

Artificial Reef Program Development Plan and Funding Needs for Taylors Island and Tilghman Island Reefs as Alternative to Cove Point (D R A F T)

Prepared: June 1, 2003

Note: All prices in 2003 constant dollars.

OBJECTIVES

PHASE 1 & 2 PROGRAM OBJECTIVE: Establish industrial daily production capability of 25 modules (15 Bay Balls and 10-Mini Bay Balls) per day for the Reef Program to achieve production economies of scale. Obtain suitable mold systems for volunteer organizations to supplement industrial production capability.

PHASE 3-5 PROGRAM OBJECTIVES: Progressively expand the industrial production capability of the Artificial Reef Program to include modules with greater vertical relief and surface area and deploy higher relief modules in conjunction with modules of other sizes to promote the diversity of reef dwellers. Expand daily production capability to 30 modules (Phase 1 - 15 Bay Balls, Phase 2 -10 mini-Bay Balls, Phase 3 - 2 Pallet Balls, Phase 4 - 2 Reef Balls, and Phase 5 - 1 Goliath Ball) for the Reef Program and deploy an additional 100 Bay Bay Balls, 100 mini-Bay Balls, 40 Pallet Balls, 40 Reef Balls and 20 Goliath Balls) in each of the two reef sites.

REEF SITE DEVELOPMENT GENERAL OBJECTIVES: Improve bottom conditions to support Reef Ball modules of various sizes. Develop approximately 3 acres of improved reef structure at Taylors Island Reef Site and approximately 2 acres of improved reef structure at Tilghman Island Reef Site. Deploy 500 Reef Ball in various sizes, supplemented by modules produced by the Program's authorized volunteer reef partners. Continue to improve site as resources permit thereafter.

PHASE 1 REEF SITE OBJECTIVES: Deploy 200 modules (125 Bay Balls and 25 Mini-Bay Balls in Taylors Island reef site and 25 Bay Balls and 25 Mini-Bay Balls in Tilghman Island reef site).

PHASE 2 REEF SITE OBJECTIVES: Deploy 250 modules (100 Bay Balls and 50 mini-Bay Balls in Taylors Island reef site and 50 Bay Balls and 50 Mini-Bay Bay Balls in Tilghman Island reef site, adjusted for site-specific bottom conditions.

PHASE 3 REEF SITE OBJECTIVES: Improve the foundation conditions in the Taylors Island artificial reef sites as materials of opportunity become available in order to expand the area suitable for Reef Ball deployment; Deploy 10 Pallet Balls to each reef site, adjusted for site-specific bottom conditions; deploy additional modules as funding becomes available.

PHASE 4 REEF SITE OBJECTIVE: Improve the foundation conditions in the Tilghman Island artificial reef sites as materials of opportunity become available in order to expand the area suitable for Reef Ball deployment; deploy 10 Reef Balls to each site, adjusted for site-specific bottom conditions; deploy additional modules as funding becomes available.

PHASE 5 REEF SITE OBJECTIVES: Deploy 10 Goliath Balls to Taylor Island reef site. Deploy additional modules of various sizes as funding becomes available.

											Comments	
PROCUREMENT OF REEF BALL MOLD SYSTEMS	Development Phase	Quantity Needed	Unit Cost	Subtotal	Phase 1 Items Subtotal	Phase 2 Items Subtotal	Phase 3 Items Subtotal	Phase 4 Items Subtotal	Phase 5 Items Subtotal	Row Subtotals		
<i>Bay Ball Mold Systems (1 available funded by MES)</i>	1	14	\$2,525	\$35,350	\$35,350						\$35,350	Top priority is to obtain mold systems to achieve an expanded industrial production capability in order to achieve economies of scale during production and to provide a long-term capability for reef development at all 20 artificial reef sites. Prices shown are the full price from the Reef Ball Development Group for licensed Reef Ball contractors. A substantial discount is possible through the Reef Ball Foundation taking advantage of the non-for-profit status of the Maryland Environmental Service and non-profit status of the Program's volunteer reef partners.
<i>Sponsor Logo Insert Master (for Mini-Bay Ball through Pallet Ball) [estimate is for a single sponsor]</i>	1	1	\$1,000	\$1,000	\$1,000						\$1,000	
<i>Mold Inserts for Sponsor Logo (1 per mold system)</i>	1-5	25	\$100	\$2,500	\$1,400	\$600	\$200	\$200	\$100		\$2,500	
<i>Mini Bay Ball Mold Systems (4 available funded by MES)</i>	1-2	6	\$1,600	\$9,600	\$1,600	\$8,000					\$9,600	Provides high habitat value relative to cost and capable of providing cover for up to medium sized finfish.
<i>Lo Pro Ball Mold Systems (for artificial reef partners)</i>	2	10	\$850	\$8,500		\$8,500					\$8,500	
<i>Pallet Ball Mold Systems</i>	3	2	\$4,875	\$9,750			\$9,750				\$9,750	
<i>Sponsor Logo Insert Master (for Reef-Bay Ball and Goliath Ball) [estimate assumes a single sponsor]</i>	4	1	\$1,000	\$1,000				\$1,000			\$1,000	
<i>Mold Inserts for Sponsor Logo (2 per mold system)</i>	4	6	\$100	\$600				\$600			\$600	
<i>Reef Ball Mold Systems</i>	4	2	\$7,200	\$14,400				\$14,400			\$14,400	
<i>Goliath Ball Mold System</i>	5	1	\$8,200	\$8,200					\$8,200		\$8,200	
<i>Mold System Packing</i>	05-Jan	35	\$25	\$875	\$375	\$375	\$50	\$50	\$25		\$875	
<i>Mold System Transportation</i>	1-5	5	\$750	\$3,750	\$750	\$750	\$750	\$750	\$750		\$3,750	
<i>Mold Bases (Mini-Bay Ball - Bay Ball)</i>	1-5	30	\$25	\$750	\$375	\$375					\$750	
<i>Mold Bases (Pallet Ball - Goliath Ball)</i>	1-5	5	\$50	\$250			\$100	\$100	\$50		\$250	
				\$96,525	\$40,850	\$18,600	\$10,850	\$17,100	\$9,125		\$96,525	

											Comments	
FABRICATION OF REEF BALL MODULES FOR DEPLOYMENT	Development Phase	Quantity Needed	Unit Cost	Subtotal	Phase 1 Items Subtotal	Phase 2 Items Subtotal	Phase 3 Items Subtotal	Phase 4 Items Subtotal	Phase 5 Items Subtotal	Row Subtotals		
<i>Bay Balls</i>	1-2	300	\$65	\$19,500	\$9,750	\$9,750	additional modules as funding permits			\$19,500	Sufficient size for physical energy at the sites and high habitat value.	
<i>MINI-Bay Balls (50% oversized for open water deployment)</i>	1-2	150	\$60	\$9,000	\$3,000	\$6,000	additional modules as funding permits			\$9,000	Sufficient size for physical energy at the sites and high habitat value.	
<i>Pallet Balls</i>	3	20	\$200	\$4,000			\$4,000	addl modules as funding permits		\$4,000	Provides greater vertical relief and surface area for reef species and provides cover for up to large finfish.	
<i>Reef Balls</i>	4	20	\$250	\$5,000				\$5,000	addl modules as funding permits		\$5,000	Provides greater vertical relief and surface area for reef species and capable of providing cover for large finfish.
<i>Goliath Balls</i>	5	10	\$400	\$4,000					\$4,000		\$4,000	Provides greater vertical relief and surface area for reef species and capable of providing cover for large finfish.
		500		\$41,500	\$12,750	\$15,750	\$4,000	\$5,000	\$4,000		\$41,500	

	Development Phase	Service Days	Unit Cost	Subtotal	Phase 1 Items Subtotal	Phase 2 Items Subtotal	Phase 3 Items Subtotal	Phase 4 Items Subtotal	Phase 5 Items Subtotal	Row Subtotals	Comments
DEMONSTRATION POUR, PUBLIC AFFAIRS EVENT, STAFF AND VOLUNTEER TRAINING AND SAFETY ORIENTATION	1	1	\$4,500	\$4,500	\$4,500					\$4,500	

DEPLOYMENT SERVICES	Development Phase	Service Days	Unit Cost	Subtotal	Phase 1 Items Subtotal	Phase 2 Items Subtotal	Phase 3 Items Subtotal	Phase 4 Items Subtotal	Phase 5 Items Subtotal	Row Subtotals	Comments
<i>Ground transportation for loading and tug and crane barges services for open water placement of Bay Ball modules at Taylors Island Reef Site on existing foundation material</i>	1	1	\$11,000	\$11,000	\$11,000					\$11,000	
<i>Ground transportation for loading and run boat heavy lift services for open water placement of Bay Ball modules at Tilghman Island Reef Site on existing foundation material.</i>	1	2	\$3,000	\$6,000	\$6,000					\$6,000	
<i>Ground transportation for loading and tug and crane barge service for open water placement of concrete slabs and other suitable foundation materials as available to Taylors Island Reef Site</i>	2	1	\$11,000	\$11,000		\$11,000				\$11,000	
<i>Ground transportation for loading and tug and crane barge service for open water placement of concrete slabs and other suitable foundation materials as available to Tilghman Island Reef Site</i>	3	1	\$11,000	\$11,000			\$11,000			\$11,000	
<i>Ground transportation for loading and run boat heavy lift services for open water placement of Bay Ball modules of various sizes at reef sites (combined with slab placement, if practicable)</i>	3	2	\$3,000	\$6,000			\$6,000			\$6,000	
<i>Ground transportation for loading an tug and crane barge service for open water placement of Reef Ball modules of various sizes to Reef Sites</i>	4	1	\$11,000	\$11,000				\$11,000		\$11,000	
<i>Ground transportation for loading and deployment of Goliath Balls and Additional Reef Ball modules of various sizes as available from Reef Partners and other sponsors</i>	5	1	\$11,000	\$11,000					\$11,000	\$11,000	
Subtotals:			\$67,000	\$17,000	\$17,000	\$11,000	\$17,000	\$11,000	\$11,000	\$67,000	

Subtotals:	\$209,525	\$75,100	\$45,350	\$31,850	\$33,100	\$24,125	\$209,525
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	Phase 1	Phase 1+2	Phase 1-3	Phase 1-4	Phase 1-5
Materials and Services Cummulative Totals:	\$75,100	\$120,450	\$152,300	\$185,400	\$209,525

REEF ADMINISTRATION											
<i>Reef Administrator</i>		12	\$95	\$1,140	\$570	\$143	\$143	\$143	\$143	\$1,140	Hourly rate is loaded.
<i>Reef Project Manager</i>		24	\$50	\$1,200	\$600	\$150	\$150	\$150	\$150	\$1,200	Hourly rate is loaded.
<i>Reef Environmental Inspectors (2 per deployment)</i>		144	\$35	\$5,040	\$2,520	\$630	\$630	\$630	\$630	\$5,040	Hourly rate is loaded.
Subtotals:			\$7,380	\$3,690	\$923	\$923	\$923	\$923	\$923	\$7,380	

COLUMN TOTALS	\$216,905	\$78,790	\$46,273	\$32,773	\$34,023	\$25,048	\$216,905
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	Phase 1	Phase 1+2	Phase 1-3	Phase 1-4	Phase 1-5
Cummulative Totals:	\$78,790	\$125,063	\$157,835	\$191,858	\$216,905