Engineering Services Manager's Report

Engineering and Operations Committee
Item 7b
November 13, 2017

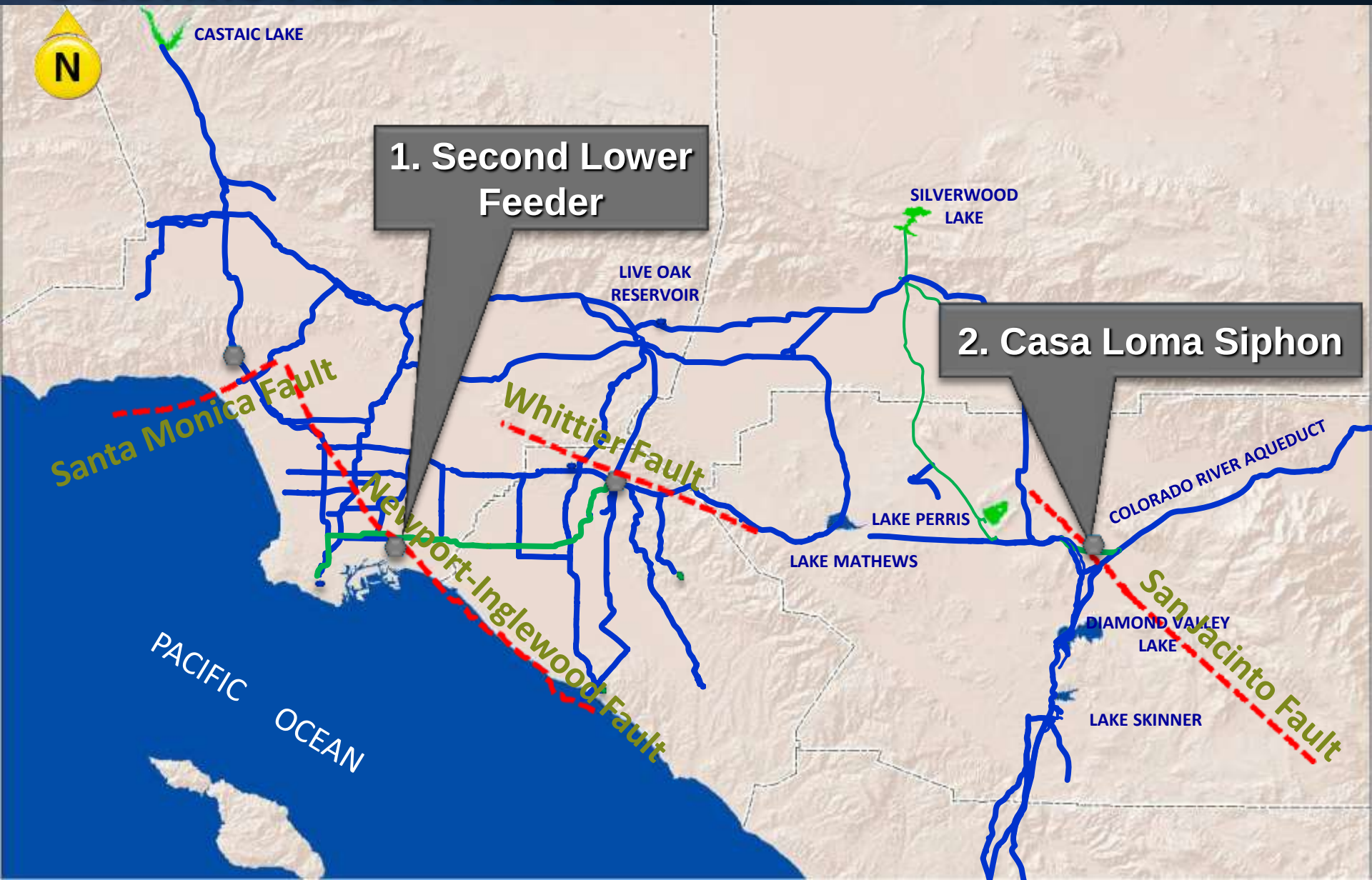
Strategy for Incorporating Seismic Resilience Into Capital Projects

- Continue to conduct seismic assessments & perform upgrades of structures & facilities
- Maintain capability to recover & perform repairs quickly after seismic events
- Incorporate seismic resilience into new pipeline projects
- Evaluate results of vulnerability assessments of exist. distribution system (pipelines, tunnels, canals)
  - Identify mitigation measures & prioritize
  - Execute high-priority projects
    - Relatively few projects are anticipated to proceed based on seismic resilience as the primary driver
  - Mitigate most seismic hazards via long-term rehab programs
    - Every project is an opportunity to make significant improvements over time

Status of Seismic Assessments & Upgrades of Individual Facilities

Pre-1990 Above-Ground Structures	311
Rapid Evaluations	311 Done; 0 Remain
Rapid Evaluation Results	195 OK; 116 Potentially Deficient
Seismic Upgrades	56 Upgraded; 30 in Design or Const.; 2 Detailed Evaluations Underway; 28 Planned for Detailed Eval.
Detailed Evaluation Priority	4 Related to Water Delivery; 24 Not for Water Delivery

Examples of Projects That Incorporate Seismic Resilience

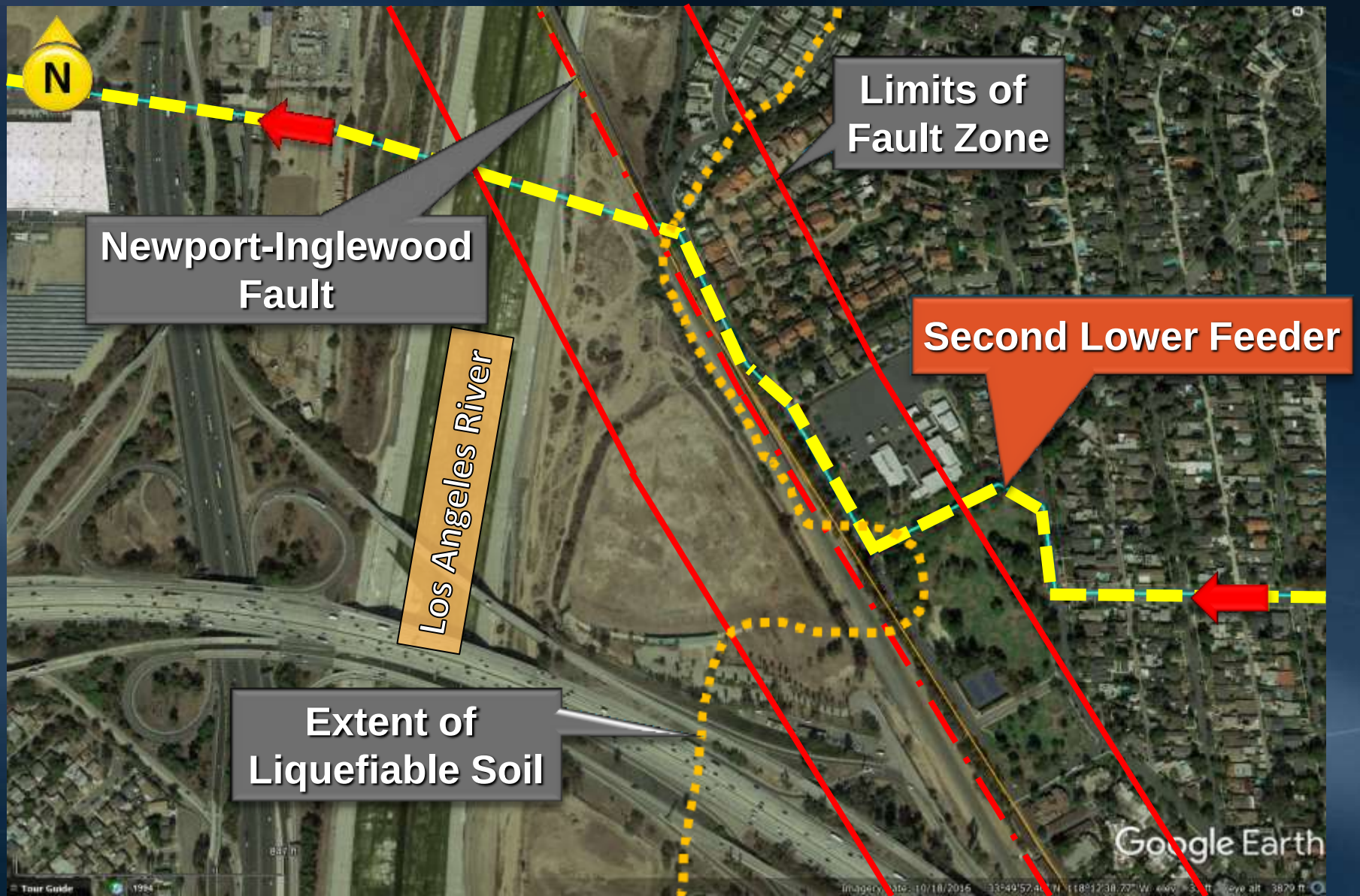


1. Second Lower Feeder

- Project underway to rehabilitate 28 miles of 78-inch dia. PCCP under multiple const. contracts
  - Majority of work includes lining PCCP with steel liner
  - Internal pressure is 300 psi
- Newport-Inglewood Fault
  - Capable of producing M7.5 earthquake
  - Potential horiz. displacement up to 16 ft at fault crossing, along with liquefaction
- Planned solution
  - Replace exist. line at fault crossing with earthquake-resistant steel pipe

1. Second Lower Feeder

Fault Crossing – Newport-Inglewood Fault



2. Casa Loma Siphon

- Project underway for permanent repairs to leaks on 150-inch dia. Casa Loma Siphon No.1 on the CRA
  - Regional subsidence has caused leaks for decades
  - Siphon No. 1 was originally concrete pipe, now steel pipe with external sleeve-type couplings on every joint
  - Couplings are corroded & continue to leak
    - Internal seals installed recently as interim measure
  - Internal pressure is 21 psi
- Casa Loma Fault (San Jacinto Fault System)
  - Capable of producing M6.7 earthquake
  - Potential displacement of 1 ft if fault ruptures on its own, or 10 ft if multiple reaches rupture
- Planned solution
  - Replace exist. line at fault crossing with earthquake-resistant ductile iron pipe

2. Casa Loma Siphon

Fault Crossing – Casa Loma Fault (San Jacinto Fault System)


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928