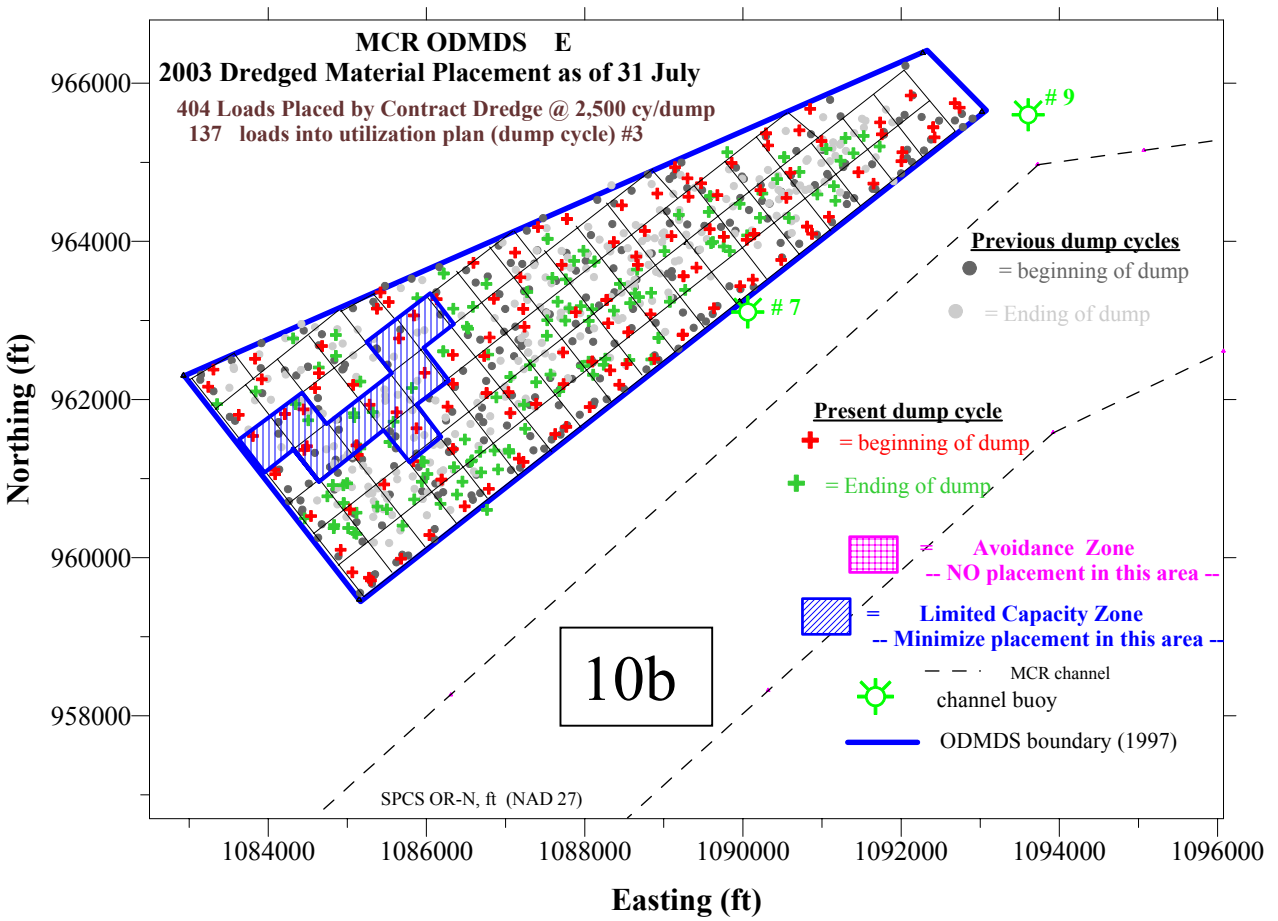

Initial Site Utilization Concept for ODMDS E - 2003
based on 29 April 2003 Survey
The number of loads allowed to be dumped per cell may be modified throughout the contract based on periodic surveys by the government. Refer to contract plans and specifications for additional details concerning placement of dredged material within ODMDS E
9
7
proposed
8a
Line dividing Site E into WEST and EAST half
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
Disposal Events Specified per Cell for
Contract Hopper Dredge @ 2,500 cy/dump
Total Disposal Events shown = 490 @ 1.2 million cy
Distribution of Disposal Events will be Refined
throughout course of 2003 dredging season
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

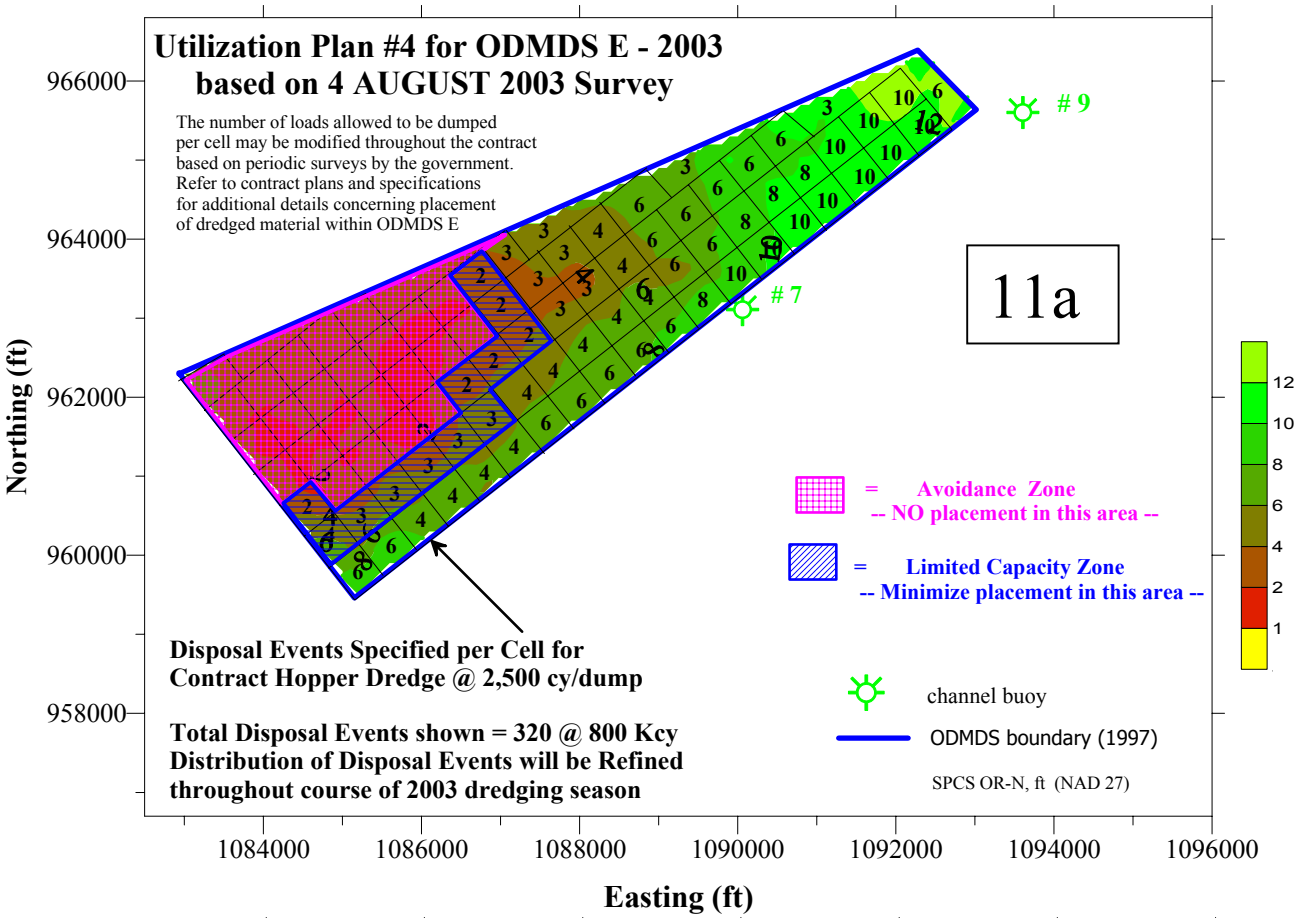

MCR ODMDS E
2003 Dredged Material Placement as of 6 July
83 Loads Placed by Contract Dredge @ 2,500 cy/dump
9
7
8b
contract dredge
= beginning of dump
= Ending of dump
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
MCR channel
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

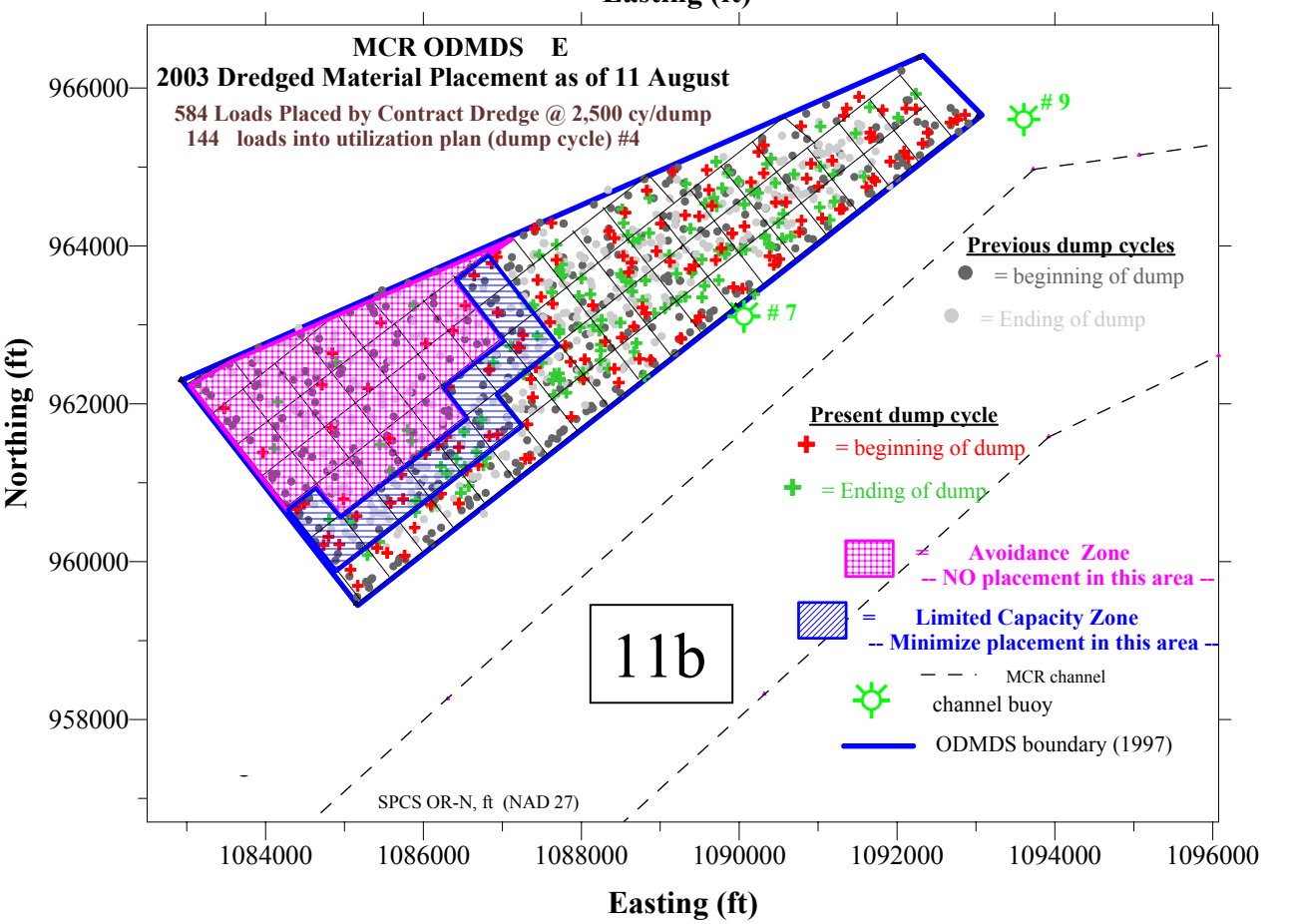

Utilization Plan #2 for ODMDS E - 2003
based on 8 JULY 2003 Survey
The number of loads allowed to be dumped per cell may be modified throughout the contract based on periodic surveys by the government. Refer to contract plans and specifications for additional details concerning placement of dredged material within ODMDS E
9
7
9a
Line dividing Site E into WEST and EAST half
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
Disposal Events Specified per Cell for Contract Hopper Dredge @ 2,500 cy/dump
Total Disposal Events shown = 467 @ 1.2 million cy
Distribution of Disposal Events will be Refined throughout course of 2003 dredging season
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

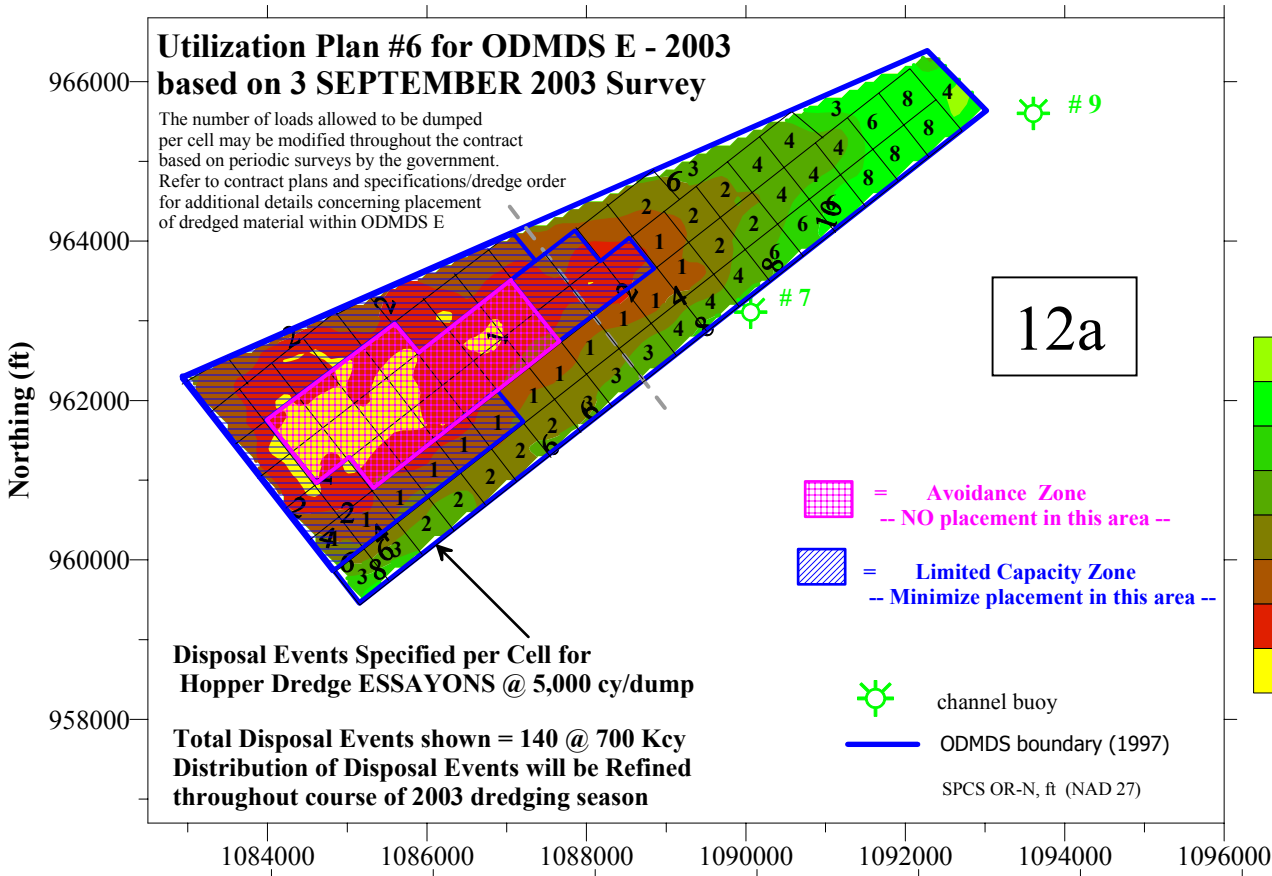

MCR ODMDS E
2003 Dredged Material Placement as of 12 July
164 Loads Placed by Contract Dredge @ 2,500 cy/dump
77 loads into cycle #2 87 loads per cycle
9
7
Previous dump cycles
= beginning of dump
= Ending of dump
Present dump cycle
= beginning of dump
= Ending of dump
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
MCR channel
channel buoy
ODMDS boundary (1997)
9b
SPCS OR-N, ft (NAD 27)
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

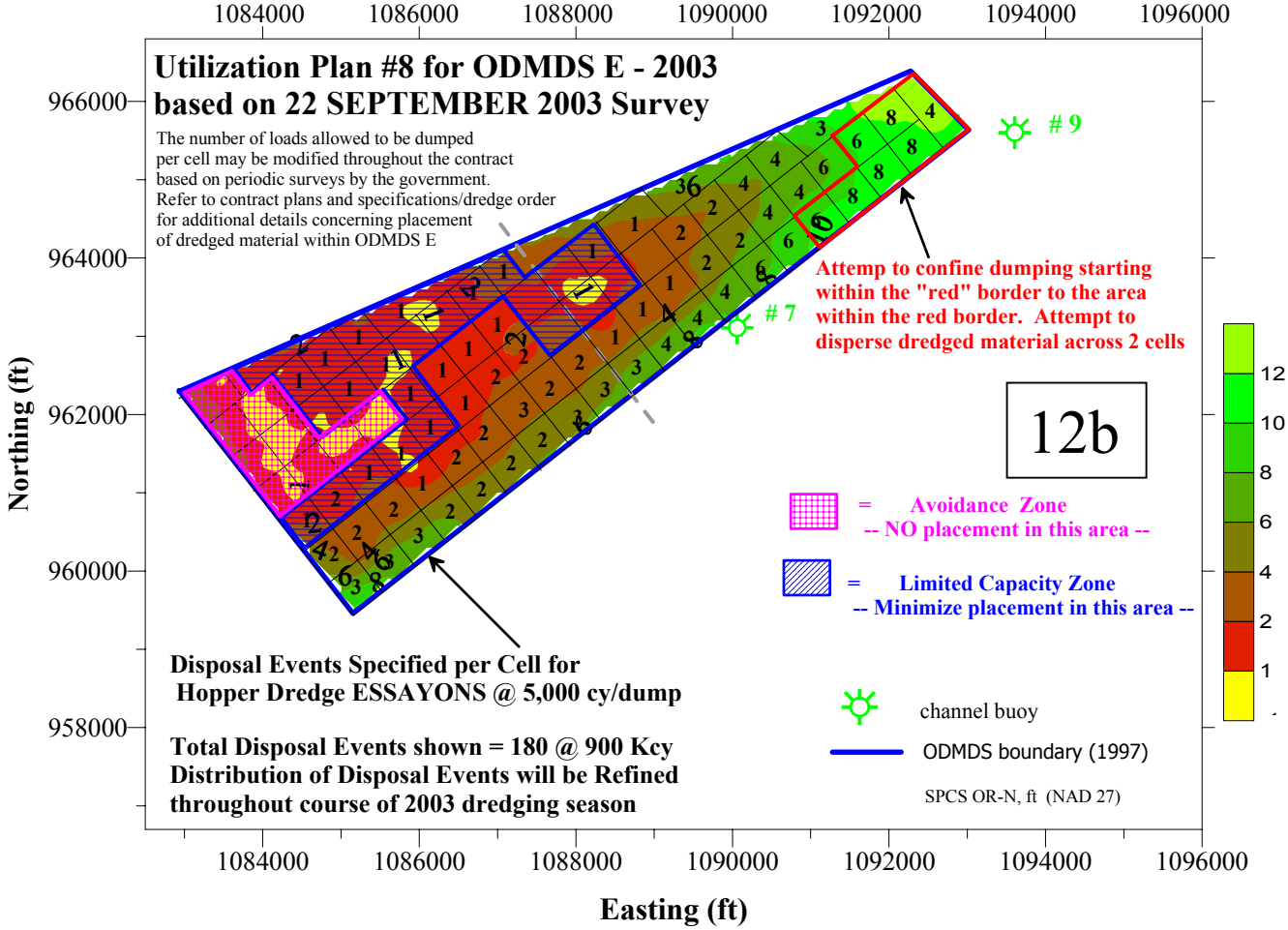

Utilization Plan #3 for ODMDS E - 2003
based on 21 JULY 2003 Survey
The number of loads allowed to be dumped per cell may be modified throughout the contract based on periodic surveys by the government. Refer to contract plans and specifications for additional details concerning placement of dredged material within ODMDS E
10a
9
7
Line dividing Site E into WEST and EAST half
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
Disposal Events Specified per Cell for Contract Hopper Dredge @ 2,500 cy/dump
Total Disposal Events shown = 467 @ 1.2 million cy
Distribution of Disposal Events will be Refined throughout course of 2003 dredging season
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

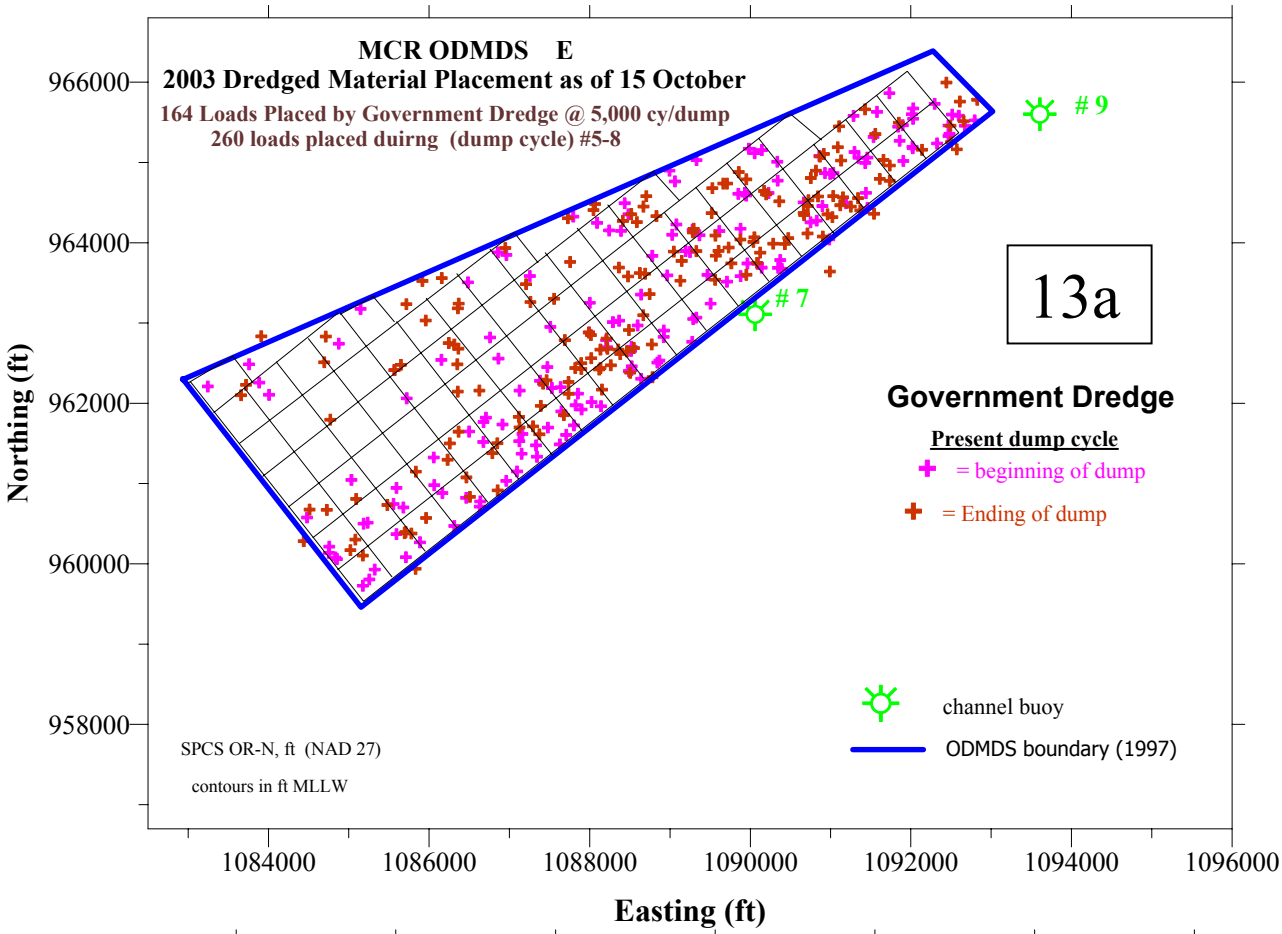

MCR ODMDS E
2003 Dredged Material Placement as of 31 July
404 Loads Placed by Contract Dredge @ 2,500 cy/dump
137 loads into utilization plan (dump cycle) #3
9
7
Previous dump cycles
= beginning of dump
= Ending of dump
Present dump cycle
= beginning of dump
= Ending of dump
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
MCR channel
channel buoy
ODMDS boundary (1997)
10b
SPCS OR-N, ft (NAD 27)
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

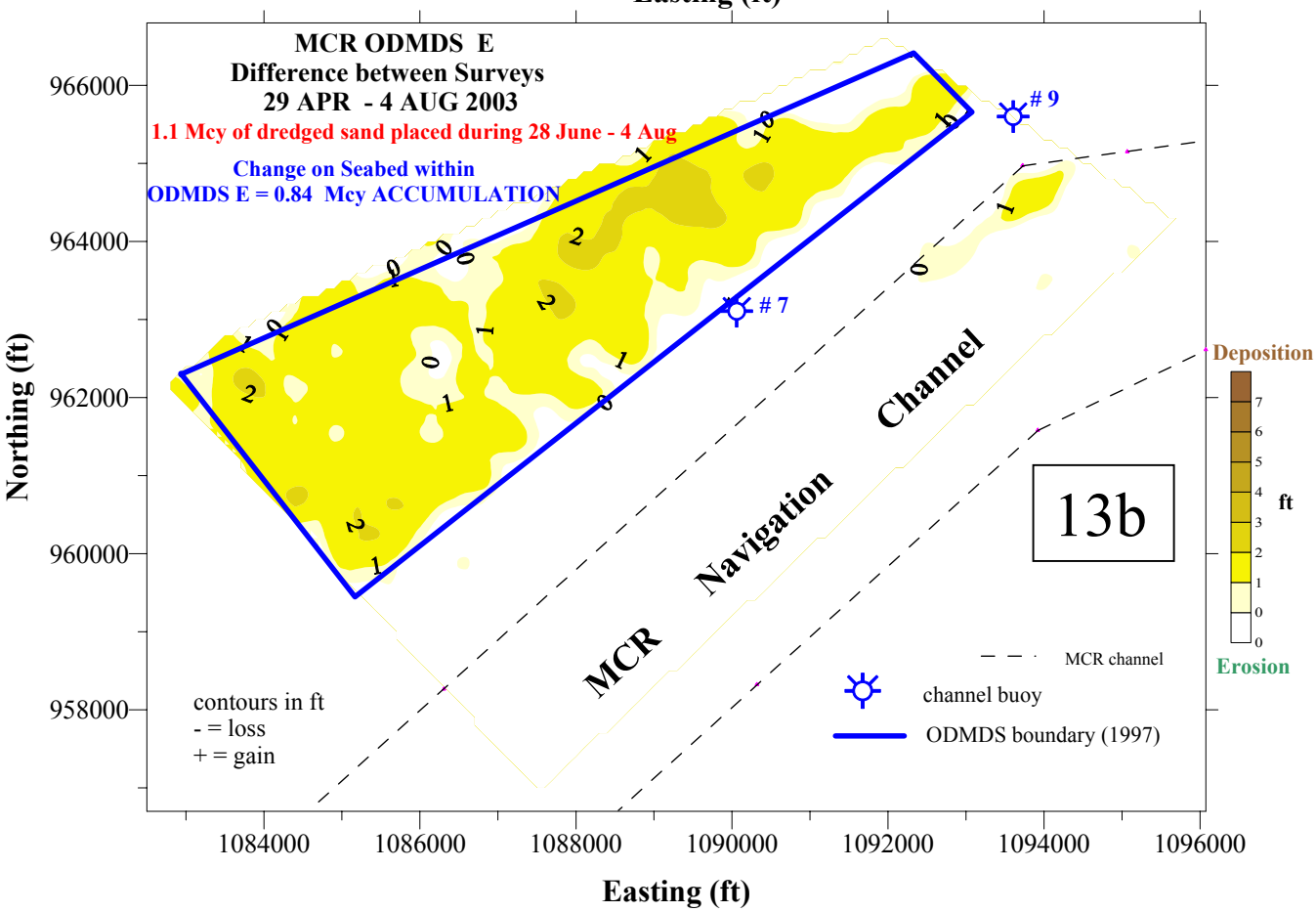

Utilization Plan #4 for ODMDS E - 2003
based on 4 AUGUST 2003 Survey
The number of loads allowed to be dumped per cell may be modified throughout the contract based on periodic surveys by the government. Refer to contract plans and specifications for additional details concerning placement of dredged material within ODMDS E
11a
9
7
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
Disposal Events Specified per Cell for Contract Hopper Dredge @ 2,500 cy/dump
Total Disposal Events shown = 320 @ 800 Kcy
Distribution of Disposal Events will be Refined throughout course of 2003 dredging season
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000
12
10
8
6
4
2
1

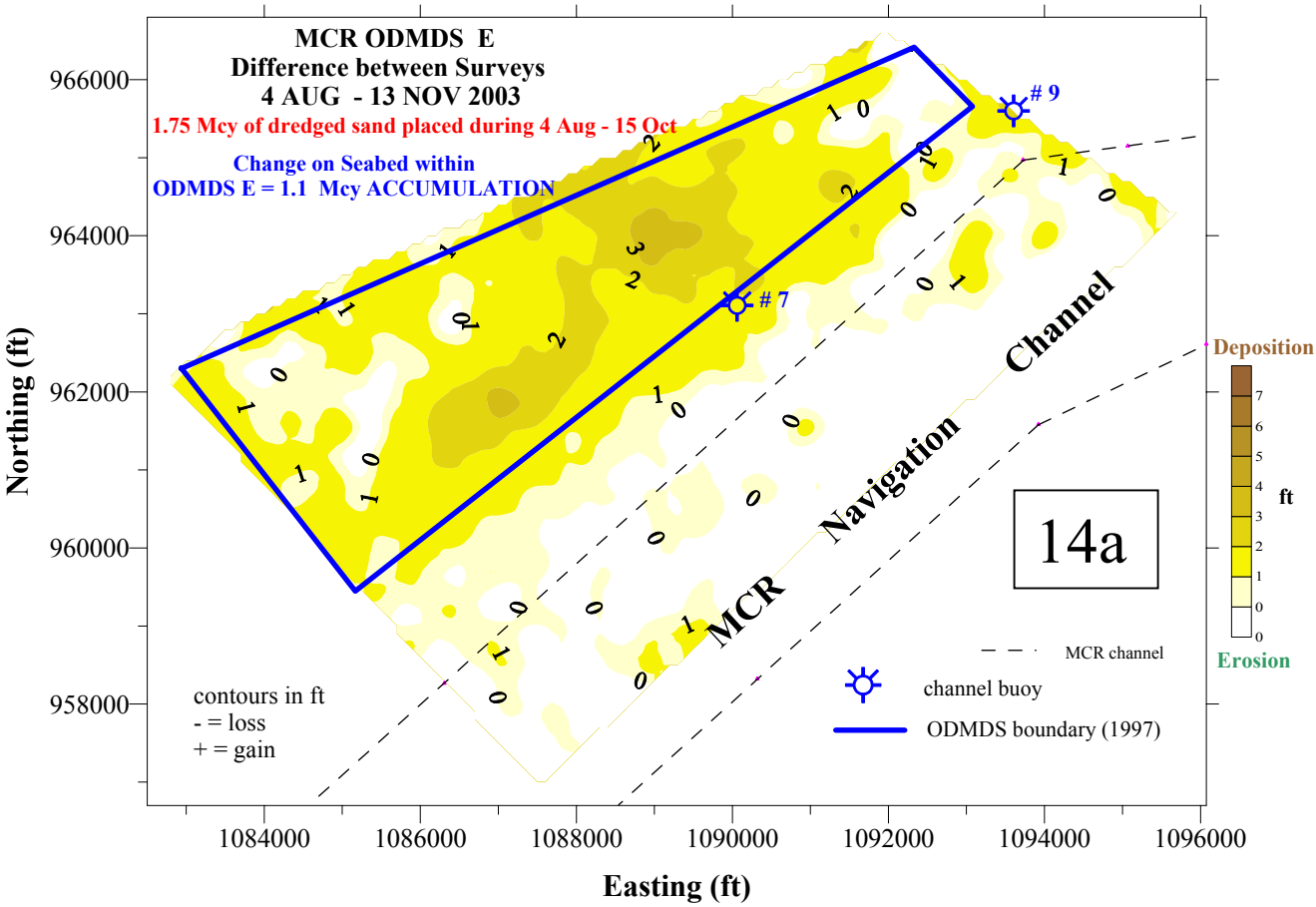

MCR ODMDS E
2003 Dredged Material Placement as of 11 August
584 Loads Placed by Contract Dredge @ 2,500 cy/dump
144 loads into utilization plan (dump cycle) #4
11b
9
7
Previous dump cycles
= beginning of dump
= Ending of dump
Present dump cycle
= beginning of dump
= Ending of dump
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
MCR channel
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

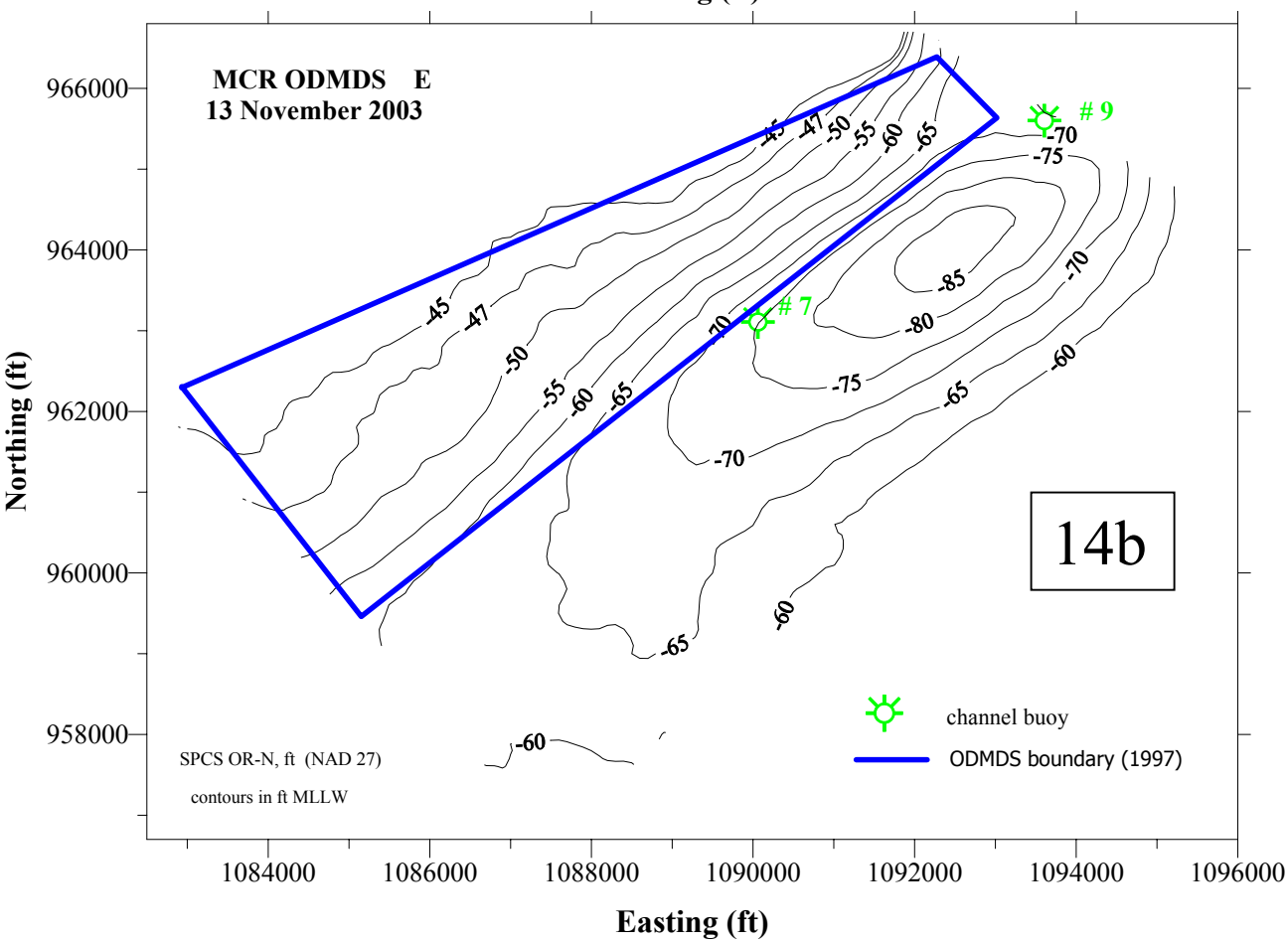

Utilization Plan #6 for ODMDS E - 2003
based on 3 SEPTEMBER 2003 Survey
The number of loads allowed to be dumped per cell may be modified throughout the contract based on periodic surveys by the government. Refer to contract plans and specifications/dredge order for additional details concerning placement of dredged material within ODMDS E
12a
9
7
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
Disposal Events Specified per Cell for
Hopper Dredge ESSAYONS @ 5,000 cy/dump
Total Disposal Events shown = 140 @ 700 Kcy
Distribution of Disposal Events will be Refined
throughout course of 2003 dredging season
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
Northing (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000
12
10
8
6
4
2
1

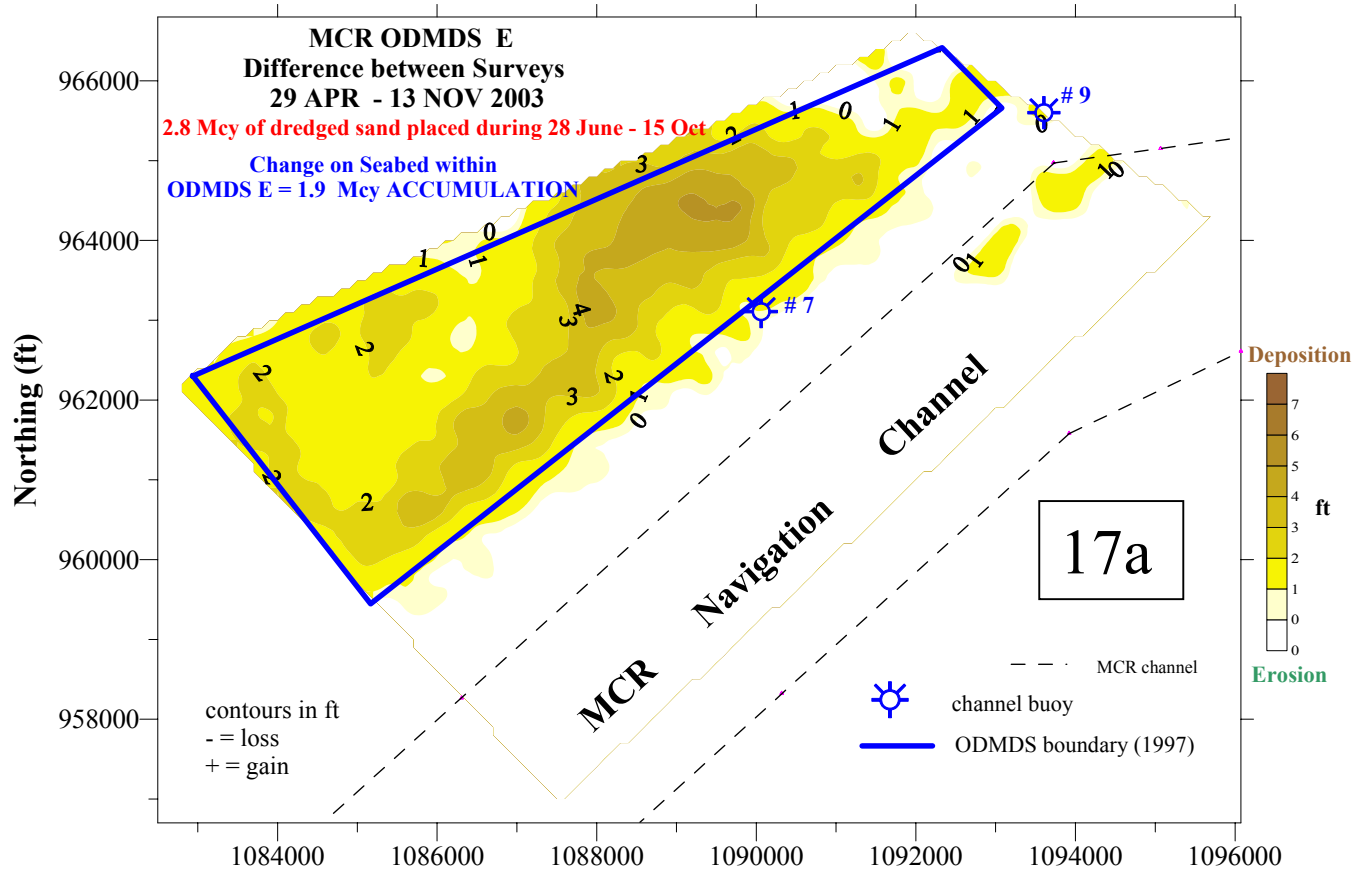

Utilization Plan #8 for ODMDS E - 2003
based on 22 SEPTEMBER 2003 Survey
The number of loads allowed to be dumped per cell may be modified throughout the contract based on periodic surveys by the government. Refer to contract plans and specifications/dredge order for additional details concerning placement of dredged material within ODMDS E
12b
9
7
Attemp to confine dumping starting within the "red" border to the area within the red border. Attempt to disperse dredged material across 2 cells
= Avoidance Zone
-- NO placement in this area --
= Limited Capacity Zone
-- Minimize placement in this area --
Disposal Events Specified per Cell for
Hopper Dredge ESSAYONS @ 5,000 cy/dump
Total Disposal Events shown = 180 @ 900 Kcy
Distribution of Disposal Events will be Refined
throughout course of 2003 dredging season
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
Northing (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000
Easting (ft)
12
10
8
6
4
2
1

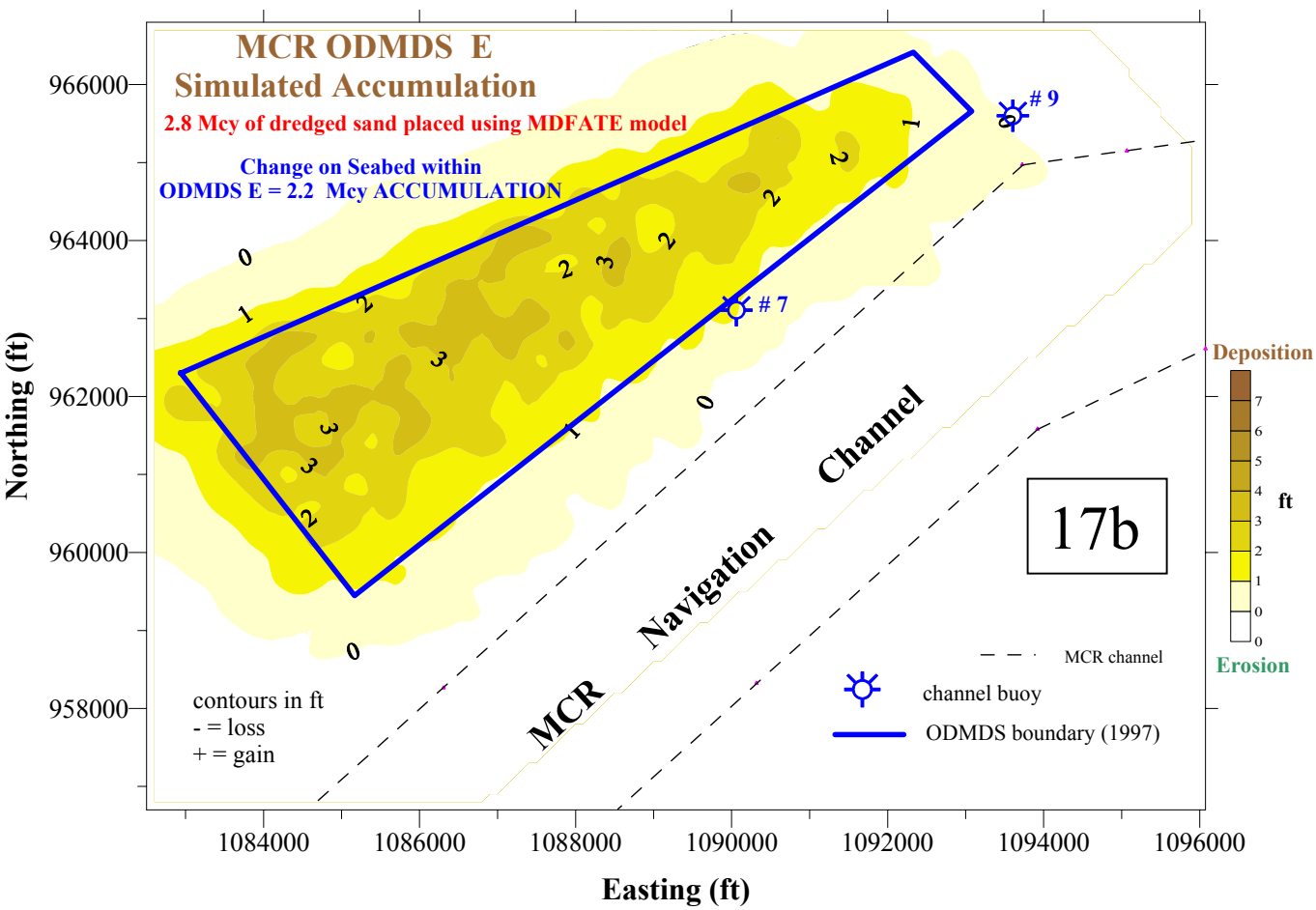

MCR ODMDS E
2003 Dredged Material Placement as of 15 October
164 Loads Placed by Government Dredge @ 5,000 cy/dump
260 loads placed duirng (dump cycle) #5-8
9
7
13a
Government Dredge
Present dump cycle
= beginning of dump
= Ending of dump
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
contours in ft MLLW
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

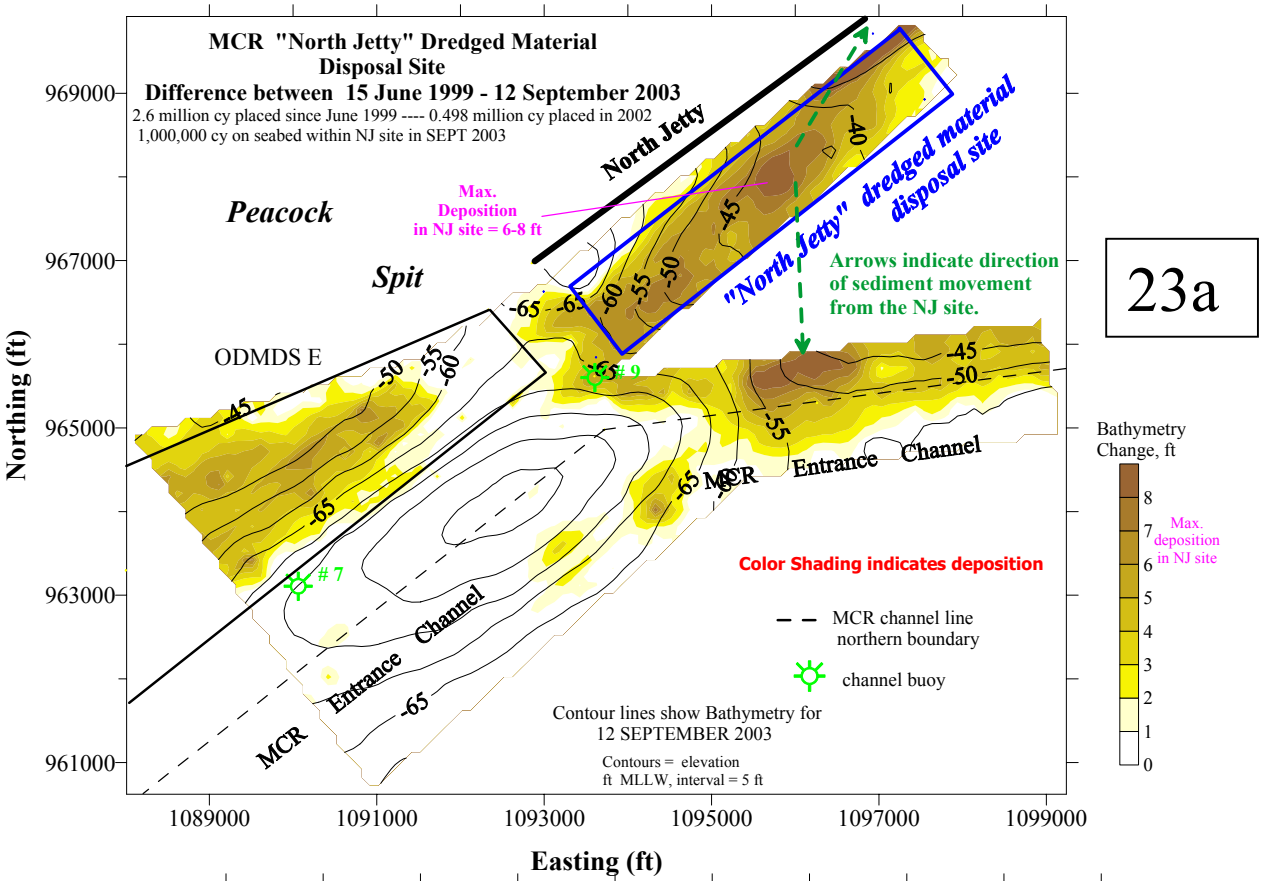

MCR ODMDS E
Difference between Surveys
29 APR - 4 AUG 2003
1.1 Mcy of dredged sand placed during 28 June - 4 Aug
Change on Seabed within
ODMDS E = 0.84 Mcy ACCUMULATION
9
7
MCR Navigation Channel
13b
Deposition
Erosion
ft
MCR channel
channel buoy
ODMDS boundary (1997)
contours in ft
- = loss
+ = gain
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

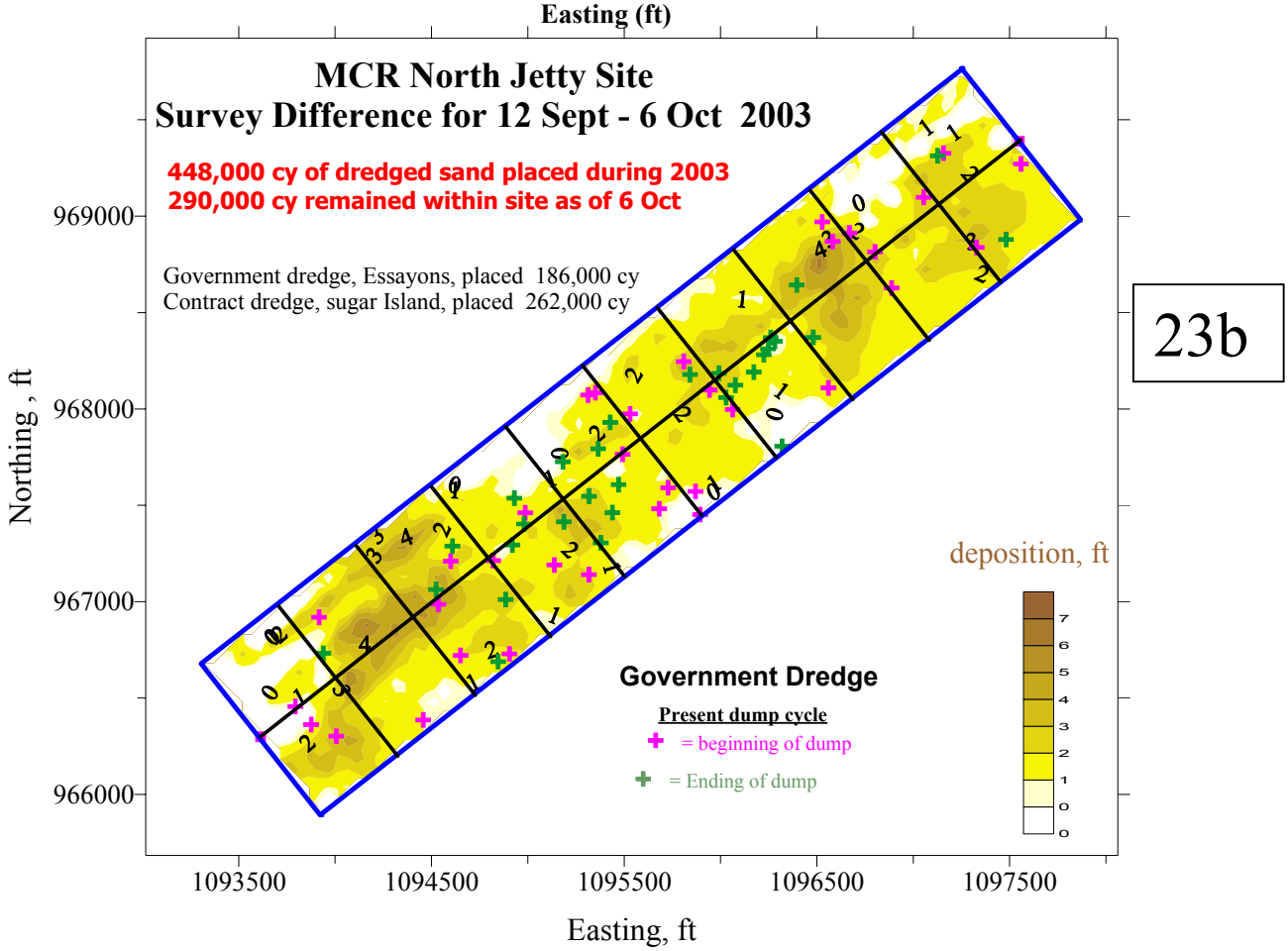

MCR ODMDS E
Difference between Surveys
4 AUG - 13 NOV 2003
1.75 Mcy of dredged sand placed during 4 Aug - 15 Oct
Change on Seabed within
ODMDS E = 1.1 Mcy ACCUMULATION
9
7
MCR Navigation Channel
14a
Deposition
ft
Erosion
MCR channel
channel buoy
ODMDS boundary (1997)
contours in ft
- = loss
+ = gain
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

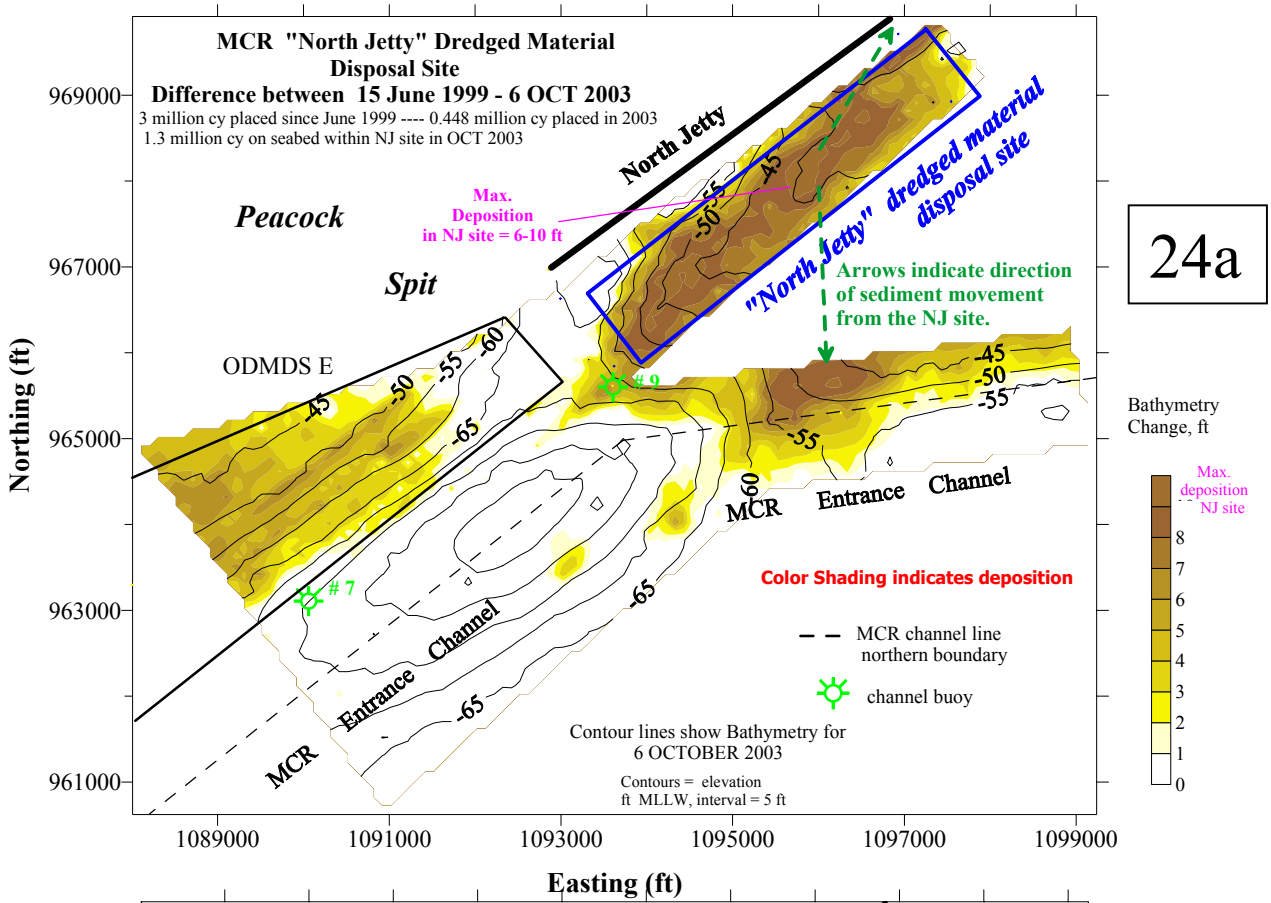

MCR ODMDS E
13 November 2003
9
7
14b
channel buoy
ODMDS boundary (1997)
SPCS OR-N, ft (NAD 27)
contours in ft MLLW
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000


MCR ODMDS E
Difference between Surveys
29 APR - 13 NOV 2003
2.8 Mcy of dredged sand placed during 28 June - 15 Oct
Change on Seabed within
ODMDS E = 1.9 Mcy ACCUMULATION
9
7
MCR Navigation Channel
17a
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
Deposition
Erosion
ft
Northing (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

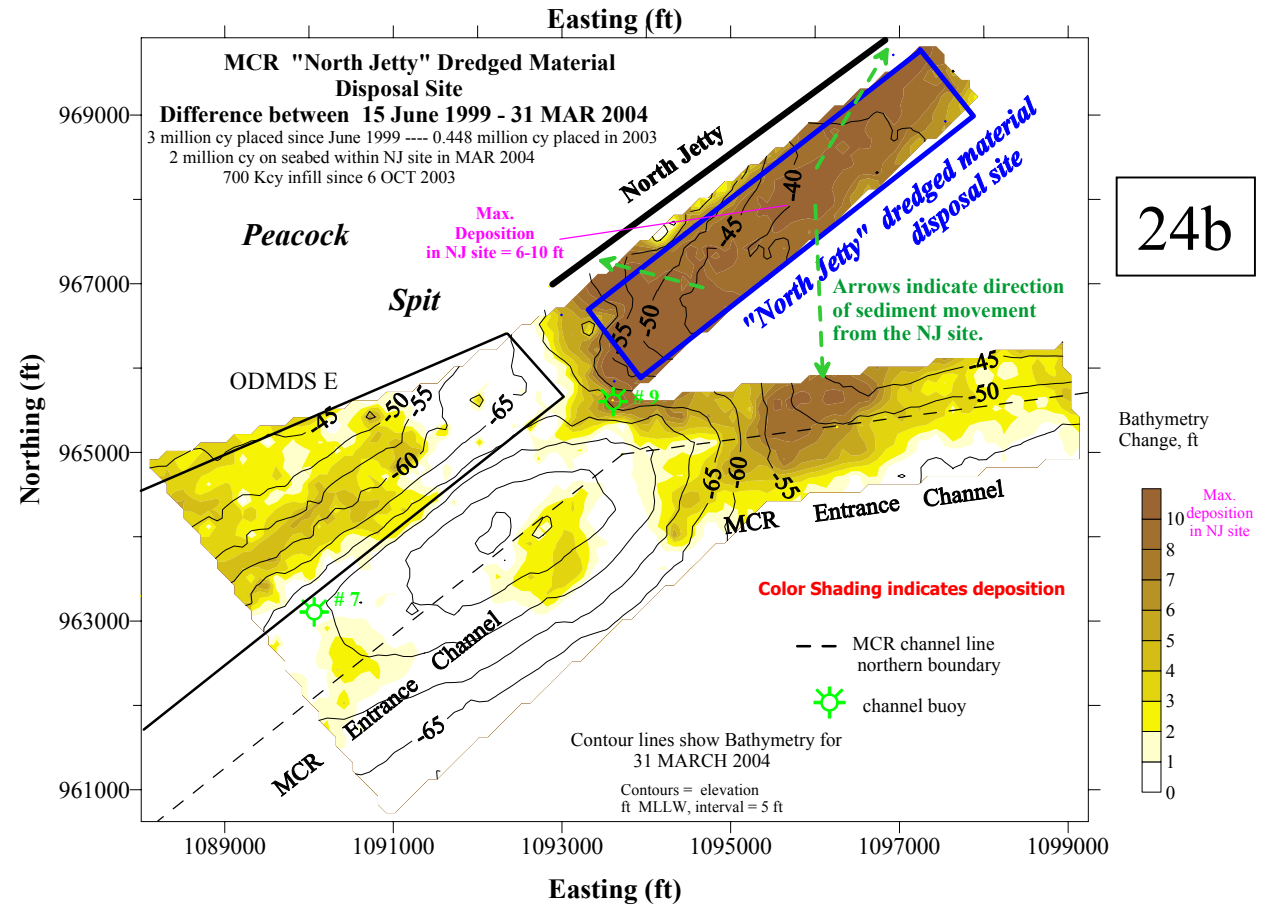

MCR ODMDS E
Simulated Accumulation
2.8 Mcy of dredged sand placed using MDFATE model
Change on Seabed within
ODMDS E = 2.2 Mcy ACCUMULATION
9
7
MCR Navigation Channel
17b
contours in ft
- = loss
+ = gain
MCR channel
channel buoy
ODMDS boundary (1997)
Deposition
Erosion
ft
Northing (ft)
Easting (ft)
966000
964000
962000
960000
958000
1084000
1086000
1088000
1090000
1092000
1094000
1096000

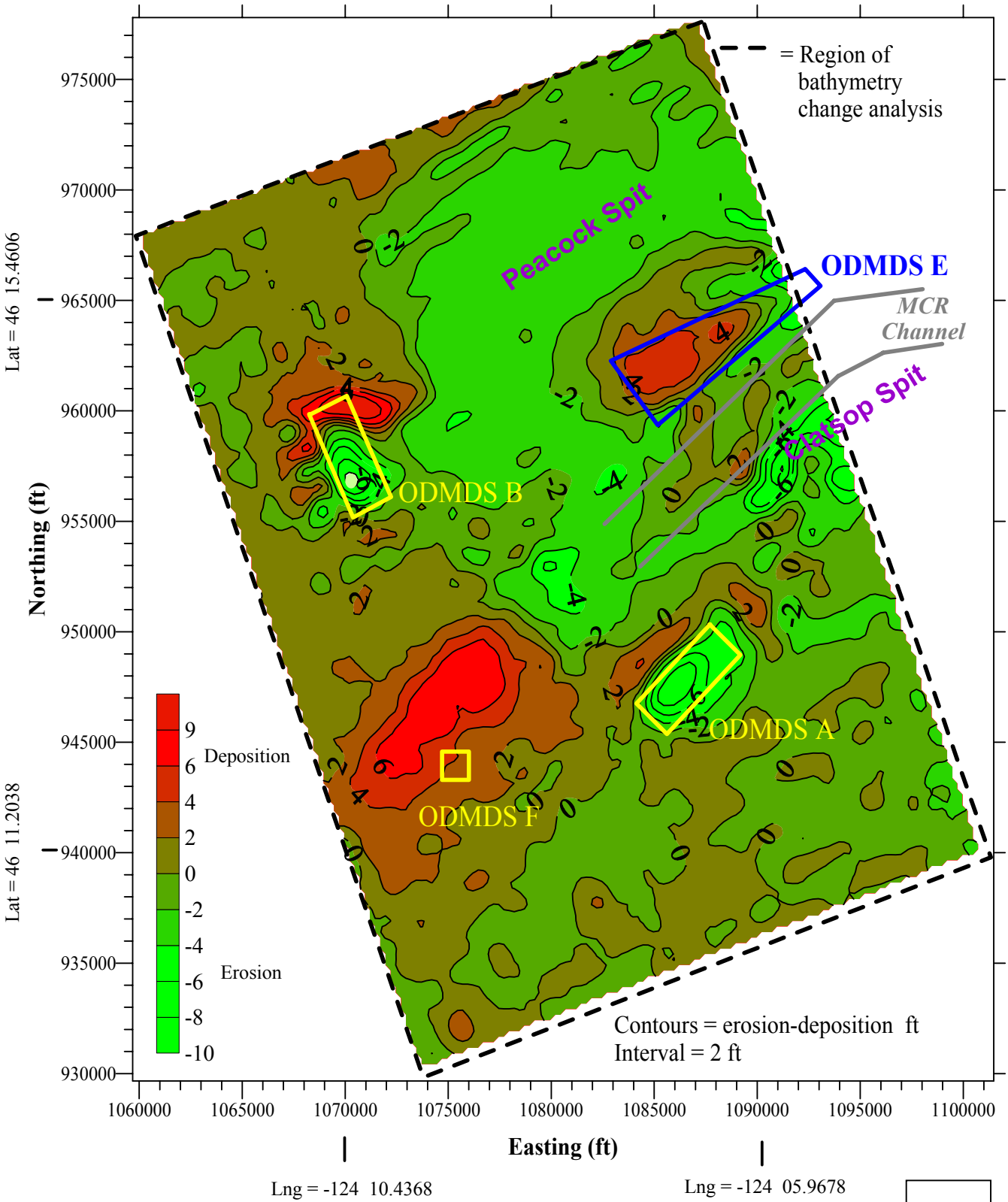

MCR "North Jetty" Dredged Material Disposal Site
Difference between 15 June 1999 - 12 September 2003
2.6 million cy placed since June 1999 ---- 0.498 million cy placed in 2002
1,000,000 cy on seabed within NJ site in SEPT 2003
Peacock
Spit
North Jetty
Max. Deposition in NJ site = 6-8 ft
"North Jetty" dredged material disposal site
Arrows indicate direction of sediment movement from the NJ site.
ODMDS E
MCR Entrance Channel
Color Shading indicates deposition
MCR channel line northern boundary
channel buoy
Contour lines show Bathymetry for 12 SEPTEMBER 2003
Contours = elevation ft MLLW, interval = 5 ft
Bathymetry Change, ft
Max. deposition in NJ site
Northing (ft)
Easting (ft)
23a


MCR North Jetty Site
Survey Difference for 12 Sept - 6 Oct 2003
448,000 cy of dredged sand placed during 2003
290,000 cy remained within site as of 6 Oct
Government dredge, Essayons, placed 186,000 cy
Contract dredge, sugar Island, placed 262,000 cy
Government Dredge
Present dump cycle
= beginning of dump
= Ending of dump
deposition, ft
Northing , ft
Easting, ft
23b


MCR "North Jetty" Dredged Material Disposal Site
Difference between 15 June 1999 - 6 OCT 2003
3 million cy placed since June 1999 ---- 0.448 million cy placed in 2003
1.3 million cy on seabed within NJ site in OCT 2003
Peacock
Spit
Max. Deposition in NJ site = 6-10 ft
North Jetty
"North Jetty" dredged material disposal site
Arrows indicate direction of sediment movement from the NJ site.
ODMDS E
9
7
MCR Entrance Channel
Color Shading indicates deposition
MCR channel line northern boundary
channel buoy
Contour lines show Bathymetry for 6 OCTOBER 2003
Contours = elevation ft MLLW, interval = 5 ft
Bathymetry Change, ft
Max. deposition NJ site
Northing (ft)
Easting (ft)
969000
967000
965000
963000
961000
1089000
1091000
1093000
1095000
1097000
1099000

24a


MCR "North Jetty" Dredged Material Disposal Site
Difference between 15 June 1999 - 31 MAR 2004
3 million cy placed since June 1999 ---- 0.448 million cy placed in 2003
2 million cy on seabed within NJ site in MAR 2004
700 Kcy infill since 6 OCT 2003
Peacock
Spit
Max. Deposition in NJ site = 6-10 ft
North Jetty
"North Jetty" dredged material disposal site
Arrows indicate direction of sediment movement from the NJ site.
ODMDS E
9
7
MCR Entrance Channel
Color Shading indicates deposition
MCR channel line northern boundary
channel buoy
Contour lines show Bathymetry for 31 MARCH 2004
Contours = elevation ft MLLW, interval = 5 ft
Bathymetry Change, ft
Max. deposition in NJ site
Northing (ft)
Easting (ft)
969000
967000
965000
963000
961000
1089000
1091000
1093000
1095000
1097000
1099000

24b

MCR Bathymetry Difference: 1997 - 2003