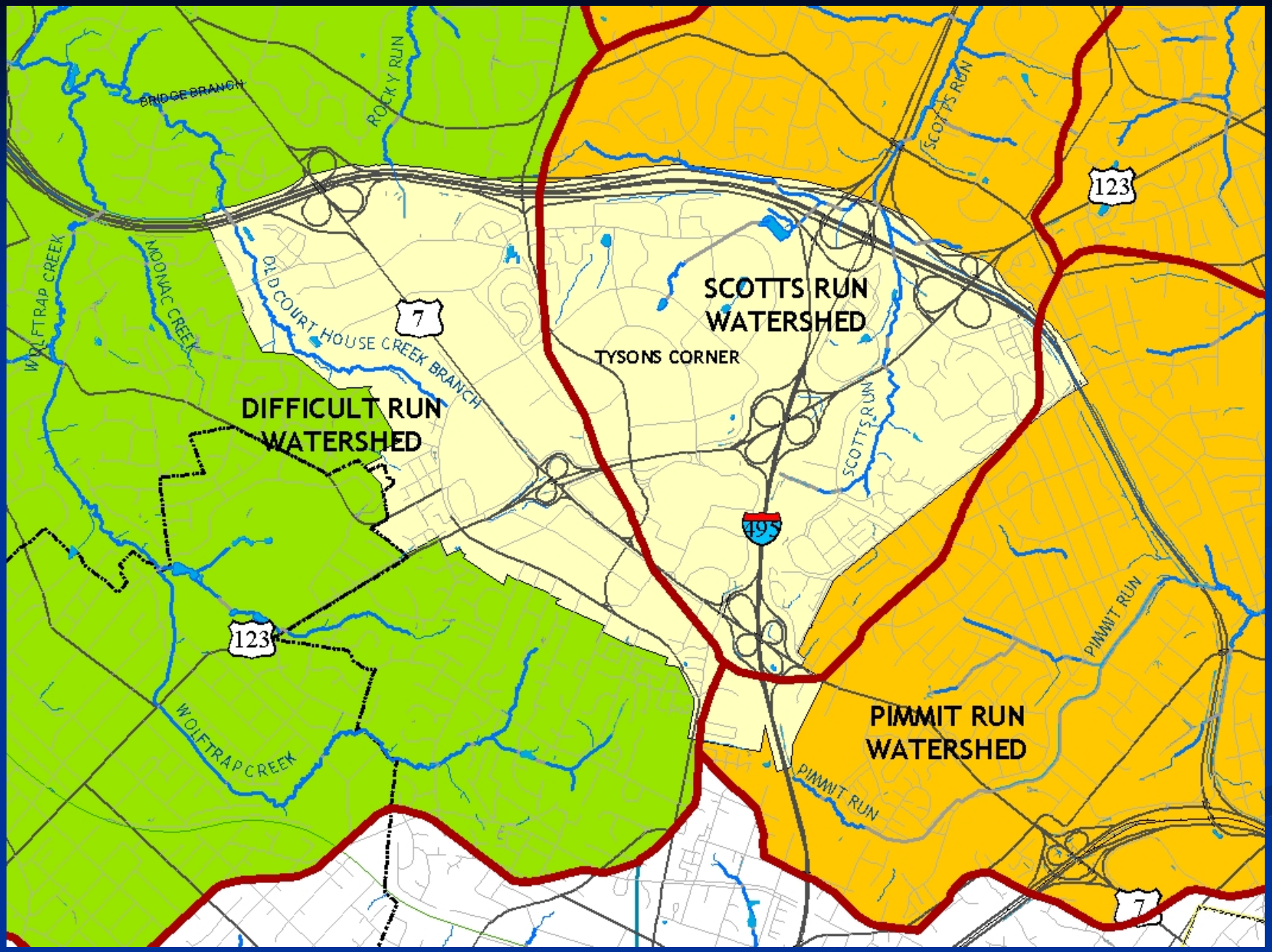
Stormwater Management
Tysons Corner

Department of Public Works and Environmental Services

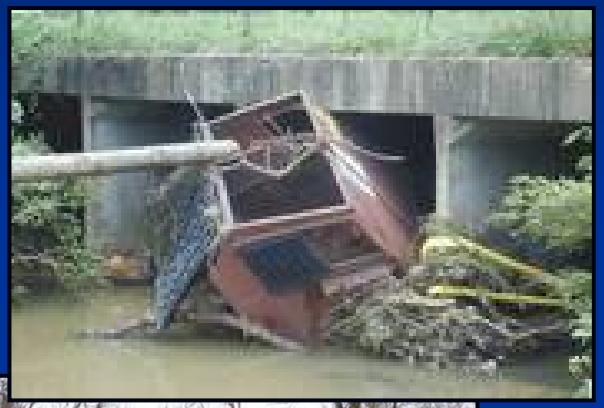
Stormwater Planning Division

January 22, 2009


BRIDGE BRANCH
ROCKY RUN
SCOTTS RUN
123
WOLFTRAP CREEK
MOONAC CREEK
OLD COURT HOUSE CREEK BRANCH
7
SCOTTS RUN
WATERSHED
TYSONS CORNER
DIFFICULT RUN
WATERSHED
SCOTTS RUN
495
PIMMIT RUN
123
WOLFTRAP CREEK
PIMMIT RUN
WATERSHED
PIMMIT RUN
7

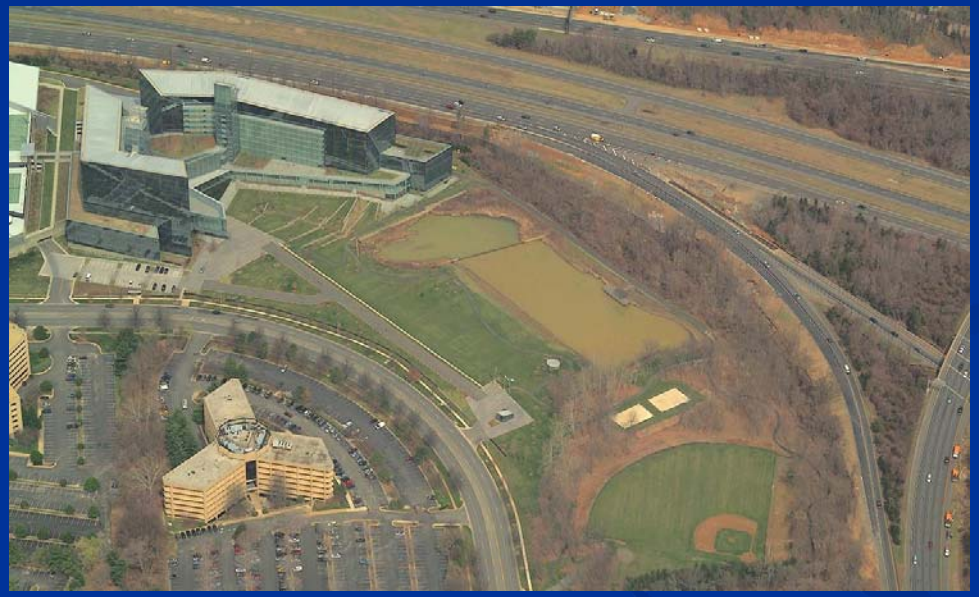
Current Conditions

- Uncontrolled Stormwater Runoff
- Stream Corridor Degradation
- Instream Impairment



Existing Stormwater Management in Tysons Corner

- Approximately 60 existing stormwater management facilities
  - Quantity
  - Quality



Watershed	Drainage Area within Tysons (acres)	Existing Percent Imperviousness	Percent Parcel Area Served by		
			Quantity Control	Quantity & Quality Control	Uncontrolled
Scotts Run	1,412	49%	33%	10%	57%
Pimmit Run	115	50%	84%	0%	16%

Future Tysons Corner

- Relatively little difference between future built out and current condition in terms of the amount of impervious surface and corresponding stormwater runoff
- Future will have similar stormwater implications if regulations left unchanged
- Redevelopment provides rare opportunity to manage stormwater in developed areas

Taskforce Recommendations

- Provide modern Stormwater Management
- Restore Existing Streams
- Use Green Streets Design Principles
- Control Total Flow as well as Peak Flow
- Design to mimic pre-settlement good forested conditions

Old Courthouse Branch

"...a true 21st century urban center that addresses the challenges of sustainable growth, energy conservation, **environmental protection**, affordable housing, and safe communities."

Innovative Solutions

- Low impact development (LID)- uses many small scale controls to reuse, infiltrate, filter, store, evaporate & retain stormwater

Water quality inlet

Rain garden

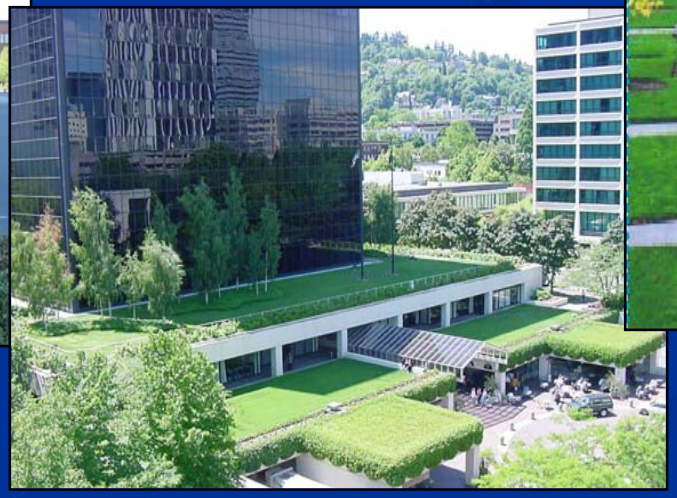
Wet pond with vegetated banks

SWM as an Amenity

- Controls as Amenities
  - Vegetated Roof Top Gardens
  - Vegetated Swales as landscape borders
  - Vegetated Pond as a water feature
  - Tree box filters on sidewalks provide shade

Parking Lot w/bioinfiltration

Integrated SWM



Courtyard w/bioinfiltration

Redevelopment Guidelines

- Environmentally-Friendly Stormwater Design as initial and integral design principle at conceptual stage of development
- Stormwater Design will utilize a combination of reuse, infiltration, and retention to manage runoff
- Redevelopment to be designed to ensure downstream protection and prevent stream degradation

Staff Recommendations for Implementation

- Stormwater should be managed by site.
- Stormwater management designs should be part of conceptual planning allowing maximum flexibility of techniques to be used
- Stormwater quantity control measures should be more extensive than current minimum requirements
- Reduce total run-off volume and/or significantly delay its entry into the stream system for up to the 100 year storm
- Reduce pollutant runoff from redeveloped sites beyond minimum requirements, should be consistent for what is required by PFM for new development
- Specific Guidelines can be found within Draft Plan Text under Environmental Stewardship Guidelines, pg 44

Questions?

TR-55 GOOD FORESTED CONDITION RUNOFF DATA			
STORM	PEAK RUNOFF RATE (CFS)	TIME OF CONCENTRATION (HR)	TOTAL RUNOFF VOLUME (AC-FT)
SCS TYPE II 1-YEAR	14	12	2
SCS TYPE II 2-YEAR	28	12	3
SCS TYPE II 10-YEAR	130	12	12
SCS TYPE II 100-YEAR	260	12	22

TR-55 EXISTING RUNOFF DATA			
STORM	PEAK RUNOFF RATE (CFS)	TIME OF CONCENTRATION (HR)	TOTAL RUNOFF VOLUME (AC-FT)
SCS TYPE II 1-YEAR	200	12	14
SCS TYPE II 2-YEAR	240	12	17
SCS TYPE II 10-YEAR	430	12	31
SCS TYPE II 100-YEAR	600	12	45

WinTR-55 Output Hydrograph

Project:

Subareas: (Forest, Existing) Storm: 1-Yr

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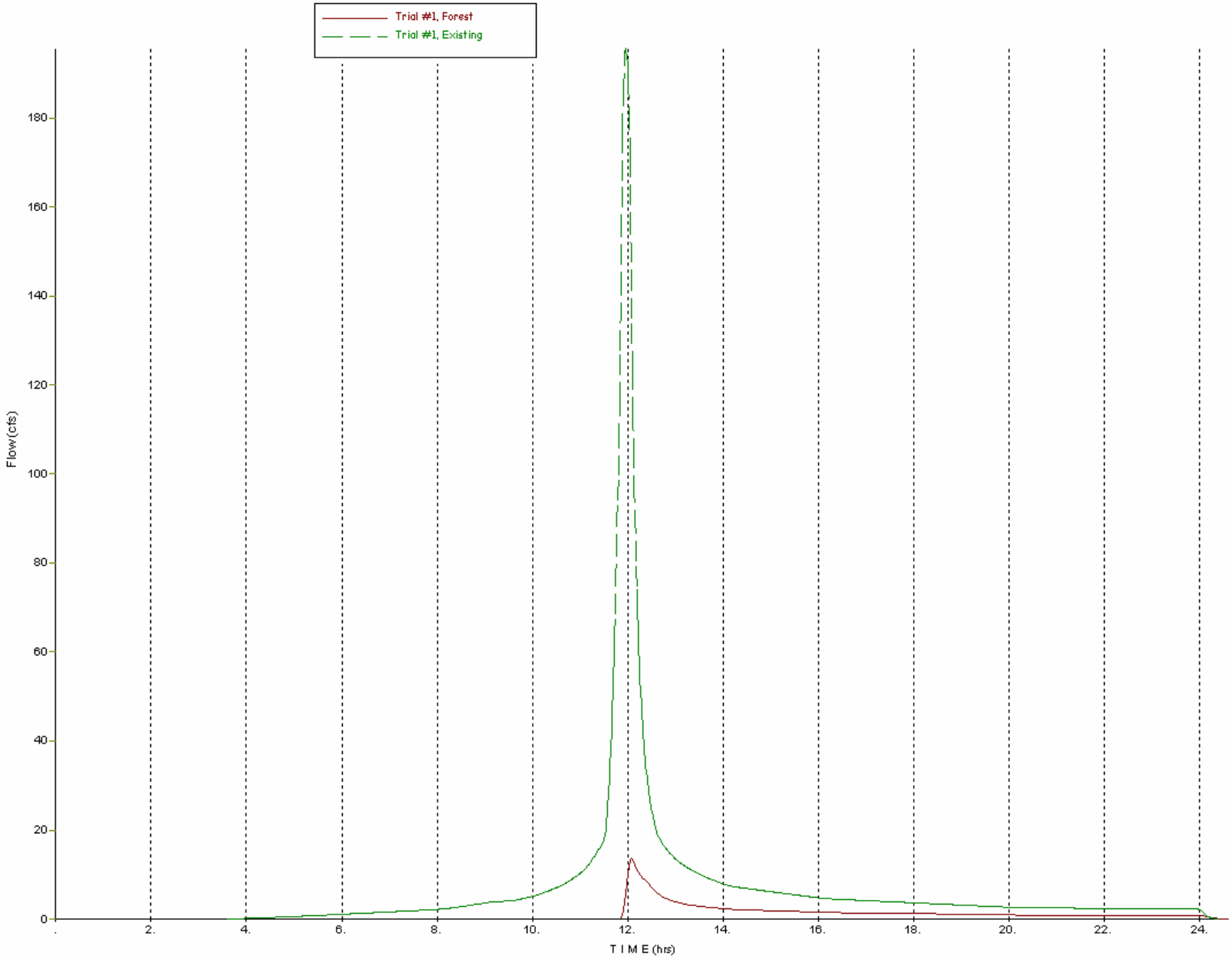

WinTR-55 Output Hydrograph

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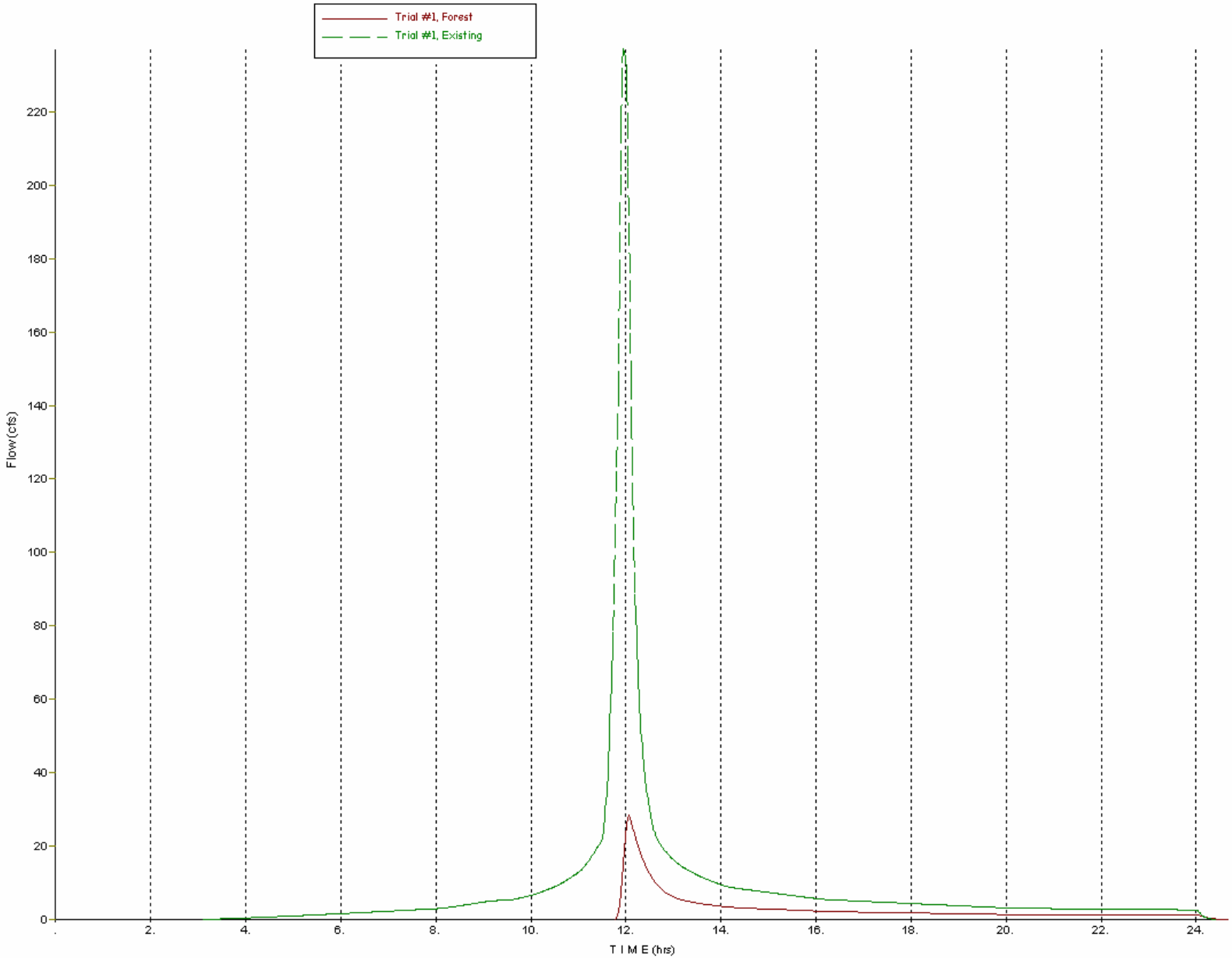

WinTR-55 Output Hydrograph

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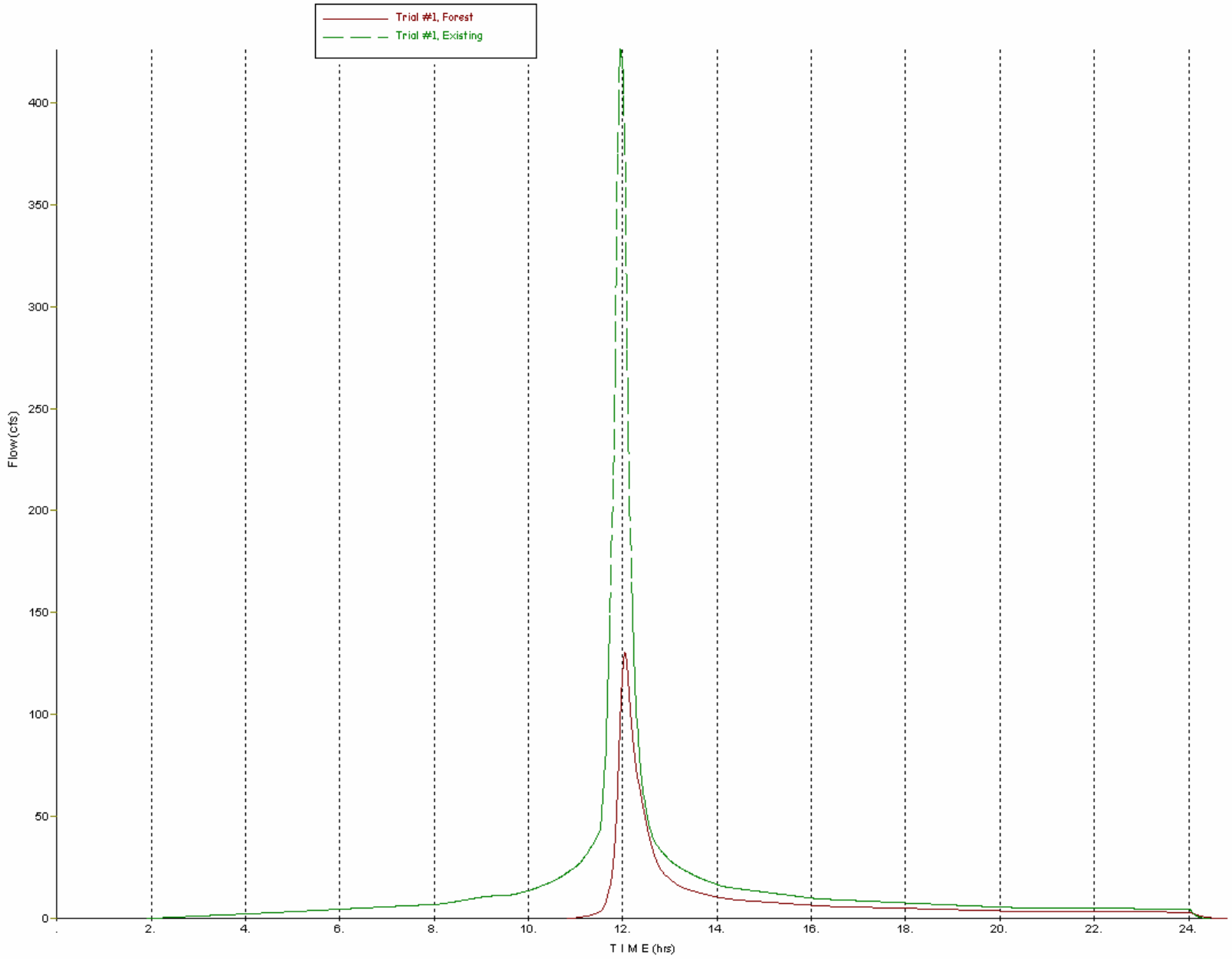

WinTR-55 Output Hydrograph

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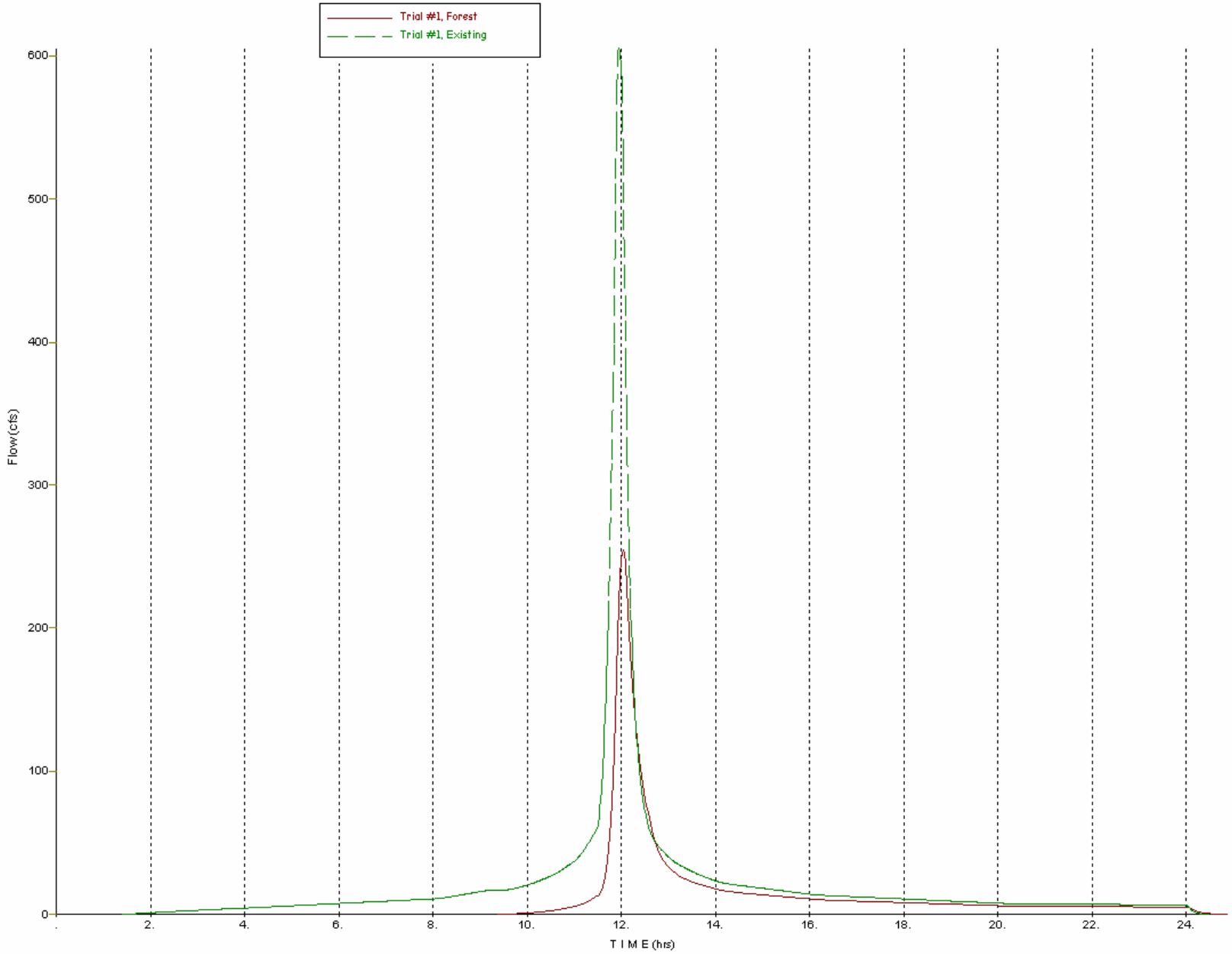
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