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| Sector Load Management Demonstration Technical Memorandum |
| **Point Source Load Sectors: MS4s, Construction, CAFOs, WWTP, and CSOs Nonpoint Source Load Sectors: Ag, Forests Lands, OSWTS, Nonregulated stormwater** |
| **December 21, 2012** |
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| **Prepared by EPA Region III** |

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# Purpose

In the event that a jurisdiction has not set aside loads to account for new and increased loads as a result of growth, a jurisdiction must either have in place an offset program for these loads or demonstrate that a formal offset program is not necessary as loads are sufficiently controlled by existing regulation and local planning to ensure that new and/or expanding sources will not contribute additional loads that will prevent attainment of the Chesapeake BayTMDL. **Jurisdictions are expected to complete these demonstrations by February 28, 2013.**

# Scope

This technical memorandum establishes criteria for possible demonstrations by the jurisdictions that new and/or expanding sources will not result in increased loads. It is not intended to determine whether an offset program is necessary to meet the TMDL target loads for particular sectors, nor is it intended to establish a trading baseline. In many cases, it may be advantageous to have an offset program to ensure that the TMDL and a jurisdiction’s Watershed Implementation Plan is achieved. This is particularly the case when considering new source controls versus retrofits. The cost/benefit of new source controls may be significantly below that of retrofit controls.

# Assumptions

EPA expects the jurisdictions to demonstrate that a formal offset program either is necessary or unnecessary and it is assumed that:

* The jurisdiction will have a system in place to manage changes in load allocations
* The jurisdiction will have a system in place for tracking increases in loads to ensure accountability and verification
* The jurisdiction will periodically re-examine whether the inputs of the demonstration remain valid.
* A date will be identified as to when the offset program will be in place if determined that one is needed.

# Sector Growth Demonstration

For each of the five sectors below please determine whether an increase in nutrient loads will/have occurred between the years 2010 and 2025 . Please indicate whether these loads have been offset and how. An example of how to calculate these loads is identified under each of the sectors below. Alternative calculations and methodologies can be used by the jurisdictions as long as documentation is provided. See attached example data set for possible use in this calculation .

## Agriculture (CAFOs and “nonregulated AG”)

1. **Agriculture (CAFOs and “nonregulated AG”)**

Perform an analysis of documented trends in county-level agriculture census data for the past 20 years in 5 year increments (use 1992, 1997, 2002, 2007 to maintain consistency with USDA data.) Ag Census data is collected every 5 years. The most recent census data available is from 2007, and was released in February of 2009 and updated in December of 2009. The 2012 census data is currently being collected, and will not be available for some time. The 2007 data is available at: <http://www.agcensus.usda.gov/Publications/2007/index.php>

Use the following indicators:

* + 1. Land area used for agricultural production including all cropland, whether it was harvested or not, and all pasture land, regardless of whether animals were present.
    2. Poultry Sector including number of broilers, pullets, and turkeys sold and an inventory of layers during each agriculture census year.
    3. Inventory of cattle including dairy and beef as well as all calves and inventory of sheep, goats, hogs, and horses for during each agriculture census year.

Review 2017 and 2025 projected load loss/gain in sector using agriculture census data In addition to the NASS Ag Census Data, USDA prepares a 10-year forecast for all agricultural commodities. While it does not provide watershed specific data, the state-level projections could be used to create some level of consistency for many of the agricultural sectors. The last report was released in February of 2012, and covered the period through 2021. It is available at: <http://www.usda.gov/oce/commodity/archive_projections/USDAAgriculturalProjections2021.pdf>

Paul Westcott, Economic Research Service, is the contact for the information, his e-mail is: westcott@ers.usda.gov

Predict , using 2010 as a basis and projected 2017 and 2025 load loss/gain, annual total sector loadings considering application of WIP controls and regulation (NMP requirements), utilizing calculation methodology consistent with Bay Model. (FYI **-** The INForest tool for VA 9VA Department of Forestry and Virginia Tech) is comparatively easy to use for changes in land use, but will not be able to provide the loadings within sector. )

* + 1. **L**oadings associated with projected animal populations on annual basis
    2. Loadings associated with Row Crops for crop types (corn, bean, etc) on annual basis
  1. Comparison of TMDL WLA and LA against Predicted Loads:

i. Loads Flat or decreasing - no offset program needed

ii. Loads increasing - offset program necessary

## Urban and suburban stormwater (MS4s, Construction and “nonregulated stormwater”)

1. Look Back over the years 1984 - 2006 using attached Historic Regulated (and Unregulated) Development information and identify loadings for a through f.
   1. total impervious acres 1984 – 2006
   2. total pervious acres 1984 – 2006
   3. unregulated impervious acres 1984 – 2006
   4. unregulated pervious acres 1984 – 2006
   5. MS4 regulated impervious acres 1984 – 2006
   6. MS4 regulated pervious acres 1984 – 2006
2. Review , using 2010 as a basis, , 2017 and 2025 projected load loss/gain in sector using attached Future Regulated (and unregulated) Development information and associated loadings as calculated in i. above for a through f.
   1. total impervious acres 2017 and 2025
   2. total pervious acres 2017 - 2025
   3. unregulated impervious acres 2017 - 2025
   4. unregulated pervious acres 2017 - 2025
   5. MS4 regulated impervious acres 2017 - 2025
   6. MS4 regulated pervious acres 2017 - 2025
3. Predict , using 2010 as a basis and projected 2017 and 2025 load loss/gain from information from i. and ii. above, annual total sector loadings considering application of WIP controls and regulations, utilizing calculation methodology consistent with Bay Model.
   1. total impervious acres 2012 thru 2025
   2. total pervious acres 2012 thru 2025
   3. unregulated impervious acres 2012 thru 2025
   4. unregulated pervious acres 2012 thru 2025
   5. MS4 regulated impervious acres 2012 thru 2025
   6. MS4 regulated pervious acres 2012 thru 2025
4. Perform comparison of TMDL WLA and LA against Predicted Loads:
   1. Loads Flat or decreasing: Assumed that there is no growth in Sector
   2. Loads Increasing: offset program necessary

## WWTPs, CSOs

1. Look Back over the years 1984 - 20010 using attached Sewer and Septic and Historic and Future Regulated information and identify loadings for a through k.
   1. total housing units 1984
   2. total housing units 1990
   3. total housing units 2000
   4. total housing units 2010
   5. total housing units 2010
   6. population on sewer 1984
   7. population on sewer 1990
   8. population on sewer 2000
   9. population on sewer 2010
   10. CSO regulated impervious acres 1984 – 2006
   11. CSO regulated pervious acres 1984 – 2006
2. Review , using 2010 as a basis, , 2017 and 2025 projected load loss/gain in sector using attached Sewer and Septic and Historic and Future Regulated information and associated loadings as calculated in i. above for a through f
   1. total housing units 2017
   2. total housing units 2025
   3. population on sewer 2017
   4. population on sewer 2025
   5. CSO regulated impervious acres 2017
   6. CSO regulated pervious acres 2025
3. Predict , using 2010 as a basis and projected 2017 and 2025 load loss/gain from information from i. and ii. above, annual total sector loadings, considering application of WIP controls and regulation, utilizing calculation methodology consistent with Bay Model.
   1. total housing units 2012 thru 2025
   2. population on sewer 2012 thru 2025
   3. CSO regulated impervious acres 2012 thru 2025
   4. CSO regulated pervious acres 2012 thru 2025
4. Perform comparison of TMDL WLA against Predicted Loads
   1. Loads Flat or decreasing: Assumed that there is no growth in Sector
   2. Loads Increasing: offset program necessary

## OSWTS (Septics)

1. Look Back over the years 1984 - 20010 using attached Sewer and Septic information and identify loadings for a. thru i:
   1. total housing units 1984
   2. total housing units 1990
   3. total housing units 2000
   4. total housing units 2010
   5. total housing units 2010
   6. population on septics 1984
   7. population on septics 1990
   8. population on septics 2000
   9. population on septics 2010
2. Review , using 2010 as a basis, , 2017 and 2025 projected load loss/gain in sector using attached Sewer and Septic information. and associated loadings as calculated in i. above for a. thru d.
   1. total housing units 2017
   2. total housing units 2025
   3. population on sewer 2017
   4. population on sewer 2025
3. Predict , using 2010 as a basis and projected 2017 and 2025 load loss/gain, annual total sector loadings considering application of WIP controls and regulation, utilizing calculation methodology consistent with Bay Model.
   1. total housing units 2012 thru 2025
   2. population on septics 2012 thru 2025
4. Perform comparison of TMDL WLA and LA (depending whether the jurisdiction has allocated loads to septics as a WLA or LA) against Predicted Loads
   1. Loads Flat or decreasing: Assumed that there is no growth in Sector
   2. Loads Increasing: offset program necessary

## Forest Lands

1. Look at the years 2006 thru 2010 using the attached Future Land Conversion information and identify loadings for a.
   1. cumulative conversion of forests to development 2006 - 2010
2. Review 2017 and 2025 projected load loss/gain in sector using attached Future Land Conversion information.
   1. cumulative conversion of forests to development 2006 - 2017
   2. cumulative conversion of forests to development 2006 - 2025
3. Predict projected 2017 and 2025 load loss/gain, annual total sector loadings considering application of WIP controls and regulation, utilizing calculation methodology consistent with Bay Model.
   1. Conversion of forests to development from 2012 thru 2025
   2. Conversion of forests to development from 2012 thru 2025
4. Perform comparison of TMDL LA (assuming jurisdiction has allocated loads to forests as a LA) against Predicted Loads
   1. Loads Flat or decreasing: Assumed that there is no growth in Sector
   2. Loads Increasing: offset program necessary



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