

Future Tysons Corner Development

Estimated Impacts on the Wastewater Conveyance and Treatment Capacities

Tysons Land Use Task Force Meeting
March 24, 2008

Wastewater Management Program
Department of Public Works & Environmental Services
County of Fairfax, Virginia



Background

- Proposed Tysons Corner development plans will increase flows to the wastewater system
- County is nearing its allocation at the Blue Plains treatment plant, which serves Tysons area
- Potential for additional allocation at Blue Plains and LCSA is under consideration
- CH2M HILL evaluated several alternatives to divert flows from the Blue Plains service area to Noman Cole plant service area

FAIRFAX COUNTY, VIRGINIA WASTEWATER FACILITIES



2008



Treatment Plant Service Areas



0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 Miles

Source: Fairfax County Planning, Management and Facilities Center Geographic Information System

Countywide Treatment Capacities

Treatment Plant	Current Capacity (MGD)	Existing Comp. Plan Projected Buildout (MGD)	Excess (Deficit) Capacity (MGD)
Blue Plains	31.0	37.0	(6.0)
Noman Cole	67.0	61.0	6.0
ASA	32.4	26.0	6.4
LCSA	1.0 (under negotiation)	N/A - Supplements Blue Plains	1.0
Arlington	3.0	3.0	0.0
UOSA	23.6	22.0	1.6

Scenarios Evaluated

- Scenarios are identified by two components:
 - Development Plans
 - Existing Comprehensive Plan
 - COG 2030 with Tysons A
 - COG 2030 with Tysons B
 - Capacity at Blue Plains
 - Limited to existing IMA Allocation of 31 MGD
 - 8.5 MGD Additional Allocation

Diversion Scenarios from Blue Plains Treatment Plant Service Area

Scenario	Flow Projections	Blue Plains Capacity	Capacity (Deficit) (MGD)	Distribution of Extra Flows (MGD)
1	Existing Comp Plan	No Additional Allocation	(6.0)	1.0 to LCSA, 5.0 to Noman Cole
2	Existing Comp Plan	8.5 MGD Additional Allocation	0.0	
3	COG 2030 + Tysons A	No Additional Allocation	(12.0)	1.0 to LCSA, 6.0 to Noman Cole, 5.0 to ASA
4	COG 2030 + Tysons A	8.5 MGD Additional Allocation	(3.5)	1.0 to LCSA, 2.5 to Noman Cole
5	COG 2030 + Tysons B	No Additional Allocation	(15.0)	1.0 to LCSA, 6.0 to Noman Cole, 6.4 to ASA, 1.6 Left over
6	COG 2030 + Tysons B	8.5 MGD Additional Allocation	(6.5)	1.0 to LCSA, 5.5 to Noman Cole

Scenarios Evaluated

Scenario	Flow Projections	Blue Plains Capacity	Diverted or Stored Flows – Noman Cole Base Flow / Peak Flow MGD	Flow Diverted To ASA MGD
1	Existing Comp Plan	No Additional Allocation	5.0/5.0	0
2	Existing Comp Plan	8.5 MGD Additional Allocation	0 / 2.5	0
3	COG 2030 + Tysons A	No Additional Allocation	11 / 11.7	5
4	COG 2030 + Tysons A	8.5 MGD Additional Allocation	2.5 / 11.7	0
5	COG 2030 + Tysons B	No Additional Allocation	14 / 21.9	6.4
6	COG 2030 + Tysons B	8.5 MGD Additional Allocation	5.5 / 21.9	0

Required Improvements

Each Scenario was evaluated for 2 Alternatives:

- Storage at Noman Cole Pollution Control Plant (NCPCP)
- Storage at Difficult Run Pump Station

Infrastructure improvements fall into five categories:

- Pipe size increases
- Siphon improvements at Scott's Run
- Upgrades to Difficult Run Pump Station
- Wet Weather Storage
- Dry Weather Flow Treatment Expansion

Costs of Required Improvements

Scenarios	Scenario 1 Existing Comp Plan No additional Allocation	Scenario 2 Existing Comp Plan 8.5 MGD additional Allocation	Scenario 3 COG 2030 + Tysons A No additional Allocation, ASA Diversion	Scenario 4 COG 2030 + Tysons A 8.5 MGD additional Allocation	Scenario 5 COG 2030 + Tysons B No additional Allocation, ASA Diversion	Scenario 6 COG 2030 + Tysons B 8.5 MGD additional Allocation
Wet Weather Storage at Noman Cole PCP	\$29M	\$8M	\$60M	\$98M	\$111M	\$134M
Wet Weather Storage at Difficult Run PS	\$39M	\$12M	\$82M	\$59M	\$142M	\$103M

Planning Costs at -30%/+50%

Scenario 5 requires an additional 1.6 MGD of treatment capacity at Noman Cole PCP. Scenarios 5 and 6 require an additional line in Scotts Run Siphon. Scenarios 2,4 and 6 require purchase of additional capacity at Blue Plains. All scenarios require purchase of additional capacity at LCSA. These are not included in the cost estimates.

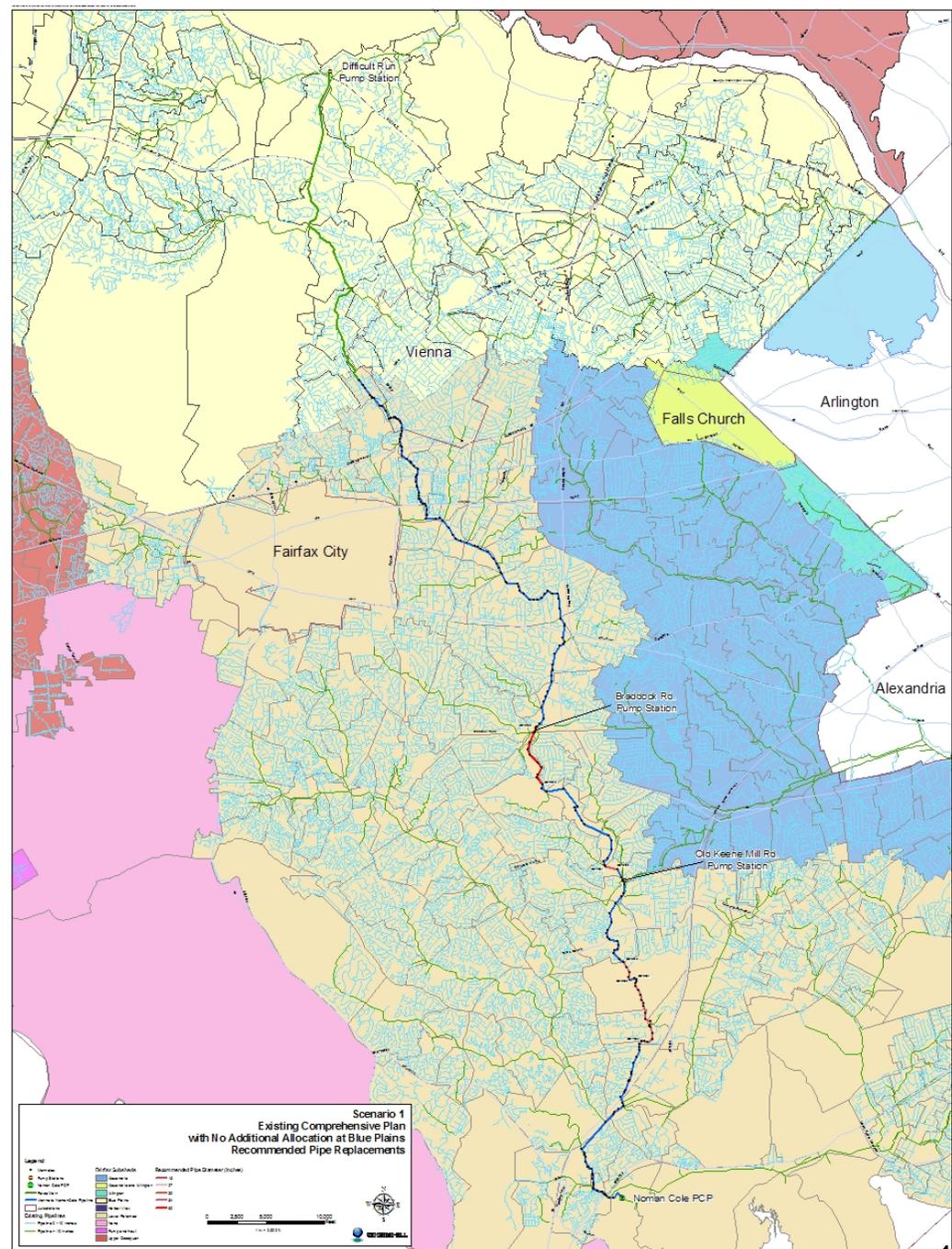
Evaluation Assuming Wet Weather Storage at Noman M. Cole PCP

Scenario 1

Existing Comprehensive Plan

No Additional Allocation at Blue Plains

	Scenario 1
	Existing Comp Plan No Additional Allocation
Scotts and Difficult Pipes	3,504 LF @ 1.25' to 2.5'
Noman Cole Pipes	15,377 LF @ 4.5' to 5'
Scotts Run Siphon	No Upgrades Required
Difficult Run PS	Modify to Accommodate Lower Flows
Additional Wet Weather Storage	0
NCPCP Upgrades	None
Flows Diverted to ASA	0



Scenario 3

COG 2030 with Tysons

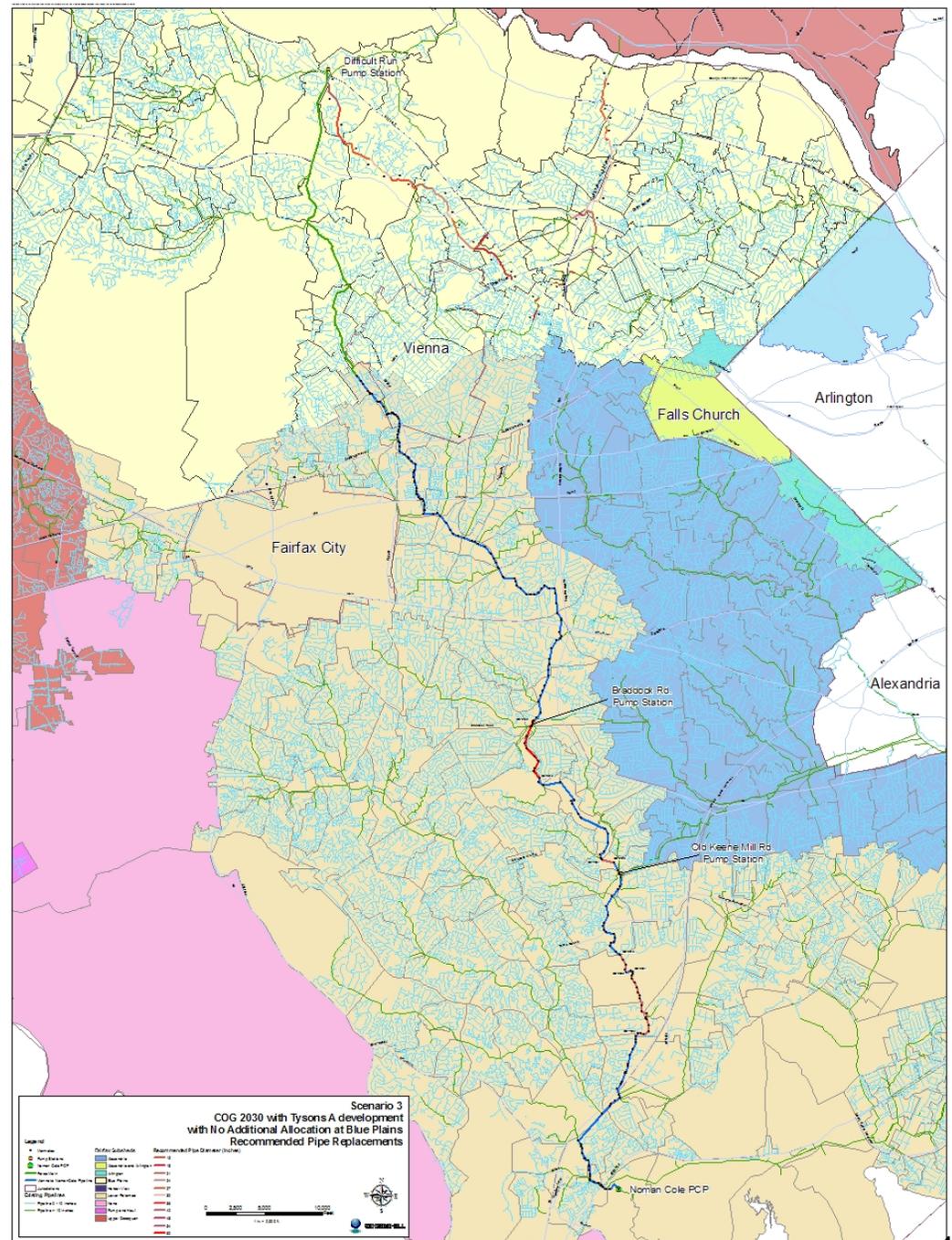
A development

No Additional Allocation

at Blue Plains – ASA

diversion

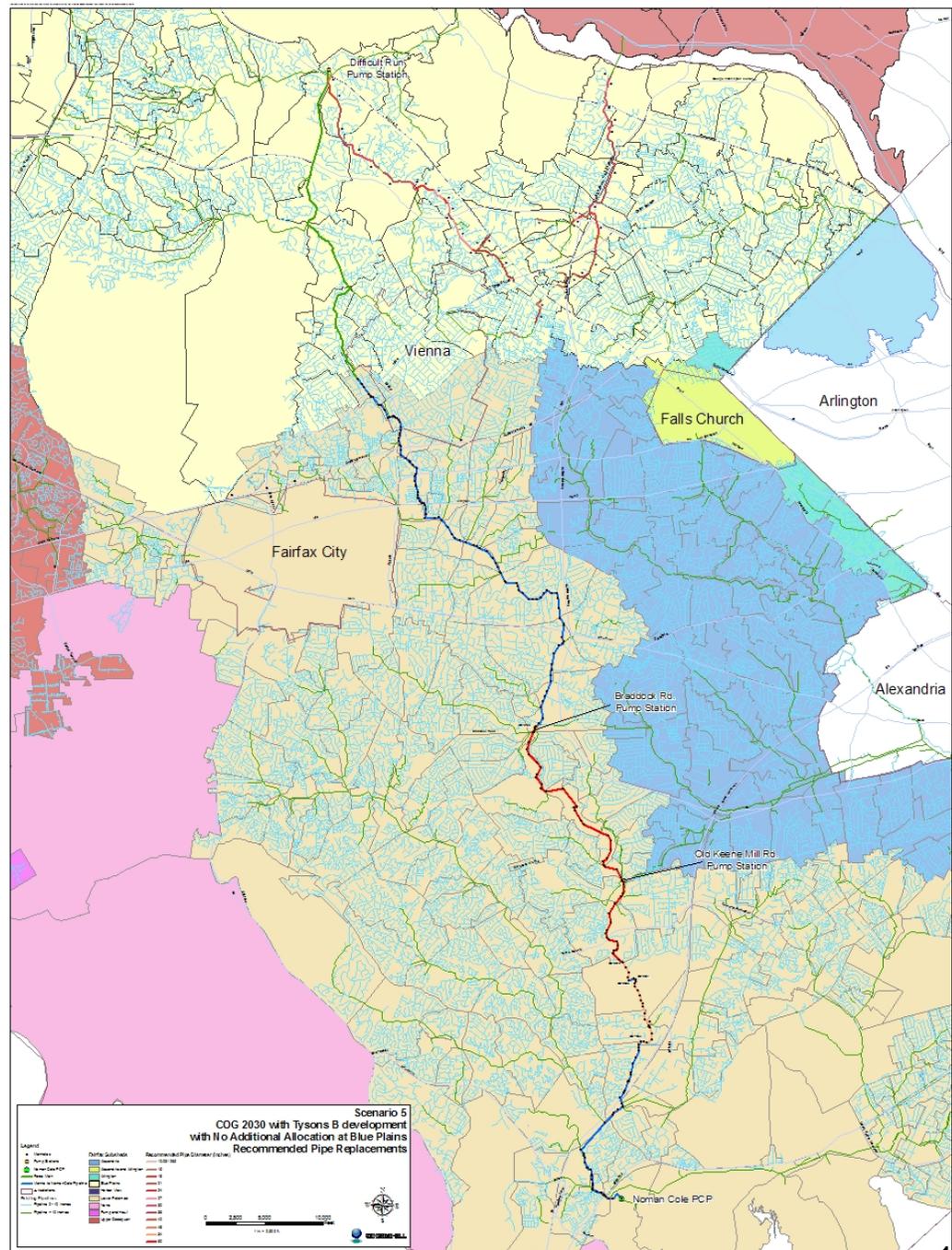
	<p>Scenario 3</p> <p>COG 2030 + Tysons A</p> <p>No Additional Allocation</p>
Scotts and Difficult Pipes	50,406 LF @ 1' to 3.5'
Noman Cole Pipes	15,377 LF @ 4.5' to 5'
Scotts Run Siphon	No Upgrades Required
Difficult Run PS	Increase to 12 MGD
Additional Wet Weather Storage	0
NCPCP Upgrades	None
Flows Diverted to ASA	5 MGD



Scenario 5

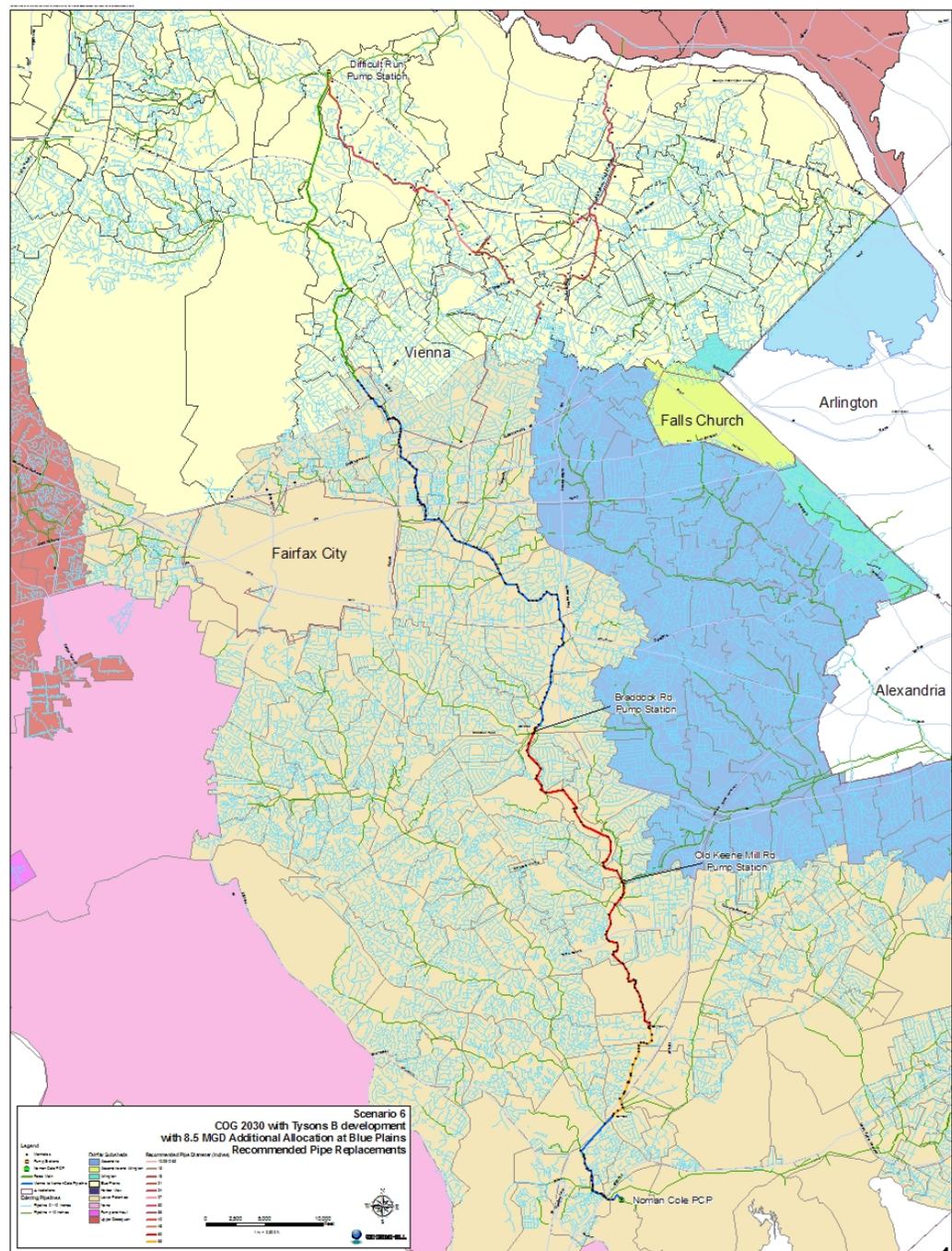
COG 2030 with Tysons B development No Additional Allocation at Blue Plains – ASA diversion

	Scenario 5 COG 2030 + Tysons B No Additional Allocation
Scotts and Difficult Pipes	61,246 LF @ 1.25' to 4'
Noman Cole Pipes	36,687 LF @ 4.5' to 5'
Scotts Run Siphon	Add 24" Parallel Line
Difficult Run PS	Increase to 22 MGD
Additional Wet Weather Storage	0
NCPCP Upgrades	Add 1.4 MGD Capacity
Flows Diverted to ASA	6.6 MGD



Scenario 6 COG 2030 with Tysons B development 8.5 MGD Additional Allocation at Blue Plains

	Scenario 6
	COG 2030 + Tysons B 8.5 MGD Additional Allocation
Scotts and Difficult Pipes	61,246 LF @ 1.25' to 4'
Noman Cole Pipes	44,256 LF @ 5' to 5.5'
Scotts Run Siphon	Add 24" Parallel Line
Difficult Run PS	Increase to 22 MGD
Additional Wet Weather Storage	4 MG
NCPCP Upgrades	None
Flows Diverted to ASA	0



Summary of Improvements

Assuming Storage at Noman Cole PCP

Scenarios	Scenario 1 Existing Comp Plan No Additional Allocation	Scenario 2 Existing Comp Plan 8.5 MGD Additional Allocation	Scenario 3 COG 2030 + Tysons A No additional Allocation, ASA Diversion	Scenario 4 COG 2030 + Tysons A 8.5 MGD Additional Allocation	Scenario 5 COG 2030 + Tysons B No additional Allocation, ASA Diversion	Scenario 6 COG 2030 + Tysons B 8.5 MGD Additional Allocation
Scotts and Difficult Pipes	3,504 LF @ 1.25' to 2.5'	3,504 LF @ 1.25' to 2.5'	50,406 LF @ 1' to 3.5'	50,406 LF @ 1' to 3.5'	61,246 LF @ 1.25' to 4'	61,246 LF @ 1.25' to 4'
Noman Cole Pipes	15,377 LF @ 4.5' to 5'	No Upgrades Required	15,377 LF @ 4.5' to 5'	36,687 LF @ 4.5' to 5'	36,687 LF @ 4.5' to 5'	44,256 LF @ 5' to 5.5'
Scotts Run Siphon	No Upgrades Required	No Upgrades Required	No Upgrades Required	No Upgrades Required	Add 24" Parallel Line	Add 24" Parallel Line
Difficult Run PS	Modify to Accommodate Lower Flows	Modify to Accommodate Lower Flows	Increase to 12 MGD	Increase to 12 MGD	Increase to 22 MGD	Increase to 22 MGD
Additional Wet Weather Storage	0	0	0	0	0	4 MG
NCPCP Upgrades	None	None	None	None	Add 1.4 MGD Capacity	None

Summary of Rough Order Of Magnitude Costs of Required Upgrades Assuming Storage at Noman Cole

Scenarios	Scenario 1 Existing Comp Plan No Additional Allocation	Scenario 2 Existing Comp Plan 8.5 MGD Additional Allocation	Scenario 3 COG 2030 + Tysons A No additional Allocation, ASA Diversion	Scenario 4 COG 2030 + Tysons A 8.5 MGD Additional Allocation	Scenario 5 COG 2030 + Tysons B No additional Allocation, ASA Diversion	Scenario 6 COG 2030 + Tysons B 8.5 MGD Additional Allocation
Pipe Replacements	\$24M	\$3M	\$55M	\$92M	\$102M	\$116M
Scotts Run Siphon	-	-	-	-	TBD	TBD
Difficult Run PS	\$5M	\$5M	\$6M	\$6M	\$8M	\$8M
Additional Wet Weather Storage	-	-	-	-	-	\$10.0M
NCPCP Upgrades	-	-	-	-	TBD	-
Total Cost	\$29M	\$8M	\$60M	\$98M	\$111M	\$134M