

# **2014 Freeway Congestion Monitoring Program 1-Second Time Lapse Aerial Photo (TLAP) Pilot Study**

---

Daivamani Sivasailam, DTP

Greg Jordan, SKYCOMP

Travel Forecasting Subcommittee

May 22, 2015

# 1-Sec Time Lapse Aerial Photo (TLAP) -Pilot

- **Traditional Survey**

- Fly in an airplane and take overlapping pictures using single camera
- Density from Pictures
- Speeds , flow, LOS estimated
- Regional study

- **1-Sec Time Lapse Aerial Photo Pilot Study**

- Use a stationary helicopter
- 3 camera setup
- Area coverage ~ 1.5 mile x 3.5 mile (can be customized)
- Pictures stitched together to create a single wide area shot
- One second pictures joined to create a video
- Detailed study of traffic operations in the box

# 1-Sec Time Lapse Aerial Photo (TLAP) -Pilot

- Pilot Study

- Demonstration of technique
- 9 locations selected in consultation with MOITS
- Freeways and urban arterial studied
- 20 minutes of coverage in AM and PM
- Linear and Area configuration used
- Results indicated are of a “sample” nature
- Caveat: Data have not been studied or verified in conjunction with other state or local engineering studies or data collection efforts in these particular locations/corridors
- All results should be considered DRAFT at this time

# 1-Sec Time Lapse Aerial Photo (TLAP) -Pilot

- Data

- Traffic flow, Density, and operations
- Volume entering, volume exiting
- Origin Destination (OD)
- Weaving Characteristics
- Observing movement of specific vehicles/vehicle types (e.g., trucks)

# 1-Sec Time Lapse Aerial Photography (TLAP) -Pilot

- Uses

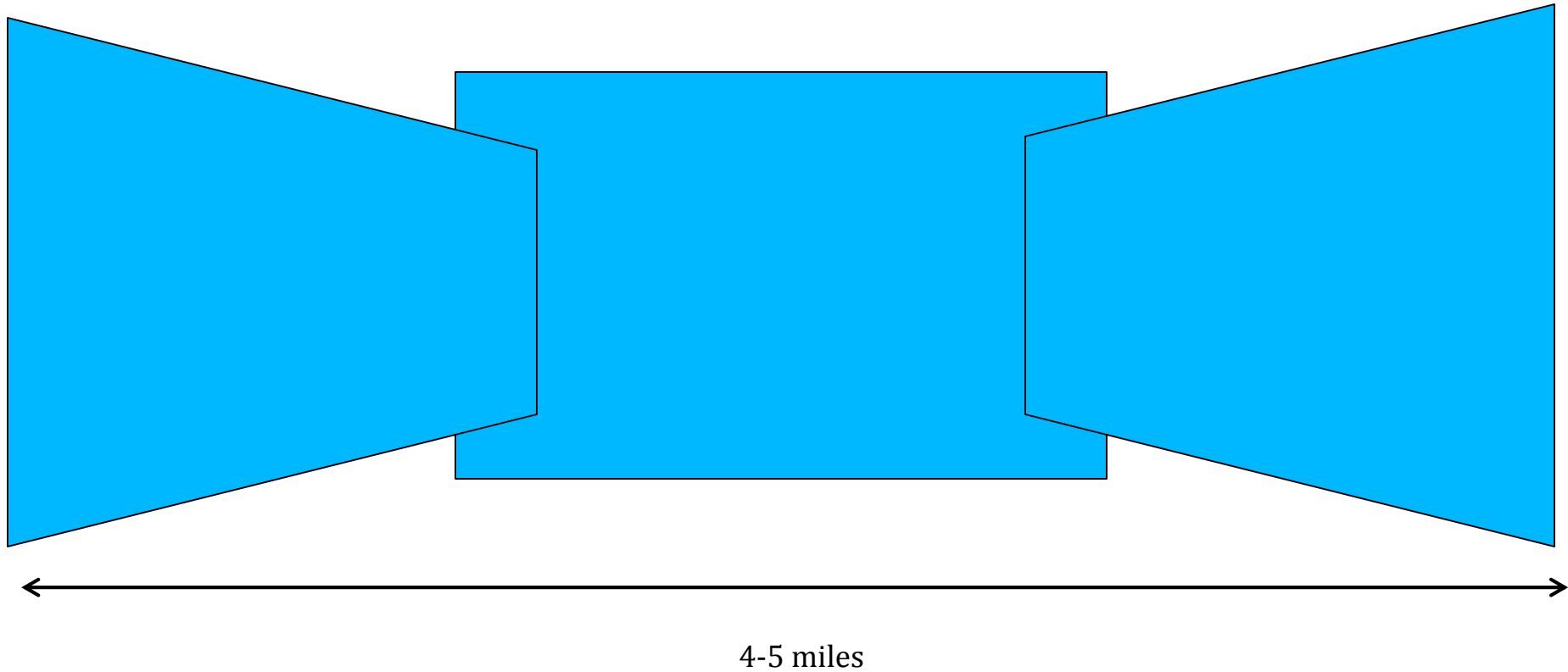
- Explanation for policy makers and public
- Identifying potential low cost solutions
- Credible data for Macro and Microscopic models
- Video/visualization of Traffic operation dynamics
- Archive of detailed information for future reference
- Promising for agency/local uses

# 1-Sec Time Lapse Aerial Photography (TLAP) -Pilot

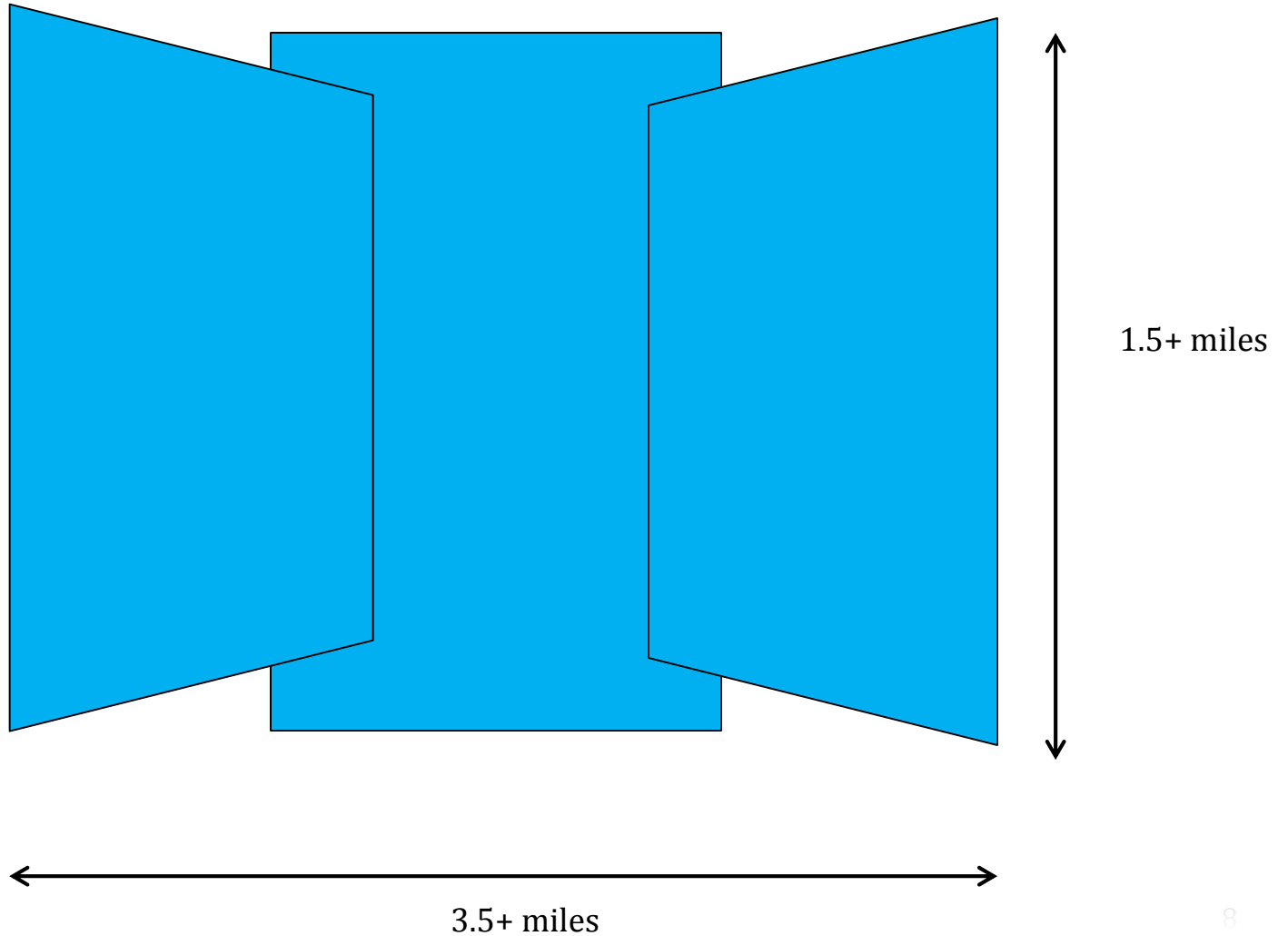
Location	Data
1) 11th Street Bridge/I-695	D, V, OD, W
2) Memorial Bridge/GW Parkway	D, V, OD, W
3) Virginia Approach to W. Wilson Bridge	D,V, W
4) I-66 Between VA 123 and US 50	D,V, W
5) 16th Street Between Military and Spring Rd.	D,V, T
6) I-495 and Hot Lane Merge	D, V, OD, W
7) I-495 Between I-270 to Cabin John Parkway	D, V, OD
8) I-70 at US 340/I-270	D, V, OD , W
9) I-495 near US 1 interchange in MD	D, V, OD, W

D=Density; V=Flow; OD=Origin Destination; W=Weaving; T= Transit

# 1-Sec Time Lapse Aerial Photo (TLAP)- Pilot Linear configuration



# 1-Sec Time Lapse Aerial Photo (TLAP)- Pilot Area configuration





# 1-Sec Time Lapse Aerial Photo (TLAP) -Pilot

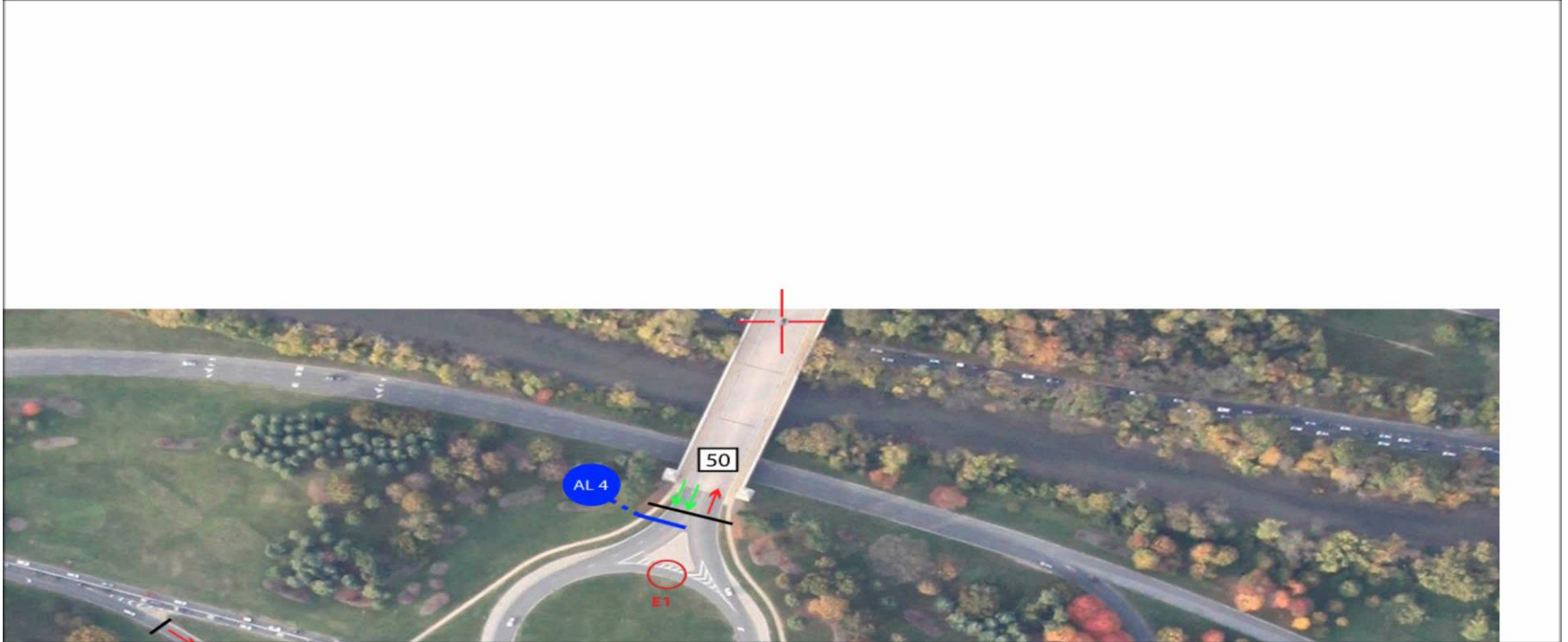
## 3 Photo Setup



# Site 1: 11<sup>th</sup> Street Bridges

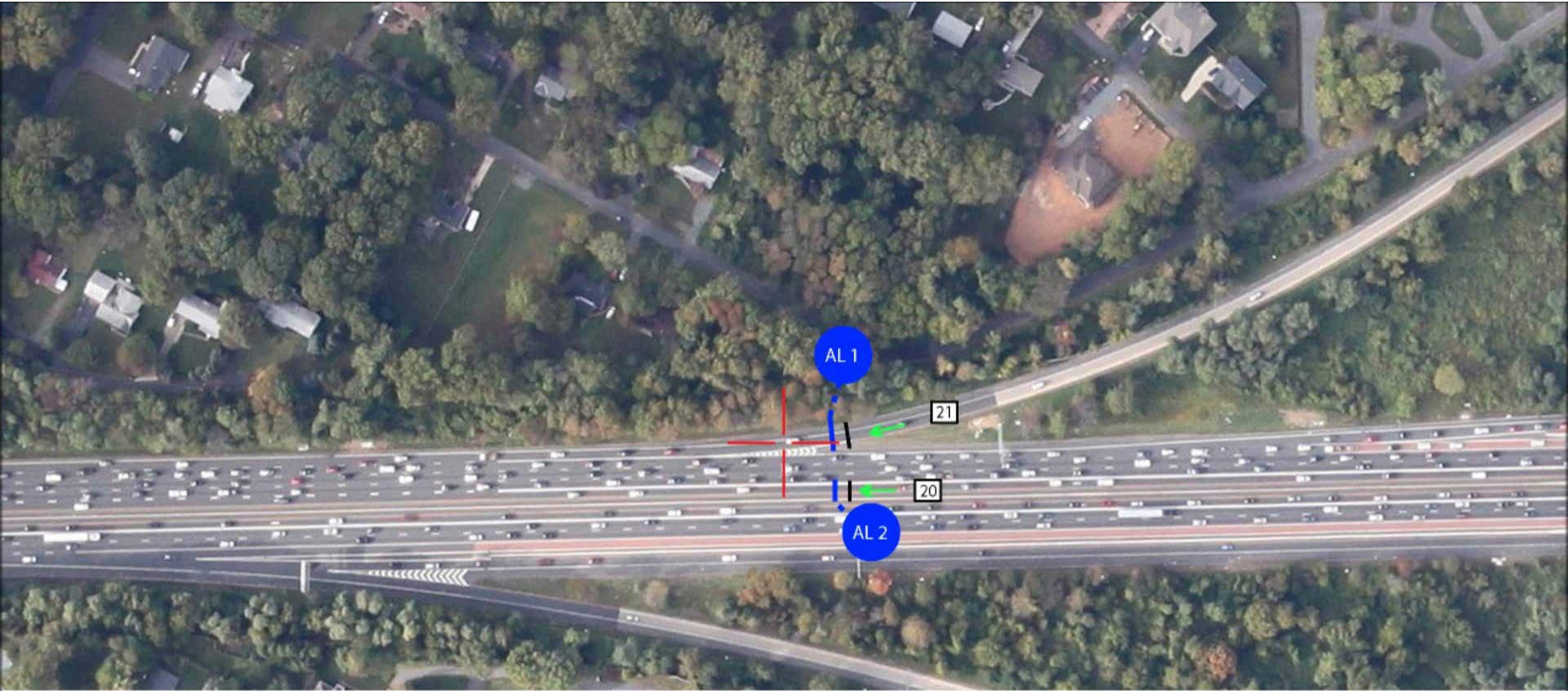


# Site 2: Memorial Bridge Complex

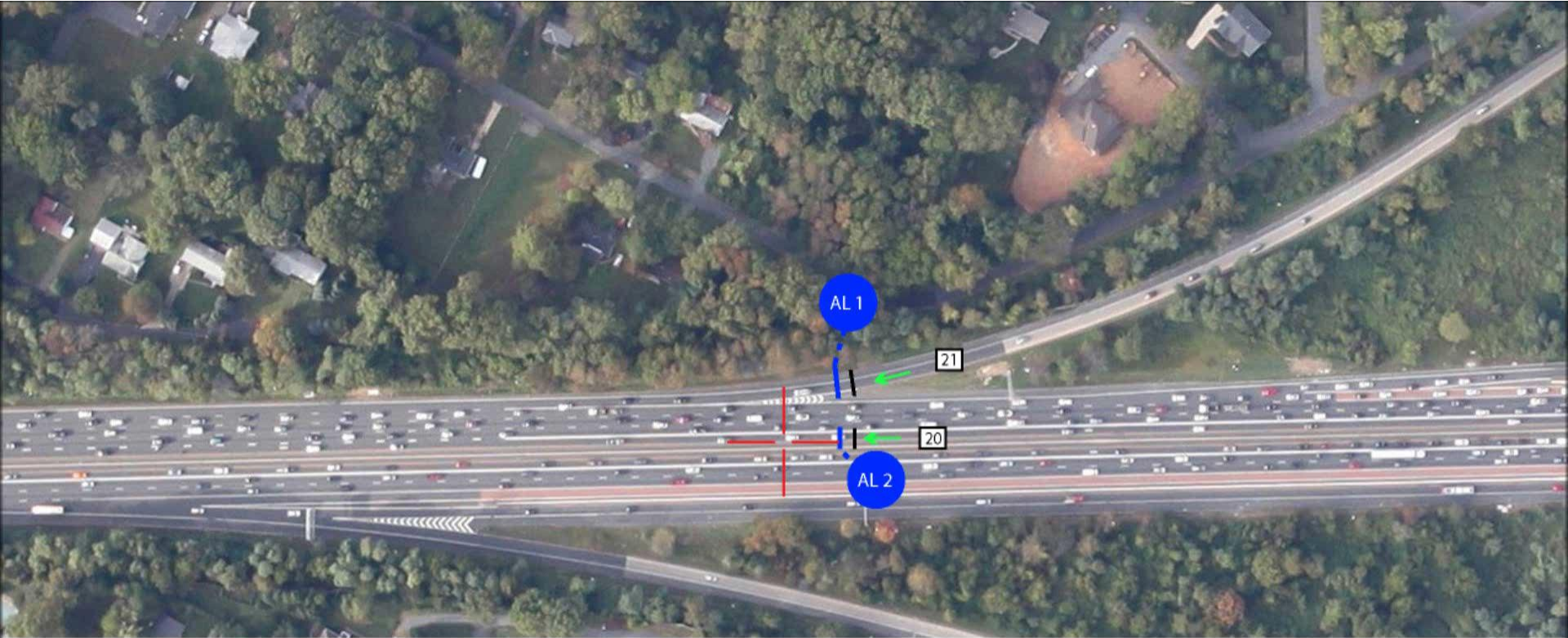




# Site 4: I-66 (Weaving from on ramp to HOV)



# Site 4: I-66 (Weaving from HOV to Exit)





# Site 5: 16<sup>th</sup> Street (Bus following)



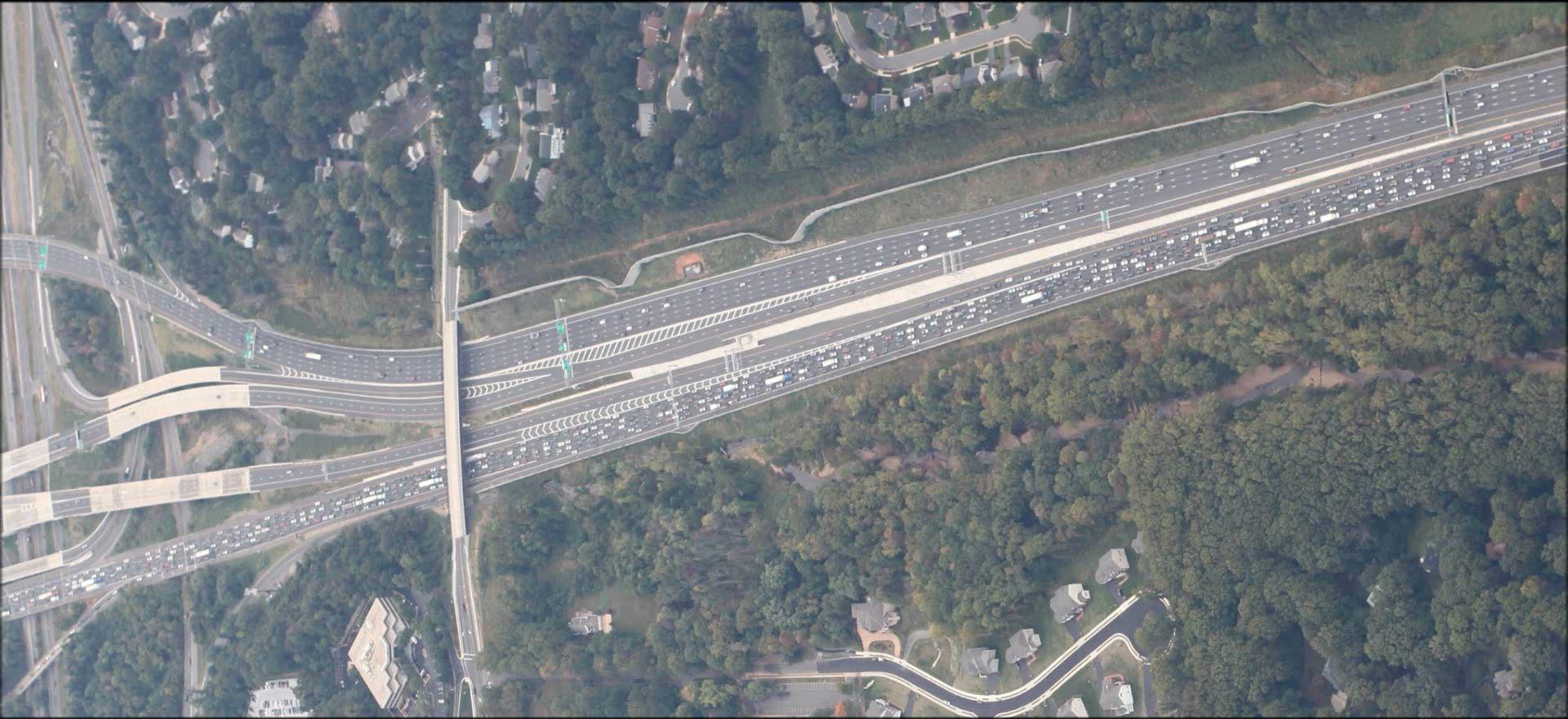


# Site 6 End of HOT Lanes, I-495 (congestion Forming)





# Site 6 End of HOT Lanes, I-495 (congested)



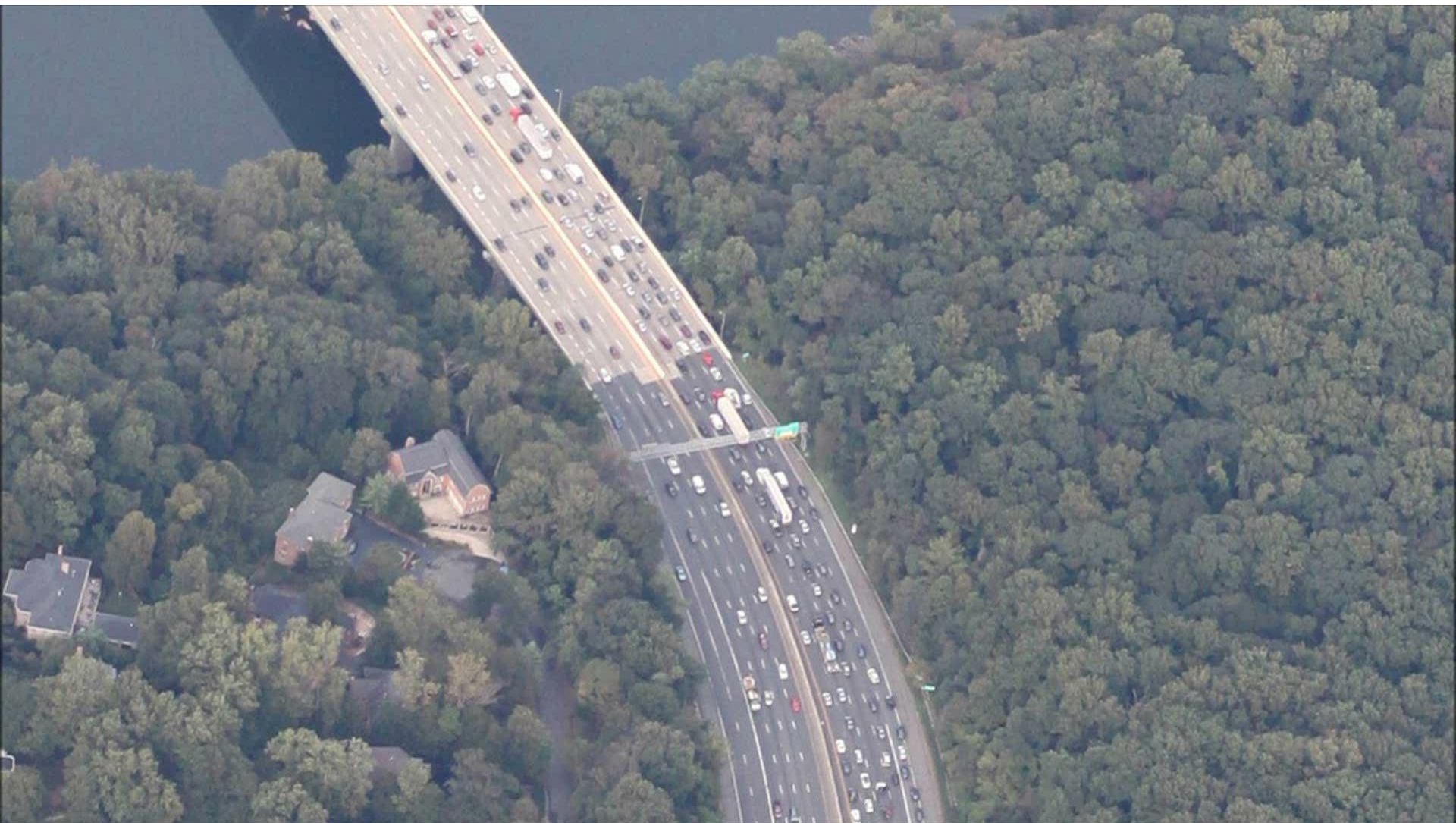


# Site 6 I-495 American Legion bridge





# Site 6 I-495 American Legion bridge





# Site 7: Cabin John Pkwy Queue Bypass



# 1-Sec Time Lapse Photo (TLAP) -Pilot

- Next Steps
  - Three Part Report
    - Spring 2014 Peak Period System Performance
    - Spring 2014 TLAP Pilot
    - Congestion analysis using all data sources
  - Discussion on use of TLAP
  - TPB Technical Committee
  - TPB (Part 1) accompanying the Regional Travel Trends Report

Questions?