

### Workplan for CAST 2021

**Goal:** Accommodate new data and methods with CAST 2021 for changes that have been approved by the Partnership up until COB Sept. 1, 2021

**Outcome:** A Partnership approved CAST 2021 model that uses the best available science, data and information to inform and support our shared restoration efforts and collective decision-making processes, adhering to our principals of adaptive management

- \* The tasks and actions (Tasks 1-8) below represent the priority issues that have been identified by the Partnership and will receive primary focus by the participating entities. Other tasks and actions can be added to this work plan as time and resources allow, and with Partnership approval. Note that not all issues may be fully addressed by the Partnership-established deadlines for updating CAST 2021. Tasks and actions may be applicable to future versions of CAST.
  - \* **Timelines are the estimated completion dates (month & year) for the investigating body (e.g., CBP office technical staff) to make final presentations about options for the relevant source workgroups to consider.** Agreement about what will be included and excluded from CAST21 depends on votes of members of the workgroups and WQGIT. Approved data and method changes for CAST21 need to be finalized through the WQGIT by Sept. 1, 2021.
- **As each key action is considered and signed off by workgroups and the WQGIT, there will be no determination where and to what degree nutrient and sediment loads would be higher or lower than CAST 2019.** Additional key actions may be added to this workplan if the addition is approved by the WQGIT. CAST 2021 will accommodate all method and data changes approved through the Partnership by COB Sept. 1, 2021 and will be available for review, including loads, Nov. 1, 2021. Comments and questions from jurisdictions are due Dec. 1, 2021 with the final release of CAST21 scheduled for Jan. 1, 2022.

	Key Action	Participating Entities	Timeline* – Findings Presented to Lead Participating Entity for Decision	Status Updates
<b>Task 1</b>	<p>Continue with updates to data and methods for the following that typically occur every two years – as well as other proposals agreed-to and approved by the CBP Partnership:</p> <ul style="list-style-type: none"> <li>• New or updated BMPs, their effectiveness values, and implementation costs</li> <li>• Revised reported BMP history from jurisdictions</li> <li>• State-specific land use data, especially where it relates to land use by agency type</li> </ul> <p><b><u>Developed Sector</u></b></p> <ul style="list-style-type: none"> <li>• County-level and/or Census zone population, housing, and employment projections</li> <li>• MS4 area boundaries</li> <li>• Zoning information</li> <li>• Construction acres</li> <li>• The number of septic systems and their projections, related to sewer service area boundaries</li> <li>• Rapid infiltration basin load data</li> <li>• Large monitored onsite septic system load data</li> </ul>	<p>Relevant source workgroup (<b>Agriculture, Forestry, Land Use, Urban Stormwater, Wastewater Treatment, Wetlands</b>), BMP Expert Panels, BMP Verification Ad-Hoc Action Team, Watershed Technical Workgroup, WQGIT, Jurisdictions, CBPO technical staff</p>	<p>August, 2021</p>	<ul style="list-style-type: none"> <li>• CBP office working on USDA-NASS crop yield data.</li> <li>• Soil phosphorus data provided by WV. NY forthcoming</li> <li>• AAPFCO fertilizer data up to 2016.</li> <li>• CAST <a href="#">Data Updates Frequency</a> w/ most recent submissions.</li> <li>• June 3 WTWG/June 17 AgWG review of data requested from jurisdictions. Manure data, soil P, etc.</li> </ul>

	Key Action	Participating Entities	Timeline* – Findings Presented to <b>Lead</b> Participating Entity for Decision	Status Updates
	<ul style="list-style-type: none"> <li>CSO connections and pass-through data</li> </ul> <p><b><u>Agriculture Sector</u></b></p> <ul style="list-style-type: none"> <li>Manure nutrient concentrations</li> <li>Manure or litter mass produced per animal</li> <li>Permitted/Non-permitted animal fractions</li> <li>Soil phosphorus data by crop type and county- for Phase 7</li> <li>AAPFCO for fertilizer sales and use data for farm (crop) and non-farm (urban turfgrass) entities – as well as other supplemental sources of data</li> <li>USDA-NASS crop yield data + bushels per acre</li> <li>Biosolid and spray irrigation mass and nutrient concentration applications</li> <li>Harvested forest areas</li> </ul>			
<b>Task 2</b>	Investigate alternatives to the current methods for forecasting agricultural land uses and animals and propose options for Partnership consideration. Particular attention will be paid to trends in acres of full-season soybeans and double-crops	<b>Agriculture Workgroup</b> , Land Use Workgroup, Watershed Technical Workgroup, WQGIT, CBPO technical staff	Completed, March 2021	3/18/21 DECISION: The AgWG approved a path forward regarding CAST-21 Workplan Task 2: <i>Investigate alternatives to the current methods for forecasting agricultural land uses and animals and propose options for partnership consideration.</i> The AgWG

	Key Action	Participating Entities	Timeline* – Findings Presented to Lead Participating Entity for Decision	Status Updates
				achieved consensus to continue using the current projection method (Double Exponential Smoothing: Alpha = 0.8).
<b>Task 3</b>	Investigate 2012-2017 Ag Census change for crop types “Cropland in cultivated summer fallow” and “Cropland idle or used for cover crops or soil improvement but not harvested and not pastured or grazed” and attempt to determine if reported increases are reflective of on-the-ground change. To the extent that information becomes available that demonstrates that census-reported changes are not reflective of real change, explore mechanisms by which model inputs for CAST 2021 might be adjusted to counteract and propose options for Partnership consideration.	<b>Agriculture Workgroup</b> , Land Use Workgroup, Watershed Technical Workgroup, WQGIT, CBPO technical staff	Completed January, 2021	01/21/21 DECISION: The AgWG acknowledges that investigation has not provided evidence to indicate that the 2017 Ag Census data is or is not reflective of on-the-ground change, therefore cannot recommend adjustment toCAST-21 model inputs at this time. The AgWG has exhausted its available resources to investigate this issue, but this decision does not preclude interested parties from pursuing further lines of inquiry and bringinginformation back to the workgroup for review.
<b>Task 4</b>	Investigate use of latest landcover and LiDAR imagery to better define changes in total agriculture areas and crop acres through time as well as all other source categories in the developed sector, forest, mixed open, and wetlands	<b>Land Use Workgroup</b> , Agriculture Workgroup, Forestry Workgroup, Urban Stormwater Workgroup, Wetlands Workgroup,	Aug., 2021	Classifications and mapping efforts for the 2017 land use dataset have been discussed,reviewed or updates provided at every meeting of Land Use WG, and Forestry WG. 2/16/21 Wetland WG, AgWG, and WQGIT. The 4/15/21 AgWG focused on 14 prototypes counties.

	Key Action	Participating Entities	Timeline* – Findings Presented to <b>Lead</b> Participating Entity for Decision	Status Updates
		Watershed Technical Workgroup, WQGIT, CBPO technical staff		<p>5/20/21 DECISION: The AgWG supported adoption of the proposed land use methodology for determining the change in total agricultural area from 2013 to 2017.</p> <p>5/20/21: The LUWG reviewed problems and fixes for the land use change data informing CAST-21.</p> <p>5/24/21 WQGIT update on 2013-2017 land use change. Updated Timeline for 2013 - 2017 Land Use Change Review for CAST-21 <a href="#">here</a>.</p> <p>6/28/21 WQGIT update on 2013-2017 land use change product.</p>
<b>Task 5</b>	Investigate alternatives for estimating acres of double-crops and propose options for Partnership consideration	<b>Agriculture Workgroup</b> , Watershed Technical Workgroup, WQGIT, CBPO technical staff	Completed May, 2021	5/20/21 DECISION: The AgWG approved the continued use of the current double-cropping methodology.

	Key Action	Participating Entities	Timeline* – Findings Presented to <b>Lead</b> Participating Entity for Decision	Status Updates
<b>Task 6</b>	Consider additions to current methods for “crediting” Nutrient Management on soybeans and propose options	<b>Agriculture Workgroup</b> , Watershed Technical Workgroup, WQGIT, CBPO technical staff	Completed May, 2021	<p>5/20/21 &amp; 6/17/21 Decision &amp; Discussion: The AgWG is asked <b>to endorse or not endorse</b> application of a non-zero reduction efficiency for the Supplemental Nitrogen Nutrient Management BMP on the full-season soybean load source (rate, timing, and/or placement).</p> <p><b>No consensus-</b> 2 Endorse, 8 Not Endorse, 1 Hold, 4 Not Present, 4 No Vote (AgWG did achieve consensus to endorse change to Supplemental NM BMP for full-season soybeans.)</p> <p><b>Long-term recommendations:</b></p> <ul style="list-style-type: none"> <li>• Phase 7 review of ag loading rates</li> <li>• continued efforts to improved accuracy of crop data sources &amp; improve understanding of real-world soybean management for future incorporation into CAST.</li> </ul>
<b>Task 7</b>	Accommodate with CAST21 QA/QC’d historic and current layer population data for Hillandale Farms, Spring Grove, PA.	<b>Agriculture Workgroup</b> , Watershed Technical	May, 2021	July 1, 2021 WTWG: Planned update on progress and sources of data.

	Key Action	Participating Entities	Timeline* – Findings Presented to <b>Lead</b> Participating Entity for Decision	Status Updates
		Workgroup, WQGIT, CBPO technical staff		2/11/21 AgWG Ad-Hoc discussion of issue  PA DEP and CBP office obtaining layer production data (1978-2020) from Hillandale + CAFO permit information.
<b>Task 8</b>	Build in Partnership-approved products of the BMP Verification Ad-Hoc Action Team as it relates to credit duration	Relevant source workgroup (Agriculture, Forestry, Urban Stormwater, Wetlands), <b>BMP Verification Ad-Hoc Action Team</b> , Watershed Technical Workgroup, WQGIT, CBPO technical staff	June, 2021	July 15 AgWG update scheduled (from BMPVAHAT chair and coordinator).  July 2021 Meeting: Voting on the Credit Duration Extension Decision from the FWG.  June and July Meetings: Partial Credit and Programmatic Conversations.  June Wetlands Meeting: Conversation on extending the credit duration of wetland restoration.  Last met on 05/14/2021 and the BRC/LLM issue was tabled. Next steps

	Key Action	Participating Entities	Timeline* – Findings Presented to <b>Lead</b> Participating Entity for Decision	Status Updates
				<p>have been identified and provided to the group for those who would like to revisit the issue.</p> <p>Began programmatic discussions – DE presented their challenges, solutions to their challenges and outstanding issues with their verification program that have not been resolved (namely the lack of point location information).</p> <p>The vote for BRC and LLM did not achieve consensus in April 2021. Rationale from those who did not endorse the change have been identified and provided to the group.</p> <p>The FWG is drafting a proposal for Credit durations of Forest Buffer, Tree Planting and Forest Planting practices.</p> <p>The Coordinator will go to the Wetlands WG in June to discuss the credit duration of wetland restoration.</p>



	Key Action	Participating Entities	Timeline* – Findings Presented to <b>Lead</b> Participating Entity for Decision	Status Updates
				Diminishing or partial credit was introduced for discussion during the May meeting. Offline discussions with the CAST modelling team are on-going.