Dissolved Oxygen Effectiveness Factor Part 1

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Geographic Isolation Runs

- Sets exchange ratios
  - States can choose to reduce more N and less P or vice versa in their WIPs
- Part of relative effectiveness
  - Geo Iso runs are (DO improvement) / (lb delivered)
  - Multiplied by (lb delivered) / (lb produced

Method

- Increase nitrogen by 1,000,000 lbs for a single basin
- Increase is implemented by multiplying each cell and day by the same factor
- Record the change in the 25th percentile of DO for each designated use
- Express result in terms of ug/l increase per million lbs TN
- Repeat for all basins
- Repeat using 100,000 lbs phosphorus

Nitrogen geo runs for Deep Water

Numbers are the 25th percentile of DO in mg/l for deep water in the model

run	2010WIP2	Susq_N_n	JmsA_N_r	PotA_N_n	PxtA_N_n
CB3MH	5.99309	5.98608	5.99238	5.98825	5.98892
CB4MH	4.44814	4.43477	4.44651	4.43781	4.43987
CB6PH	5.78068	5.77574	5.77977	5.77601	5.77744
CB7PH	5.95704	5.95297	5.95625	5.9535	5.95434
CHSMH	2.69905	2.68184	2.69757	2.68965	2.69124
EASMH	1.29263	1.27473	1.29107	1.28284	1.28429
MA1MH	7.12536	7.12413	7.12531	7.12464	7.12454
MAGMH	6.96071	6.96095	6.96066	6.96066	6.96089
MD5MH	5.29189	5.28185	5.2905	5.28227	5.2854
PA1MH	6.26554	6.26096	6.26507	6.26271	6.2631
PA2MH	3.69237	3.67391	3.69122	3.68429	3.60696
PATMH	3.97342	3.95976	3.97237	3.96716	3.96808
POMMH	5.86542	5.85789	5.86457	5.8554	5.86036
POVMH	6.6618	6.66356	6.66119	6.66616	6.6625
RPPMH	5.72118	5.71178	5.7202	5.71179	5.71476
SBEMH	4.94299	4.93747	4.8799	4.93771	4.93938
SEVMH	7.16546	7.16616	7.16533	7.16451	7.16495
SOUMH	7.68768	7.69251	7.68812	7.68924	7.6895
VA5MH	5.90626	5.89916	5.90517	5.89872	5.90179
YRKPH	5.10344	5.0962	5.10148	5.0963	5.09834

Segments used for TMDL

- *Volume-Weighted Average of*
- Deep Water
  - CB3MH, CB4MH, CB5MH, POTMH
- Deep Channel
  - CB3MH, CB4MH, CB5MH

Geo run results

- Used as exchange ratios
- A pound of N from the Susquehanna has
  - Half the oxygen effect as P from the Susquehanna
  - Twice the oxygen effect as N from the Rappahannock
  - Seven times the oxygen effect as N from the James

Oxygen decrease per million pounds

GeoBasin	N	P
Susquehanna	16.325	38.503
Western Shore	14.109	35.264
Patuxent AFL	10.931	27.505
Patuxent BFL	13.514	35.667
Potomac AFL	14.045	22.210
Potomac BFL	13.201	22.165
Rappahannock AFL	8.065	11.765
Rappahannock BFL	9.278	15.453
York AFL	4.630	9.111
York BFL	5.165	8.681
James AFL	2.647	7.673
James BFL	2.351	7.434
Upper Eastern Shore	10.709	31.840
Middle Eastern Shore	11.244	43.196
Lower Eastern Shore	9.782	25.243
Virginia Eastern Shore	15.214	20.404

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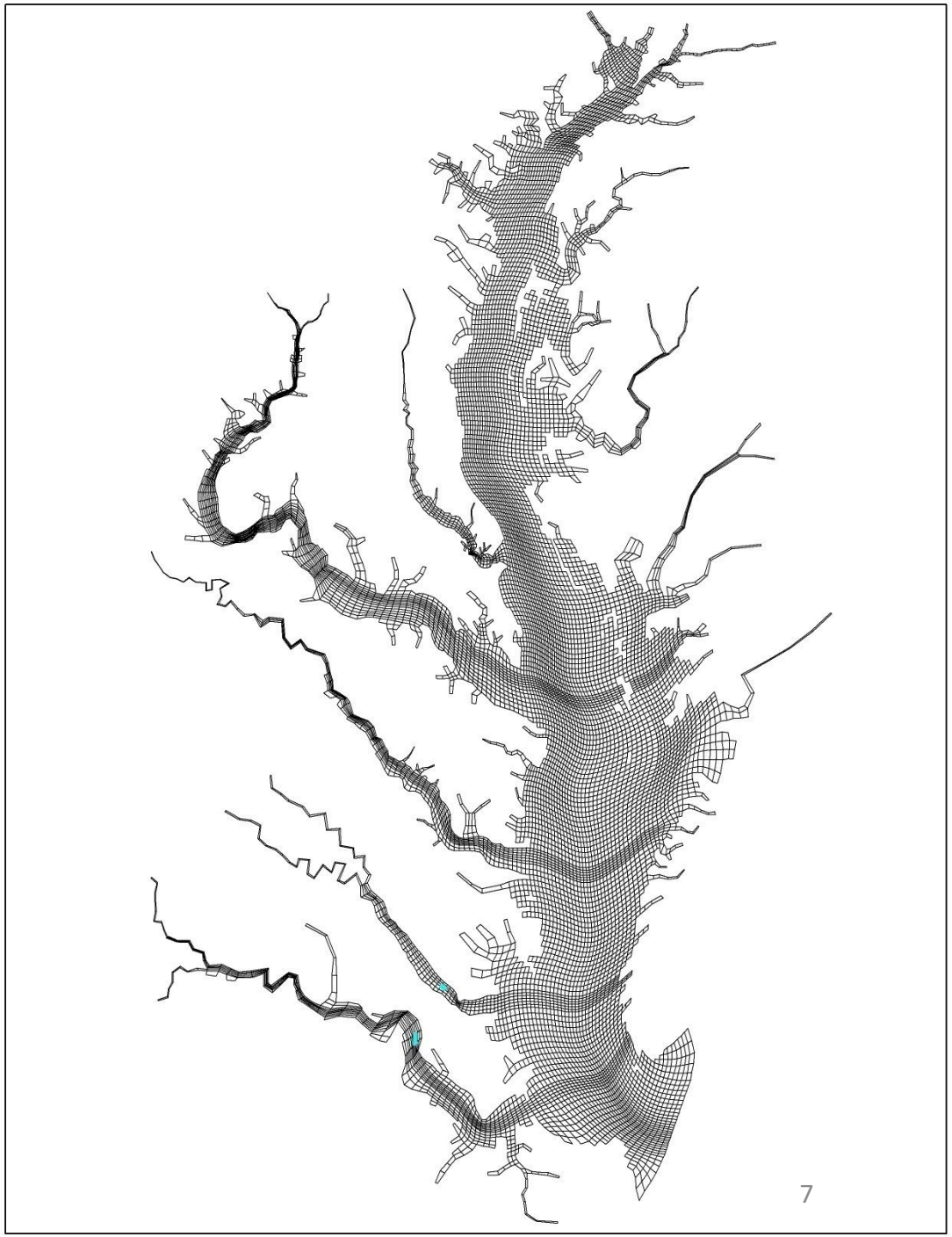

Part 2 – Next Month

- Use in Planning Target Calculation
- Use in Exchanges