

Workplan for CAST 2021: Aug 18 Update

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.

CAST 21 Schedule:

September 1, 2021 – All data and methods approved

November 1, 2021 – CAST-21 Beta release

December 1, 2021 – Jurisdictional comments due

January 1, 2022 – Final CAST-21 release

	Key Action	Participating Entities	Timeline* – Findings Presented to Lead Participating Entity for Decision	Status Updates
Task 1	<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"> • New or updated BMPs, their effectiveness values, and implementation costs • Revised reported BMP history from jurisdictions • State-specific land use data, especially where it relates to land use by agency type <p><u>Developed Sector</u></p> <ul style="list-style-type: none"> • County-level and/or Census zone population, housing, and employment projections • MS4 area boundaries • Zoning information • Construction acres • The number of septic systems and their projections, related to sewer service area boundaries • Rapid infiltration basin load data • Large monitored onsite septic system load data 	<p>Relevant source workgroup (Agriculture, Forestry, Land Use, Urban Stormwater, Wastewater Treatment, Wetlands), BMP Expert Panels, BMP Verification Ad-Hoc Action Team, Watershed Technical Workgroup, WQGIT, Jurisdictions, CBPO technical staff</p>	<p>August, 2021</p>	<p><u>TO BE INCORPORATED CAST-21</u></p> <p><i>Please Review:</i> CAST Data Update Frequency spreadsheet on the CAST Progress Reporting webpage for full list of data received from jurisdictions. <u>New or updated BMPs</u></p> <ul style="list-style-type: none"> ➤ Change tree BMP credit duration to 15 years in NEIEN [per Task 8; pending 8/23/21 WQGIT decision] ➤ Change tree BMP back out year to be 15 years earlier ➤ Change Abandoned Mine Reclamation BMP to change mixed open to forest ➤ Change Impervious Disconnection to apply ➤ to impervious land uses only ➤ Update/Add Ditch BMPs per panel report ➤ Update/Delete Wetland BMPs per panel report ➤ Add Urban Stream Restoration Protocol 5

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	<ul style="list-style-type: none"> CSO connections and pass-through data <p><u>Agriculture Sector</u></p> <ul style="list-style-type: none"> Manure nutrient concentrations Manure or litter mass produced per animal Permitted/Non-permitted animal fractions Soil phosphorus data by crop type and county- [for Phase 7] AAPFCO for fertilizer sales and use data for farm (crop) and non-farm (urban turfgrass) entities – as well as other supplemental sources of data USDA-NASS crop yield data + bushels per acre Biosolid and spray irrigation mass and nutrient concentration applications Harvested forest areas 			<p>➤ Urban stream restoration default value retirement date</p> <p><u>Historic Data</u></p> <ul style="list-style-type: none"> ➤ New BMP history and progress runs for 1985-2021 ➤ New 1995 adjustment factor ➤ New BMP back out history 1985-2017 ➤ New historic crop need fractions 1985-2016 ➤ New historic manure transport total phosphorus values 1985-2016 ➤ New calibration average stb values <p><u>Land Use</u></p> <ul style="list-style-type: none"> ➤ Double cropping-use Peter's total ag land use [per Task 4] ➤ Fix ag census vegetable acres used in double cropping calculation ➤ New land use change product [per Task 4 pending 8/23/21 decision] ➤ NY construction acres 2016-2021 <p><u>Wastewater</u></p>

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				<ul style="list-style-type: none"> ➤ Update point source supplemental data based on last year supplied ➤ Update MD biosolids data ➤ Update 3 flow values in MD 2016 wastewater data <p><u>Agriculture</u></p> <ul style="list-style-type: none"> ➤ USDA-NASS crop yield data ➤ AAPFCO fertilizer data through 2016 <p><u>CAST Graph & Tool Updates</u></p> <ul style="list-style-type: none"> ➤ Trends over time (6 data tools) ➤ Cost per BMP and Lb per BMP tables and graphs based on 150+ isolation scenarios ➤ Marginal change in load for each BMP graphs ➤ TN Loads by Input
Task 2	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	Agriculture Workgroup , 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

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				achieved consensus to continue using the current projection method (Double Exponential Smoothing: Alpha = 0.8).
Task 3	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.	Agriculture Workgroup , 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 to CAST-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 bringing information back to the workgroup for review.

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Task 4	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	Land Use Workgroup, Agriculture Workgroup, Forestry Workgroup, Urban Stormwater Workgroup, Wetlands Workgroup, Watershed Technical Workgroup, WQGIT, CBPO technical staff	Aug., 2021	<p>Classifications and mapping efforts for the 2017 land use dataset have been discussed, reviewed or updates provided at every meeting of Land Use WG.</p> <p>8/23/21 WQGIT Decision Requested: WQGIT consensus on the use of the high-resolution land use change data (2013-2017) as the “best available data” to inform CAST 2021.</p> <p>7/26/21 WQGIT update on 2013-2017 land use change product. Link to the data viewer: http://cicapps.org/obj1lu/ 6/28/21 WQGIT update on 2013-2017 land use change product. 5/24/21 WQGIT update on 2013-2017 land use change. 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. 5/20/21: The LUWG reviewed problems and fixes for the land use change data informing CAST-21. 2/16/21 Wetland WG, AgWG, and WQGIT.</p>

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Task 5	Investigate alternatives for estimating acres of double-crops and propose options for Partnership consideration	Agriculture Workgroup, 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.
Task 6	Consider additions to current methods for “crediting” Nutrient Management on soybeans and propose options	Agriculture Workgroup, Watershed Technical Workgroup, WQGIT, CBPO technical staff	Completed May, 2021	<p>5/20/21 & 6/17/21 DECISION: The AgWG is asked to endorse or not endorse 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>No consensus- 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>Long-term recommendations:</p> <ul style="list-style-type: none"> • Phase 7 review of ag loading rates • continued efforts to improved accuracy of crop data sources & improve understanding of real-world

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				soybean management for future incorporation into CAST.
Task 7	Accommodate with CAST21 QA/QC'd historic and current layer population data for Hillandale Farms, Spring Grove, PA.	Agriculture Workgroup, Watershed Technical Workgroup, WQGIT, CBPO technical staff	May, 2021	<p>August 2021 8/5/21 WTWG Decision Requested: WTWG consensus on including Hillandale data into CAST 2021. Decision tabled.</p> <p>8/19/21 AgWG: Summary of WTWG and questions to consider for CAST-23 and Phase 7</p> <p>layer production data (2000-2020) obtained from Hillandale layer facilities; limited CAFO permit, NMP, MMP information obtained</p> <p>7/15/21 AgWG: Brief update on WTWG discussion 7/1/21 WTWG: Presentation & discussion on progress. Questions & concerns catalogued. 2/11/21 AgWG Ad-Hoc discussion of issue</p>

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Task 8	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), BMP Verification Ad-Hoc Action Team , Watershed Technical Workgroup, WQGIT, CBPO technical staff	June, 2021 (BMPVAHAT charge includes a two-year timeline, beginning August 2020)	<p>9/10/21 BMPVAHAT: <i>Decision Requested:</i> The BMPVAHAT will determine if they will move forward with developing proposals to 1) extend the credit duration of grass buffers past 10 years and 2) to introduce partial crediting into NEIEN. Mark Dubin will come to the group to speak on verification related projects across the watershed. Programmatic Discussion will continue focused on resource issues states have with their verification programs and alternative verification approaches that may overcome those issues. Update will be provided on the Approval Process for new verification methods. State verification program challenges have been elevated; these conversations are ongoing to reach a holistic understanding of and solutions to challenges.</p> <p>8/23/21 WQGIT <i>Decision Requested:</i> WQGIT approval to include the extension of the credit duration for select forestry practices from</p>

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				<p>10 years to 15 years in CAST 2021.</p> <p>8/17/21 Wetlands WG: Continued discussion on a potential credit duration extension past 15 years for wetland restoration, wetland creation, and wetland reestablishment. An Ad-Hoc group will be convened to discuss options.</p> <p>8/13/21 BMPVAHAT: Grass Buffers Credit Duration Introduction – Background information to address request to extend practice credit duration past 15 years, Broader Programmatic Discussion on practices states have difficulty verifying and verification approaches introduced to address capacity/workforce related issues.</p> <p>Aug 2021 Wetlands WG: Continued discussion on the appropriate credit duration for wetland restoration practices.</p> <p>7/15/21 AgWG progress update: Presented Ag related concerns that are being addressed by the BMPVAHAT. There were no additional comments from the AgWG.</p> <p>July 2021 BMPVAHAT: Vote to support Credit Duration extension from the FWG for Forest Buffer, Tree Planting and Forest Planting BMPs.</p>

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				<p><i>BMPVAHAT support for extending credit duration was not unanimous, with stand aside votes from USWG and LUWG representatives.</i></p> <p>June and July Meetings: Partial Credit and Programmatic Conversations.</p> <p>June Wetlands Meeting: Conversation on extending the credit duration of wetland restoration.</p> <p>05/14/2021 BMPVAHAT: BRC/LLM issue was tabled. Next steps have been identified and provided to the group for those who would like to revisit the issue.</p> <p>Diminishing or partial credit was introduced for discussion.</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>April 2021 BMPVAHAT: The vote for BRC and LLM did not achieve consensus. Rationale from those who did not endorse the change have been identified and provided to the group.</p>

August 18, 2021