

## Maryland Phase II WIP Strategies

### QUEEN ANNES Agriculture - Annual Practices

		2010 Progress	2017 Interim Strategy	2025 Final Strategy
BMP Name	Unit			
Conservation Tillage	Acres/Year	106,147	98,729	93,705
Cover Crop	Acres/Year	16,584	54,080	54,999
Cropland Irrigation Management	Acres/Year	0	24,999	25,000
Dairy Manure Incorporation	Acres/Year	0	540	900
Nutrient Management (All forms)	Acres/Year	86,797	108,770	106,228
Poultry Litter Incorporation	Acres/Year	0	11,229	18,706
Soil Conservation and Water Quality Plans	Acres/Year	74,769	78,864	87,997

- The BMP values are the amount credited in the Bay watershed model. It is the amount of BMP submitted minus the amount not given credit for (e.g., due to overlapping with other BMPs)

### QUEEN ANNES Agriculture - Additional BMPs

		2010 Progress	2017 Interim Strategy	2025 Final Strategy
BMP Name	Unit			
Alternative Crops	Acres	0	120	200
Barnyard Runoff Control	Acres	12	18	22
Forest Buffers	Acres	748	825	877
Grass Buffers / Vegetated Open Channel	Acres	7,361	7,581	7,728
Heavy Use Poultry Area Concrete Pads	Acres	0	2	3
Horse Pasture Management	Acres	0	60	100
Land Retirement	Acres	1,776	8,987	13,836
Off Stream Watering Without Fencing	Acres	150	210	250
Prescribed Grazing	Acres	0	242	401
Stream Access Control with Fencing	Acres	9	46	46
Tree Planting / Vegetative Environmental Buffers	Acres	760	810	843
Water Control Structures	Acres	0	1,919	3,205
Wetland Restoration	Acres	1,297	1,913	2,324

- The BMP values represent the total amount of implementation in place.
- The BMP values are the amount credited in the Bay watershed model. It is the amount of BMP submitted minus the amount not given credit for (e.g., due to overlapping with other BMPs)

Please note: The Agricultural BMP tables represent Land BMPs that can be shown as acres or feet and do not show those BMPs that are based on percentages such as Animal Waste Storage and Poultry Litter Treatment (Alum). Manure Transport is also not represented in these tables.

**QUEEN ANNES  
Forest BMPs**

			<b>2010 Progress</b>	<b>2017 Interim Strategy</b>	<b>2025 Final Strategy</b>
<b>BMP Name</b>	<b>Zone</b>	<b>Unit</b>			
Forest Harvesting Practices	harvested forest	Acres	652	652	652

- The BMP values represent the total amount of implementation in place.
- The BMP values are the amount credited in the Bay watershed model. It is the amount of BMP submitted minus the amount not given credit for (e.g., due to overlapping with other BMPs)

**QUEEN ANNES  
Developed Land BMPs**

		<b>2010 Progress</b>	<b>2017 Interim Strategy</b>	<b>2025 Final Strategy</b>
<b>BMP Name</b>	<b>Unit</b>			
Bioretention / Raingardens	Acres	0	0	2,376
Bioswale	Acres	0	0	0
Dry Detention Ponds and Hydrodynamic Structures	Acres	184	181	180
Dry Extended Detention Ponds	Acres	110	108	107
Impervious Urban Surface Reduction	Acres	0	0	787
MS4 Permit Stormwater Retrofit	Acres	422	415	68
Stormwater Management Generic BMP (1985 to 2002)	Acres	4,366	4,290	705
Stormwater Management Generic BMP (2002 to 2010)	Acres	2,483	2,439	401
Urban Filtering Practices	Acres	59	59	6,892
Urban Forest Buffers	Acres	34	553	962
Urban Infiltration Practices	Acres	273	269	266
Vegetated Open Channels	Acres	0	0	12,119
Wet Ponds and Wetlands	Acres	3,654	3,590	3,378
Erosion and Sediment Control on Construction	Acres/Year	480	480	551
Erosion and Sediment Control on Extractive	Acres/Year	0	0	88
Forest Conservation	Acres/Year	5,336	5,336	5,239
Street Sweeping Mechanical Monthly	Acres/Year	0	0	96
Urban Nutrient Management	Acres/Year	4,579	14,179	12,901
Urban Stream Restoration / Shoreline Erosion Control	Linear Feet	0	0	55,000

- The BMP values represent the total amount of implementation in place.
- The BMP values are the amount credited in the Bay watershed model. It is the amount of BMP submitted minus the amount not given credit for (e.g., due to overlapping with other BMPs)

## QUEEN ANNES Septic System BMPs

			2010 Progress	2017 Interim Strategy	2025 Final Strategy
BMP Name	Zone	Unit			
Septic Connection	Critical Area	Systems	0	0	1,690
	Outside of the Critical Area, not within 1000 ft of a perennial stream	Systems	0	0	78
	<b>Septic Connection Total</b>			<b>0</b>	<b>0</b>
Septic Denitrification	Critical Area	Systems	79	2,535	2,079
	Outside of the Critical Area, not within 1000 ft of a perennial stream	Systems	73	73	152
	Within 1000 ft of a perennial stream	Systems	32	32	171
	<b>Septic Denitrification Total</b>			<b>184</b>	<b>2,640</b>
Septic Pumping	Critical Area	Systems	0	0	2,535
	Outside of the Critical Area, not within 1000 ft of a perennial stream	Systems	0	0	3,801
	Within 1000 ft of a perennial stream	Systems	0	0	1,712
	<b>Septic Pumping Total</b>			<b>0</b>	<b>0</b>

- The BMP values represent the total amount of implementation in place.
- The BMP values are the amount credited in the Bay watershed model. It is the amount of BMP submitted minus the amount not given credit for (e.g., due to overlapping with other BMPs)

## Maryland Phase II WIP Strategies

### QUEEN ANNES Total Nitrogen Loads

		2010 Progress	2017 Interim Strategy	2025 Final Strategy	Final Target
Source Sector	Landuse	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr
Agriculture	AFO	0.058	0.018	0.017	0.022
	CAFO	0.035	0.034	0.034	0.046
	Crop	1.354	0.959	0.859	0.824
	Nursery	0.043	0.041	0.041	0.040
	Pasture	0.025	0.028	0.033	0.018
	<b>Subtotal</b>		<b>1.515</b>	<b>1.080</b>	<b>0.984</b>
Forest	Harvested	0.007	0.007	0.007	0.007
	Natural	0.152	0.159	0.161	0.151
	<b>Subtotal</b>	<b>0.158</b>	<b>0.166</b>	<b>0.167</b>	<b>0.157</b>
Non-Tidal Atm	Non-Tidal Atm	0.015	0.015	0.015	0.015
	<b>Subtotal</b>	<b>0.015</b>	<b>0.015</b>	<b>0.015</b>	<b>0.015</b>
Septic	Septic	0.115	0.094	0.062	0.062
	<b>Subtotal</b>	<b>0.115</b>	<b>0.094</b>	<b>0.062</b>	<b>0.062</b>
Stormwater	CSS	0.000	0.000	0.000	0
	Construction	0.008	0.008	0.008	0.008
	Extractive	0.001	0.001	0.001	0.001
	Non-Regulated Developed	0.183	0.169	0.115	0.124
	Regulated Developed	0.000	0.000	0.000	0.000
	<b>Subtotal</b>		<b>0.192</b>	<b>0.178</b>	<b>0.124</b>
Wastewater	CSO	0.000	0.000	0.000	0
	Industrial	0.001	0.022	0.015	0.001
	Municipal	0.030	0.039	0.055	0.056
	<b>Subtotal</b>		<b>0.031</b>	<b>0.061</b>	<b>0.071</b>
<b>Total</b>		<b>2.026</b>	<b>1.594</b>	<b>1.422</b>	<b>1.375</b>

- The agricultural sector strategies were set to meet basin targets rather than county targets. Therefore, agricultural strategies are likely to overshoot or undershoot county targets, which can be reflected in the total countywide target results.
- Stormwater sector strategies may overshoot the county target for nitrogen (N) to meet the phosphorus (P) target, or vice versa. This is because the N and P reduction targets differ and the same BMP has different effects on the reduction of N and P.

**QUEEN ANNES**  
**Total Phosphorus Loads**

		2010 Progress	2017 Interim Strategy	2025 Final Strategy	Final Target
Source Sector	Landuse	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr
Agriculture	AFO	0.009	0.003	0.003	0.003
	CAFO	0.006	0.005	0.005	0.007
	Crop	0.087	0.070	0.066	0.071
	Nursery	0.014	0.013	0.012	0.012
	Pasture	0.004	0.005	0.007	0.002
	<b>Subtotal</b>		<b>0.120</b>	<b>0.095</b>	<b>0.093</b>
Forest	Harvested	0.000	0.000	0.000	0.000
	Natural	0.005	0.005	0.005	0.005
	<b>Subtotal</b>	<b>0.005</b>	<b>0.005</b>	<b>0.005</b>	<b>0.005</b>
Non-Tidal Atm	Non-Tidal Atm	0.001	0.001	0.001	0.001
	<b>Subtotal</b>	<b>0.001</b>	<b>0.001</b>	<b>0.001</b>	<b>0.001</b>
Septic	Septic	0.000	0.000	0.000	0.000
	<b>Subtotal</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Stormwater	CSS	0.000	0.000	0.000	0
	Construction	0.001	0.001	0.001	0.001
	Extractive	0.000	0.000	0.000	0.000
	Non-Regulated Developed	0.010	0.009	0.007	0.005
	Regulated Developed	0.000	0.000	0.000	0.000
	<b>Subtotal</b>		<b>0.011</b>	<b>0.011</b>	<b>0.008</b>
Wastewater	CSO	0.000	0.000	0.000	0
	Industrial	0.001	0.001	0.000	0.000
	Municipal	0.003	0.004	0.005	0.006
	<b>Subtotal</b>		<b>0.004</b>	<b>0.005</b>	<b>0.006</b>
	<b>Total</b>	<b>0.141</b>	<b>0.117</b>	<b>0.112</b>	<b>0.115</b>

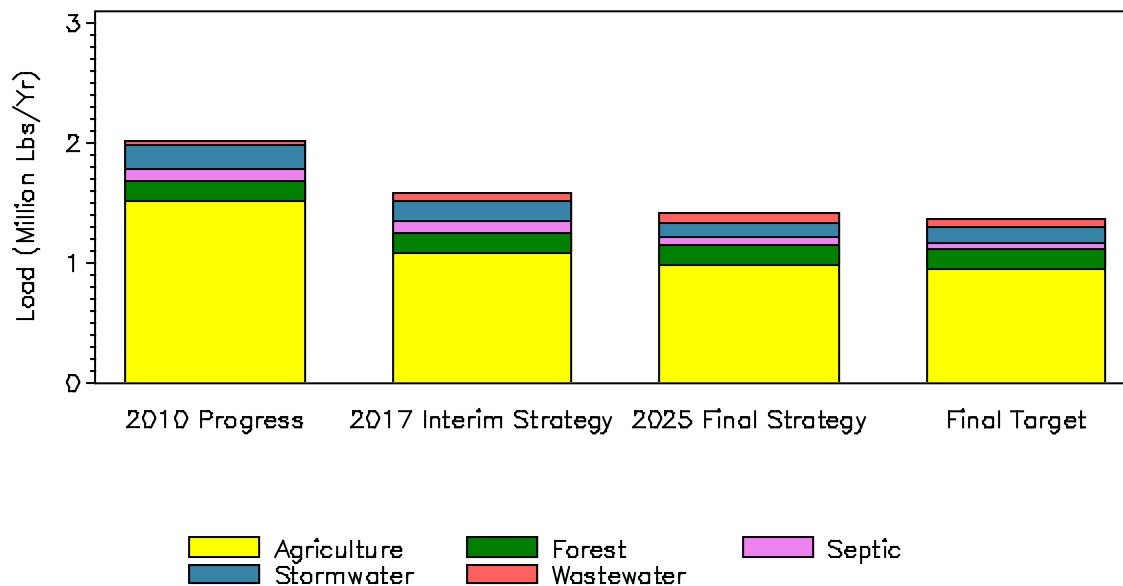
- The agricultural sector strategies were set to meet basin targets rather than county targets. Therefore, agricultural strategies are likely to overshoot or undershoot county targets, which can be reflected in the total countywide target results.
- Stormwater sector strategies may overshoot the county target for nitrogen (N) to meet the phosphorus (P) target, or vice versa. This is because the N and P reduction targets differ and the same BMP has different effects on the reduction of N and P.

**QUEEN ANNES  
Total Sediment Loads**

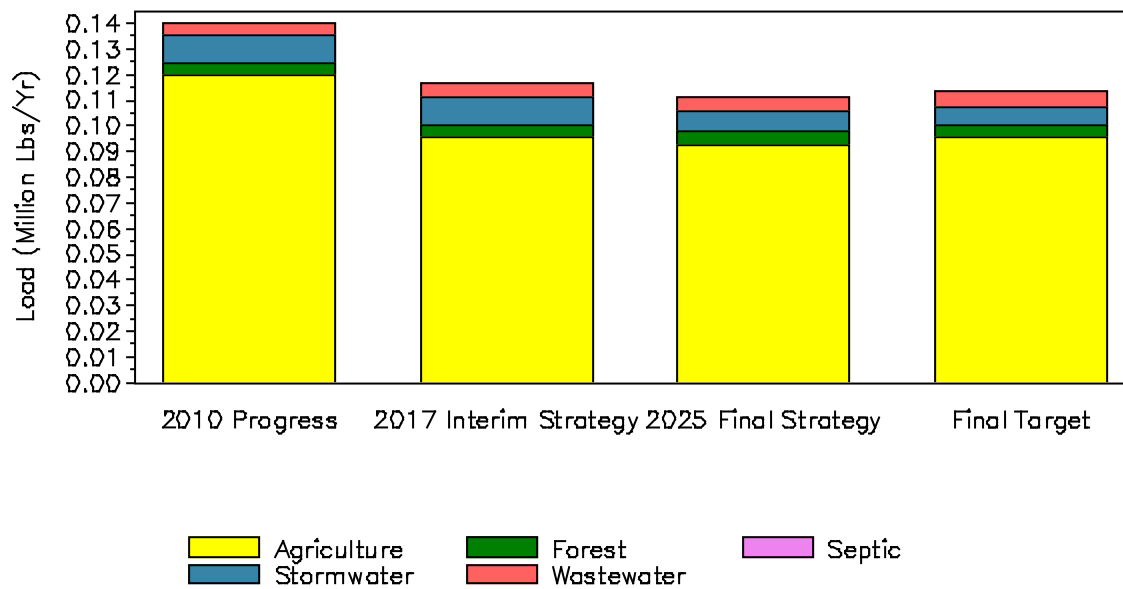
		2010 Progress	2017 Interim Strategy	2025 Final Strategy
Source Sector	Landuse	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr
Agriculture	AFO	0.004	0.004	0.004
	CAFO	0.004	0.004	0.004
	Crop	24.743	22.648	21.375
	Nursery	0.055	0.047	0.046
	Pasture	0.204	0.331	0.431
	<b>Subtotal</b>		<b>25.011</b>	<b>23.035</b>
Forest	Harvested	0.181	0.255	0.255
	Natural	2.050	2.149	2.171
	<b>Subtotal</b>	<b>2.231</b>	<b>2.404</b>	<b>2.426</b>
Non-Tidal Atm	Non-Tidal Atm	0.000	0.000	0.000
	<b>Subtotal</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Septic	Septic	0.000	0.000	0.000
	<b>Subtotal</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Stormwater	CSS	0.000	0.000	0.000
	Construction	1.388	1.442	1.339
	Extractive	0.113	0.113	0.079
	Non-Regulated Developed	4.872	4.909	3.105
	Regulated Developed	0.003	0.003	0.002
	<b>Subtotal</b>		<b>6.376</b>	<b>6.467</b>
Wastewater	CSO	0.000	0.000	0.000
	Industrial	0.003	0.059	0.059
	Municipal	0.016	0.245	0.385
	<b>Subtotal</b>		<b>0.018</b>	<b>0.304</b>
	<b>Total</b>	<b>33.636</b>	<b>32.210</b>	<b>29.255</b>

• The State did not distribute EPA's state and basin targets at the county or sector scale for sediment. Hence a Final Target column is not shown.

QUEEN ANNES  
Total Nitrogen Loads

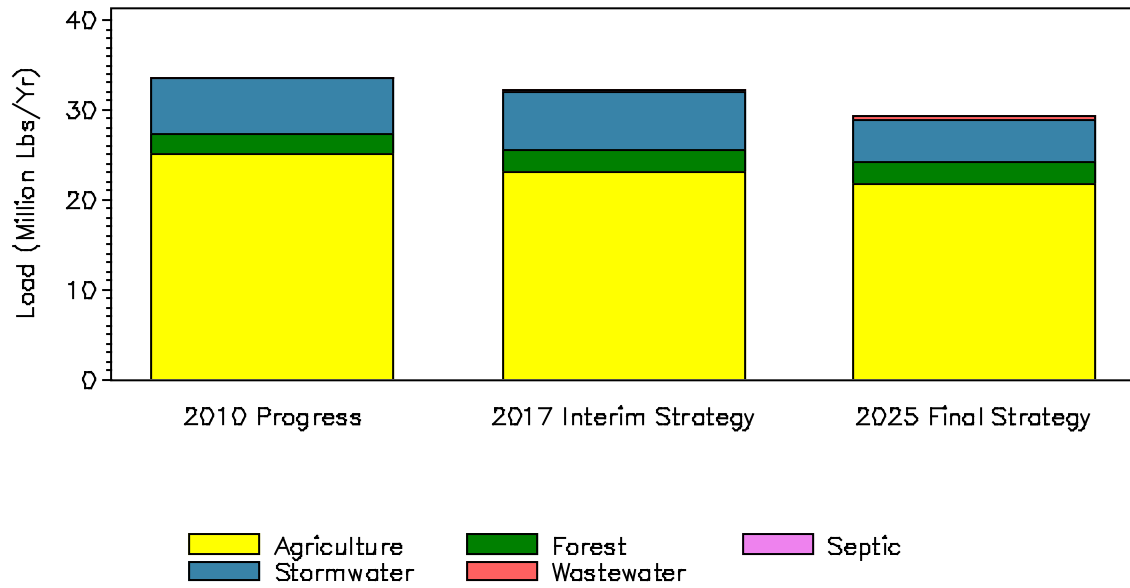


QUEEN ANNES  
Total Phosphorus Loads





QUEEN ANNES  
Total Sediment Loads



• The State did not distribute EPA's state and basin targets at the county or sector scale for sediment. Hence a Final Target bar is not shown.

## Maryland Phase II WIP Team MAST Submittals

### QUEEN ANNES Developed Land BMPs

		2010 Progress	2017 WIP Team	2017 Interim Strategy	2025 WIP Team	2025 Final Strategy	Change in 2017 Submittal	Change in 2025 Submittal
BMP Name	Unit							
Bioretention / Raingardens	Acres	0	0	0	2,419	2,376	0	-43
Bioswale	Acres	0	0	0	2,419	0	0	-2,419
Dry Detention Ponds and Hydrodynamic Structures	Acres	184	184	181	185	180	-3	-5
Dry Extended Detention Ponds	Acres	110	110	108	111	107	-2	-3
Impervious Urban Surface Reduction	Acres	0	0	0	0	787	0	787
MS4 Permit Stormwater Retrofit	Acres	422	422	415	79	68	-7	-11
Stormwater Management Generic BMP (1985 to 2002)	Acres	4,366	4,366	4,290	4,373	705	-76	-3,668
Stormwater Management Generic BMP (2002 to 2010)	Acres	2,483	2,483	2,439	846	401	-44	-445
Urban Filtering Practices	Acres	59	59	59	60	6,892	-0	6,831
Urban Forest Buffers	Acres	34	34	553	244	962	519	718
Urban Infiltration Practices	Acres	273	273	269	273	266	-5	-7
Vegetated Open Channels	Acres	0	0	0	12,095	12,119	0	24
Wet Ponds and Wetlands	Acres	3,654	3,654	3,590	3,463	3,378	-64	-86
Erosion and Sediment Control on Construction	Acres/Year	480	480	480	551	551	0	0
Erosion and Sediment Control on Extractive	Acres/Year	0	0	0	0	88	0	88
Forest Conservation	Acres/Year	5,336	5,336	5,336	5,081	5,239	0	158
Street Sweeping Mechanical Monthly	Acres/Year	0	0	0	111	96	0	-16
Urban Nutrient Management	Acres/Year	4,579	4,579	14,179	6,049	12,901	9,600	6,853
Urban Stream Restoration / Shoreline Erosion Control	Linear Feet	0	0	0	55,000	55,000	0	-0

- The BMP values represent the total amount of implementation in place.
- The BMP values are the amount credited in the Bay watershed model. It is the amount of BMP submitted minus the amount not given credit for (e.g., due to overlapping with other BMPs)
- Acres of BMPs might be observed to decrease in subsequent scenarios for several reasons:
  - To meet the countywide sector target, the State supplemented the Team scenarios with a generic set of BMPs.
  - Some aspects of the State strategies were automated, such that BMP levels were computed as a percentage of available acres. The application of some BMPs convert the acres of developed land to forest land, or impervious to pervious. This reduces/increases the available acres so that, if the same percentage level of other BMPs is applied to these lands, then a decrease/increase in BMP acreage might be observed even though the implementation level was intended to remain equal.
  - Because the Bay watershed model is not able to account for BMPs that treat overlapping areas (nested BMPs), the acreage available for BMPs can be used up before the Final Target is achieved. In such cases the State gave precedence to the more effective BMPs.
- The columns labeled Team include the State Highway Administration (SHA) strategies as well as 2010 Progress levels for other entities.
- The columns for Interim and Final strategies include numbers for SHA, federal facilities, State lands, industrial facilities, Phase I and II MS4 and non-regulated stormwater where applicable. They also reflect changes made by the State.

## QUEEN ANNES Septic System BMPs

			2010 Progress	2017 WIP Team	2017 Interim Strategy	2025 WIP Team	2025 Final Strategy	Change in 2017 Submittal	Change in 2025 Submittal
BMP Name	Zone	Unit							
Septic Connection	Critical Area	Systems	0	0	0	1,690	1,690	0	0
	Outside of the Critical Area, not within 1000 ft of a perennial stream	Systems	0	0	0	78	78	0	0
	<b>Septic ConnectionTotal</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>1,768</b>	<b>1,768</b>	<b>0</b>	<b>0</b>
Septic Denitrification	Critical Area	Systems	79	79	2,535	380	2,079	2,456	1,698
	Outside of the Critical Area, not within 1000 ft of a perennial stream	Systems	73	73	73	152	152	0	0
	Within 1000 ft of a perennial stream	Systems	32	32	32	25	171	0	146
	<b>Septic DenitrificationTotal</b>		<b>184</b>	<b>184</b>	<b>2,640</b>	<b>557</b>	<b>2,402</b>	<b>2,456</b>	<b>1,845</b>
Septic Pumping	Critical Area	Systems	0	0	0	2,535	2,535	0	0
	Outside of the Critical Area, not within 1000 ft of a perennial stream	Systems	0	0	0	3,801	3,801	0	0
	Within 1000 ft of a perennial stream	Systems	0	0	0	1,712	1,712	0	0
	<b>Septic PumpingTotal</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>8,048</b>	<b>8,048</b>	<b>0</b>	<b>0</b>

- The BMP values represent the total amount of implementation in place.
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## Maryland Phase II WIP Team MAST Submittals

### QUEEN ANNES Total Nitrogen Loads

		2010 Progress	2017 WIP Team	2017 Interim Strategy	2025 WIP Team	2025 Final Strategy	Final Target
Source Sector	Landuse	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr
Stormwater	CSS	0.000	0.000	0.000	0.000	0.000	0
	Construction	0.008	0.008	0.008	0.008	0.008	0.008
	Extractive	0.001	0.001	0.001	0.001	0.001	0.001
	Non-Regulated Developed	0.183	0.184	0.169	0.131	0.115	0.124
	Regulated Developed	0.000	0.000	0.000	0.000	0.000	0.000
	<b>Subtotal</b>		<b>0.192</b>	<b>0.193</b>	<b>0.178</b>	<b>0.139</b>	<b>0.124</b>
Septic	Septic	0.115	0.115	0.094	0.078	0.062	0.062
	<b>Subtotal</b>	<b>0.115</b>	<b>0.115</b>	<b>0.094</b>	<b>0.078</b>	<b>0.062</b>	<b>0.062</b>

- The columns labeled Team include the State Highway Administration (SHA) strategies as well as 2010 Progress levels for other entities.
- The columns for Interim and Final strategies include numbers for SHA, federal facilities, State lands, industrial facilities, Phase I and II MS4 and non-regulated stormwater where applicable. They also reflect changes made by the State.

### QUEEN ANNES Total Phosphorus Loads

		2010 Progress	2017 WIP Team	2017 Interim Strategy	2025 WIP Team	2025 Final Strategy	Final Target
Source Sector	Landuse	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr	Million Lbs/Yr
Stormwater	CSS	0.000	0.000	0.000	0.000	0.000	0
	Construction	0.001	0.001	0.001	0.001	0.001	0.001
	Extractive	0.000	0.000	0.000	0.000	0.000	0.000
	Non-Regulated Developed	0.010	0.010	0.009	0.008	0.007	0.005
	Regulated Developed	0.000	0.000	0.000	0.000	0.000	0.000
	<b>Subtotal</b>		<b>0.011</b>	<b>0.011</b>	<b>0.011</b>	<b>0.009</b>	<b>0.008</b>
Septic	Septic	0.000	0	0.000	0	0.000	0.000
	<b>Subtotal</b>	<b>0.000</b>	<b>0</b>	<b>0.000</b>	<b>0</b>	<b>0.000</b>	<b>0.000</b>

- The columns labeled Team include the State Highway Administration (SHA) strategies as well as 2010 Progress levels for other entities.
- The columns for Interim and Final strategies include numbers for SHA, federal facilities, State lands, industrial facilities, Phase I and II MS4 and non-regulated stormwater where applicable. They also reflect changes made by the State.

**QUEEN ANNES**  
**Total Sediment Loads**

		<b>2010 Progress</b>	<b>2017 WIP Team</b>	<b>2017 Interim Strategy</b>	<b>2025 WIP Team</b>	<b>2025 Final Strategy</b>
<b>Source Sector</b>	<b>Landuse</b>	<b>Million Lbs/Yr</b>	<b>Million Lbs/Yr</b>	<b>Million Lbs/Yr</b>	<b>Million Lbs/Yr</b>	<b>Million Lbs/Yr</b>
Stormwater	CSS	0.000	0.000	0.000	0.000	0.000
	Construction	1.388	1.388	1.442	1.277	1.339
	Extractive	0.113	0.113	0.113	0.113	0.079
	Non-Regulated Developed	4.872	4.880	4.909	3.681	3.105
	Regulated Developed	0.003	0.003	0.003	0.003	0.002
	<b>Subtotal</b>	<b>6.376</b>	<b>6.384</b>	<b>6.467</b>	<b>5.074</b>	<b>4.525</b>
Septic	Septic	0.000	0	0.000	0	0.000
	<b>Subtotal</b>	<b>0.000</b>	<b>0</b>	<b>0.000</b>	<b>0</b>	<b>0.000</b>

- The columns labeled Team include the State Highway Administration (SHA) strategies as well as 2010 Progress levels for other entities.
- The columns for Interim and Final strategies include numbers for SHA, federal facilities, State lands, industrial facilities, Phase I and II MS4 and non-regulated stormwater where applicable. They also reflect changes made by the State.