Stream Length and Scale in Phase 7 CAST

Modeling Workgroup Meeting

9/15/2026

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Agenda

- What was done in P6
- Options for P7
- Implications for each choice
- Requested decision
  - For Phase 7 CAST, decide which NHD product should be used to calculate the stream length characteristic at the land-river segment scale:
    - 1) NHDPlus 1:100K flowlines
    - 2) NHD HR 1:24K flowlines

P6

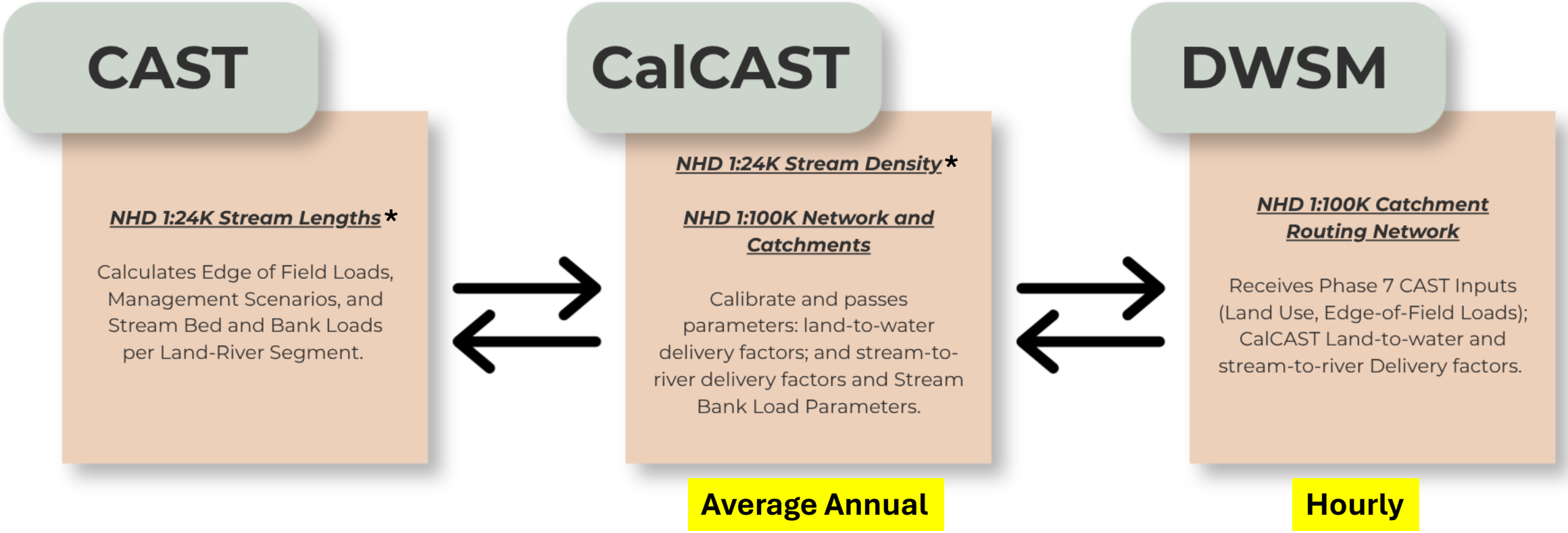
Phase 6

- CAST
  - NHD 1:100K flowlines were aggregated to the Phase 6 Land-River Segment
    - Used for proportioning the stream bed and bank loads + eligible length for stream restoration within a given segment

- DWSM
  - Contained no explicit flowlines representing stream length in P6. Instead, it relied on mapping stream locations within Phase 6 Land-River Segments (from CAST) to aggregate SPARROW land-to-water and stream-to-river delivery factors.

P7

STREAM SCALE USE IN **PHASE 7**



***Subject to today's decision**

P7

Proposed Options for P7

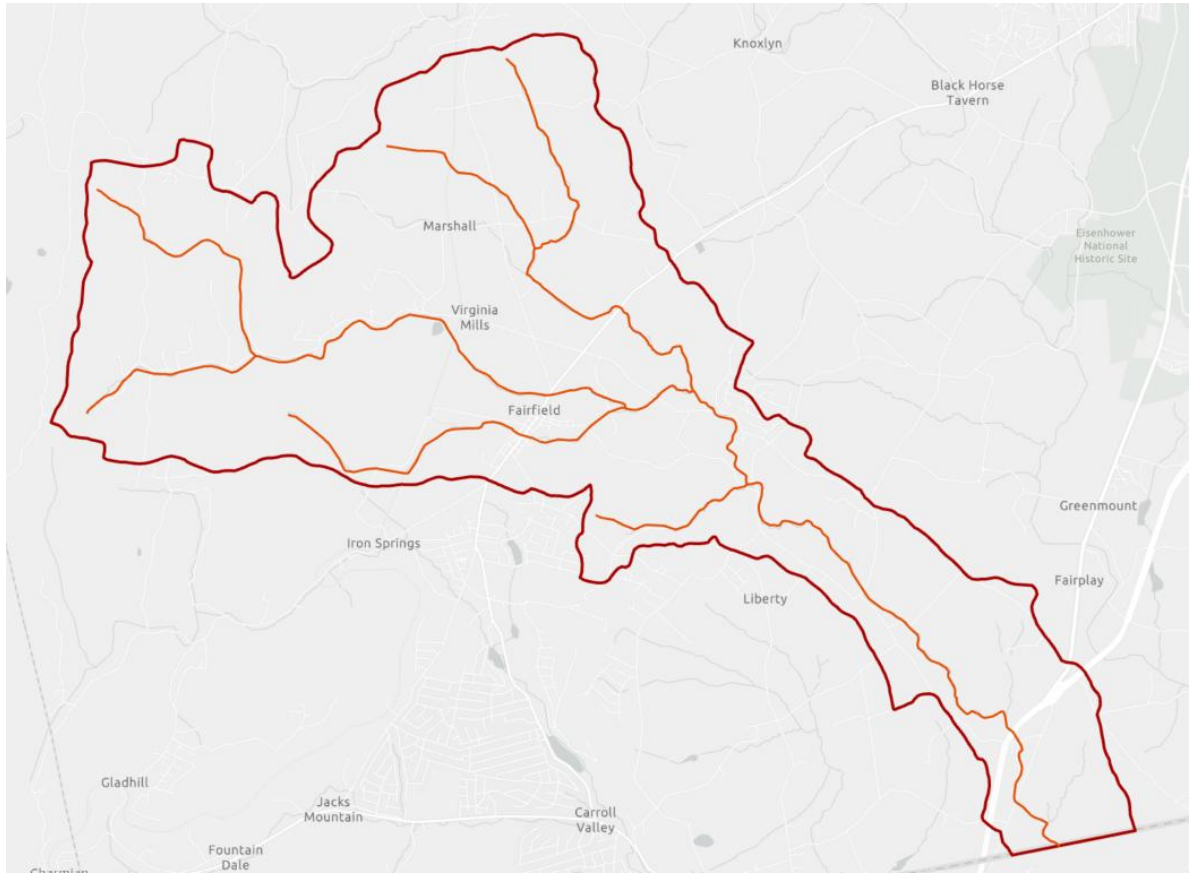
- Use NHD 1:100K flowlines to define the stream length in CAST at the P7 Land-River Segment scale
  - Use as stream density characteristic of NHDPlus 1:100K catchments for CalCAST
- Use NHD 1:24K flowlines to define the stream length in CAST at the P7 Land-River Segment scale
  - Use as stream density characteristic of NHDPlus 1:100K catchments for CalCAST

P7 CAST – LandRiver Segment

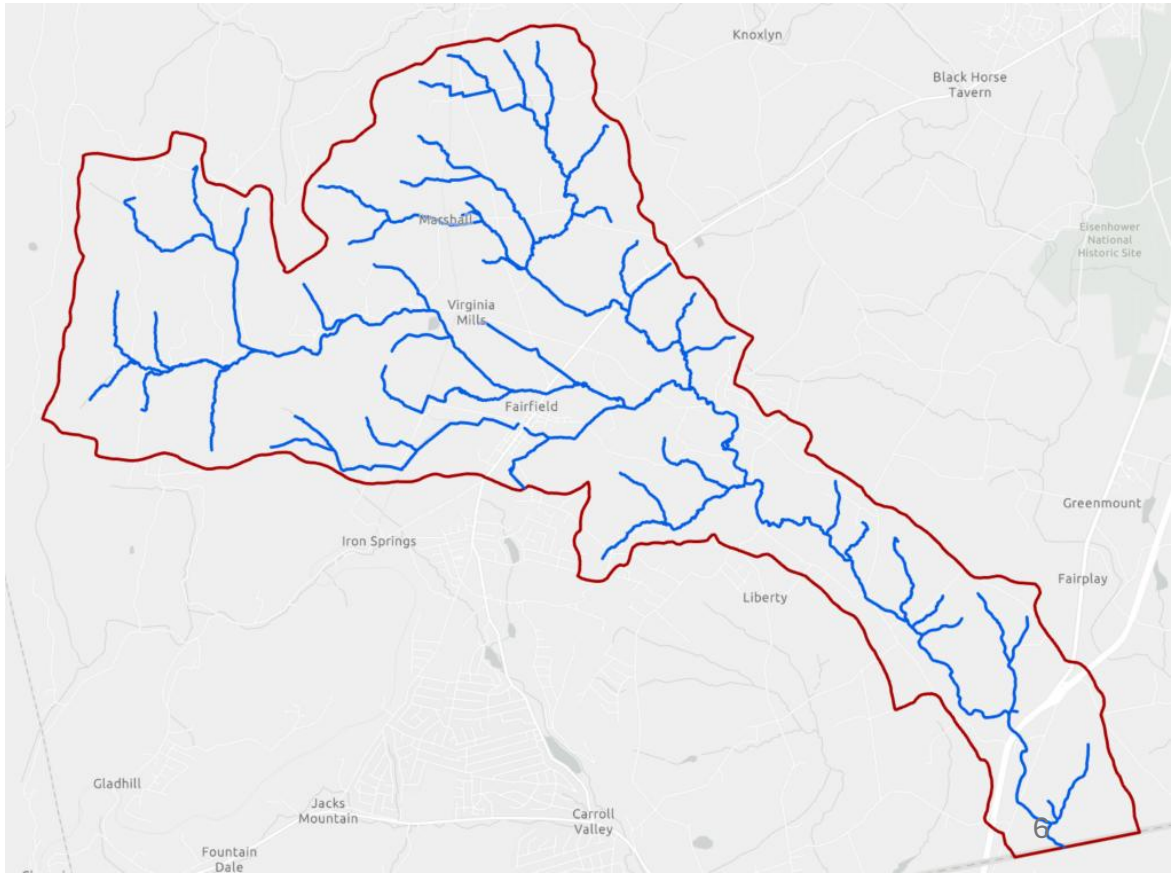
P7

- Example for Adams County, PA
  - P7 Lrseg: N42001_020700090302_POTTF_MD

NHD 1:100K



NHD 1:24K

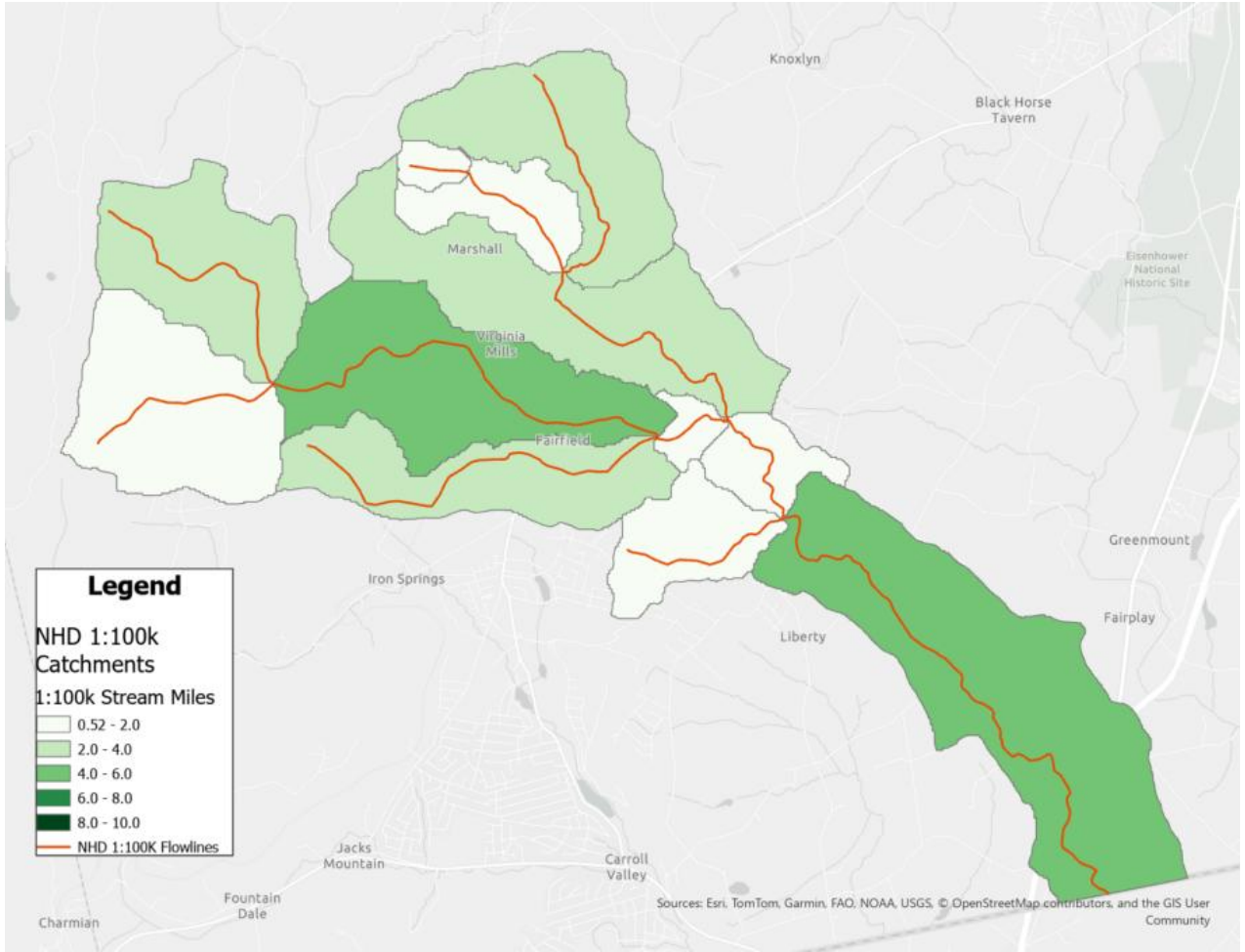


P7 CalCAST – NHDPlus Catchment (1:100K)

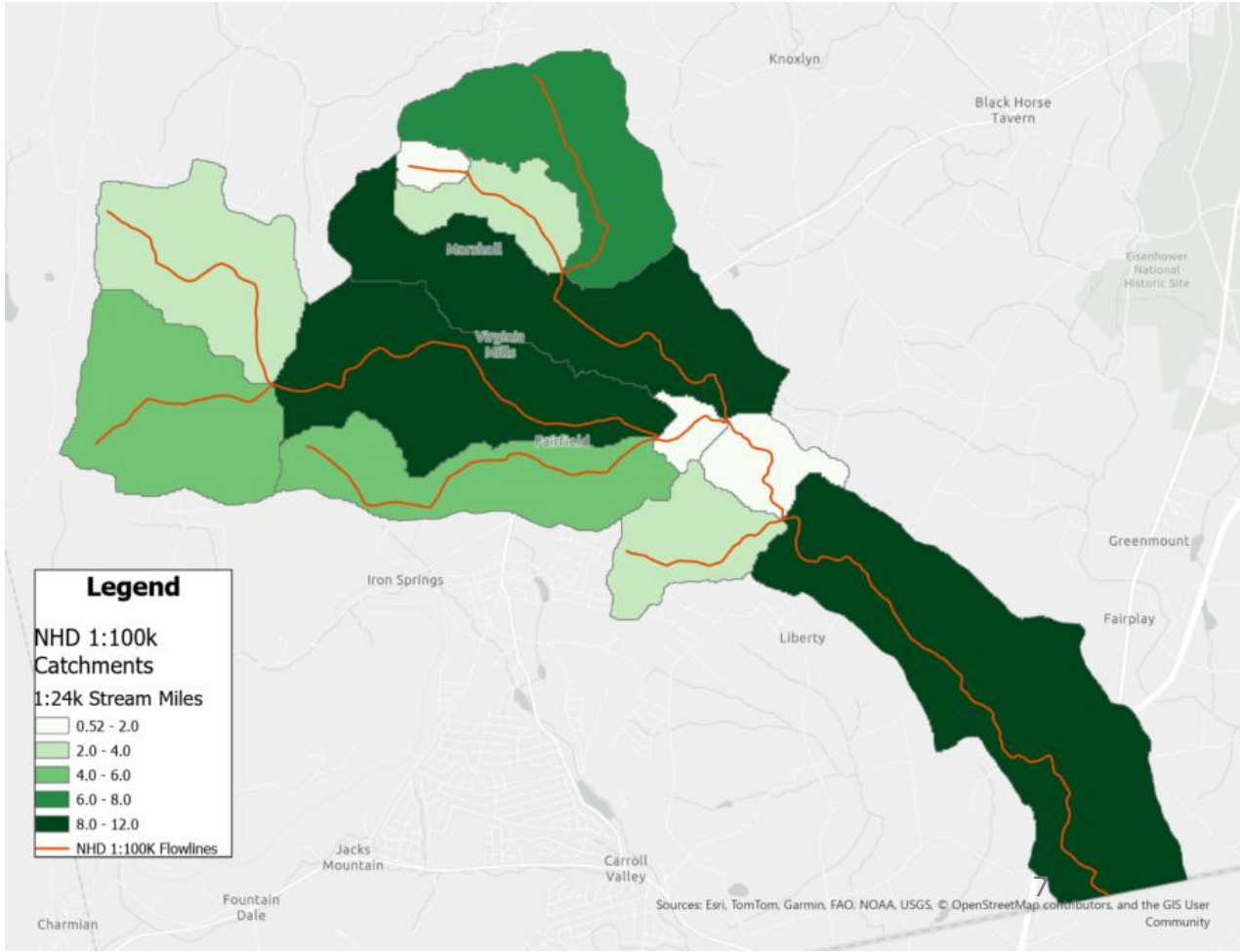
P7

- Example for Adams County, PA
  - Catchments located within P7 Lrseg N42001_020700090302_POTTF_MD

NHD 1:100K



NHD 1:24K



Reasons why NHD 1:24K was Suggested for P7 CAST

Implications

- Addresses a comment from the P6 Review that DC was dramatically undercounted with the 1:100K flowlines.
- Addresses the under count in western VA present in the 1:100K flowlines.
- NHD 1:24K streams align better with available stream restoration BMP data for which we have coordinates.

*See technical memo for more details:

https://www.chesapeakebay.net/files/documents/MWG-Memo_20260901.pdf.

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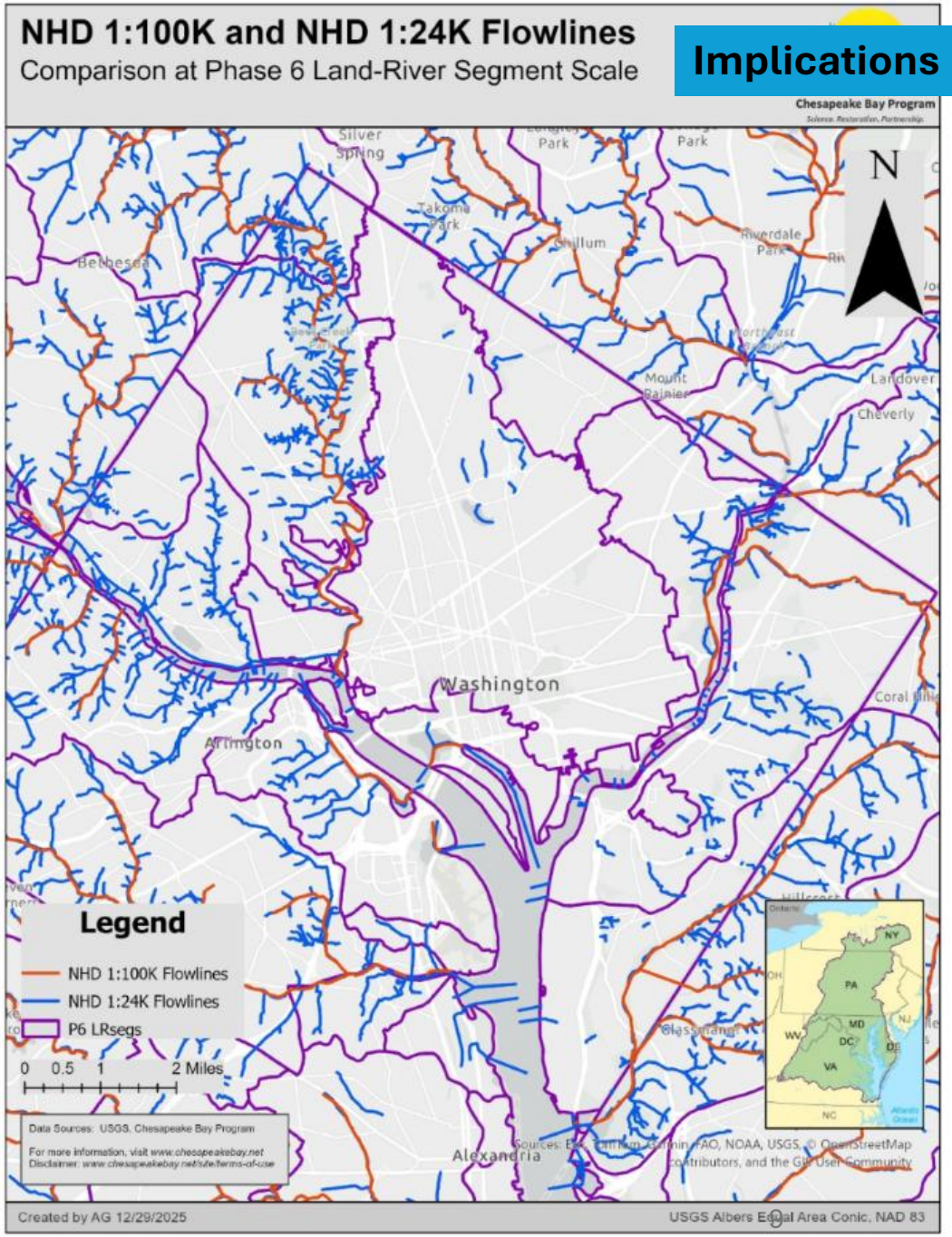

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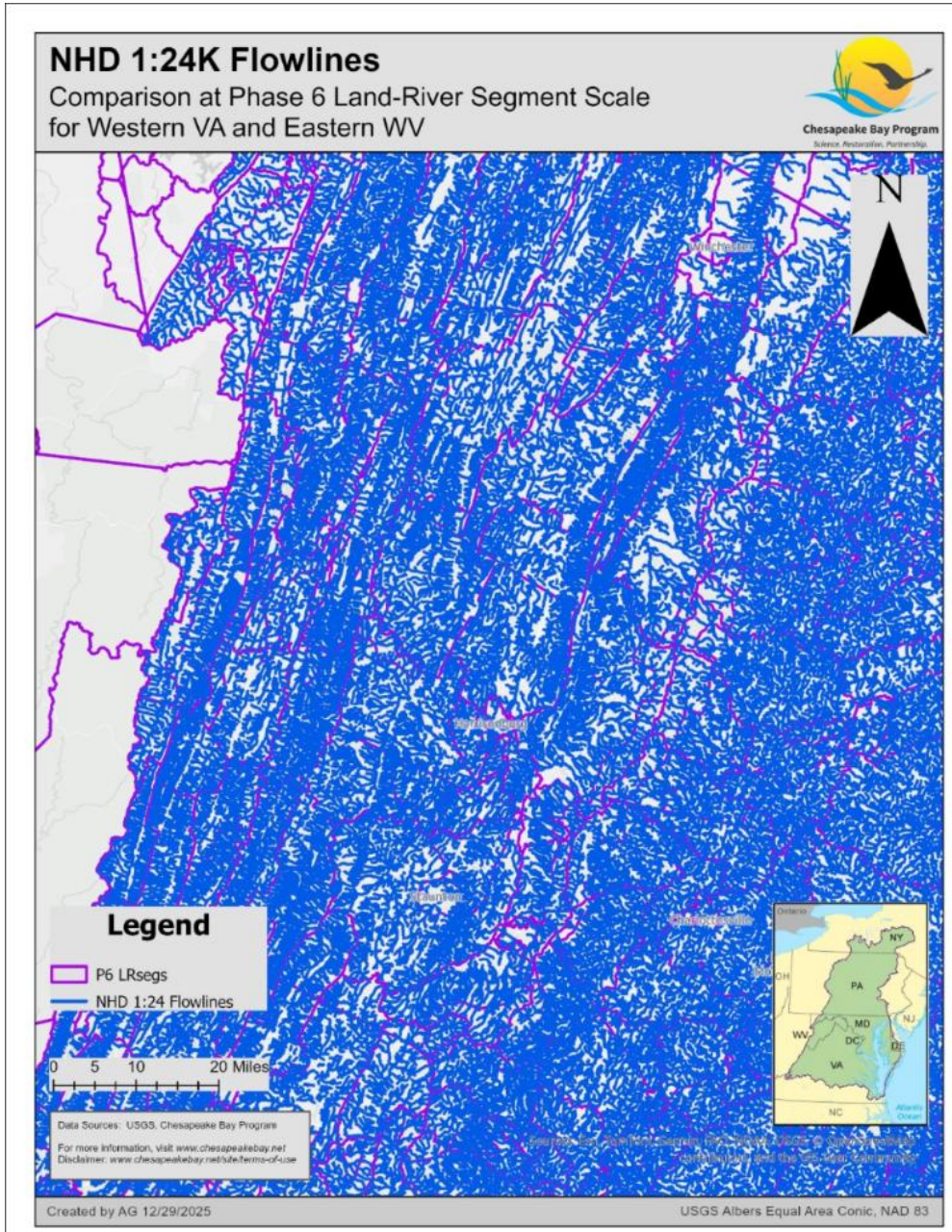
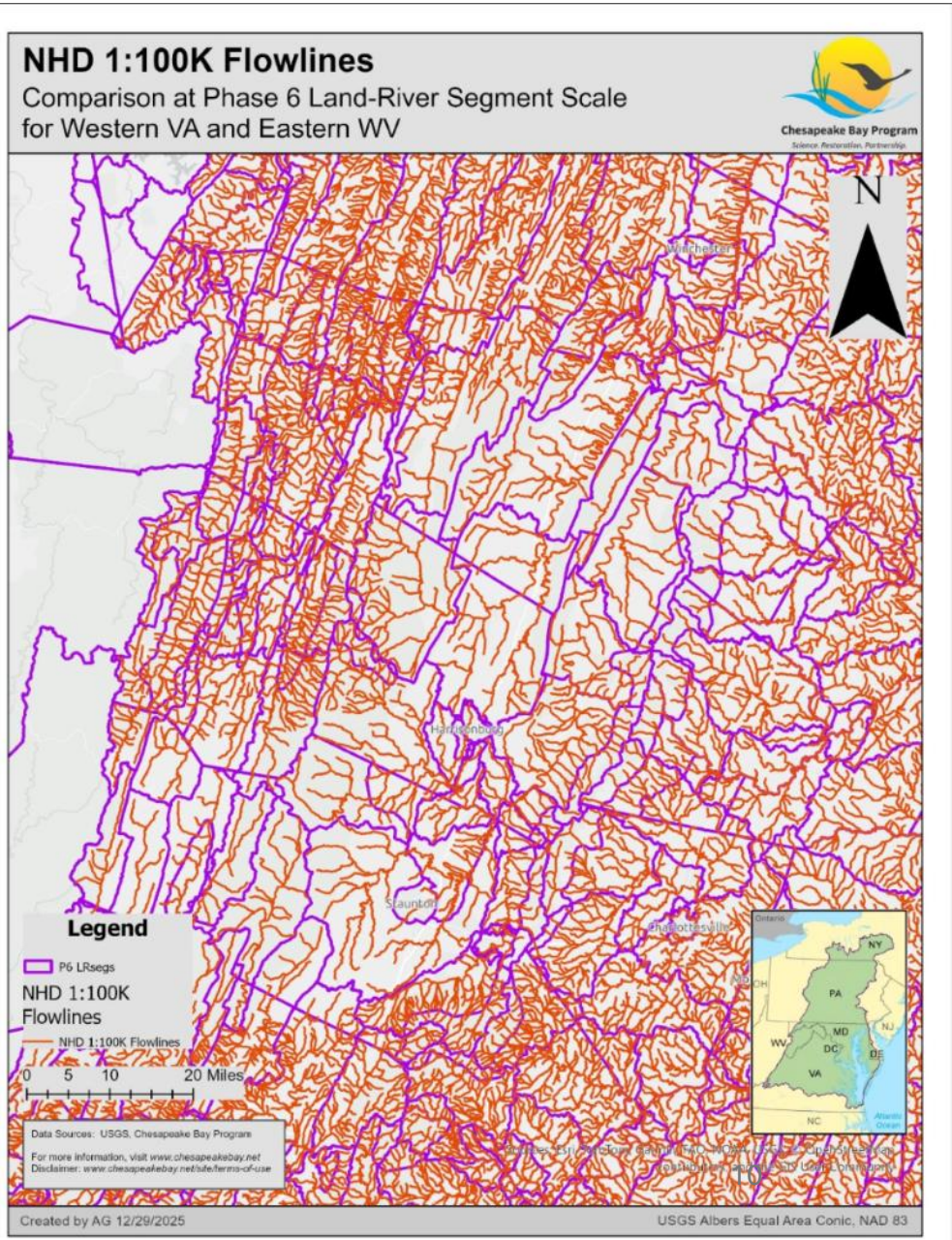




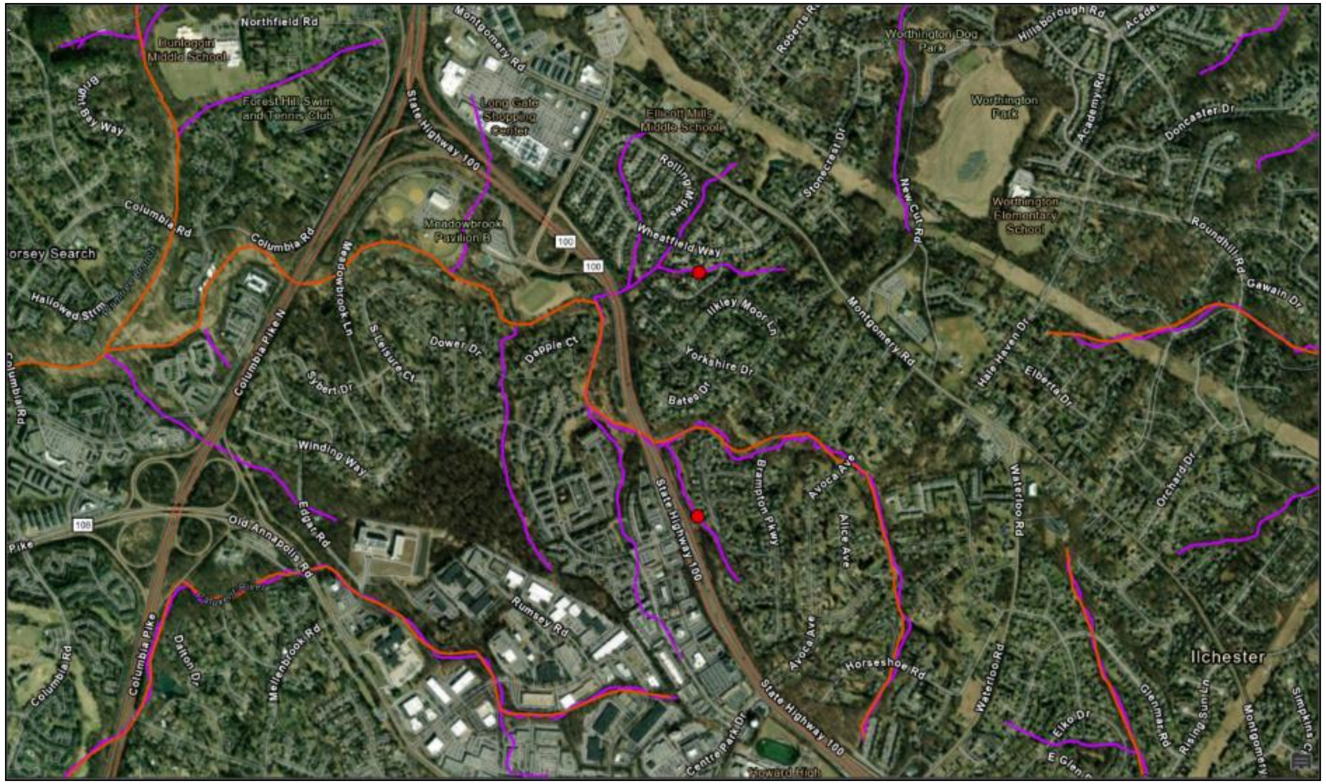
Reasons why NHD 1:24K was Suggested for P7 CAST

Implications

- NHD 1:24K streams align better with available stream restoration BMP data for which we have coordinates.

Stream Network	Stream Restoration BMPs Within 10m	Stream Restoration BMPs Within 30m	Stream Restoration BMPs Within 100m
NHD 1:24K (1st and 2nd Order)	23%	37%	54%
NHD 1:100K (1st and 2nd Order)	12%	28%	42%

Comparison of stream restoration BMPs within multiple distance intervals of NHD 1:24K and NHD 1:100K 1st and 2nd order streams.



Example of stream restoration BMPs located along NHD 1:24K 1st and 2nd order streams in Howard County, MD. Red Dots = Stream Restoration BMPs, Orange Lines = 1st and 2nd order NHD 1:100K streams, Purple Lines = 1st and 2nd order NHD 1:24K streams.

Stream Bed and Bank Erosion: 1:100K vs 1:24K

Implications

- Stream bed and bank erosion rates come from Greg Noe's predicted stream bank erosion for the Chesapeake Bay Watershed using the 2026 high res data
  - Should be through USGS review & publicly available at some point in 2027
- Keeping the total stream bed and bank erosion the same throughout the watershed, the total pounds per foot are:
  - 1:100K – 26.7442 lbs/ft/year
  - 1:24K – 14.4209 lbs/ft/year

Stream Bed and Bank Erosion by State: 1:100K vs 1:24K

Implications

1:100K

State	Millions of lbs/ft/year
DC	3.186327
DE	138.32
MD	1367.886
NY	913.5758
PA	3373.283
VA	3435.253
WV	572.6078

1:24K

State	Millions of lbs/ft/year
DC	7.695422
DE	105.2035
MD	1322.636
NY	818.3083
PA	2912.211
VA	4068.247
WV	569.8404

Request of the Modeling Workgroup: Decide on P7 CAST Stream Length Scale

Decision

- For Phase 7 CAST, decide if the stream length characteristic at the land-river segment scale should be:
  - Option 1 - Use NHD 1:100K flowlines to define the stream length in CAST at the P7 Land-River Segment scale
    - Use as stream density characteristic of NHDPlus 1:100K catchments for CalCAST
  - Option 2 - Use NHD 1:24K flowlines to define the stream length in CAST at the P7 Land-River Segment scale
    - Use as stream density characteristic of NHDPlus 1:100K catchments for CalCAST