How the New 2025 SAV Outcome Target Was Determined[[1]](#footnote-1)

8/2/2013 DRAFT – SUBJECT TO REVISION

A new Chesapeake Bay Agreement is being written to be presented in the Fall of 2013 and will include an SAV restoration target for the year 2025, but keeping the ultimate restoration goal of 185,000 acres. A meaningful and attainable target should be based on the best data available using sound analysis.

A set of graphs were developed showing the amount of SAV surveyed from 1984 to 2012 for each of the Chesapeake Bay segments used in setting the original SAV Restoration Goal, overlaid with the linear trend of the SAV abundance through time and compared with the segment’s ultimate SAV acreage restoration goal (Figure 1).

**Figure 1.** Honga River segment HNGMH 29 year history of SAV acreage compared with the segment’s SAV acreage restoration goal.

It was hoped that comparing the SAV trends with Bay water quality modeled trends in water clarity based on future implementation of BMPs would yield a scientifically-based target of expected SAV abundance in 2025. However, in discussions with Chesapeake Bay Program modelers, it was determined that this approach was not feasible. The STAC reviewed the WQSTM and said that it was unsuitable for estimating SAV responses to water clarity at the Chesapeake Bay segment scale. Also, the lag times between BMP implementation and Bay water quality response are not full known, but could years and up to decades.

It therefore fell to looking at the historical record of SAV in the Bay, for which there are continuous data from 1984-2012 (excepting 1988) for all the Bay segments. Trends among segments grouped by salinity regimes and regions of the Bay were examined. While there were generally no correlations between the increases and decreases in SAV in the segments within these groups, when the segments were aggregated, in most cases there was a general upward trend in segments where a trend was shown. One thing that became evident when examining these graphs was that a small number of segments with large amounts of SAV drive the trends, as is the case with the Susquehanna Flats (CB1TF2) and, to a lesser extent, the Maryland (POTTF MD) and Virginia (POTTF VA) portions of the upper tidal Potomac River (Figure 2).

**Figure 2.** Individual (top panel) and combined tidal fresh Chespeake Bay segments illustrating long term trends in SAV acreage.

SAV abundance within most segments fell between 2009 and 2012 due to the negative impacts of tropical storms Lee and Irene and to high summer temperatures affecting eelgrass in the lower Bay. Overall, SAV acreages were down over the past four years from 85,910 in 2009 to 48,190 in 2012 and the number of segments at or above their restoration goal acreages fell from 20 to 7. While 49% of the segments with acreage goals (43 out of 88) showed an increasing trend in SAV abundance over the past 30 years, they showed a moderate to severe downward trend over the past 5 years (Figures 3 and 4). Although the long term trend for SAV abundance in the Bay is an increase in acreage, the setting of a 2025 target should be tempered by the knowledge that stochastic events such as storm events can significantly lower that acreage within a short time period. Also, it should be noted that the four segments with the highest restoration goals have shown an aggregated downward trend, denoting long term problems in those high SAV volume segments (Figures 3 and 4).

**Figure 3.**

**Figure 4.**

Based on the above described graphical analyses, it was determined the best means for estimating SAV acreages as a percentage of the ultimate baywide SAV restoration goal would be calculating the single best year of SAV acreage for each of the 92 Chesapeake Bay segments during the 1984-2012 time period. This is based on the rationale that continued nutrient and sediment reductions through 2025 should yield water clarity conditions across the Bay’s tidal waters that we have witnessed individually through time in each individual segment.

When the single best year of SAV for each segment from 1984-2012 is taken, it amounts to 70.8% (131,032 acres) of the 185,000 acre restoration goal. If a 2025 target of 130,000 acres is set, assuming that if a segment achieved that maximum acreage at some point in the recent past it can do so again, that is a significant increase over the 48,190 acres of SAV surveyed Bay-wide in 2012. With the exception of the four biggest segments in terms of SAV restoration acreages (see Figure 3), majority of the other grouped segment were trends upwards from 1984 under the recent four to five years.

In follow up discussions with recognized SAV experts from Maryland (e.g., Lee Karrh) and Virginia (e.g., Bob Orth), this seemed to be a reasonable target for 2025. Based on the above described analysis, an interim target of 90,000 acres (slightly exceeding 2009 levels, the time period when the recent declines started) by 2017 was also agreed upon.

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