

# Harbor Branch Oceanographic Institute

Asset Allocation Study



# DISCLOSURES

Strategic long term asset class assumptions are hypothetical indications of a broad range of possible returns and are subject to a high degree of uncertainty surrounding how the asset class will actually perform in the future. Expected returns are estimates of hypothetical average returns of asset classes derived from Black Litterman and other statistical models and are based on a ten year time horizon. Assumptions are provided for illustrative purposes only, and are not intended as a recommendation to invest in any particular asset class or as a promise of future performance. There is no assurance that expected returns can be achieved and actual returns are likely to vary. The information contained herein was gathered from sources believed to be reliable but is not guaranteed by us nor is it to be considered all inclusive. Sharpe Ratio is a measure of risk adjusted return. It is calculated as excess return (vs. cash) divided by volatility.

# PROPOSED ASSET ALLOCATION RECOMMENDATIONS

- Harbor Branch Oceanographic Institute has elected to terminate its positions in two of its three fund of hedge funds.
  1. Archstone Partnership
    - Archstone employs a directional and non-directional equity and fixed income strategy.
    - Currently Harbor Branch targets a 4.50% allocation in Archstone.
    - The fund will be **liquidated** on 12/31/2014 with proceeds received between 30 and 45 days after the liquidation date.
  2. Collins Capital
    - Collins employs a directional and non direction equity and fixed income strategy.
    - Currently Harbor Branch targets a 4.50% allocation in Collins.
    - The fund will be **liquidated** on 12/31/2014 with proceeds received between 30 and 45 days after the liquidation date.
  3. Ironwood Partners
    - Ironwood employs a non-Directional or market neutral strategy
    - Harbor Branch will continue to **maintain** its 6.00% target allocation in Ironwood.

# ASSET ALLOCATION OVERVIEW

In total, 9.00% of the hedge fund allocation will be equally reallocated towards equities and fixed income. A 6.00% position will be maintained in Ironwood.

Asset Class	Current Target	Proposed Target	% Difference from Target
Large Cap Domestic Equity	30.00%	31.80%	+1.80%
Small Cap Domestic Equity	12.50%	14.30%	+1.80%
International Equity	17.50%	19.30%	+1.80%
Fixed Income	15.00%	16.80%	+1.80%
Global Fixed Income	5.00%	6.80%	+1.80%
Conservative FoF	6.00%	6.00%	0.00%
Diversified FoF	9.00%	0.00%	-9.00%
Cash	5.00%	5.00%	0.00%

# ASSET ALLOCATION REVIEW

- Outlined below is a review of the current target asset allocation for Harbor Branch along with the proposed target allocation. The expected returns and estimated standard deviation for each allocation are also outlined below.

## Asset Mixes

	Current Target Allocation	New Target Allocation
Large Cap Domestic Equity	30	31.8
Small Cap Domestic Equity	12.5	14.3
International Equity	17.5	19.3
Fixed Income	15	16.8
Global Fixed Income	5	6.8
Conservative FoF	6	6
Diversified FoF	9	0
Cash	5	5
10 Year Expected Return	6.08	6.09
Standard Deviation	11.42	11.94

Replacing the hedge funds does not increase returns but increases volatility

# ASSET ALLOCATION REVIEW

- Outlined below is a summary of the inputs used in modeling projected returns and volatility for the current and proposed target asset allocations.

An increase in the equity and fixed income allocation creates a higher overall correlation between asset classes.

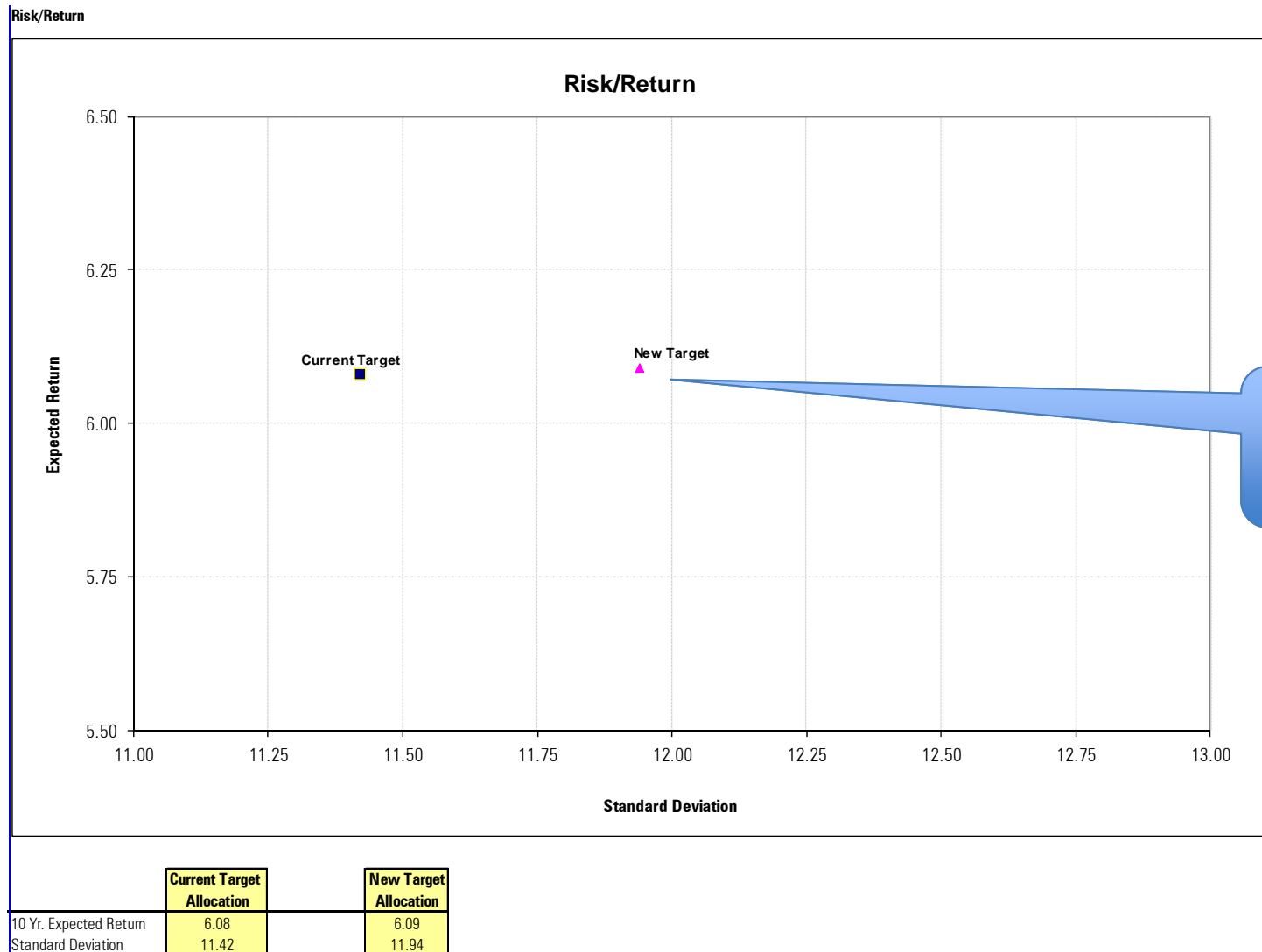
December 2014

## Inputs Summary

	10 Yr.		Correlation							
	Expected Return	Standard Deviation	Large Cap Equity	Small Cap Equity	Intl Equity	Fixed Income	Global Fixed Inc.	Conservative FoF	Diversified FoF	Cash
Large Cap Domestic Equity	6.36	17.30	1	0.757	0.563	0.257	0.159	0.514	0.448	-0.004
Small Cap Domestic Equity	6.05	22.84	0.757	1	0.546	0.116	0.044	0.489	0.517	-0.033
International Equity	7.84	22.04	0.563	0.546	1	0.151	0.374	0.461	0.452	-0.032
Fixed Income	3.10	6.05	0.257	0.116	0.151	1	0.764	0.084	0.087	0.046
Global Fixed Income	3.74	6.71	0.159	0.044	0.374	0.764	1	0.097	0.069	0.047
Conservative FoF	4.39	6.99	0.514	0.489	0.461	0.084	0.097	1	0.760	0.076
Diversified FoF	5.52	9.70	0.448	0.517	0.452	0.087	0.069	0.760	1	0.033
Cash	2.00	1.02	-0.004	-0.033	-0.032	0.046	0.047	0.076	0.033	1

# ASSET ALLOCATION REVIEW

- The chart below graphically illustrates the risk return trade off of the new target allocation and each individual asset class.



# ASSET ALLOCATION REVIEW

- Outlined below is an illustration of the possible return outcomes for each asset allocation.

## Return Percentiles

	Current Target Allocation	New Target Allocation
<b>One Year</b>		
95th Percentile	26.44	27.46
10 Yr. Expected Return	6.08	6.09
5th Percentile	-11.00	-11.69
0th Percentile	-26.98	-28.20
<b>Three Year</b>		
95th Percentile	17.40	17.95
10 Yr. Expected Return	6.08	6.09
5th Percentile	-4.14	-4.57
0th Percentile	-14.50	-15.31
<b>Five Year</b>		
95th Percentile	14.75	15.16
10 Yr. Expected Return	6.08	6.09
5th Percentile	-1.93	-2.26
0th Percentile	-10.24	-10.90
<b>Ten Year</b>		
95th Percentile	12.14	12.43
10 Yr. Expected Return	6.08	6.09
5th Percentile	0.36	0.11
0th Percentile	-5.74	-6.23
<b>Twenty Year</b>		
95th Percentile	10.33	10.54
10 Yr. Expected Return	6.08	6.09
5th Percentile	2.00	1.83
0th Percentile	-2.42	-2.77

- 95<sup>th</sup> percentile=Best case
- Middle=Most likely outcome
- 5<sup>th</sup> percentile=Bad Case
- 0<sup>th</sup> percentile=Worst case

As the investment time horizon increases, the range of investment outcomes narrow.



# ASSET ALLOCATION REVIEW

- Outlined below is an illustration of the of the probability of achieving a given return.

Target Probabilities

	Current Target Allocation	New Target Allocation
<b>One Year</b>		
Target: 4.5%	55.60	55.40
Target: 5%	53.83	53.70
Target: 5.5%	52.06	52.01
Target: 6%	50.29	50.32
Target: 6.5%	48.54	48.63
Target: 7%	46.79	46.96
<b>Three Year</b>		
Target: 4.5%	59.64	59.29
Target: 5%	56.62	56.39
Target: 5.5%	53.57	53.47
Target: 6%	50.51	50.55
Target: 6.5%	47.46	47.63
Target: 7%	44.45	44.74
<b>Five Year</b>		
Target: 4.5%	62.37	61.92
Target: 5%	58.52	58.23
Target: 5.5%	54.60	54.48
Target: 6%	50.66	50.70
Target: 6.5%	46.73	46.94
Target: 7%	42.85	43.23
<b>Ten Year</b>		
Target: 4.5%	67.21	66.60
Target: 5%	61.95	61.55
Target: 5.5%	56.49	56.32
Target: 6%	50.93	51.00
Target: 6.5%	45.38	45.68
Target: 7%	39.94	40.47
<b>Twenty Year</b>		
Target: 4.5%	73.57	72.80
Target: 5%	66.65	66.11
Target: 5.5%	59.14	58.90
Target: 6%	51.32	51.41
Target: 6.5%	43.48	43.90
Target: 7%	35.93	36.65

The proposed target allocation will return slightly less over time