

Westside Subway Extension Century City Area Station Options

OCTOBER 19, 2011



Metro

Westside Subway Extension

October 28, 2010 Board Action

October 28, 2010 - MTA Board approved the Draft EIS/EIR with station options at Century City, Westwood/UCLA and Westwood/VA Hospital stations.

- **Board approved Motion (Yaroslavsky) that during the Final EIS/EIR preparation, staff fully explore the risks associated with tunneling under the [Beverly Hills] High School, including but not limited to the following: risk of settlement, noise, vibration, risks from oil wells on the property, impact to use of the school as an emergency evacuation center, and overall risk to student faculty and community; and**
- **Staff continue to work closely with the community and the City of Beverly Hills, and Century City and Westwood neighborhoods and provide them information from these analyses as soon as they become available.**
- **Directed staff to analyze the possibility of moving the subway tunnel in order to avoid all school buildings and avoid any future plans to remodel Beverly Hills High School.**



Study and Analysis Century City Area

Metro conducted two studies

- **Tunnel Safety**
- **Fault Investigation**

Fault Experts:

James Dolan
Thomas Henyey
Thomas Rockwell

Metro's Tunnel Advisory Panel:

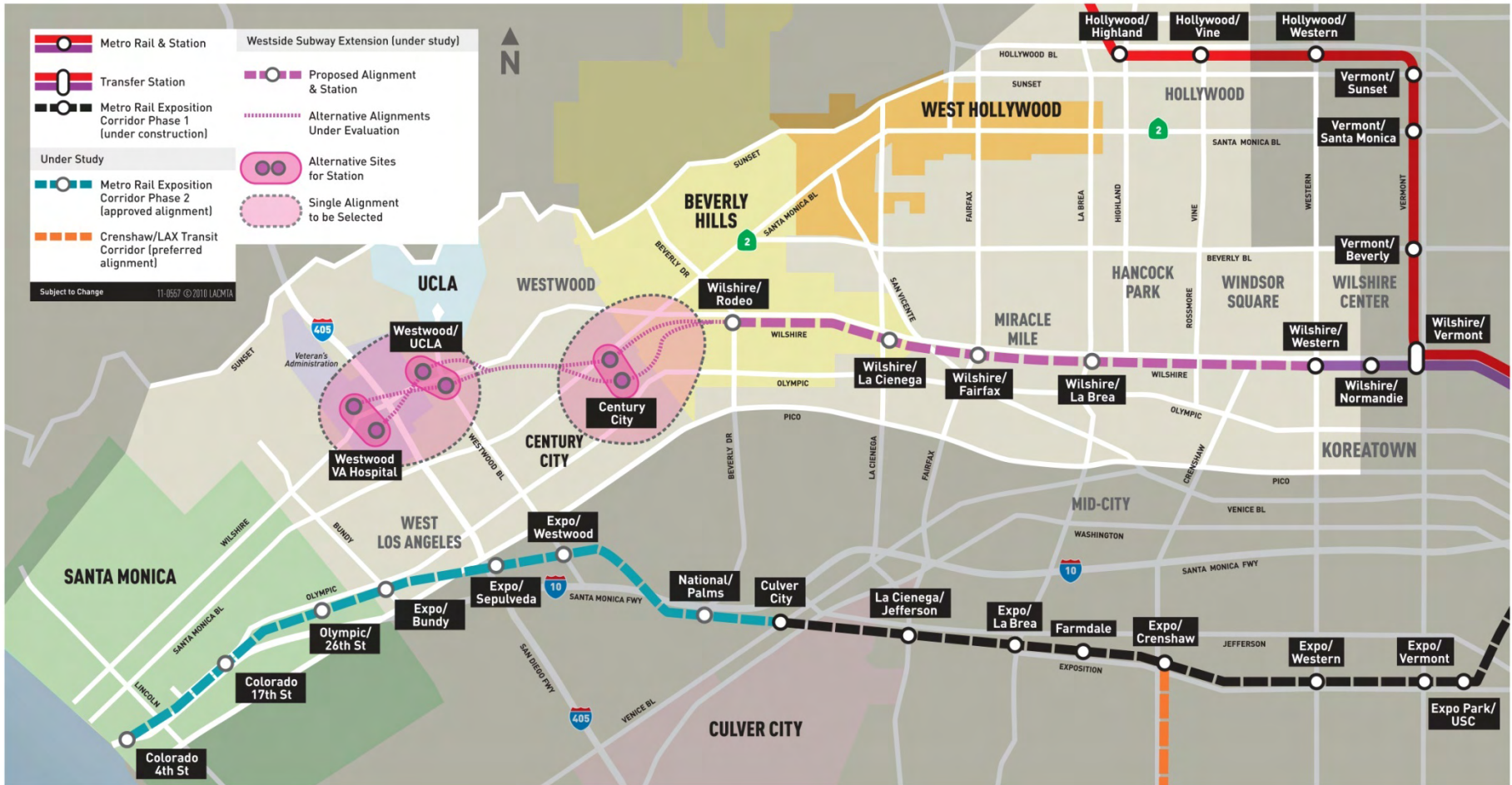
Ed Cording
Geoff Martin
Harvey Parker

Independent Review Panel:

Lloyd Cluff
Lucile Jones
Paul Jennings
Thomas O'Rourke

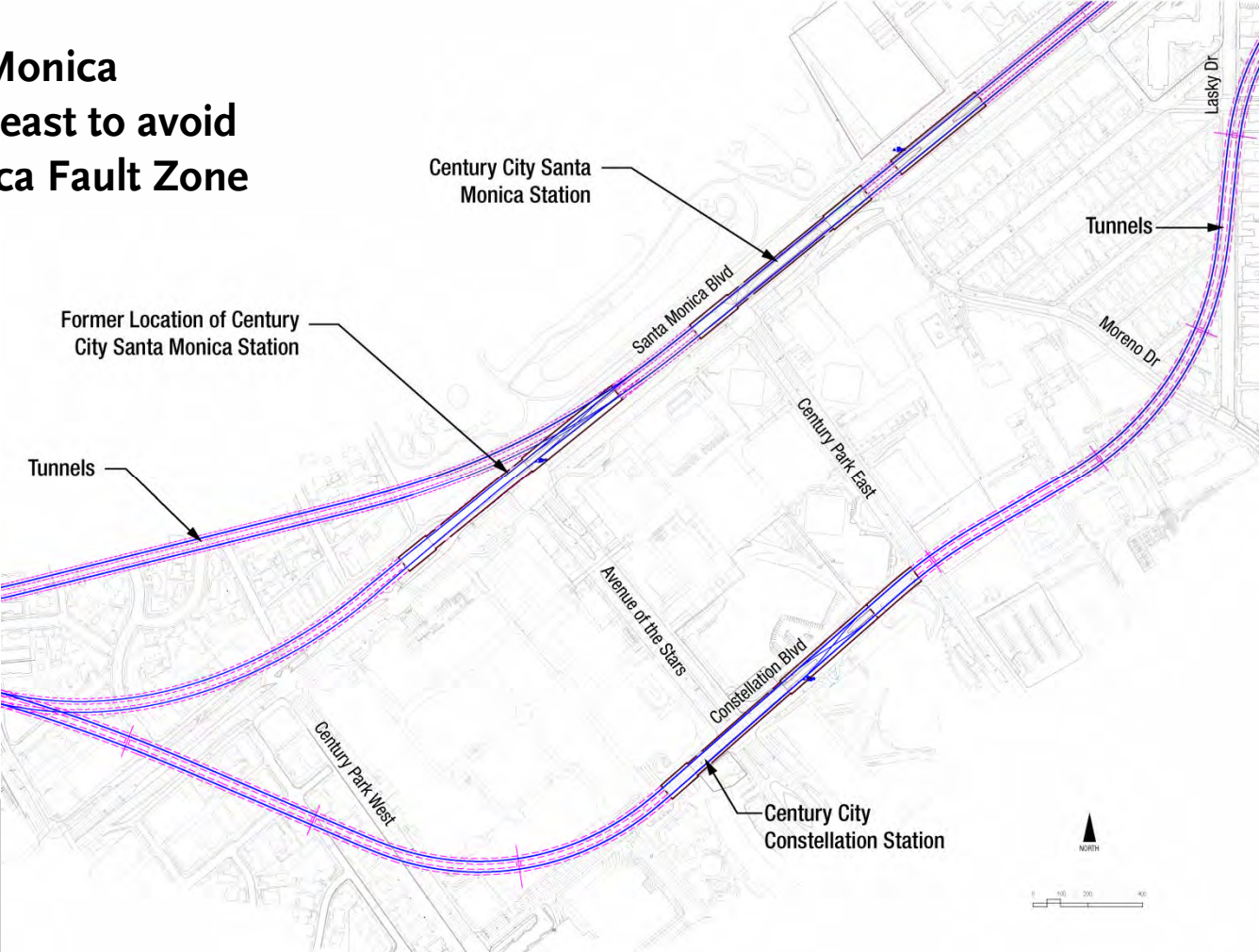
Study Area Alignments (LPA)

Westside Subway Extension Locally Preferred Alternative



Century City Station Locations

Station on Santa Monica Boulevard Shifted east to avoid active Santa Monica Fault Zone



Tunneling can be accomplished safely

- **Demonstrated on Gold Line Eastside Extension (2006)**
 - Similar: diameter, oil field, gassy soil, seismic area, depth
 - Similar soils: dense and suitable for tunnel boring machine (TBM)
- **Pressurized closed-face TBM minimizes ground movement**
 - Little to no ground settlement ➔ Little to no impact on buildings
 - Gas-and-water-tight final lining installed within TBM
 - Tunnel ventilation prevents gas buildup during tunneling and operations

Tunneling can be accomplished safely

- **Noise and vibration during tunneling and operations**
 - Will be specified, monitored, and controlled to existing criteria
 - Substantiated complaints will be addressed and mitigated
- **Investigation of oil wells**
 - Conducted investigation on BHHS Campus
 - Further investigation (magnetic probing) to confirm tunnel area clear of wells
 - Proven methods exist to treat oil well casings
- **Project requires tunneling through active faults**
 - Many precedents for successful tunneling through active faults
 - Pressurized face TBMs can tunnel through fault zones safely
 - Installed lining will be designed to accept fault offsets without collapse

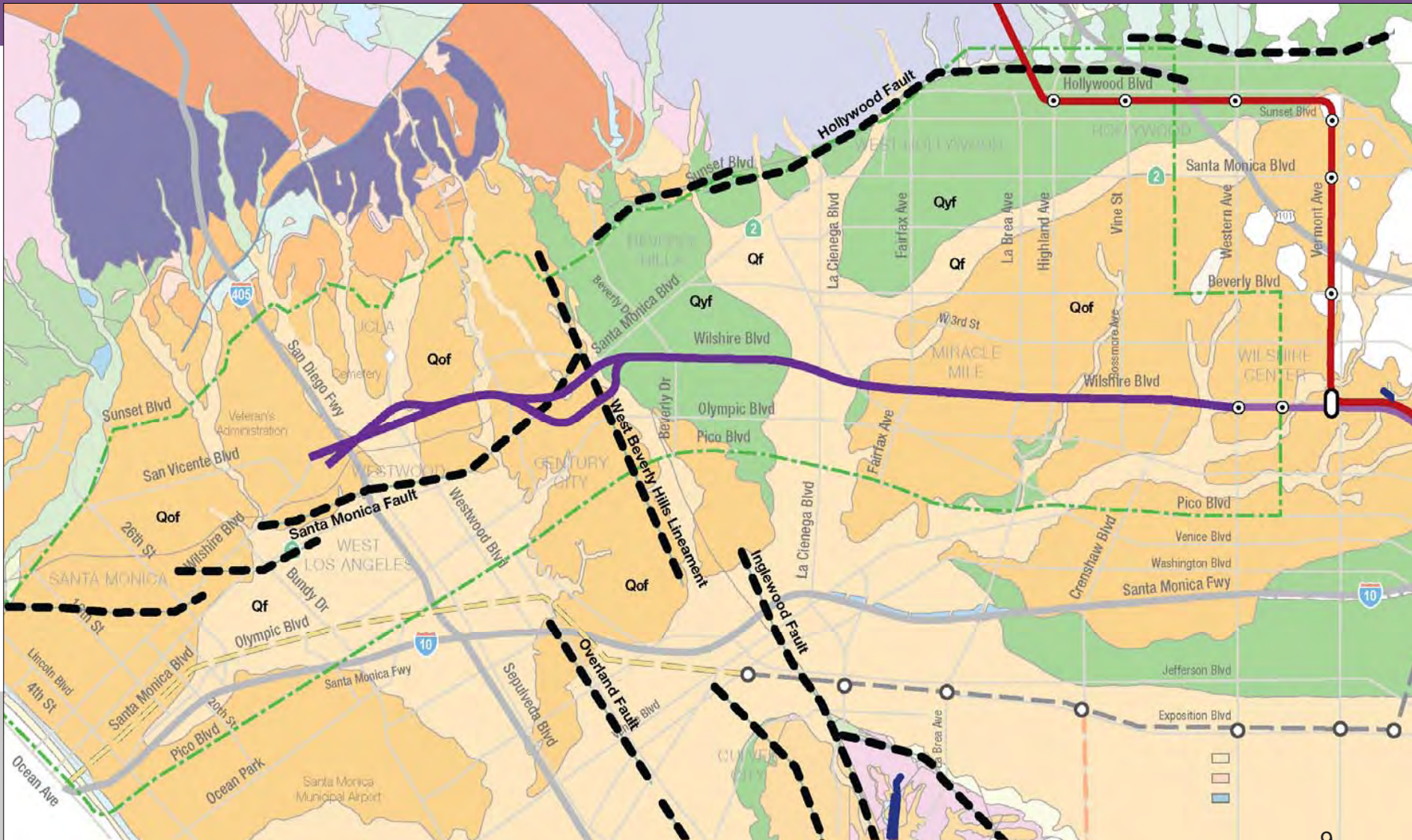


Safe Tunneling beneath Beverly Hills High School

- **Many alignments evaluated, none can avoid all BHHS buildings**
 - Selected best for BHHS
 - Passes only beneath South Wing of Building B
 - Not below gym/pool building
- **Depth allows future development (including deep basements and underground parking)**
- **Presence of tunnels**
 - Does not affect overlying structures during an earthquake
 - Does not impact use as emergency evacuation center or shelter
 - Will not pose new risks to students, faculty and community



Fault Locations Westside Subway Study Area



Santa Monica Boulevard and Constellation Options

Santa Monica Boulevard

- Fault zone extends sub-parallel to Santa Monica Boulevard - area of complex faulting
- East station location is within West Beverly Hills Lineament/Newport Inglewood Fault zone

Constellation Boulevard

- Location is south and west of fault zones
- No evidence of faulting at station location



Conclusions

- **Santa Monica Boulevard**
 - Fault zones at both proposed station sites
 - Neither site acceptable for station
- **Constellation Boulevard**
 - No evidence of faulting at station location
 - Location is acceptable for station
- **Tunnels can be safely constructed under Beverly Hills, Beverly Hills High School, Century City, and Westwood**

Independent Review Panel

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Next Steps

- Study reports: www.metro.net/westside
- Late 2011/Early 2012: Final EIS/EIR distribution for 45 day public review period
- Early 2012: Metro Board Project approval