Appendix 24A
Sound Level Contours

This appendix supports the analysis in Chapter 24, *Noise and Vibration*, by presenting a geographical depiction of modeled sound levels that would potentially occur from use of heavy equipment during construction of project facilities and infrastructure.

To provide a brief yet complete illustration of potential effects of noise during construction, the project alternative with the greatest effect on sound levels in the surrounding area is presented for each alignment. As such, Alternative 2a is depicted for the central alignment, Alternative 4a is depicted for the eastern alignment, and Alternative 5 is depicted for the Bethany Reservoir alignment.[1]

Three sets of sound level contour maps are shown for each alignment and listed in Sections 24A.1 through 24A.3. The first contour map set depicts predicted sound levels from pile driving, which would occur concurrently with heavy equipment use during buildout of facilities. This level of noise exposure would occur over a period of up to 21 months at a given facility. The second contour map set depicts predicted sound levels from heavy equipment use during buildout, without pile driving. The level of noise exposure shown in these maps would occur for a period of 12 years. The third contour map set depicts sound levels from construction of roads, utilities, and SCADA lines. These features are constructed along a linear path and would be expected to take place at a given location for 1 week or less.

Each contour map depicts the locations where sound levels during construction are predicted to exceed values of 60 dBA 1-hour L_{eq}[2] and 50 dBA 1-hour L_{eq}. The 60 dBA 1-hour L_{eq} contour identifies locations where noise from construction would potentially exceed the daytime noise level criterion specified by DWR. The 50 dBA 1-hour L_{eq} contour has a similar function for the nighttime criterion specified by DWR; however, night work would be limited to concrete pours, which would take place for a period of between 1 week and a few months for a given facility. As such, in contour maps for heavy equipment for facility buildout (without pile driving), the location of the 50 dBA 1-hour L_{eq} contour may be used to determine where the nighttime criterion could be exceeded during concrete pours.

Sound levels from haul trucks, trains, and barges used during construction are discussed in Chapter 24. Due to the length and complexity of this information, and in an effort to maintain the readability of Chapter 24, this information is presented in an appendix.

[1] The noise contours are based on the DC02f (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, and 4c) and the DC02fB (Alternative 5) versions of the project footprints. From a noise exposure context, the modeling results for versions DC02f and DC02fB are equivalent to the more recent DC02g (Alternatives 1, 2a, 2b, 2c, 3, 4a, 4b, and 4c) and DC02gB (Alternative 5) project footprints.

[2] dBA represents A-weighted decibels. L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The duration of the measurement is commonly indicated before, or as a subscript, such as 1-hour L_{eq}.

24A.1 Central Alignment

Figure 24A-1. Index of Figures for Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout

Figures 24A-1a through 24A-1e. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout

Figure 24A-2. Index of Figures for Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout, including Pile Driving

Figures 24A-2a through 24A-2f. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout, including Pile Driving

Figure 24A-3. Index of Figures for Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction

Figures 24A-3a through 24A-3k. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction

24A.2 Eastern Alignment

Figure 24A-4. Index of Figures for Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout

Figures 24A-4a through 24A-4f. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout

Figure 24A-5. Index of Figures for Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout, including Pile Driving

Figures 24A-5a through 24A-5g. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout, including Pile Driving

Figure 24A-6. Index of Figures for Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction

Figures 24A-6a through 24A-6j. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction

24A.3 Bethany Reservoir Alignment

Figure 24A-7. Index of Figures for Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout

Figures 24A-7a through 24A-7f. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout

Figure 24A-8. Index of Figures for Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout, including Pile Driving

Figures 24A-8a through 24A-8f. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout, including Pile Driving

Figure 24A-9. Index of Figures for Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction

Figures 24A-9a through 24A-9i. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction

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Appendix 24A.1
Central Alignment

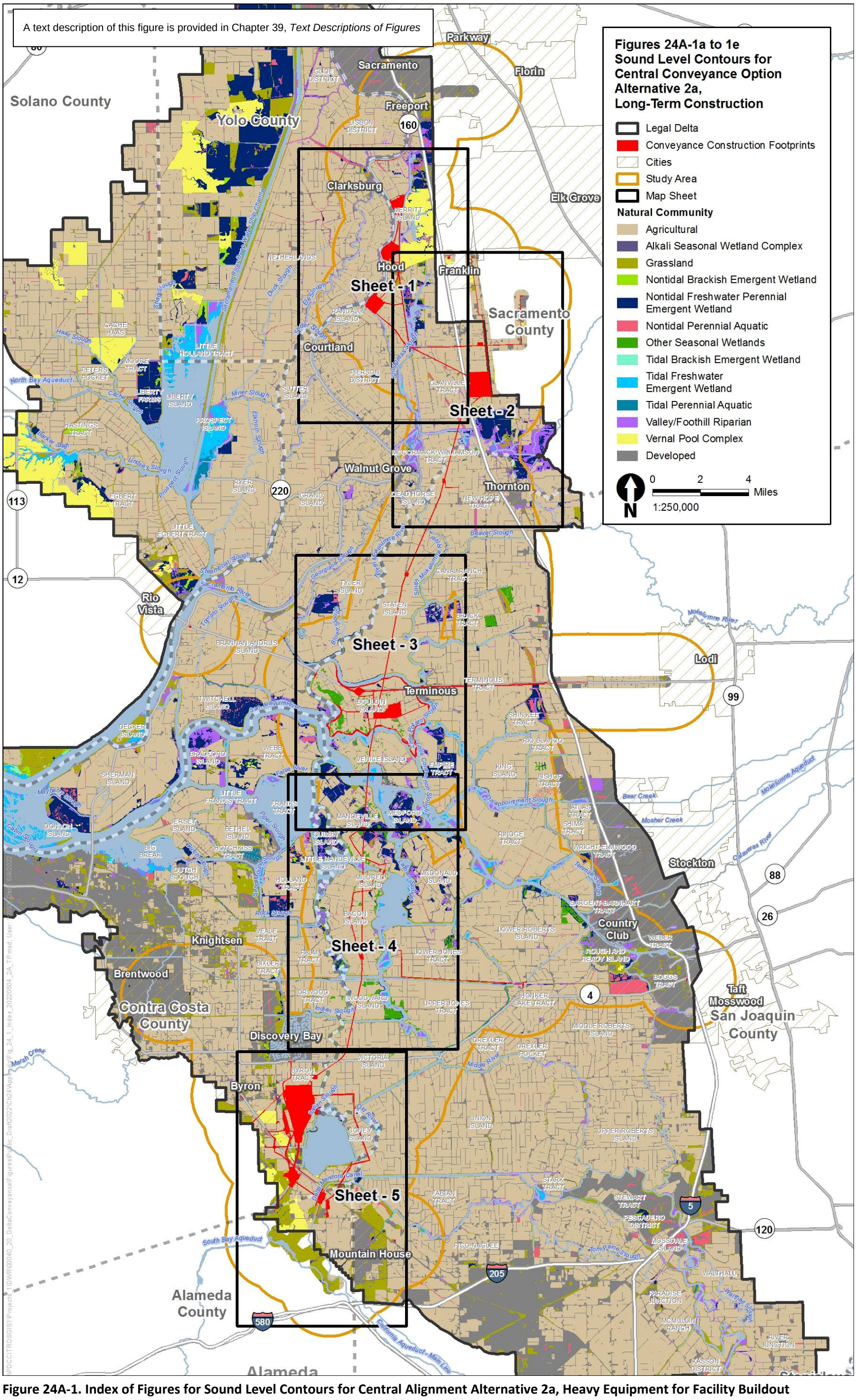
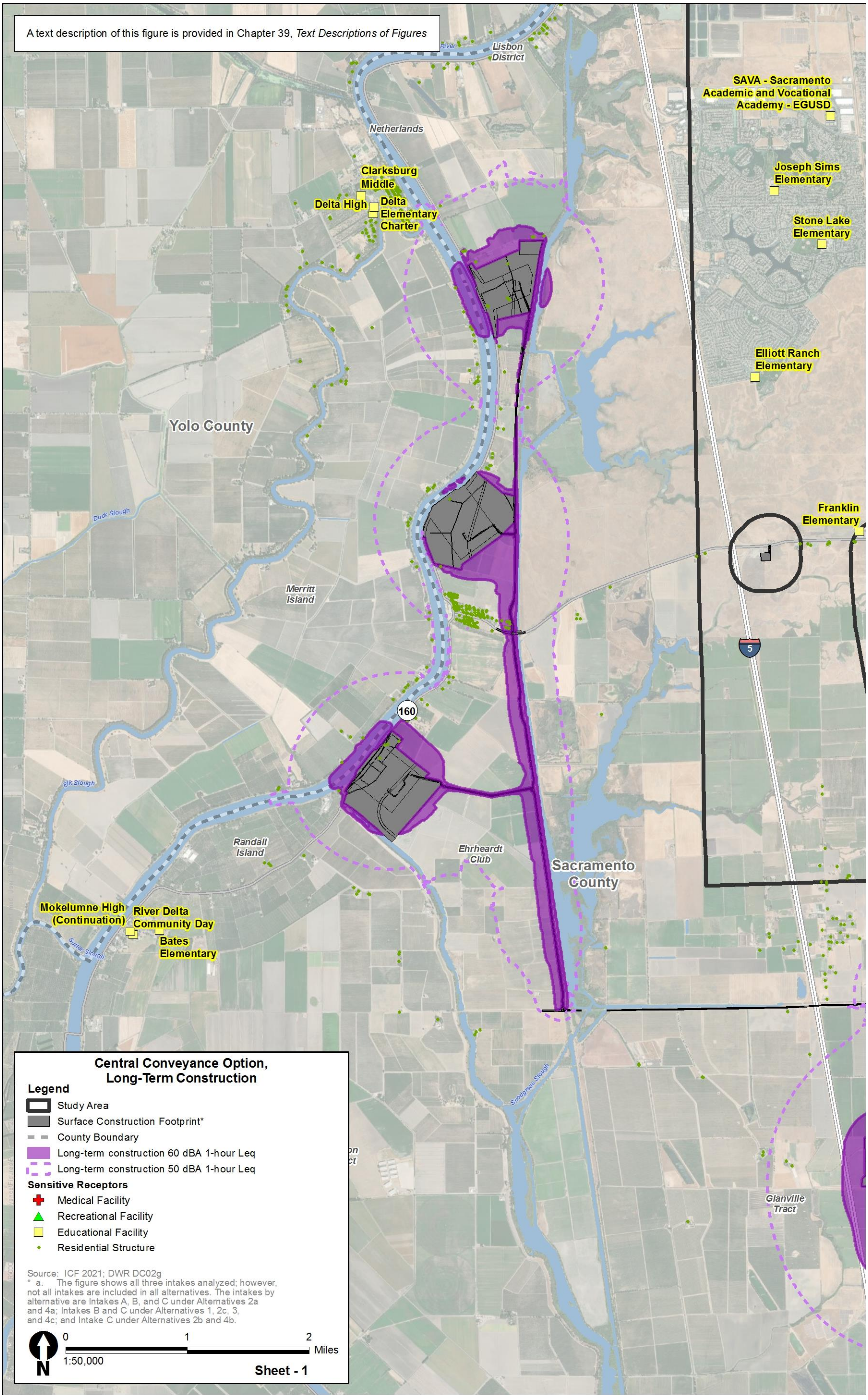
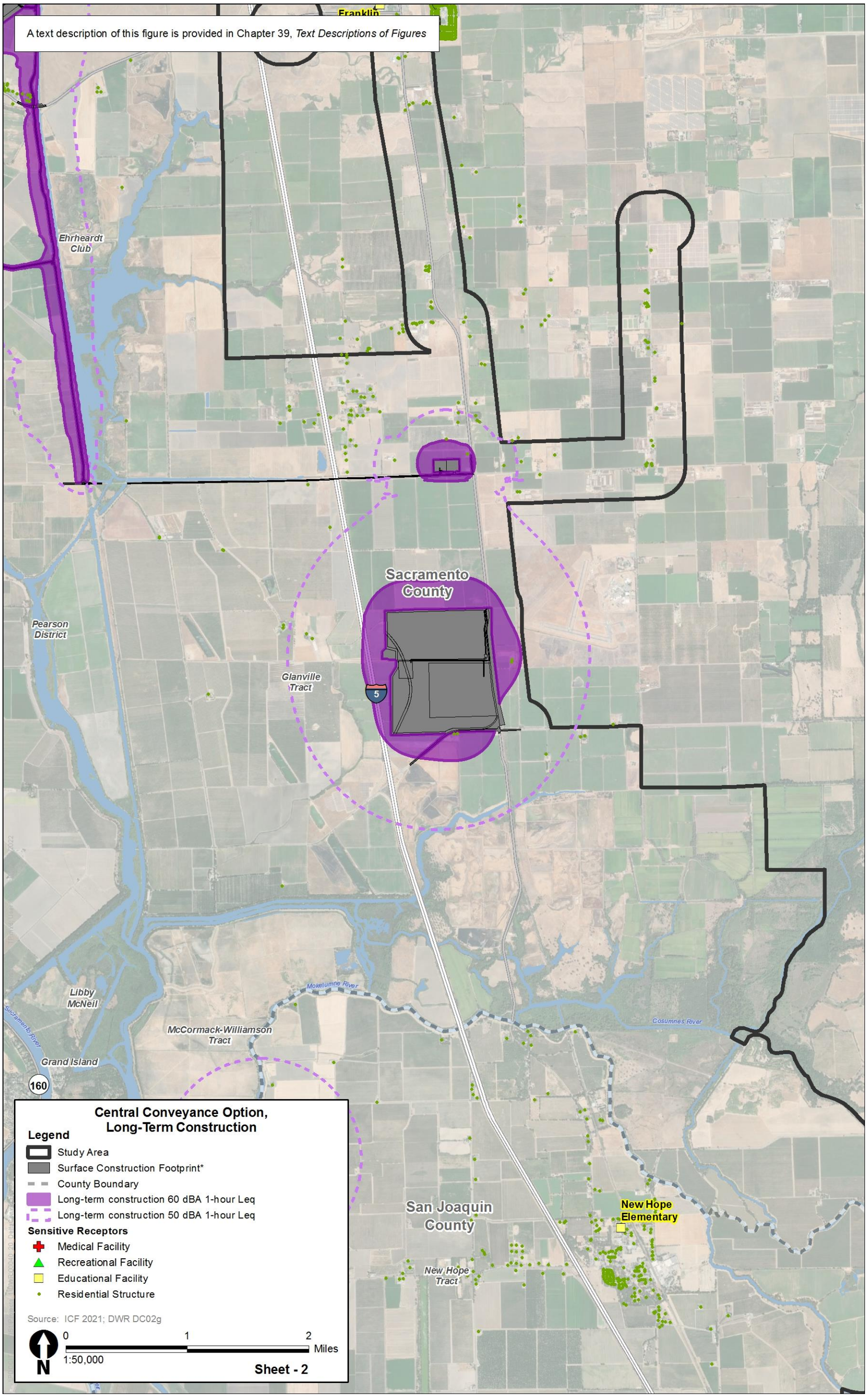


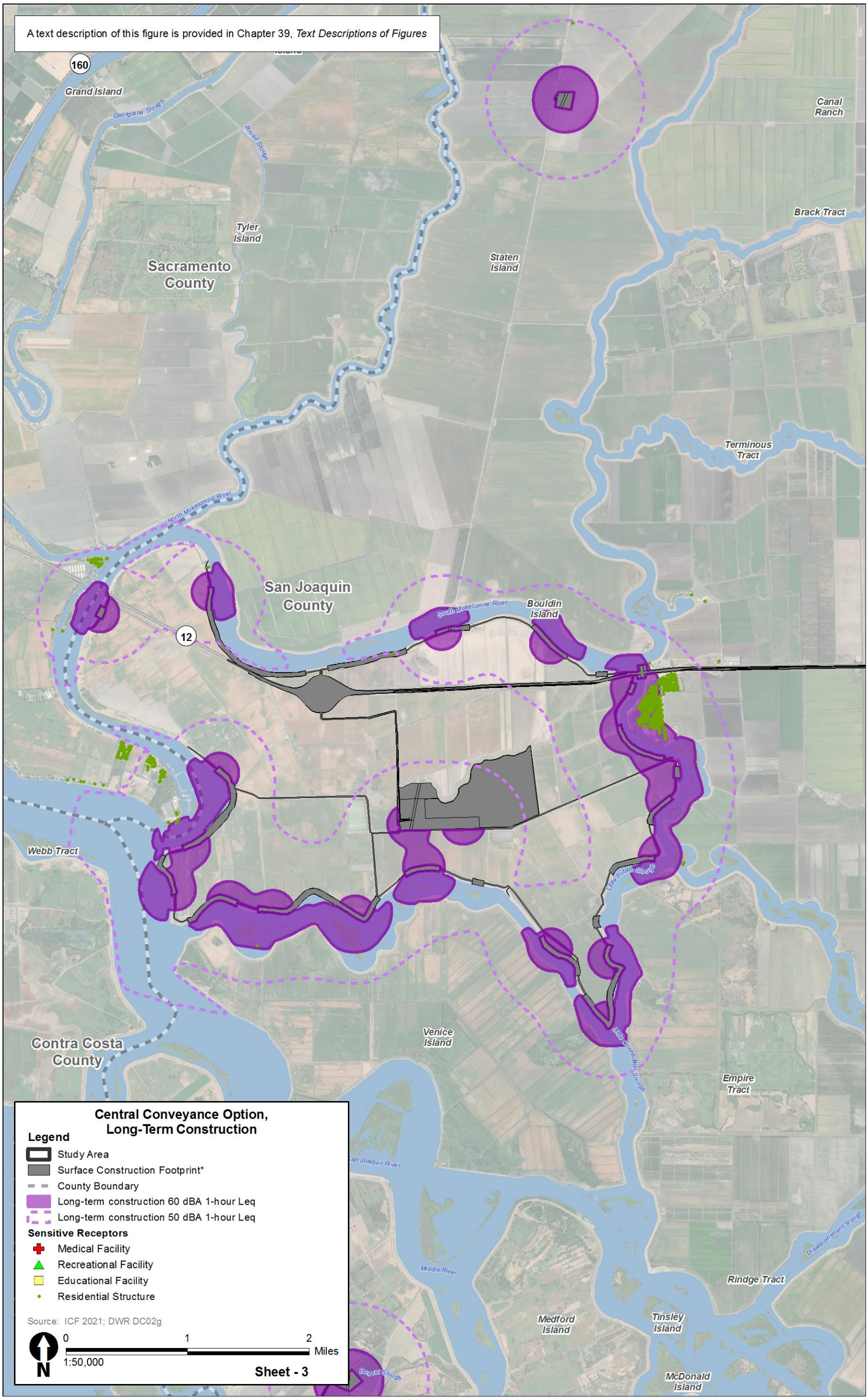
Figure 24A-1. Index of Figures for Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout



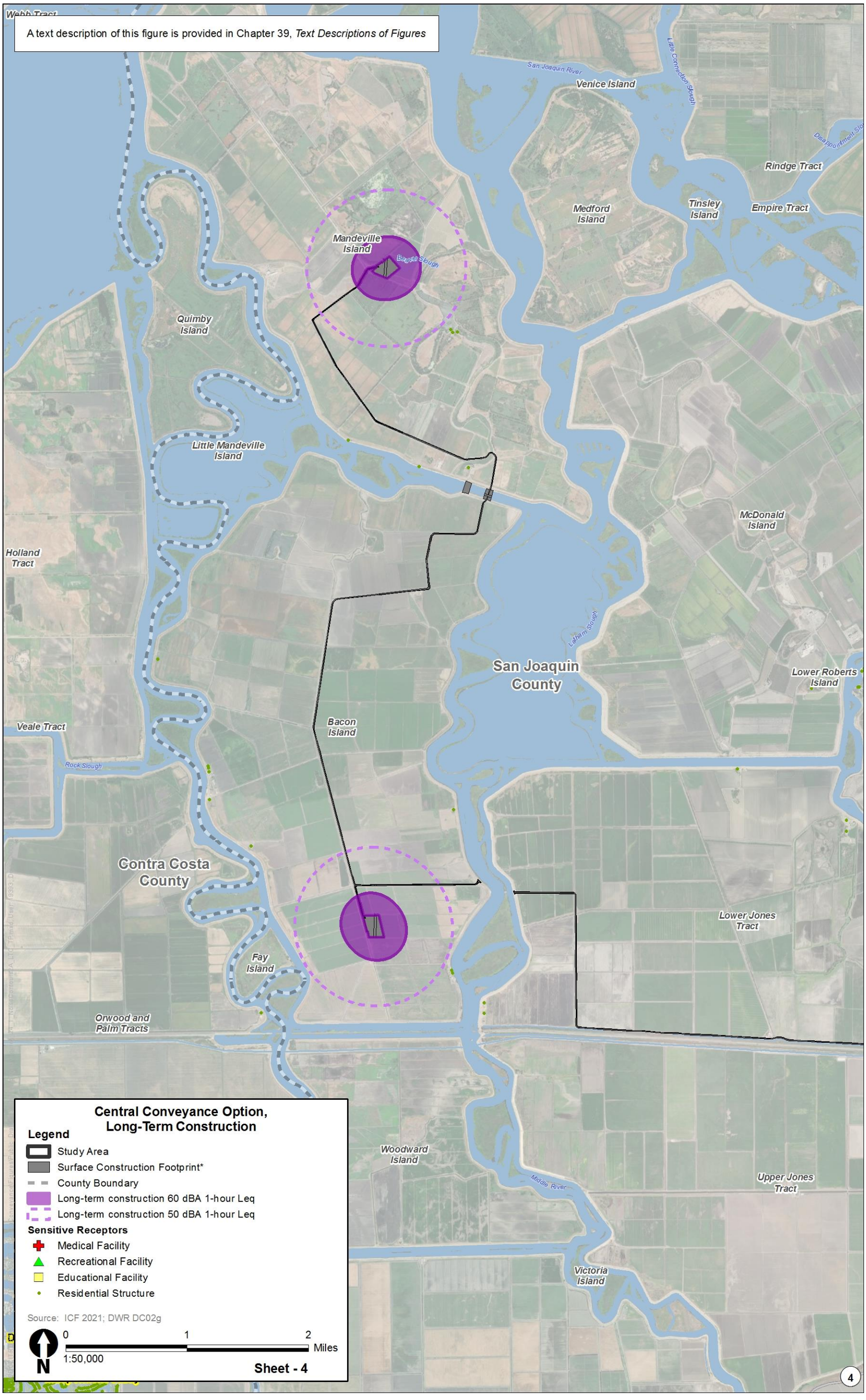
Figures 24A-1a. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout



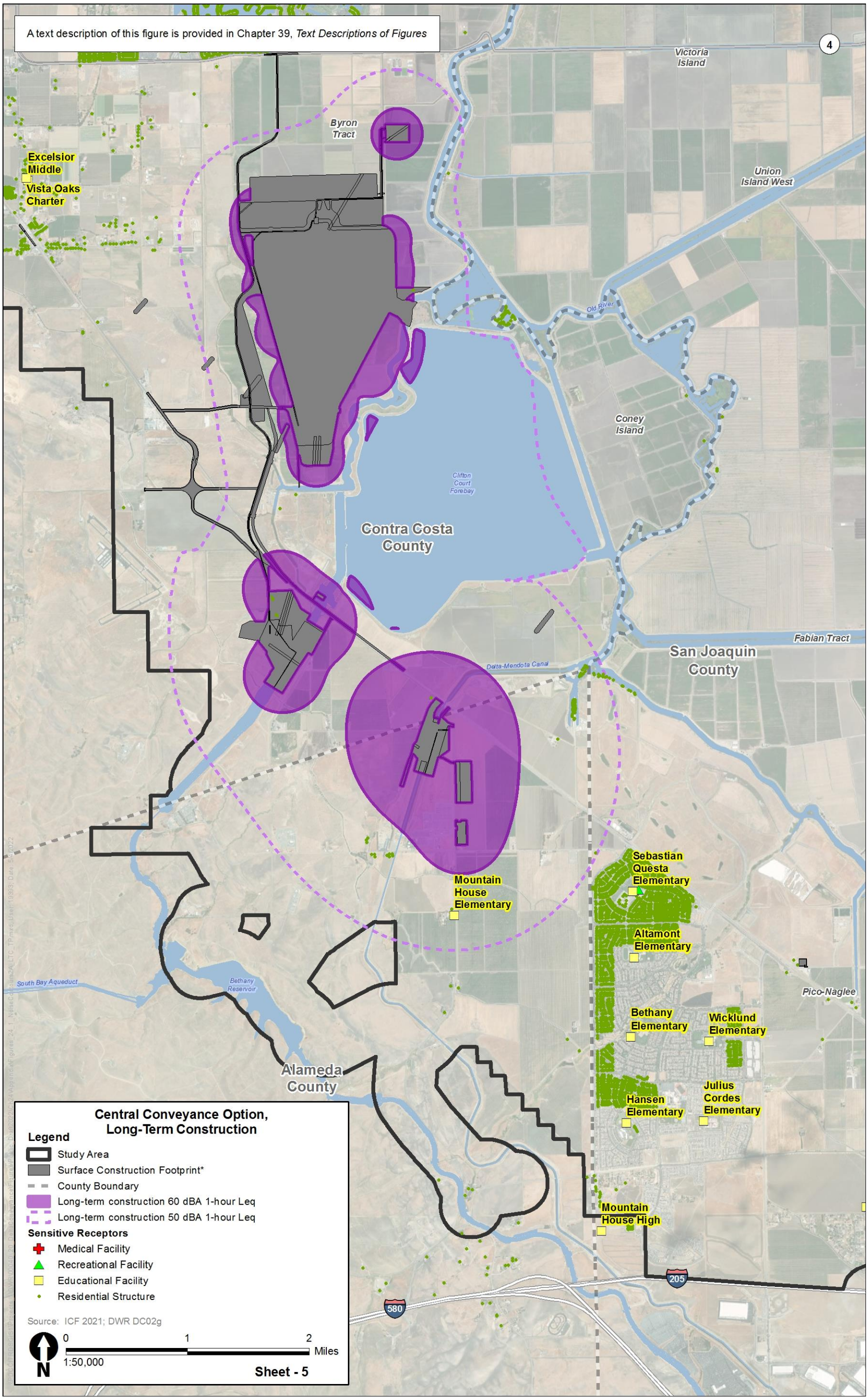
Figures 24A-1b. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout



Figures 24A-1c. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout



Figures 24A-1d. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout



Figures 24A-1e. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout

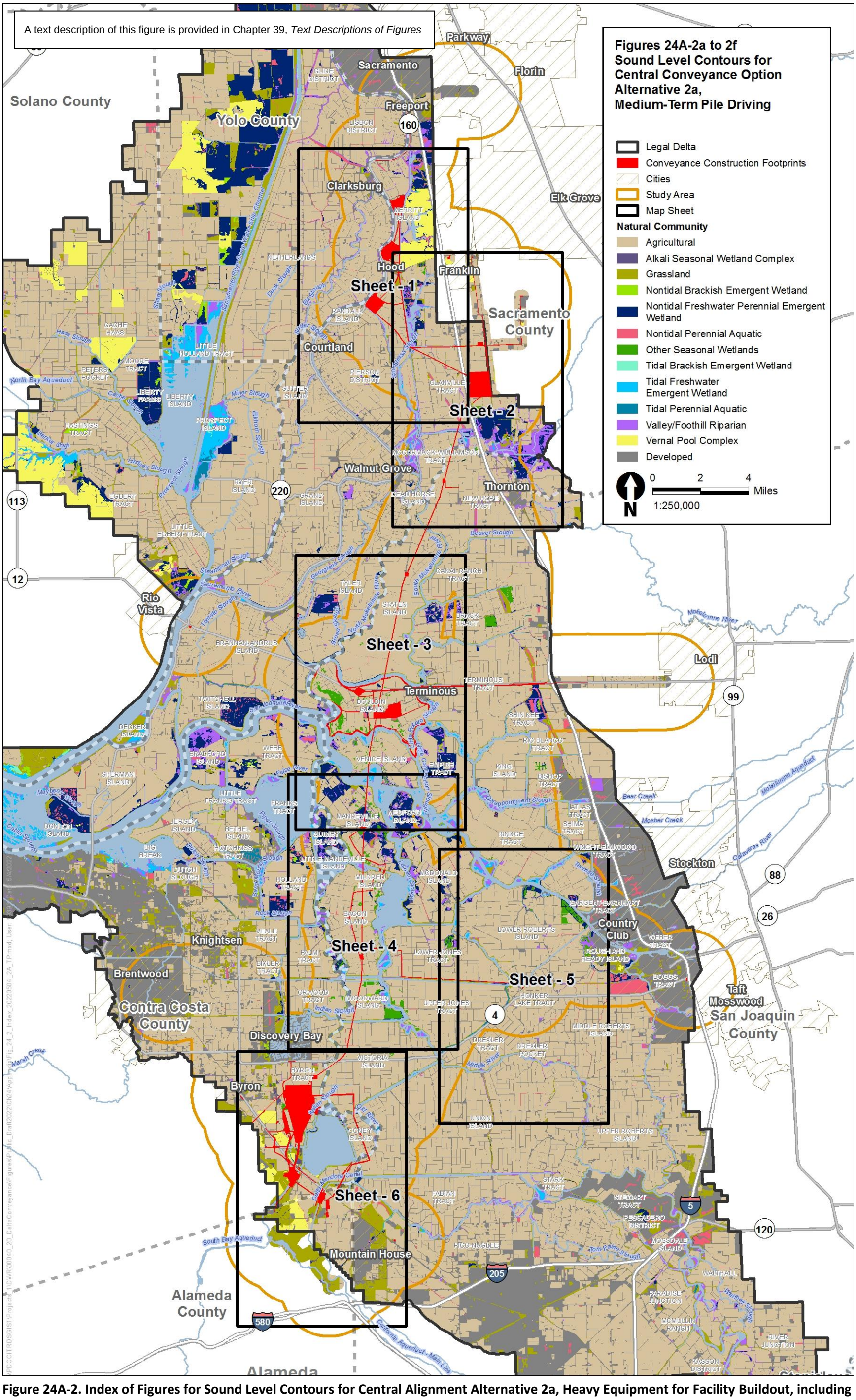
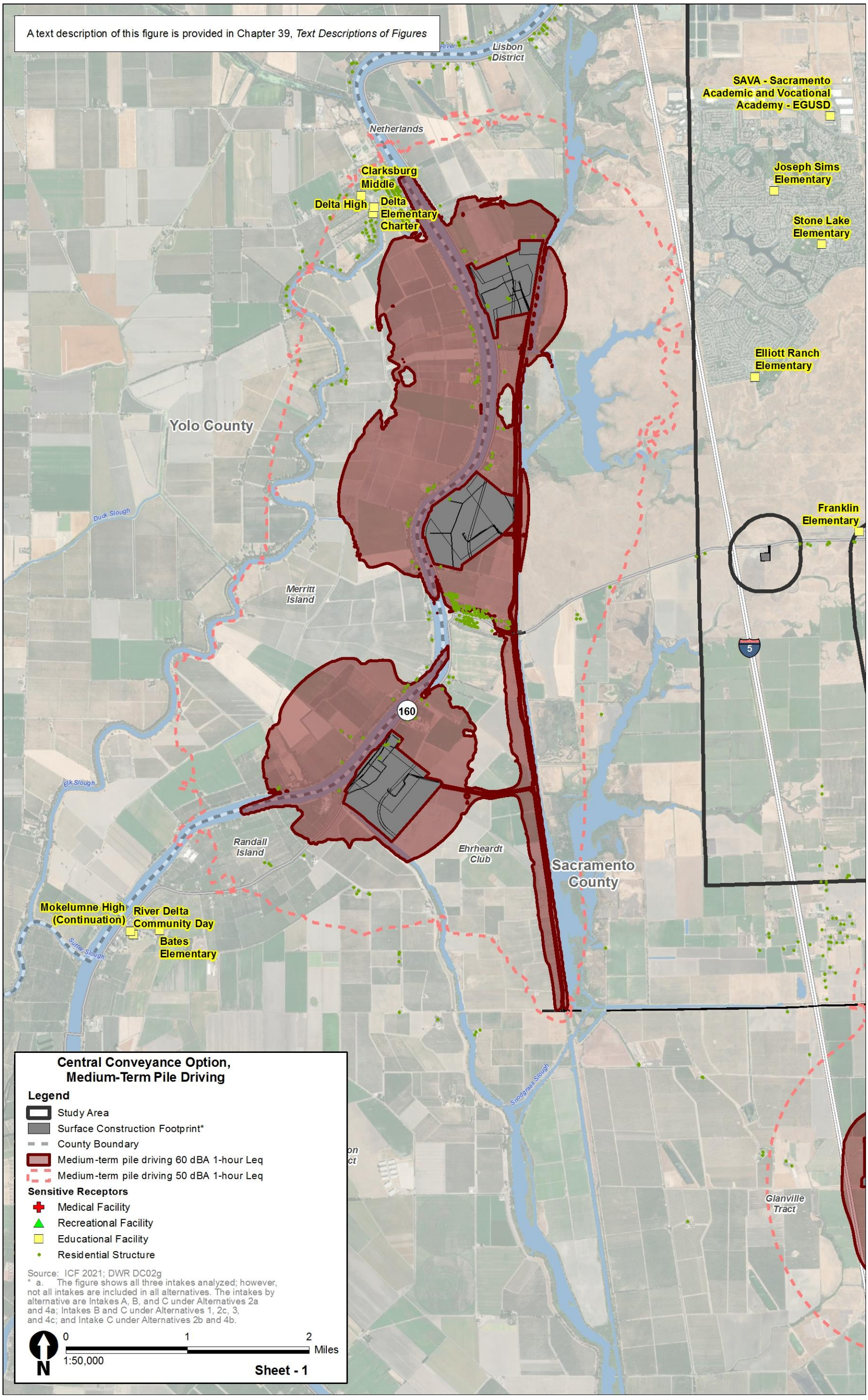
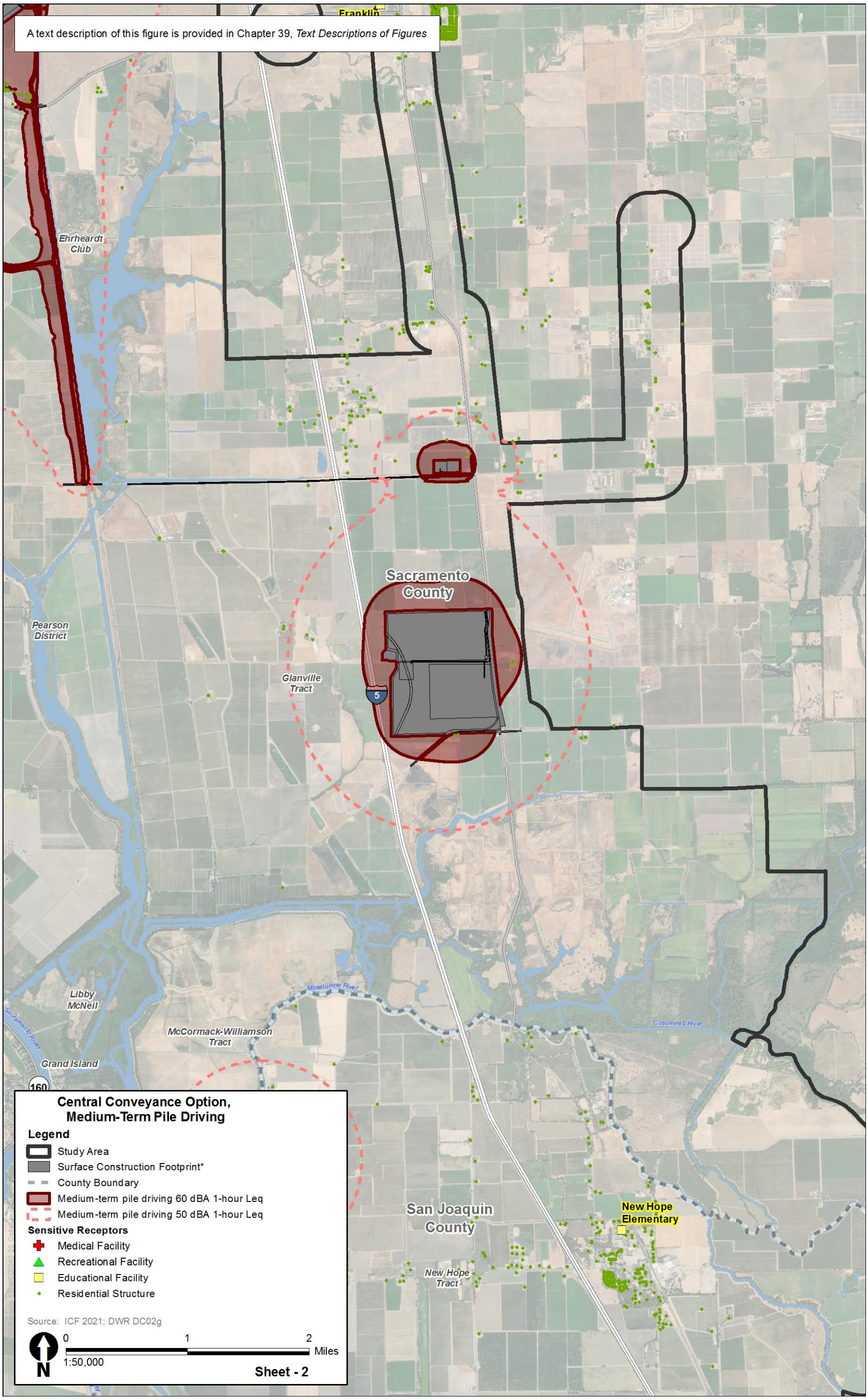


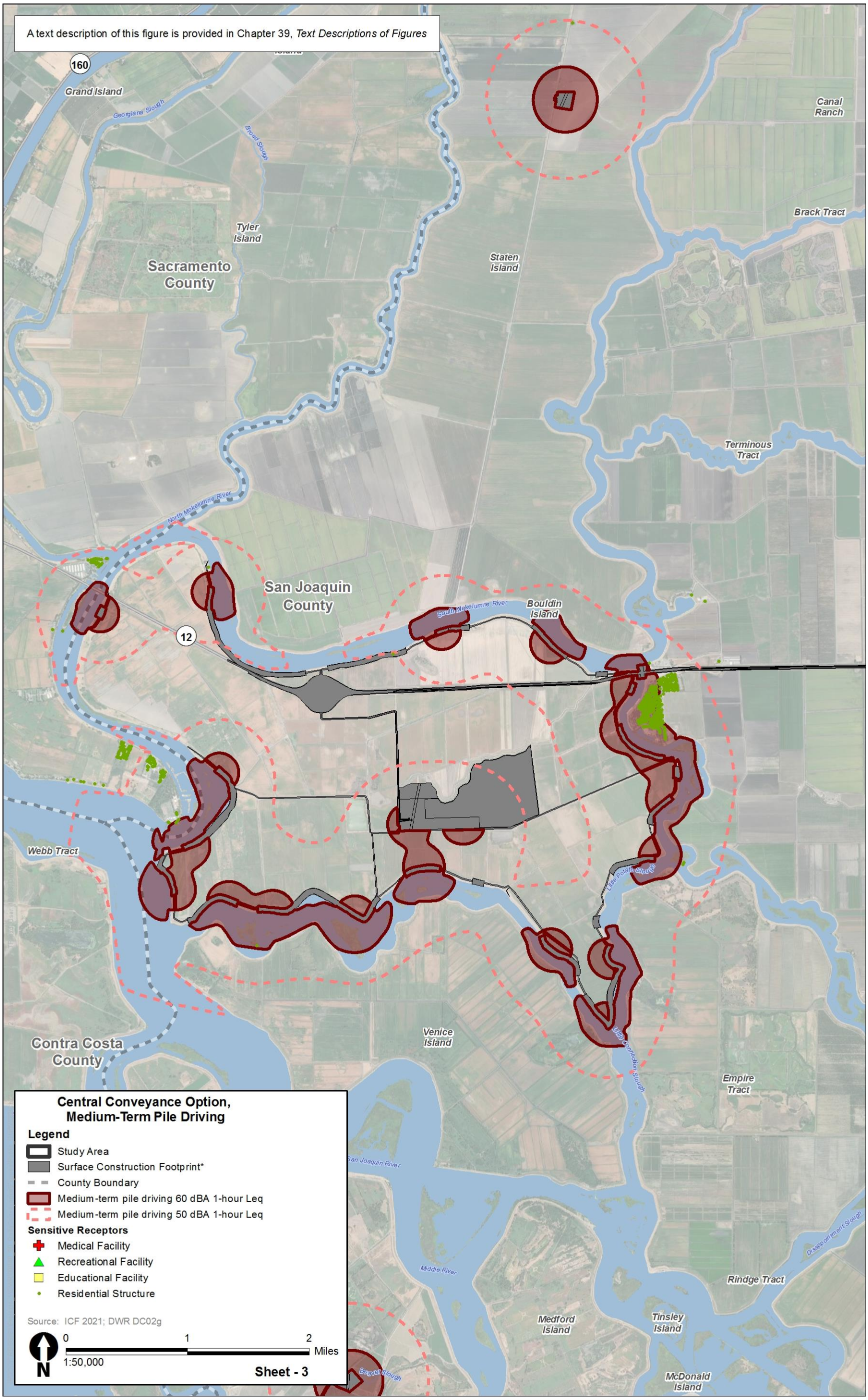
Figure 24A-2. Index of Figures for Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout, including Pile Driving



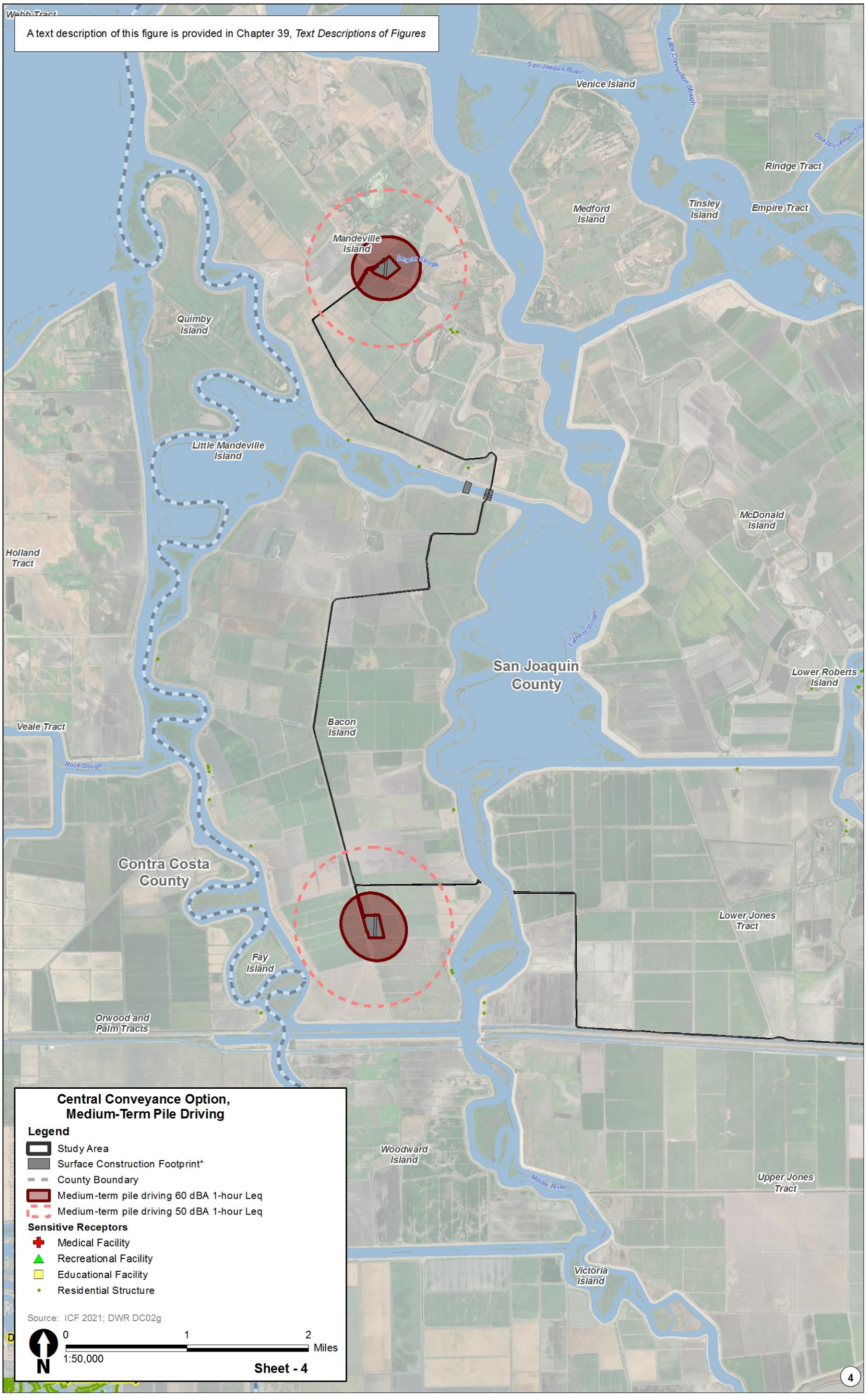
Figures 24A-2a. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout, including Pile Driving



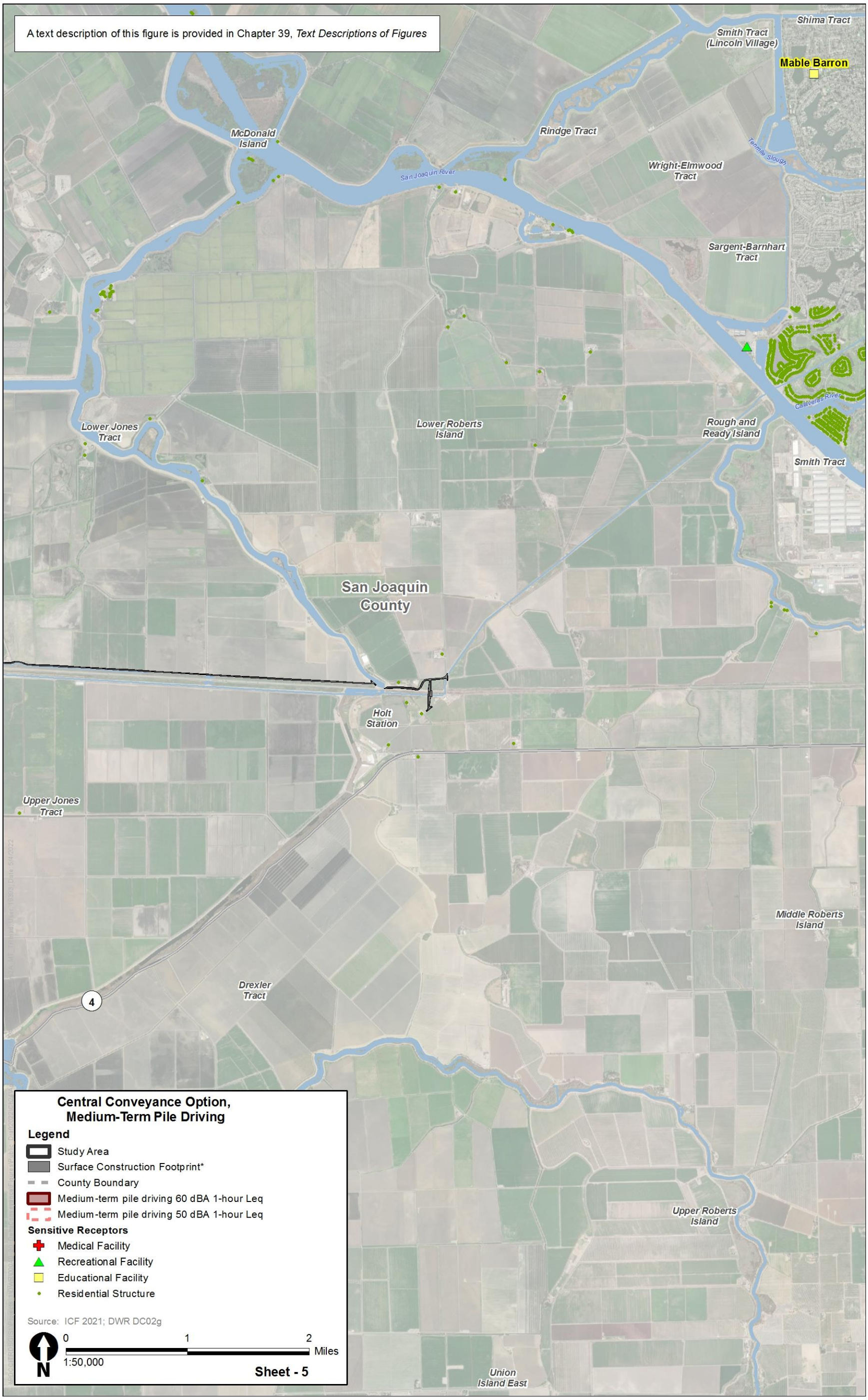
Figures 24A-2b. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout, including Pile Driving



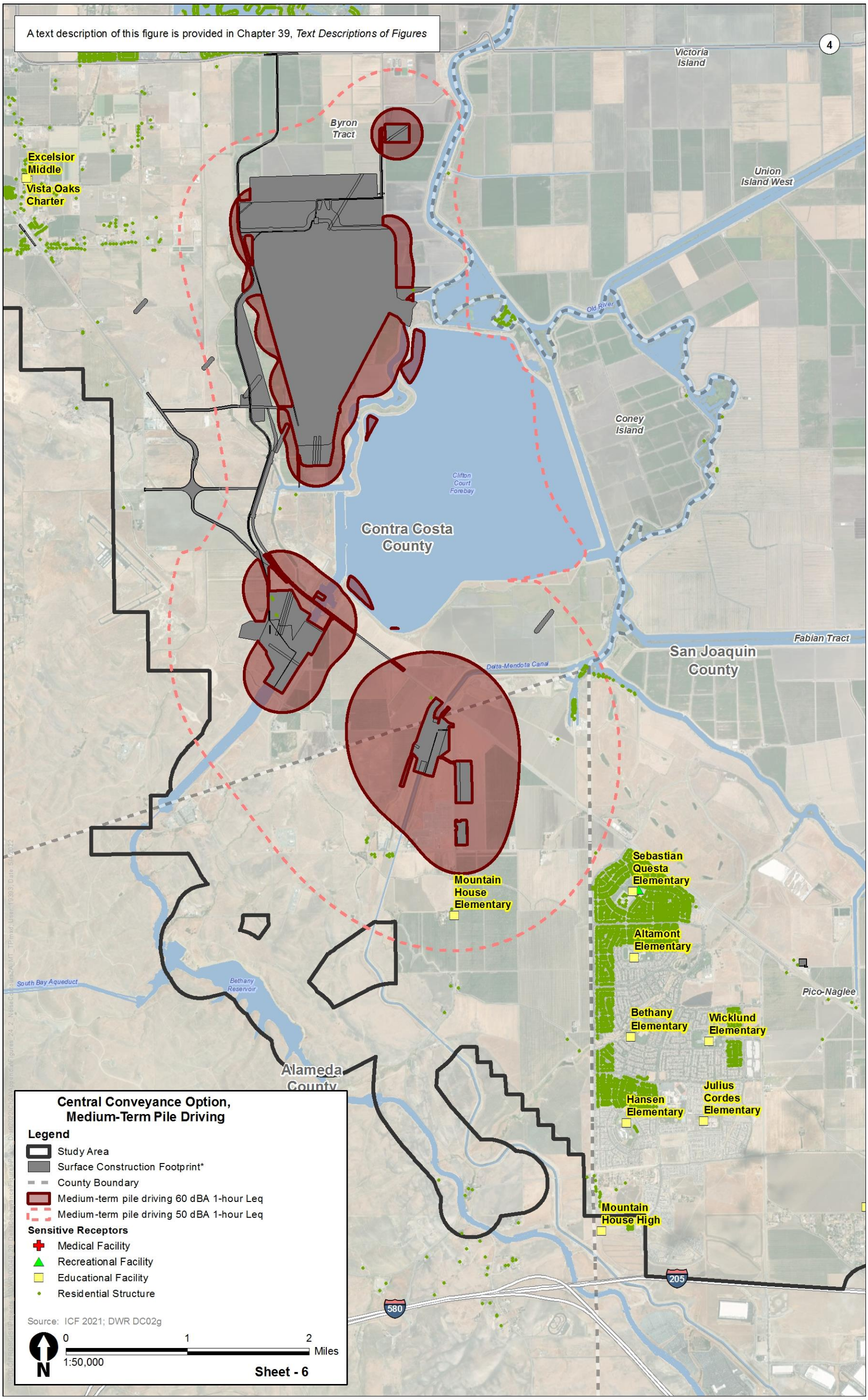
Figures 24A-2c. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-2d. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-2e. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-2f. Sound Level Contours for Central Alignment Alternative 2a, Heavy Equipment for Facility Buildout, including Pile Driving

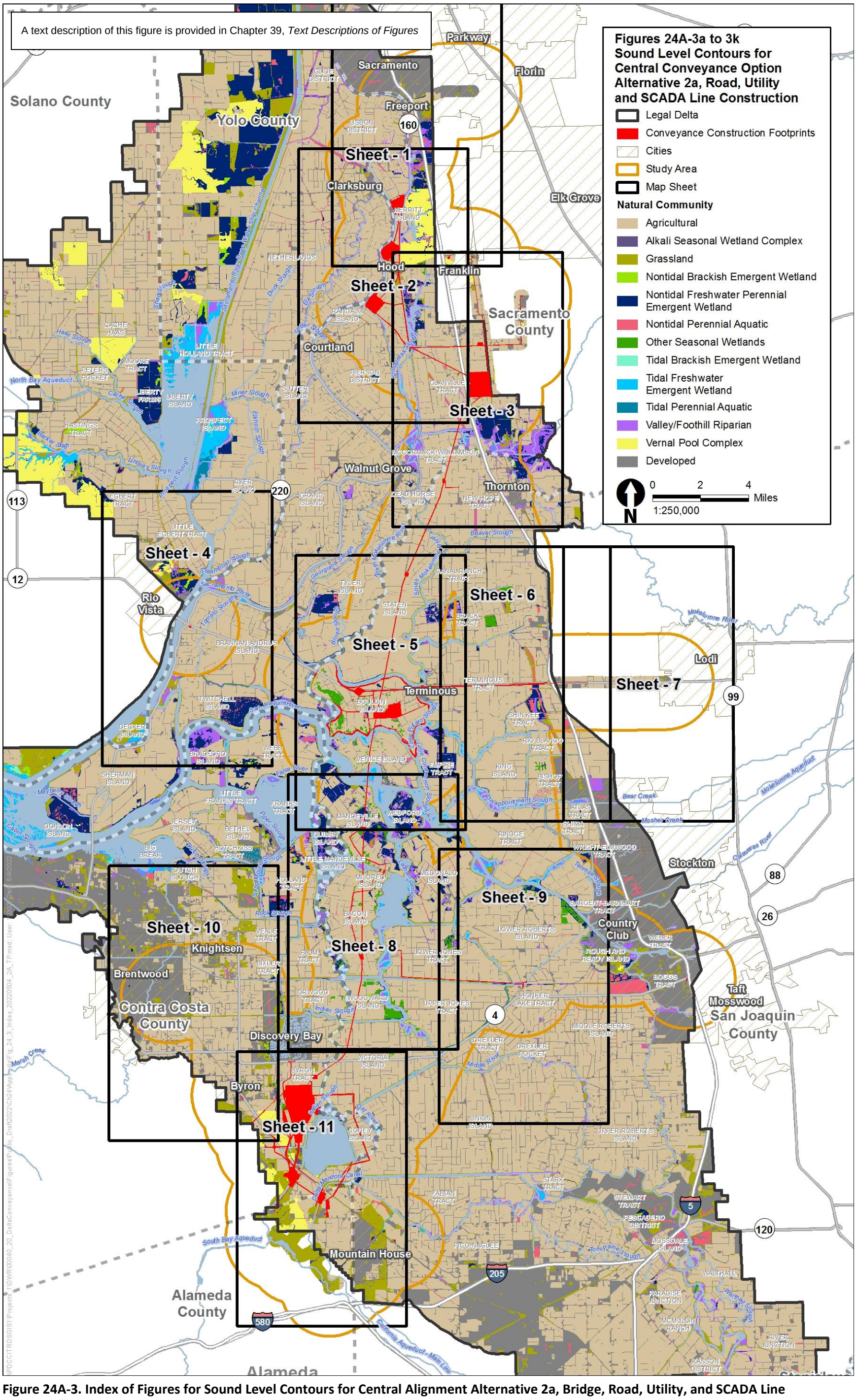
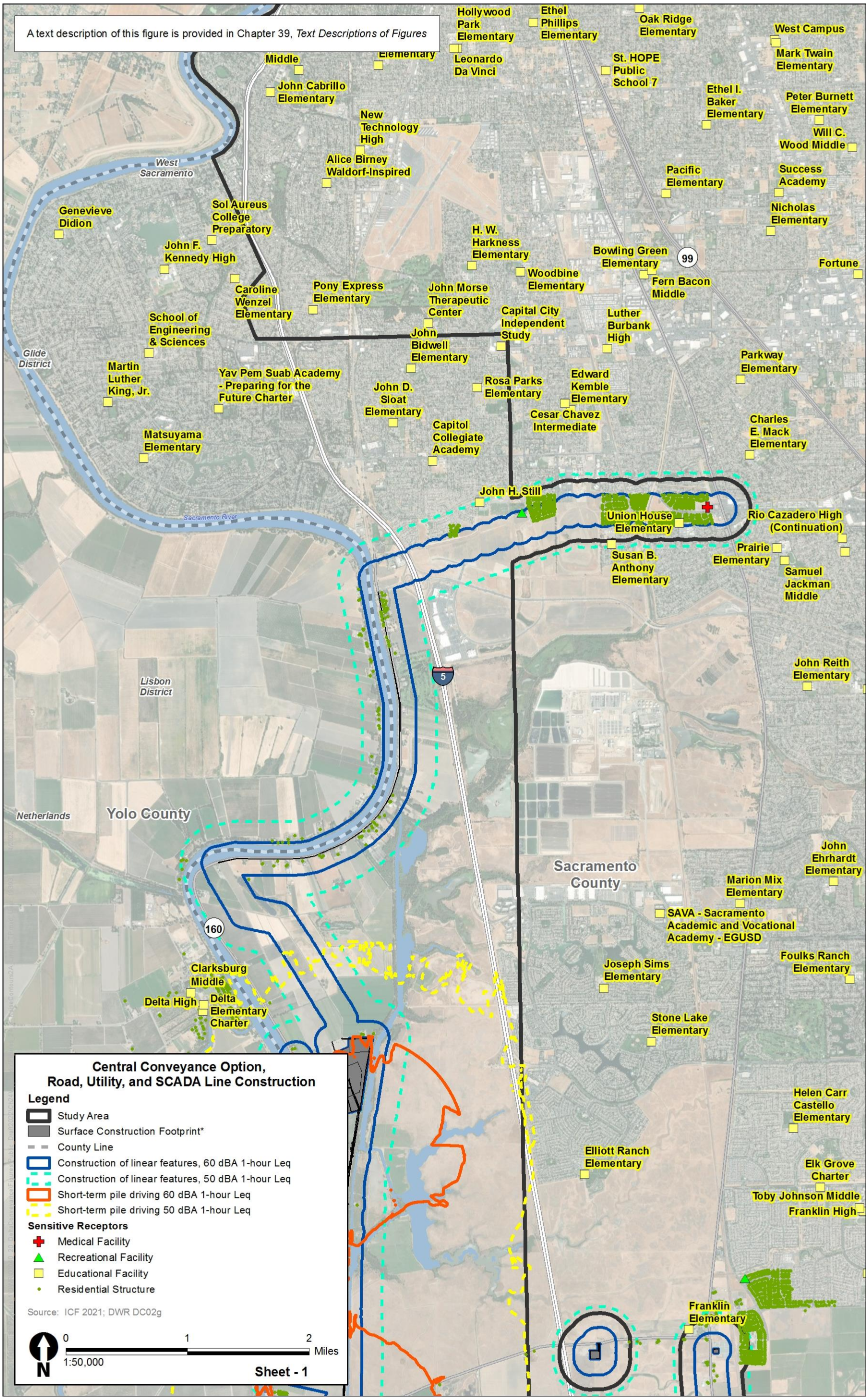
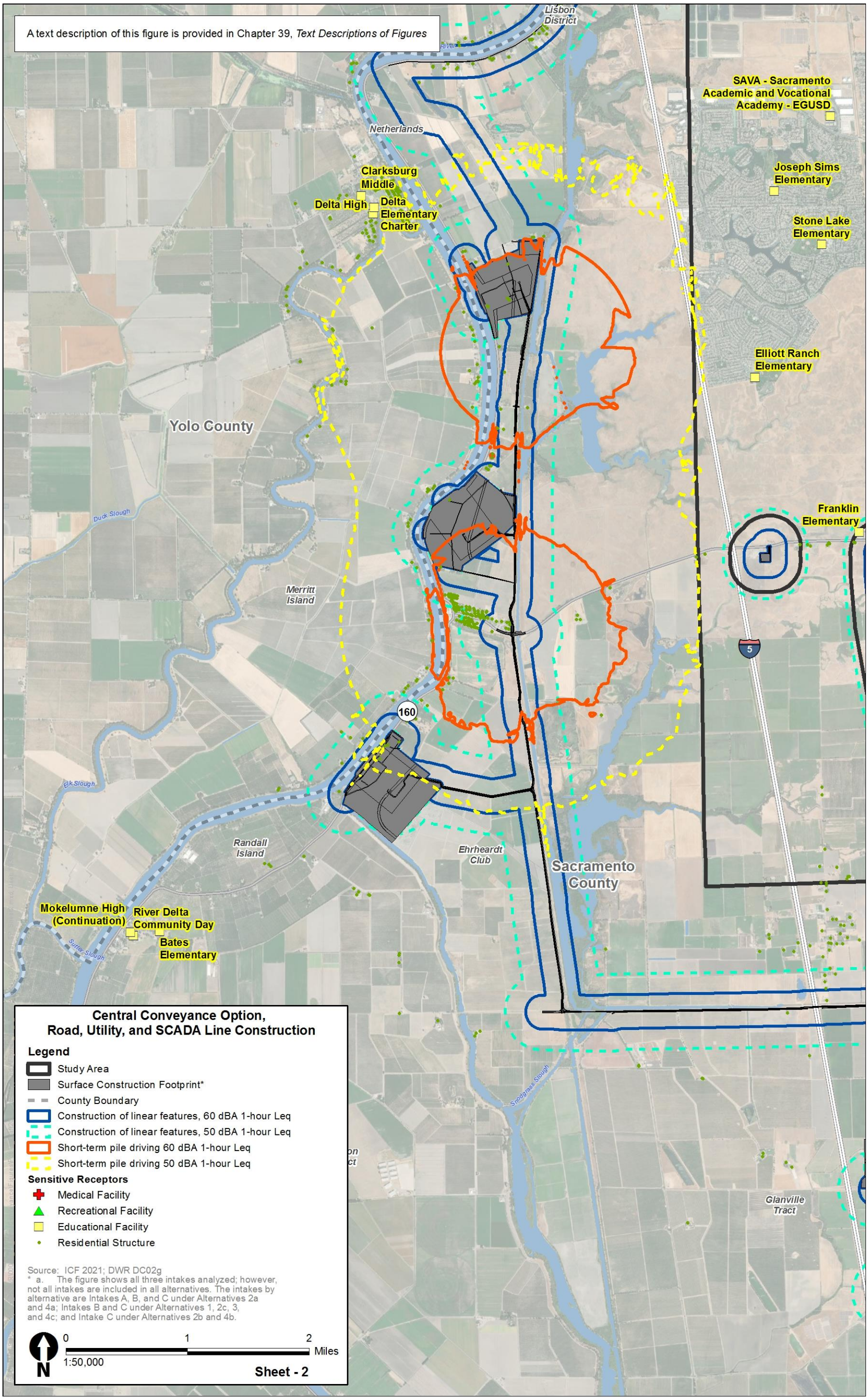


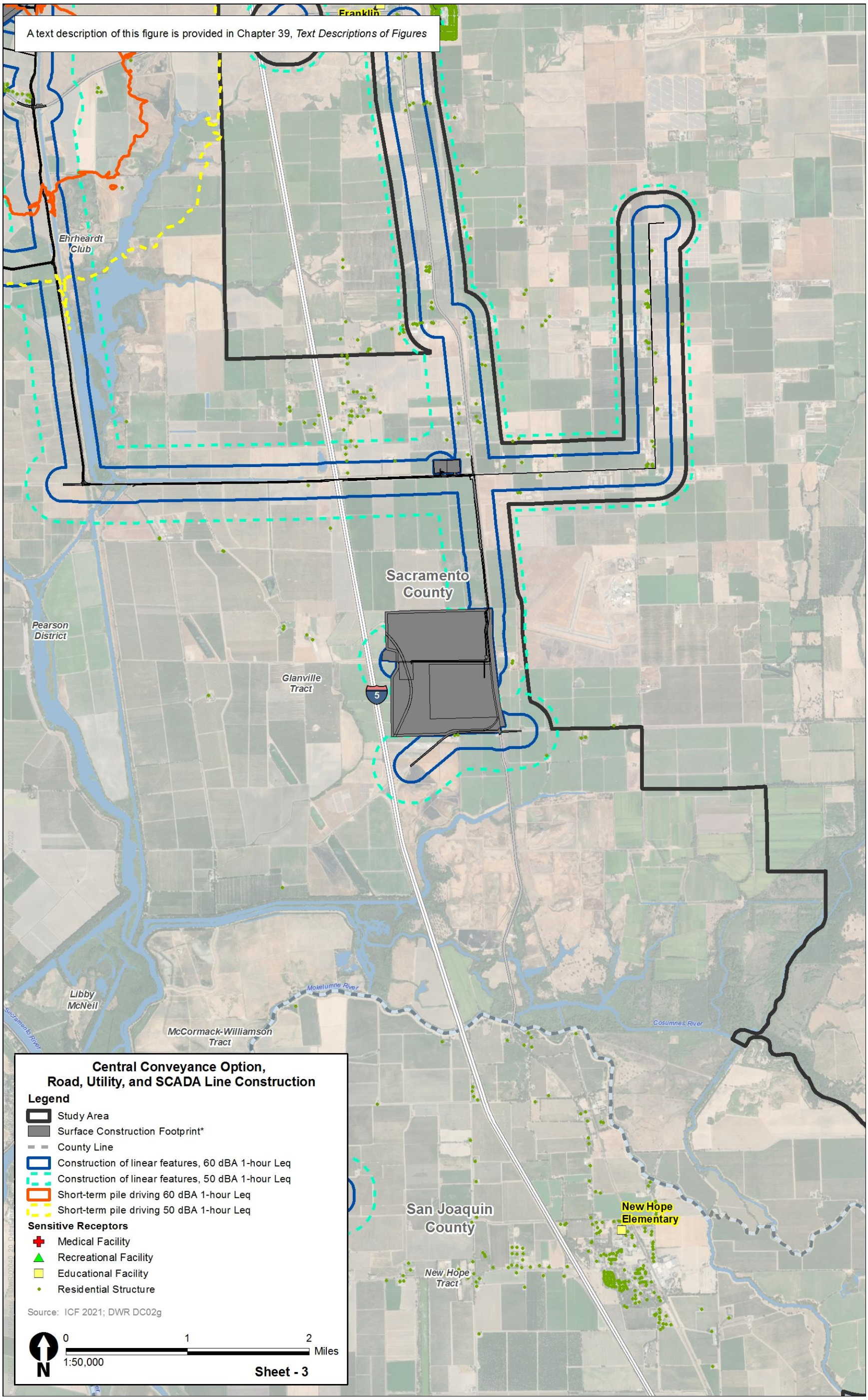
Figure 24A-3. Index of Figures for Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



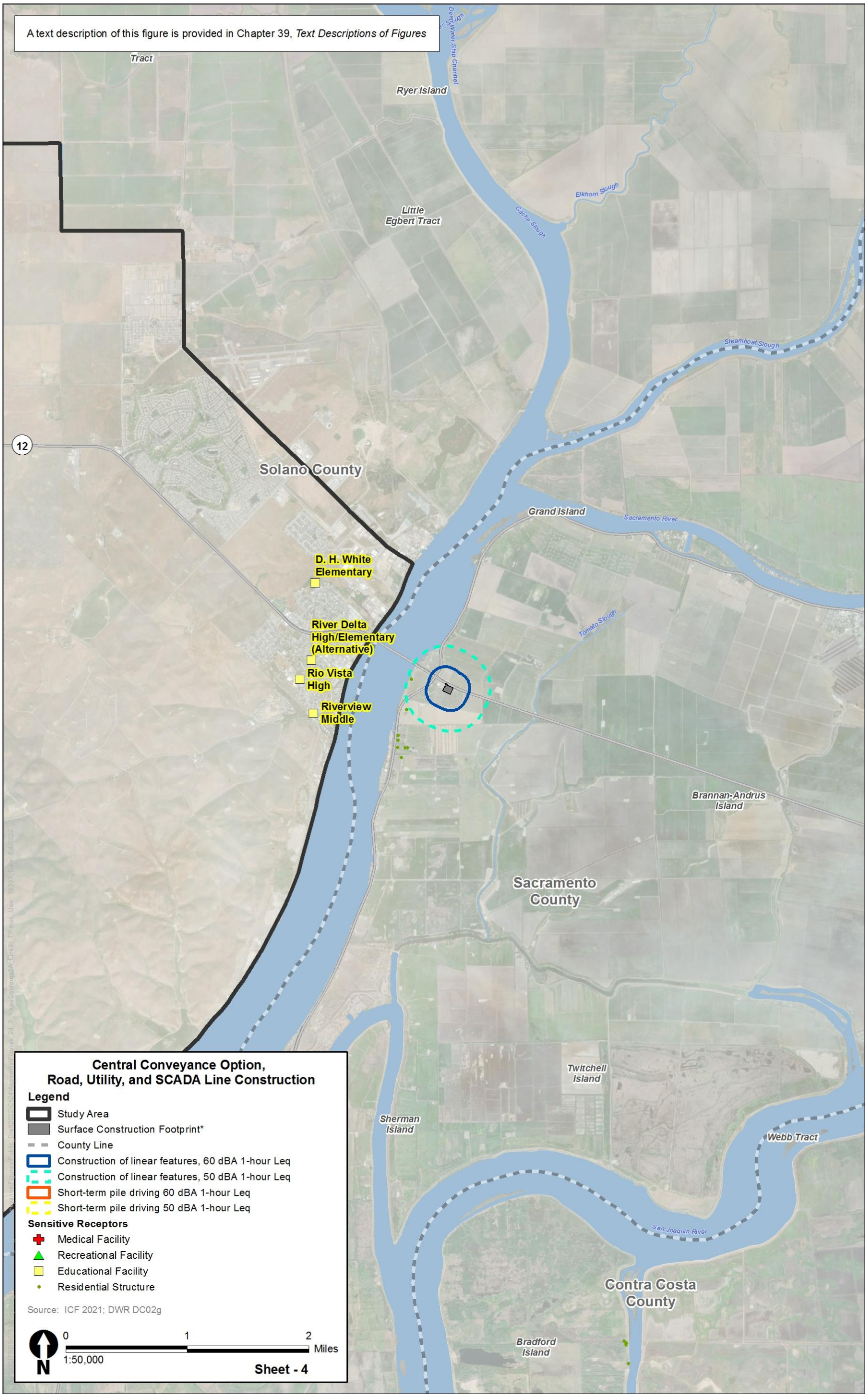
Figures 24A-3a. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



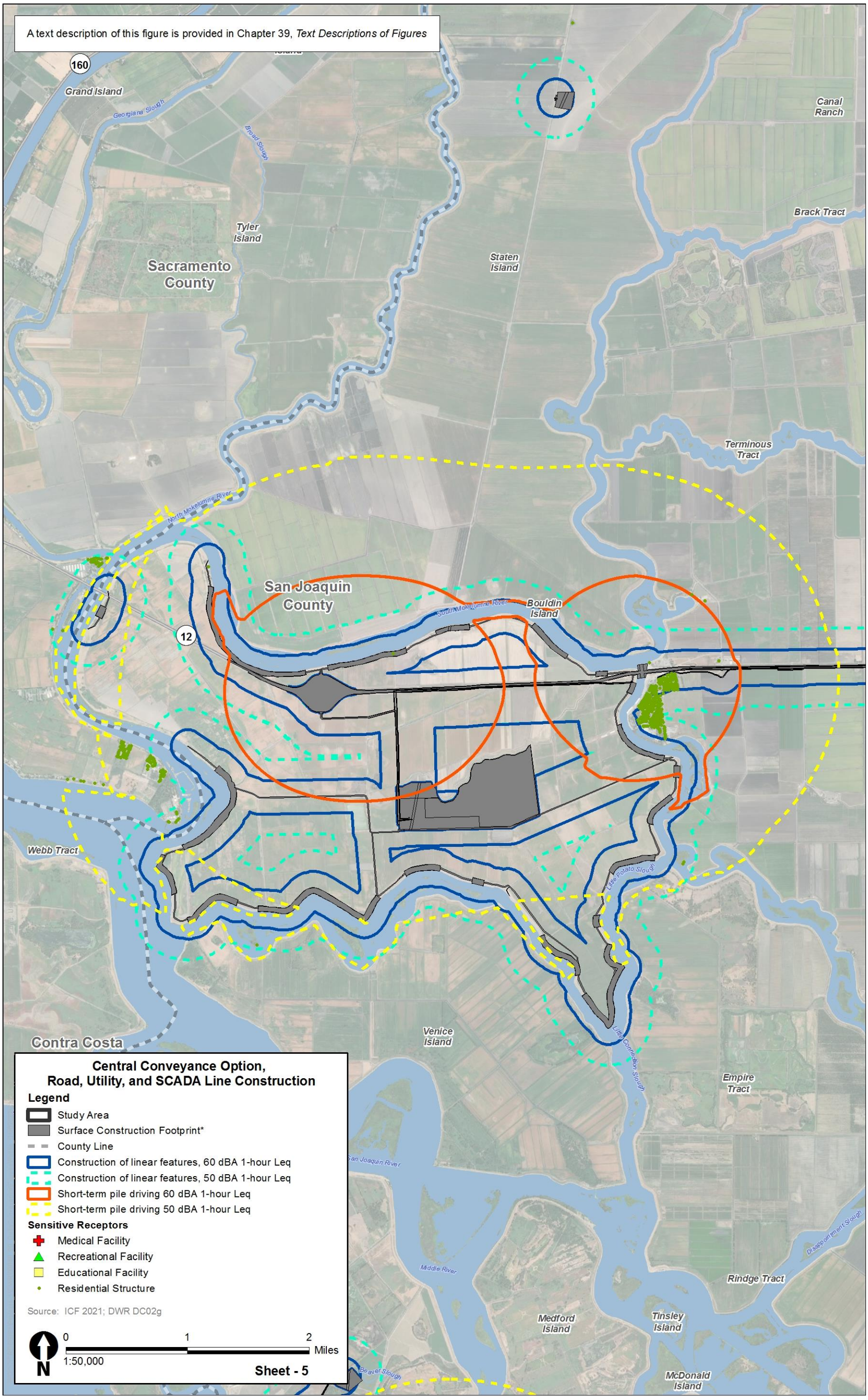
Figures 24A-3b. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



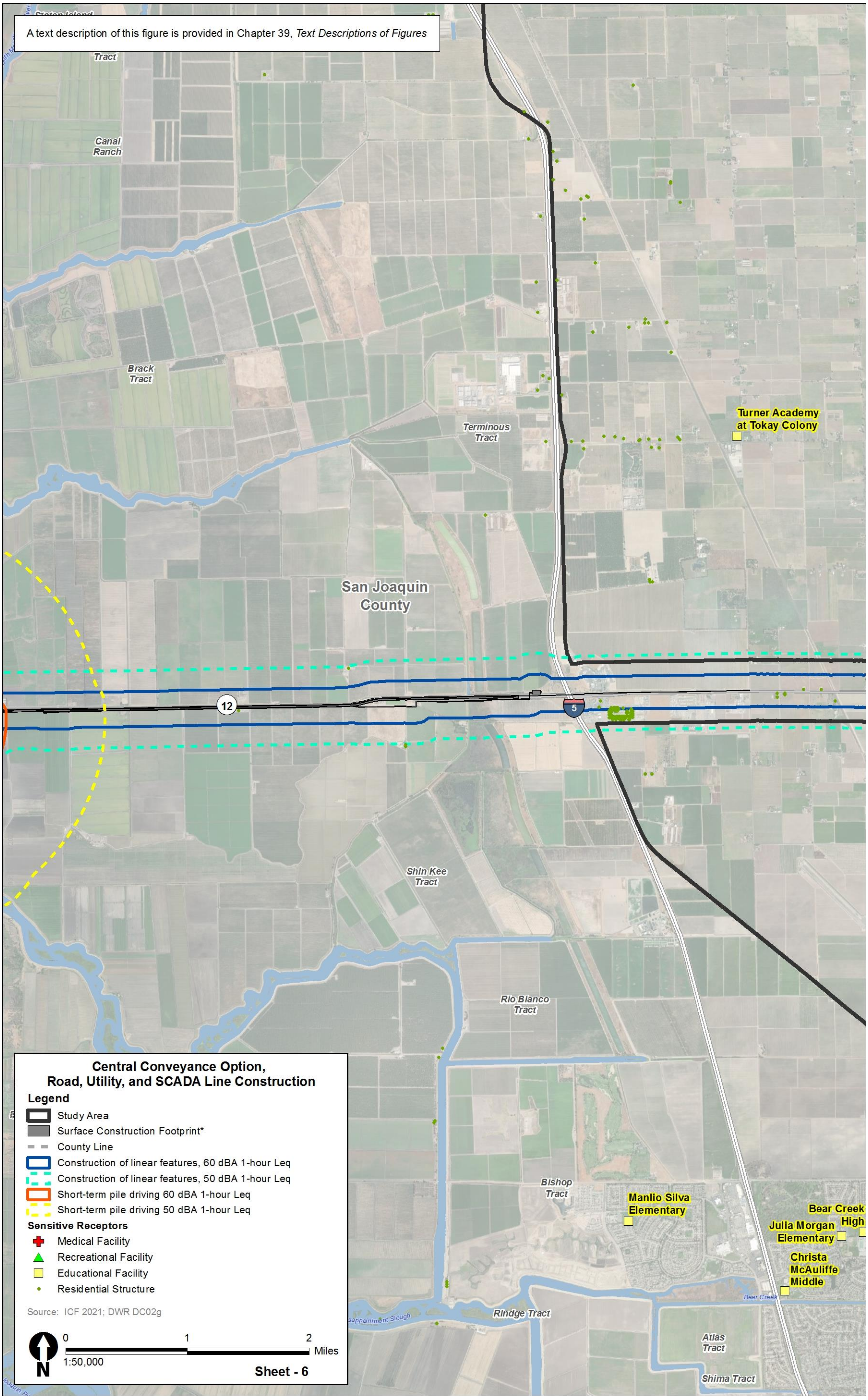
Figures 24A-3c. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



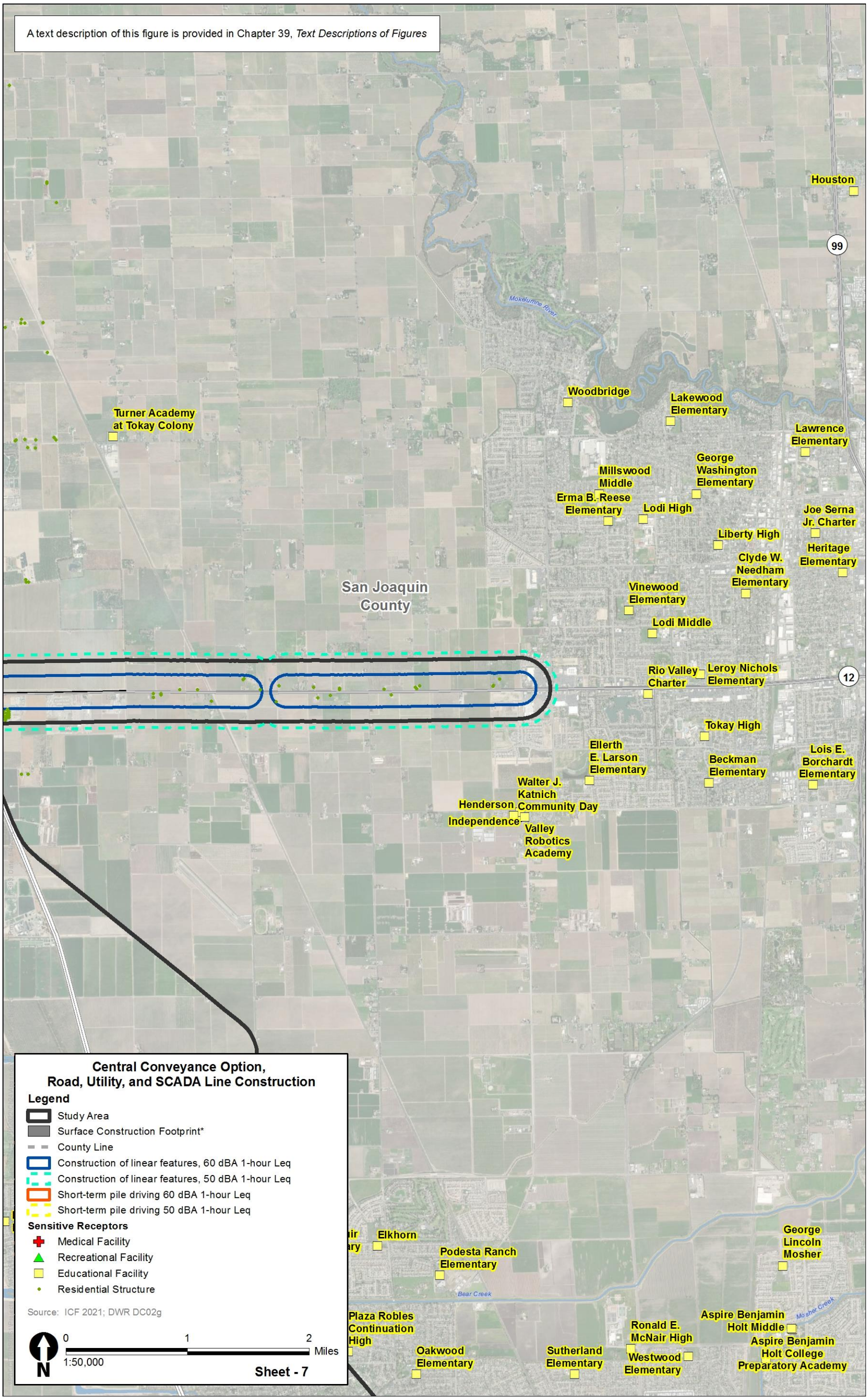
Figures 24A-3d. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



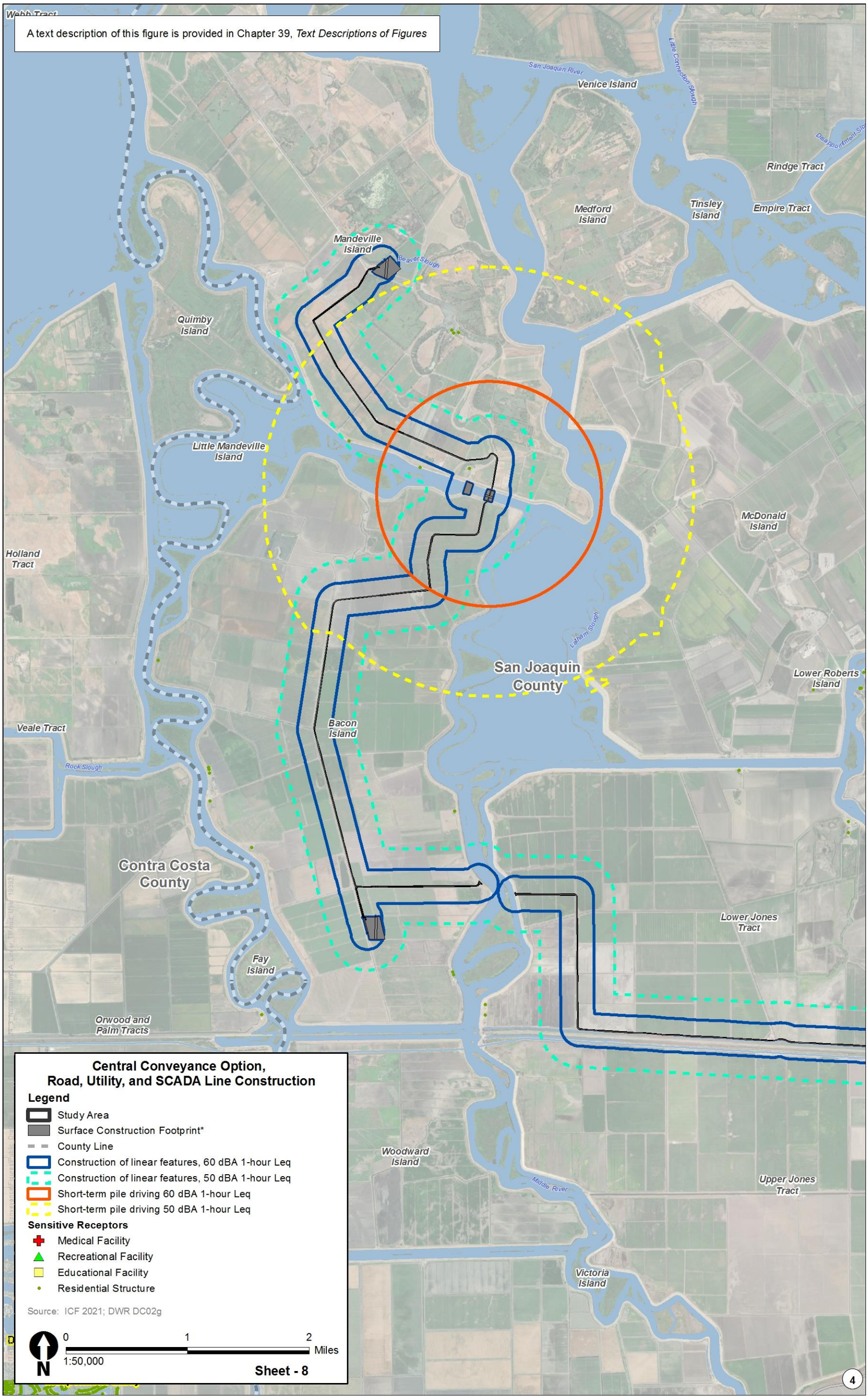
Figures 24A-3e. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



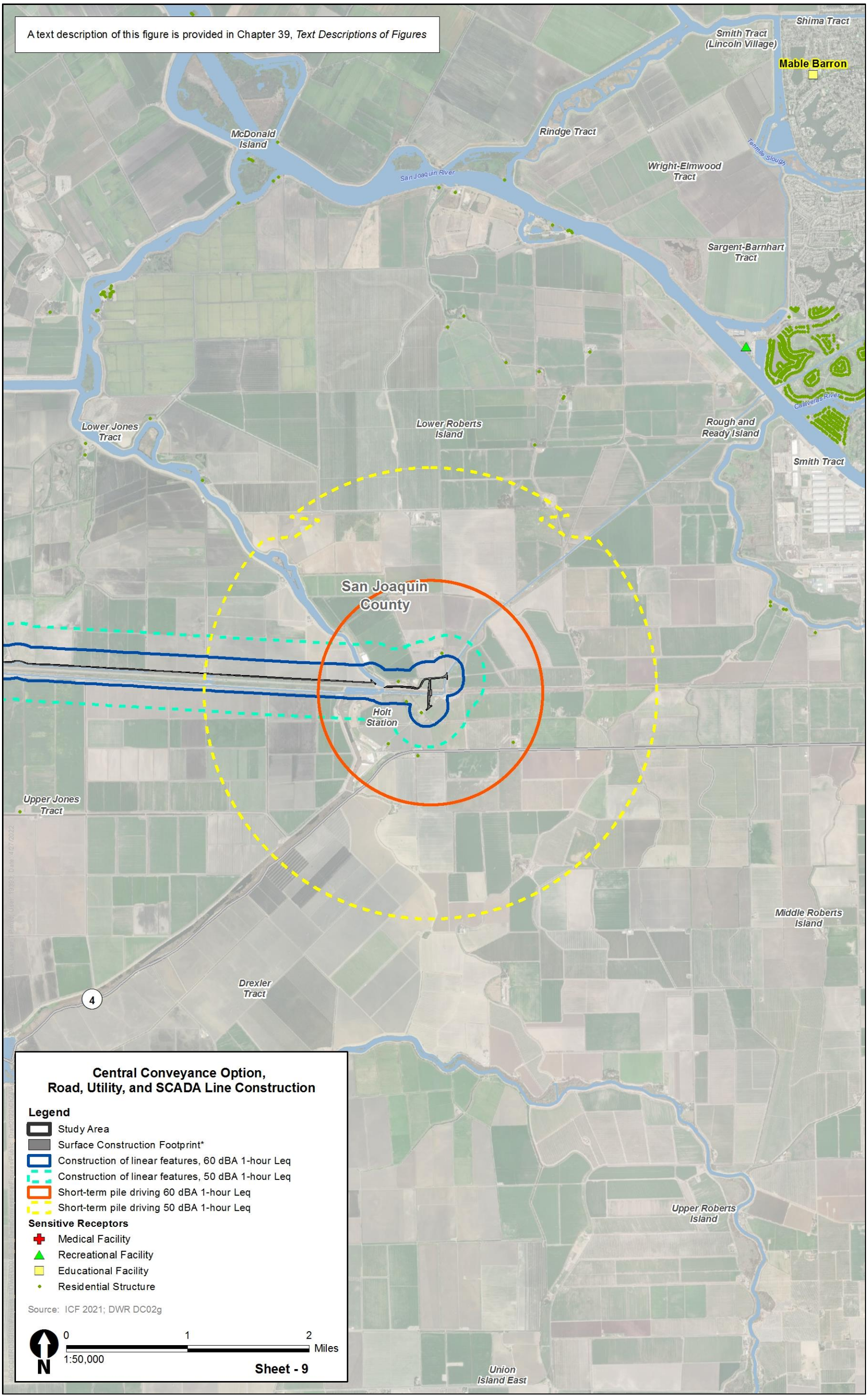
Figures 24A-3f. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



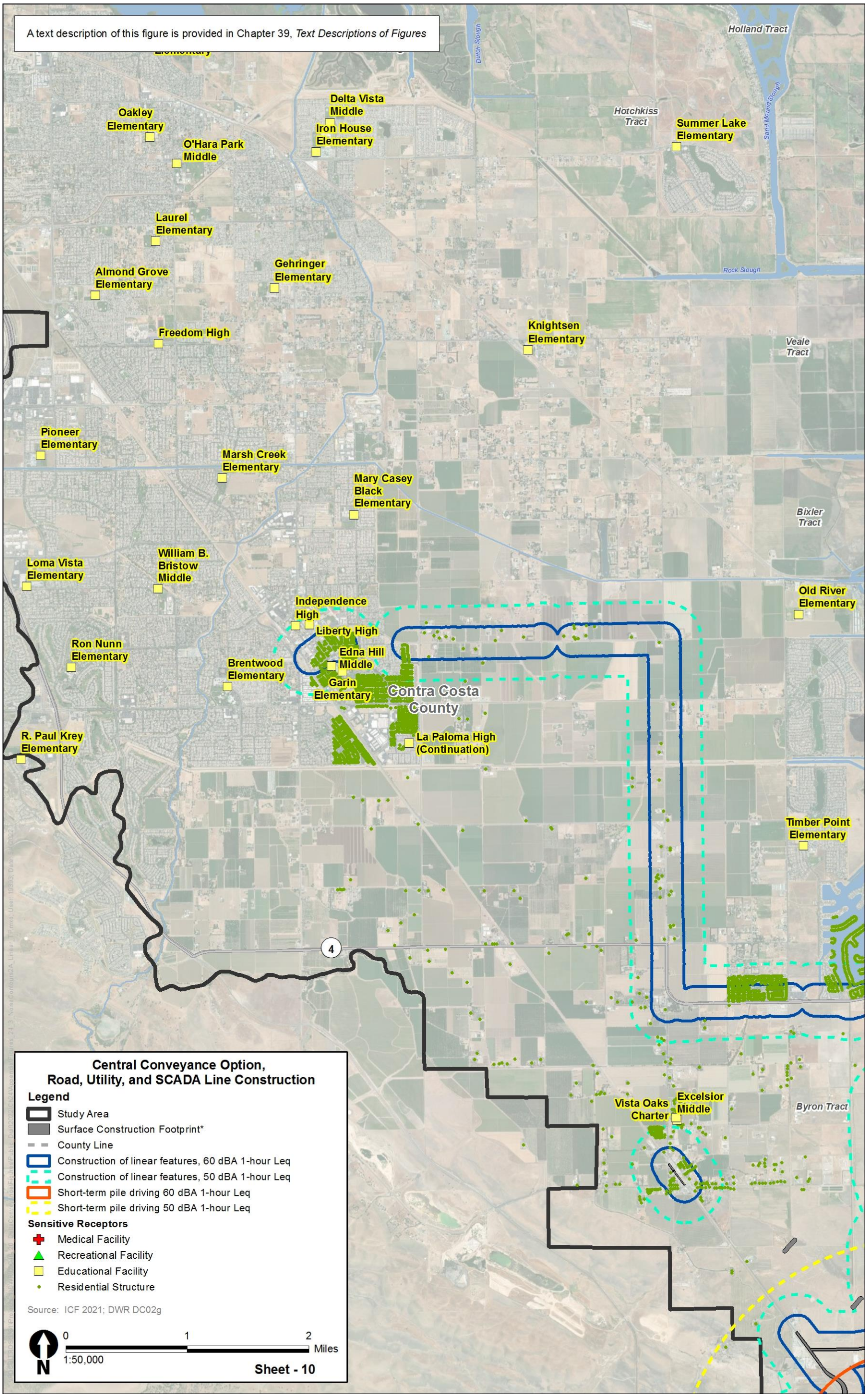
Figures 24A-3g. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



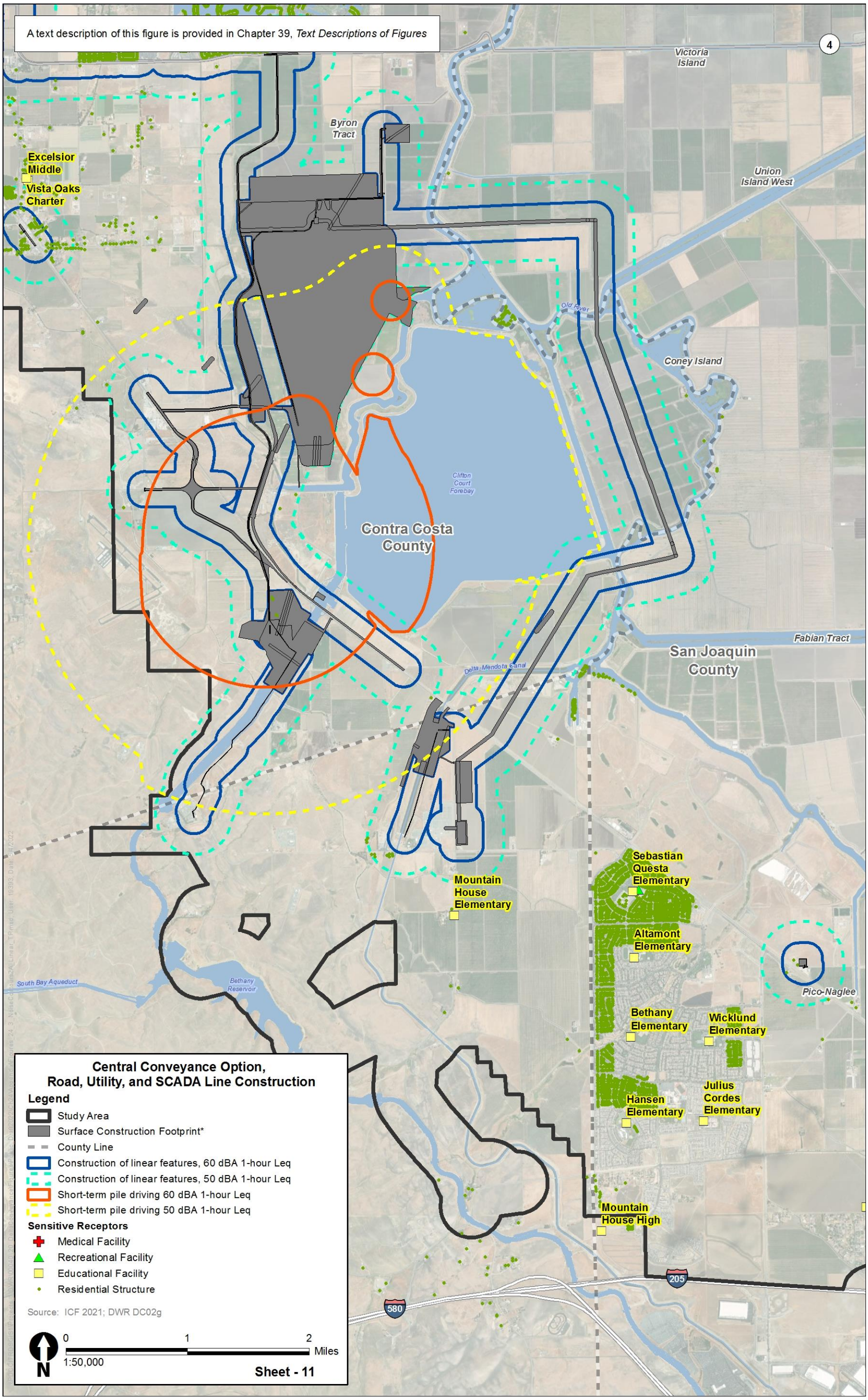
Figures 24A-3h. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-3i. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-3j. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-3k. Sound Level Contours for Central Alignment Alternative 2a, Bridge, Road, Utility, and SCADA Line Construction

Appendix 24A.2
Eastern Alignment

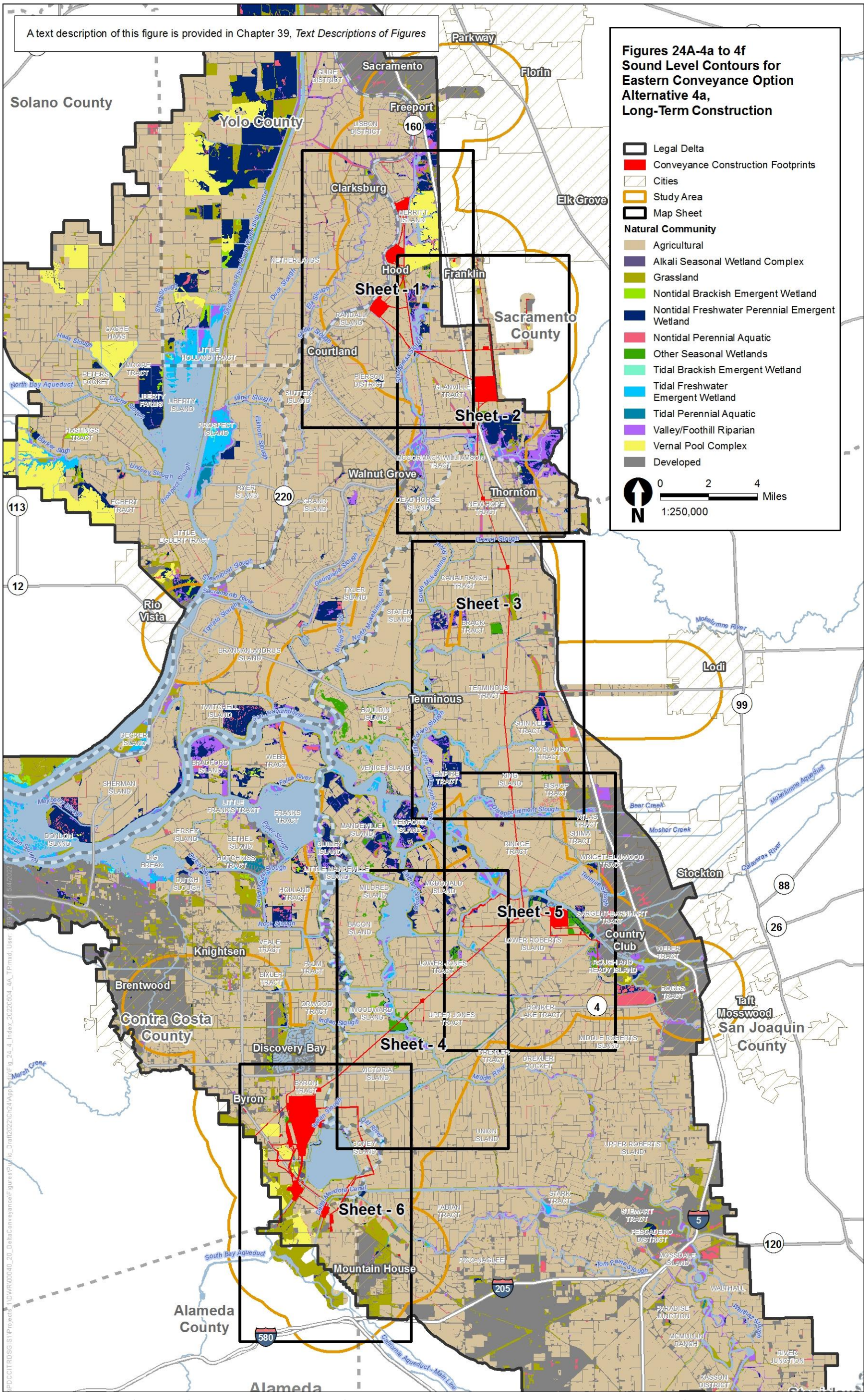
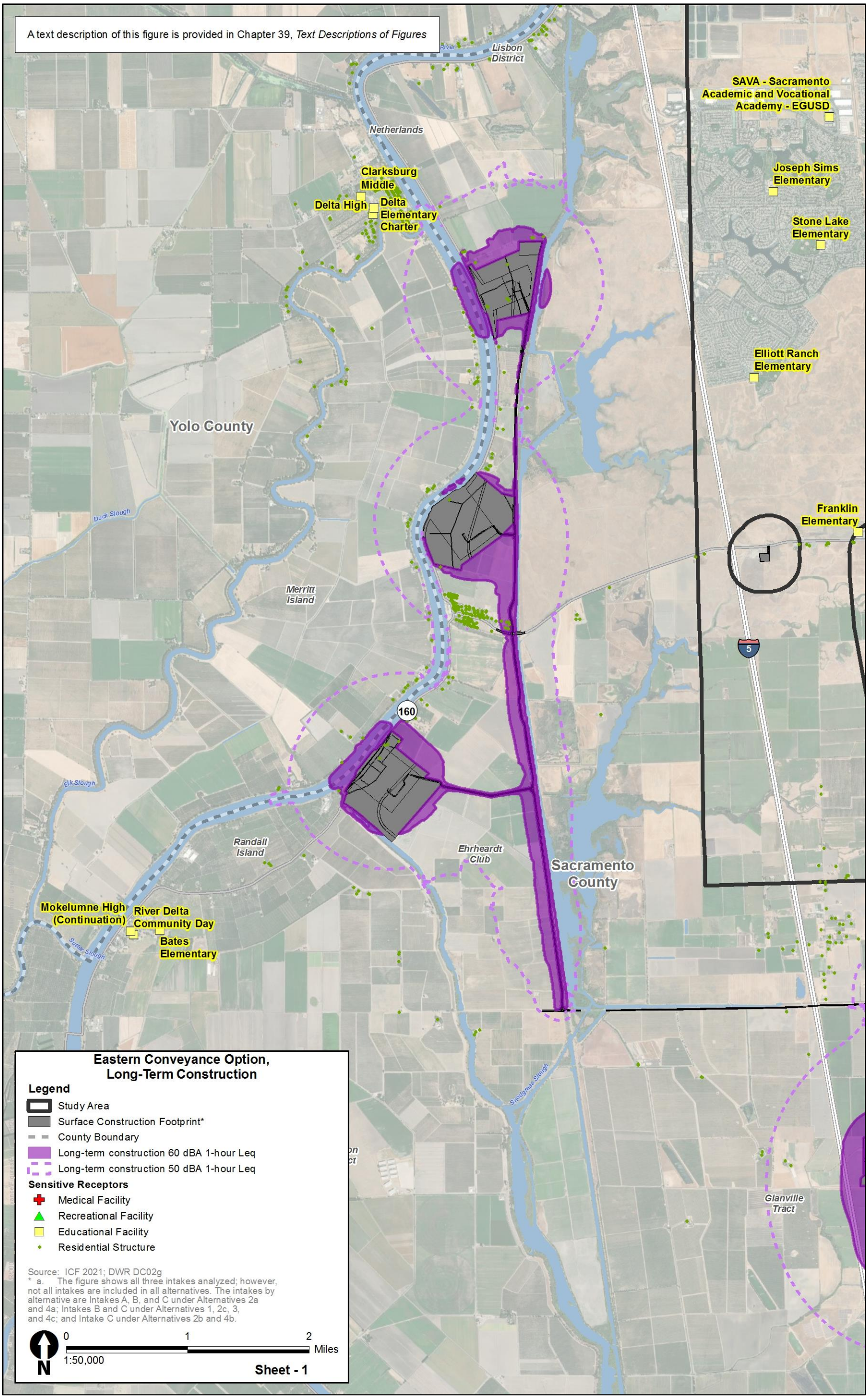
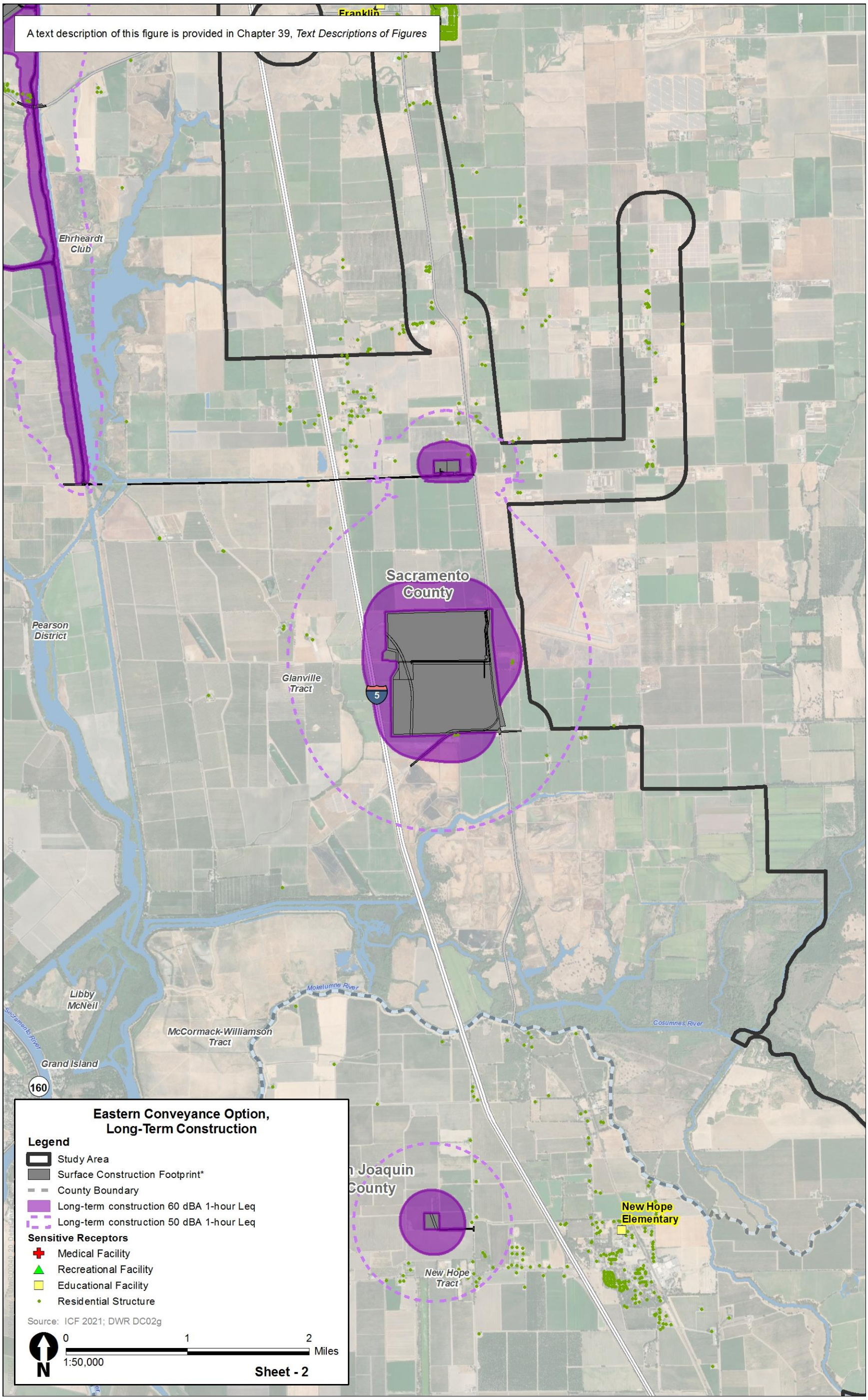


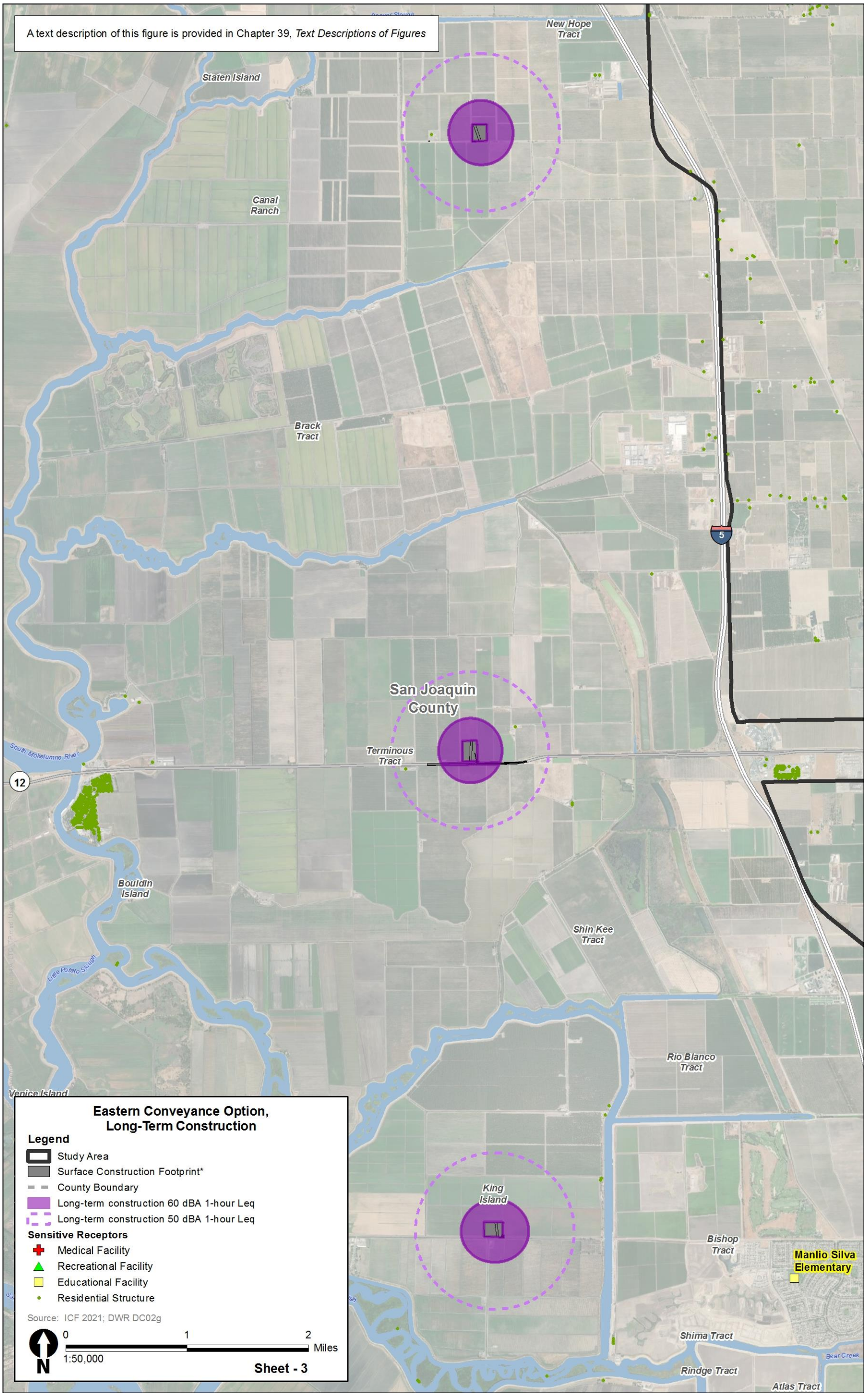
Figure 24A-4. Index of Figures for Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout



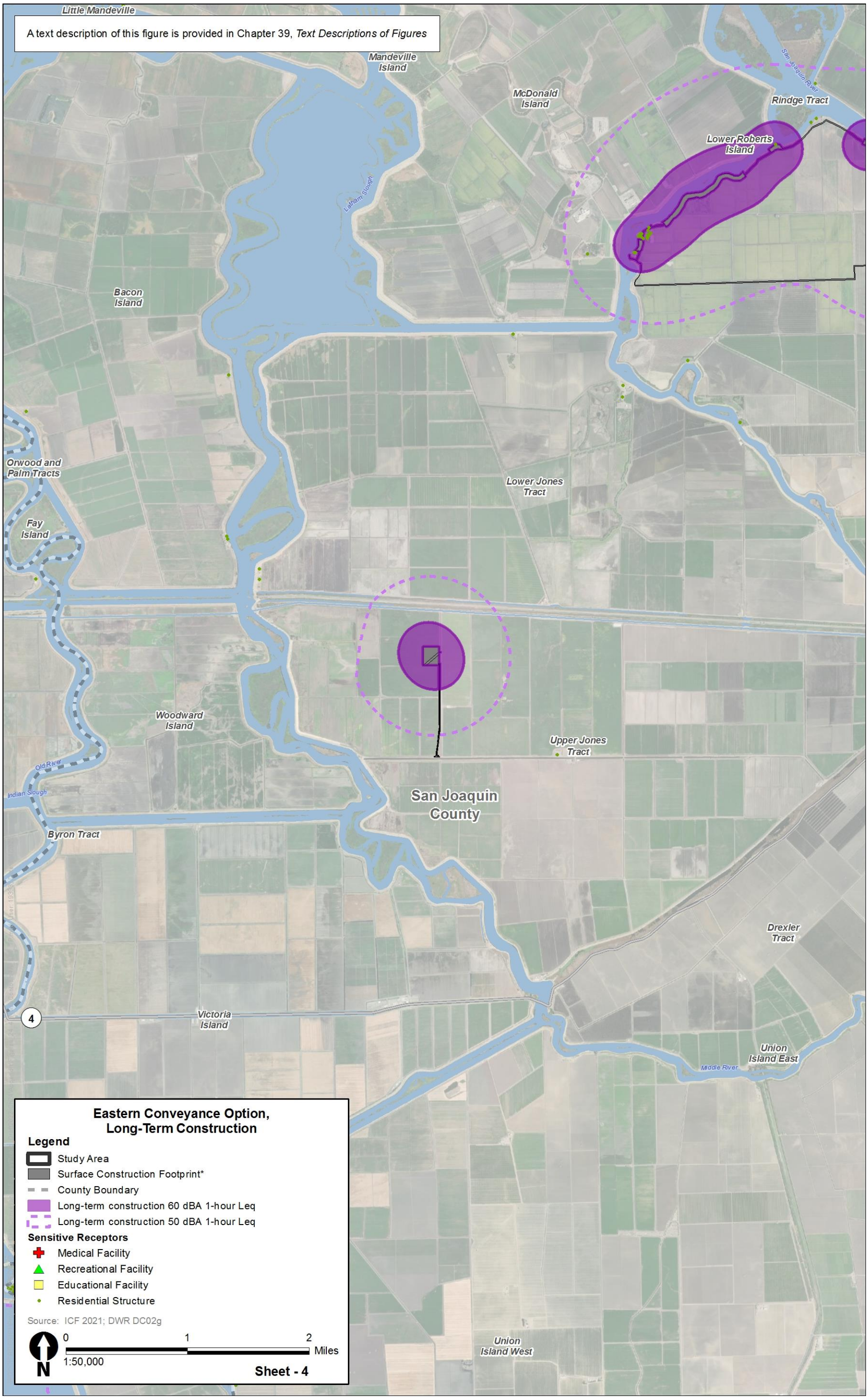
Figures 24A-4a. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout



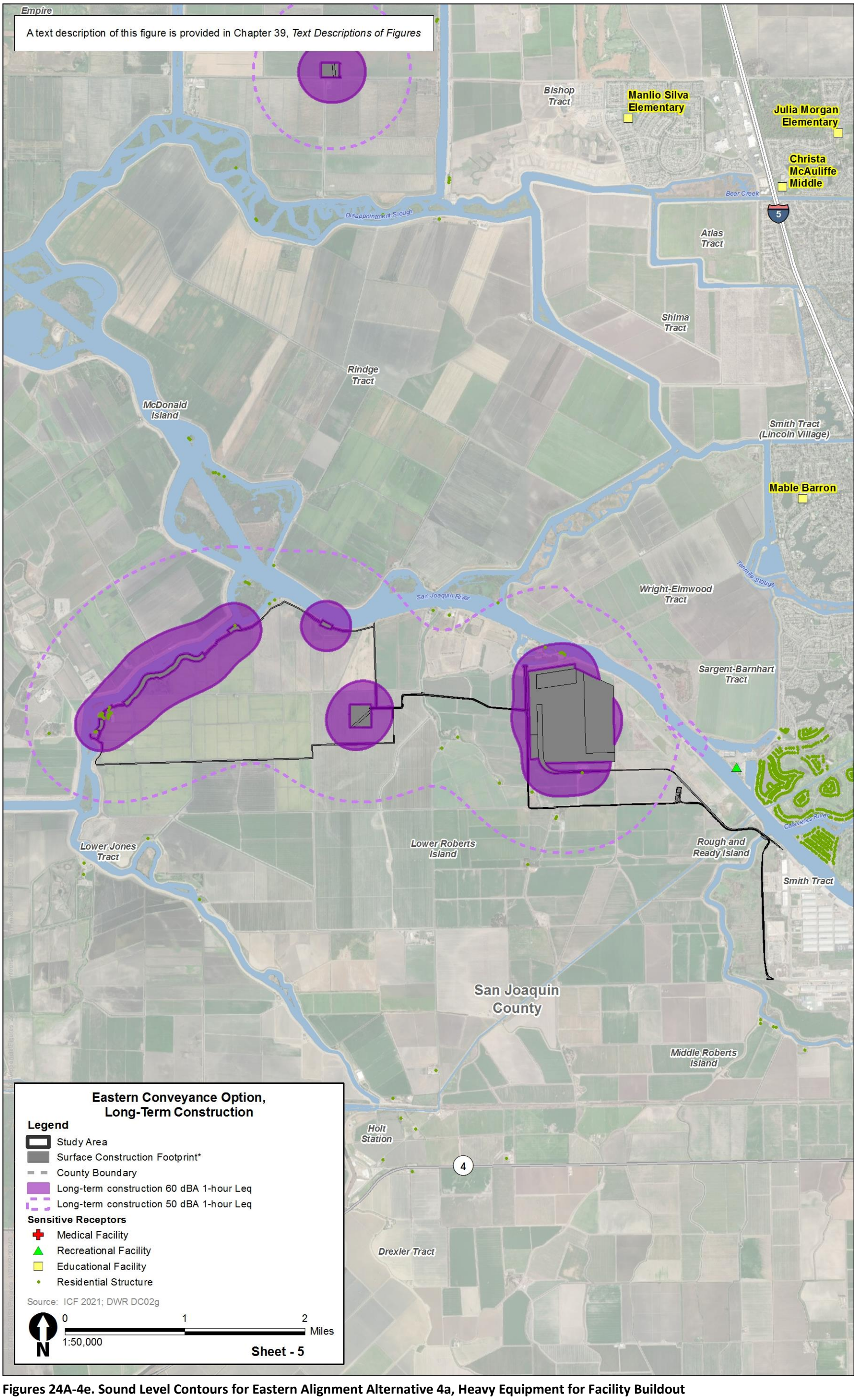
Figures 24A-4b. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout



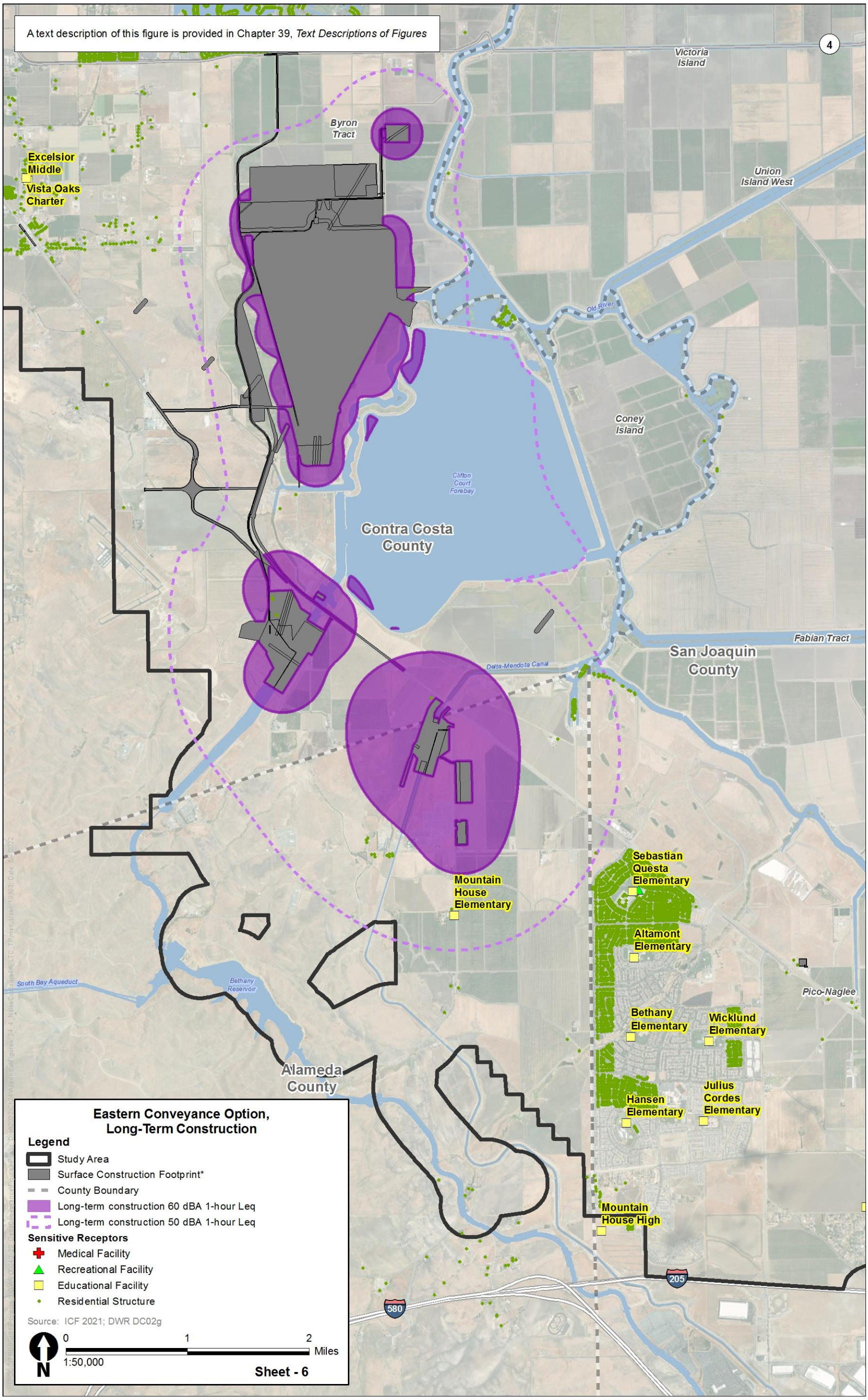
Figures 24A-4c. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout



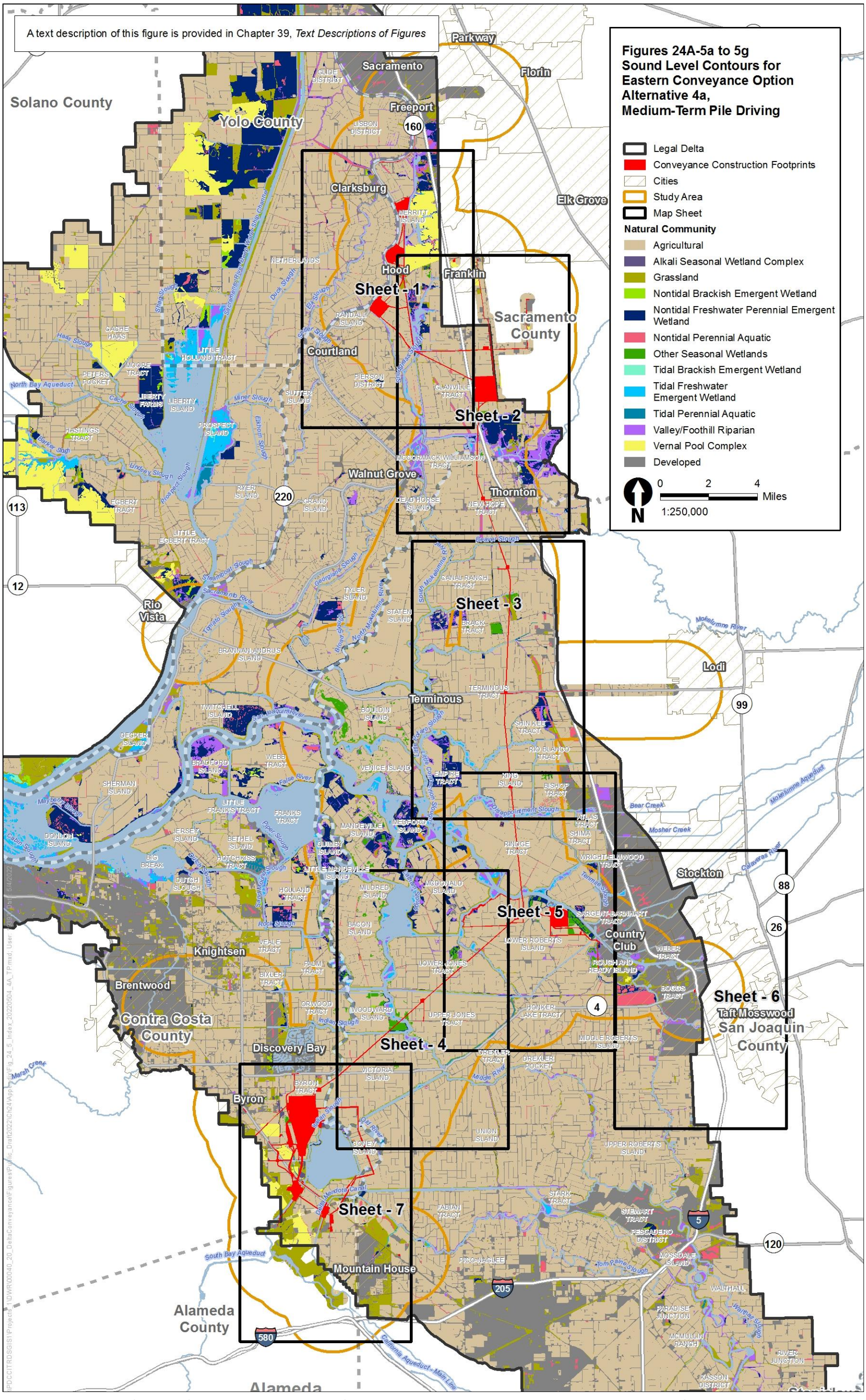
Figures 24A-4d. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout

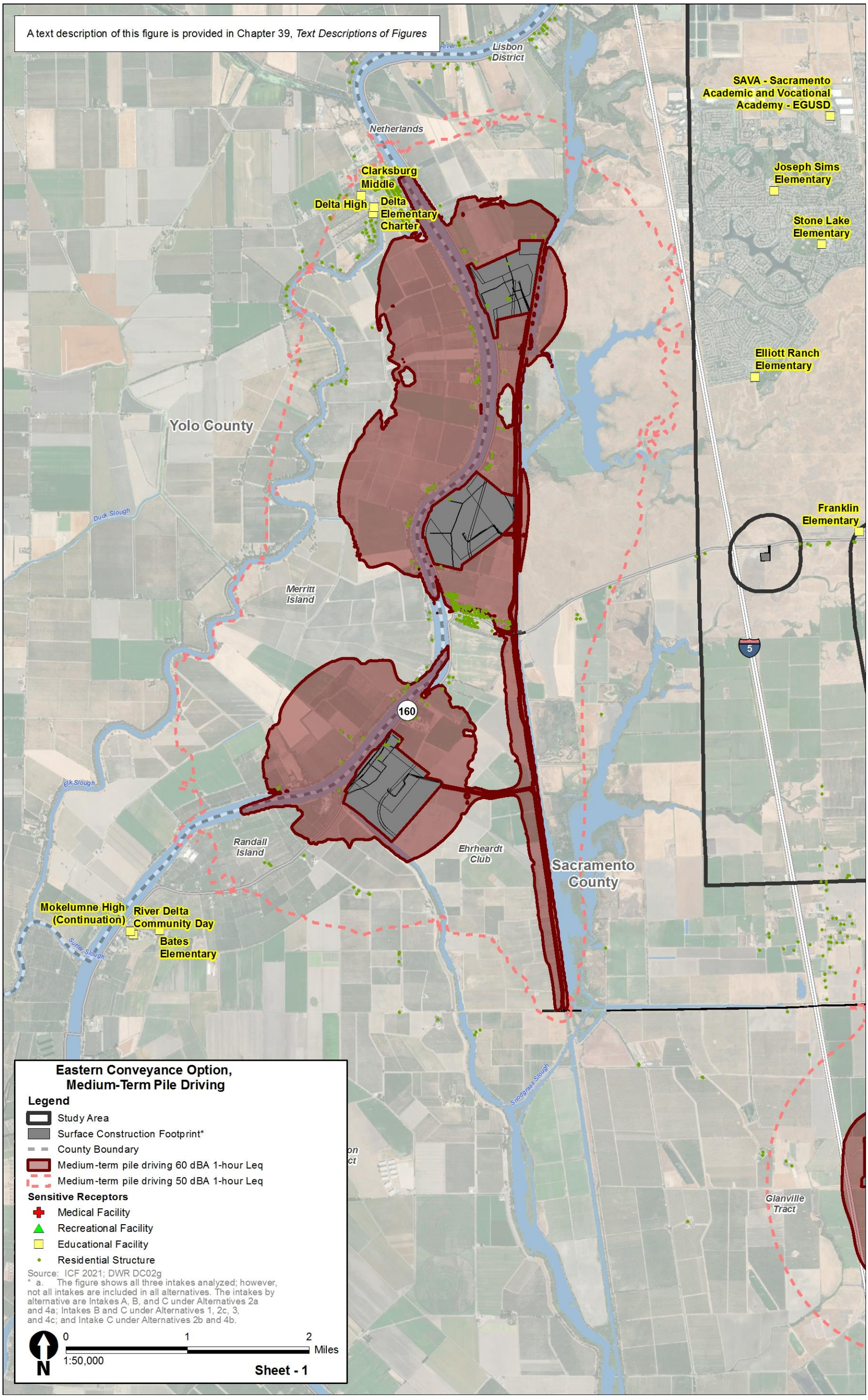


Figures 24A-4e. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout

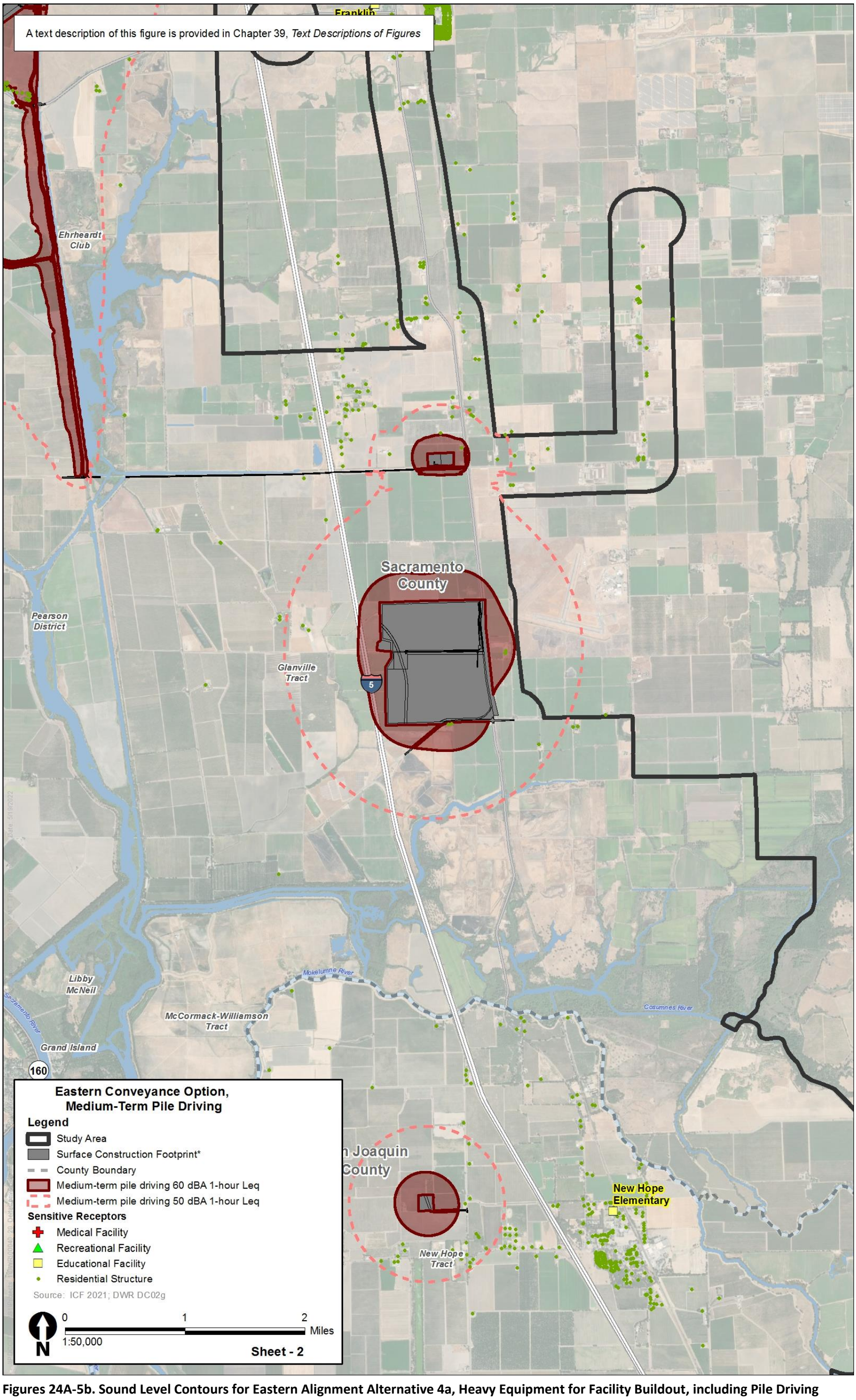


Figures 24A-4f. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout

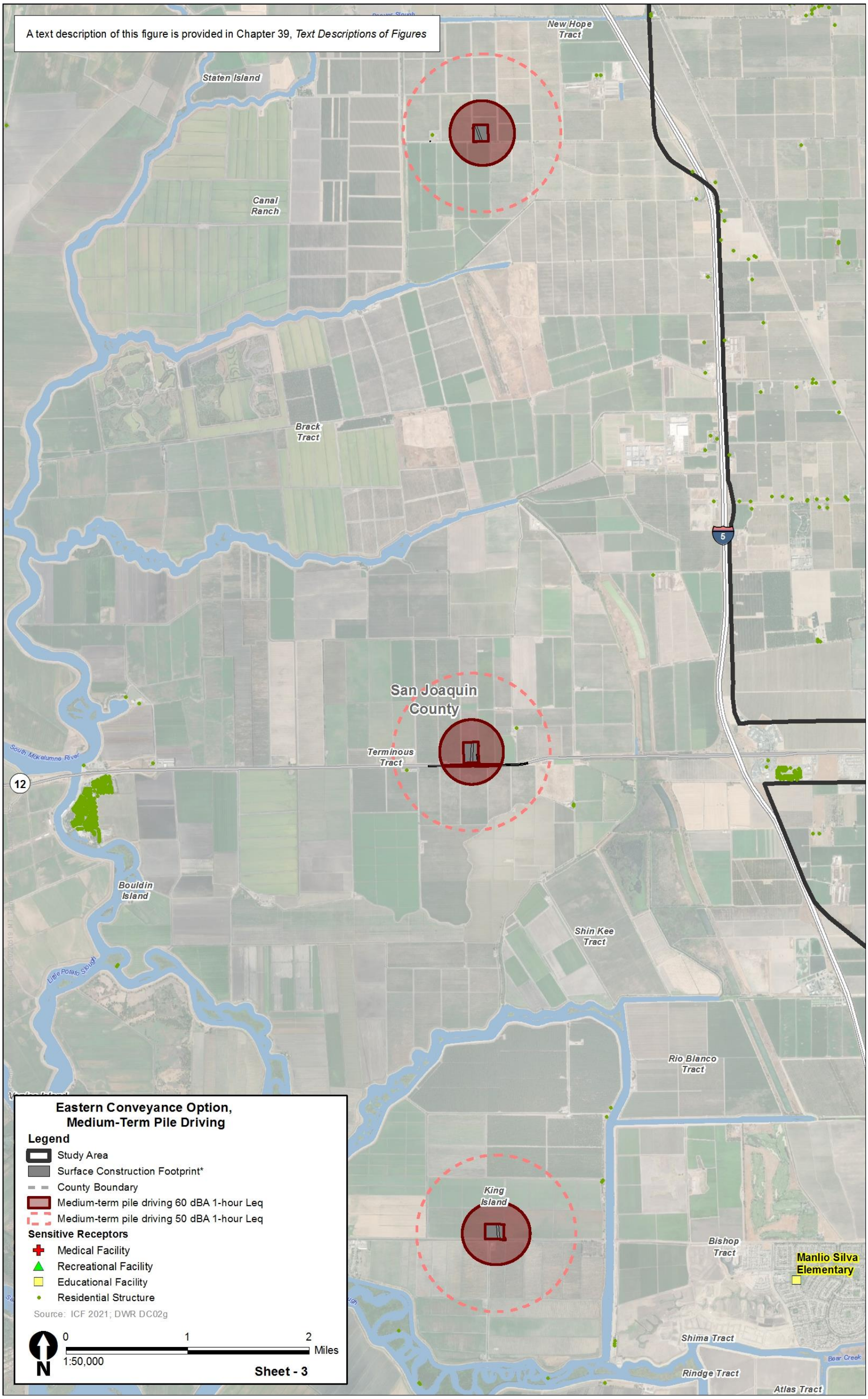

A text description of this figure is provided in Chapter 39, Text Descriptions of Figures
Figures 24A-5a to 5g
Sound Level Contours for Eastern Conveyance Option Alternative 4a, Medium-Term Pile Driving
Legal Delta
Conveyance Construction Footprints
Cities
Study Area
Map Sheet
Natural Community
Agricultural
Alkali Seasonal Wetland Complex
Grassland
Nontidal Brackish Emergent Wetland
Nontidal Freshwater Perennial Emergent Wetland
Nontidal Perennial Aquatic
Other Seasonal Wetlands
Tidal Brackish Emergent Wetland
Tidal Freshwater Emergent Wetland
Tidal Perennial Aquatic
Valley/Foothill Riparian
Vernal Pool Complex
Developed
0 2 4 Miles
1:250,000
N
Sheet - 1
Sheet - 2
Sheet - 3
Sheet - 4
Sheet - 5
Sheet - 6
Sheet - 7
Solano County
Yolo County
Sacramento County
San Joaquin County
Contra Costa County
Alameda County
Sacramento
Parkway
Florin
Freeport
Clarksburg
Elk Grove
Hood
Franklin
Courtland
Walnut Grove
Thornton
Rio Vista
Terminous
Lodi
Stockton
Knightsen
Brentwood
Discovery Bay
Byron
Mountain House
Country Club
Taft Mosswood
Tyler Island
Staten Island
Bouldin Island
Venice Island
Twitchell Island
Brannan-Andrus Island
Decker Island
Bradford Island
Sherman Island
Jersey Island
Bethel Island
Netherlands
Randall Island
Pierson District
Glanville Tract
Sutter Island
Liberty Island
Prospect Island
Hastings Tract
Egbert Tract
Little Egbert Tract
Ryer Island
Grand Island
Dead Horse Island
New Hope Tract
Canal Ranch Tract
Brack Tract
Terminous Tract
Shin Kee Tract
Rio Blanco Tract
Empire Tract
King Island
Bishop Tract
Atlas Tract
Shima Tract
Ridge Tract
Wright-Elmwood Tract
Mandeville Island
Medford Island
Quimby Island
Little Mandeville Island
Mildred Island
McDonald Island
Bacon Island
Sargent-Barnhart Tract
Lower Roberts Island
Lower Jones Tract
Rough and Ready Island
Weber Tract
Boggs Tract
Upper Jones Tract
Honker Lake Tract
Middle Roberts Island
Upper Roberts Island
Woodward Island
Victoria Island
Byron Tract
Union Island
Soney Island
Drexler Tract
Drexler Pocket
Fabian Tract
Stark Tract
Stewart Tract
Pescadero District
Mossdale Island
Walthall
Paradise Junction
McMullin Ranch
River Junction
Rasson District
Pico-Naglee
Veale Tract
Palm Tract
Bixler Tract
Orwood Tract
Holland Tract
Dutch Slough
Big Break
Hotchkiss Tract
Franks Tract
Little Franks Tract
Webb Tract
Cache Haas
Little Holland Tract
Moore Tract
Peters Pocket
Liberty Farms
Glide District
Lisbon District
Merritt Island
Courtland
Sacramento River
Steamboat Slough
Georgiana Slough
Tonzi Slough
Broad Slough
North Mokelumne River
South Mokelumne River
Beaver Slough
Mokelumne River
Mokelumne Aqueduct
Bear Creek
Mosher Creek
Calaveras River
Tom Paine Slough
Walthall Slough
Middle River
Old River
Indian Slough
Marsh Creek
Delta Mendota Canal
South Bay Aqueduct
California Aqueduct - Main Line
Prospect Slough
Cache Slough
Miner Slough
Elkhorn Slough
Barker Slough
Lindsey Slough
Haas Slough
North Bay Aqueduct
Shag Slough
Duck Slough
Elk Slough
Sutter Slough
Sycamore Slough
Tule Red Slough
Little Connection Slough
Disappointment Slough
Piper Slough
Sand Mound Slough
Rock Slough
Old River
Fabian and Bell Canal
Delta Cross Channel
Sacramento River Deep Water Ship Channel
Yolo Bypass
Cache Slough
Lindsey Slough
Prospect Slough
Barker Slough
Miner Slough
Elkhorn



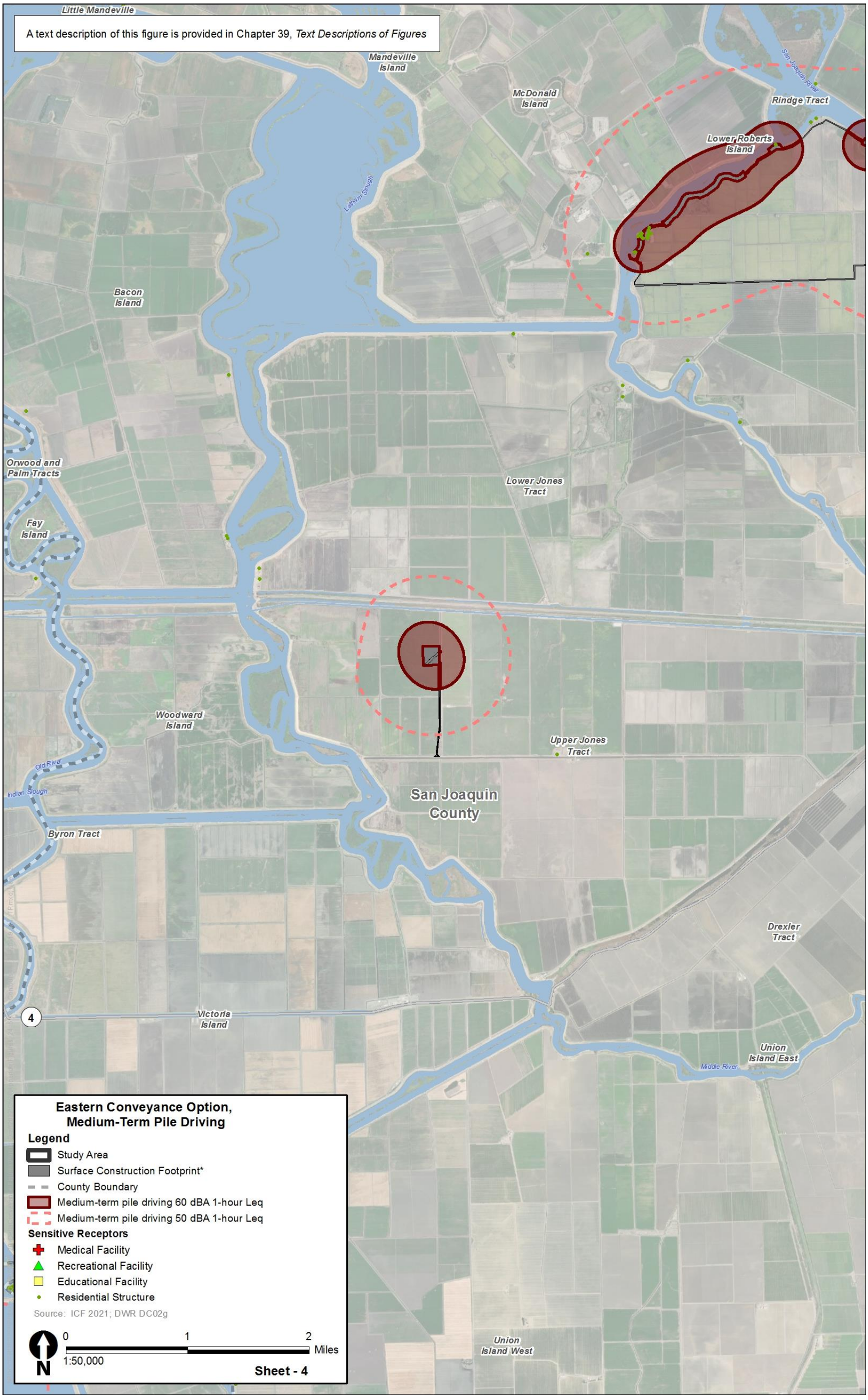
Figures 24A-5a. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout, including Pile Driving



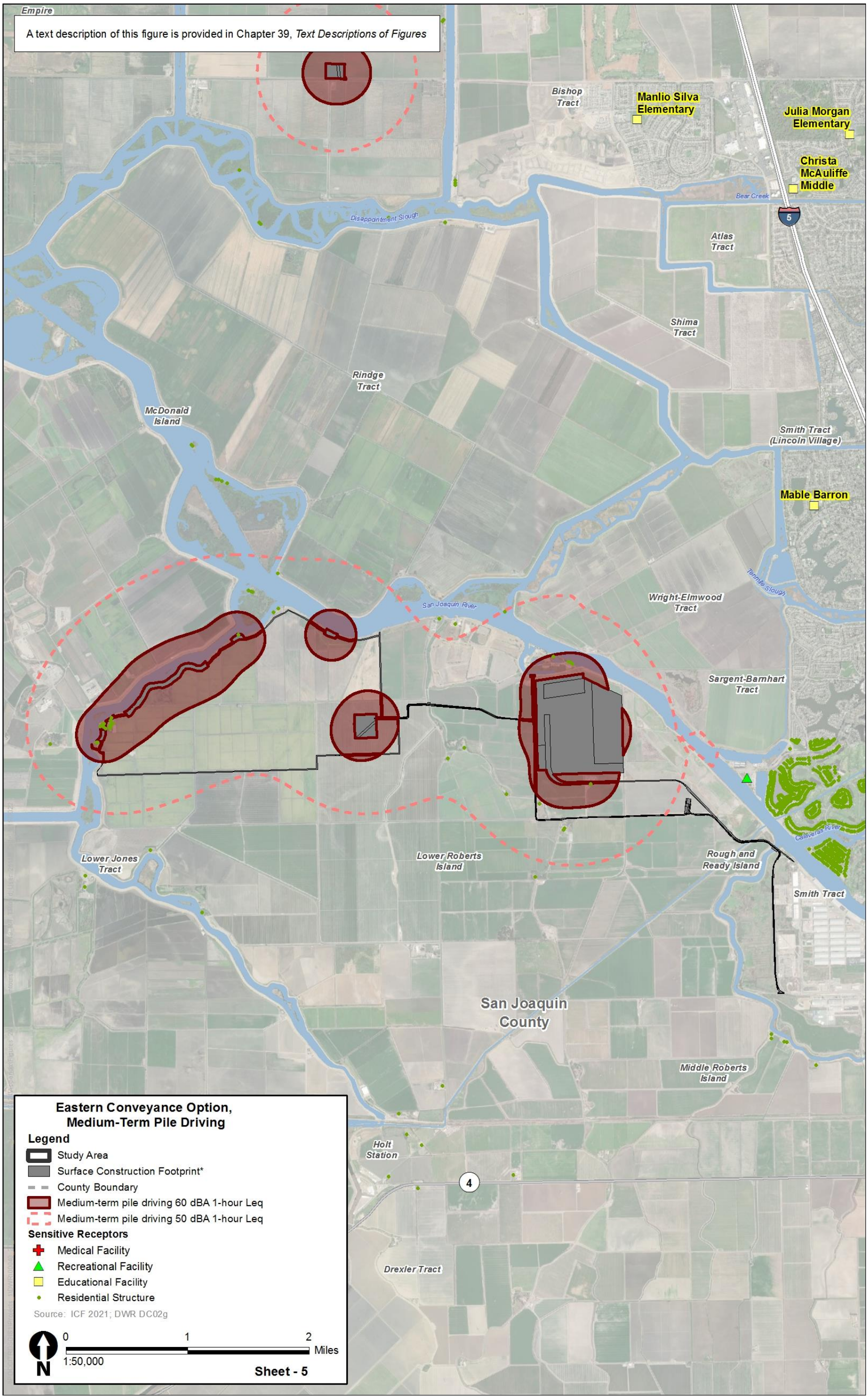
Figures 24A-5b. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-5c. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout, including Pile Driving



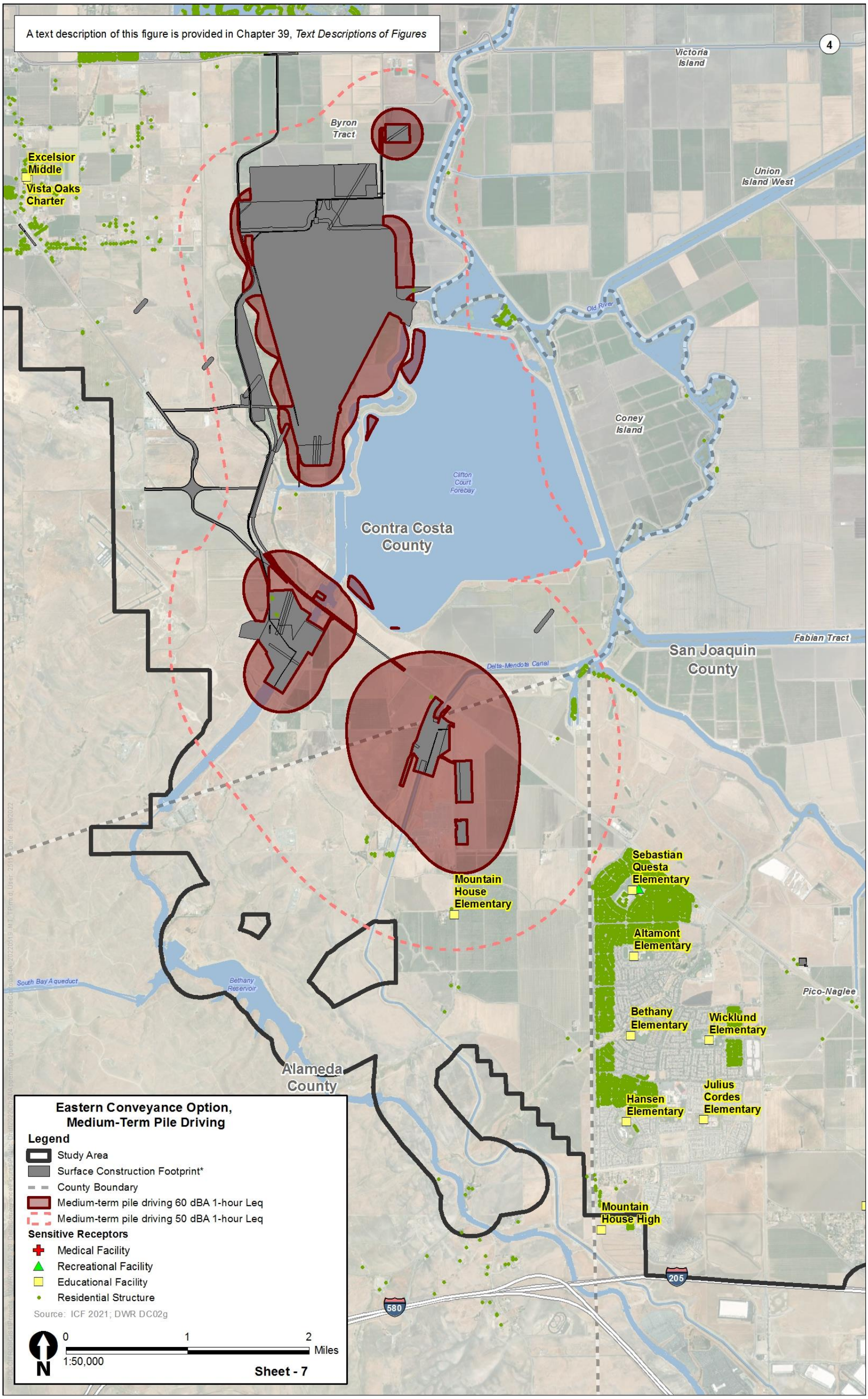
Figures 24A-5d. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-5e. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-5f. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-5g. Sound Level Contours for Eastern Alignment Alternative 4a, Heavy Equipment for Facility Buildout, including Pile Driving

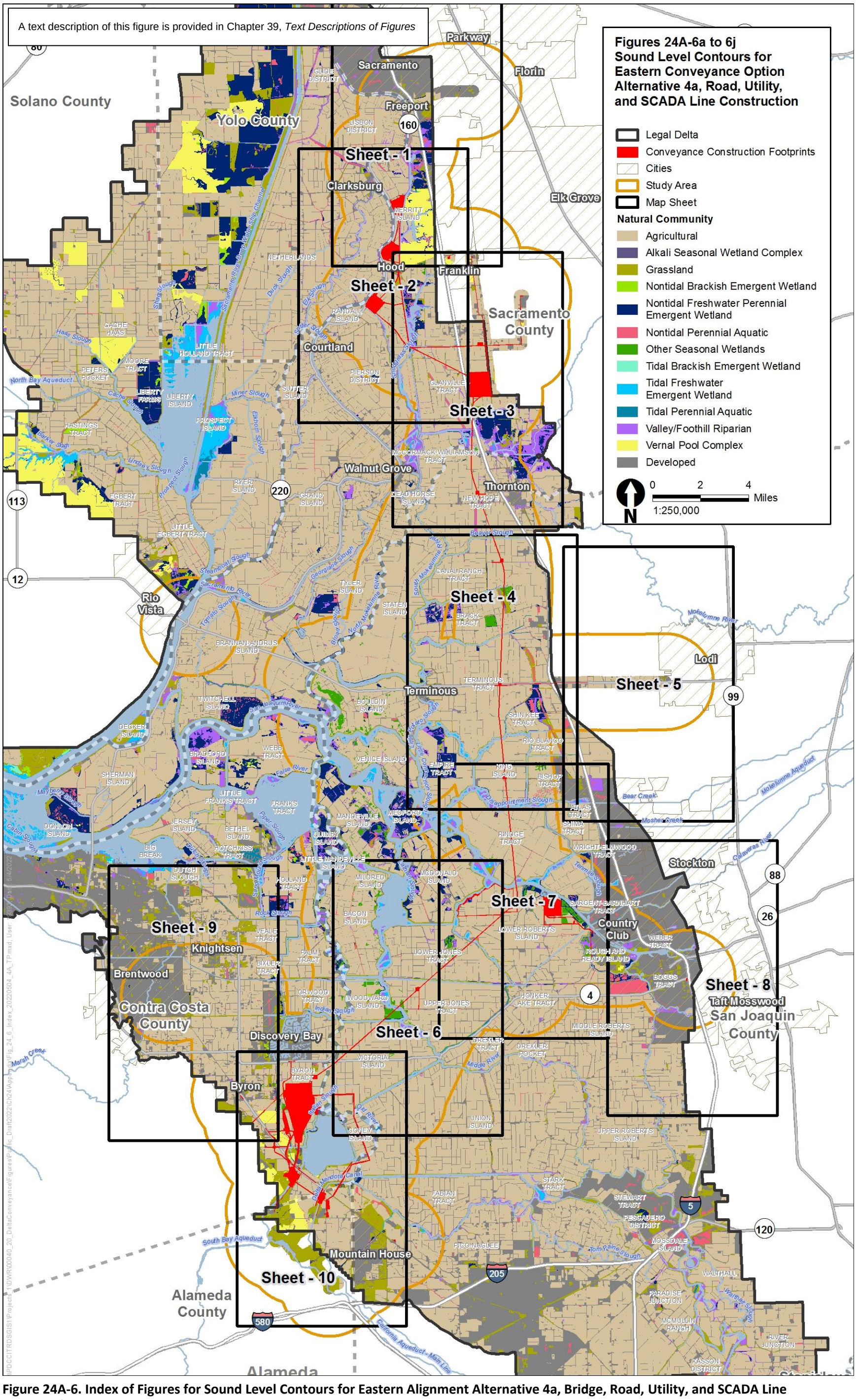
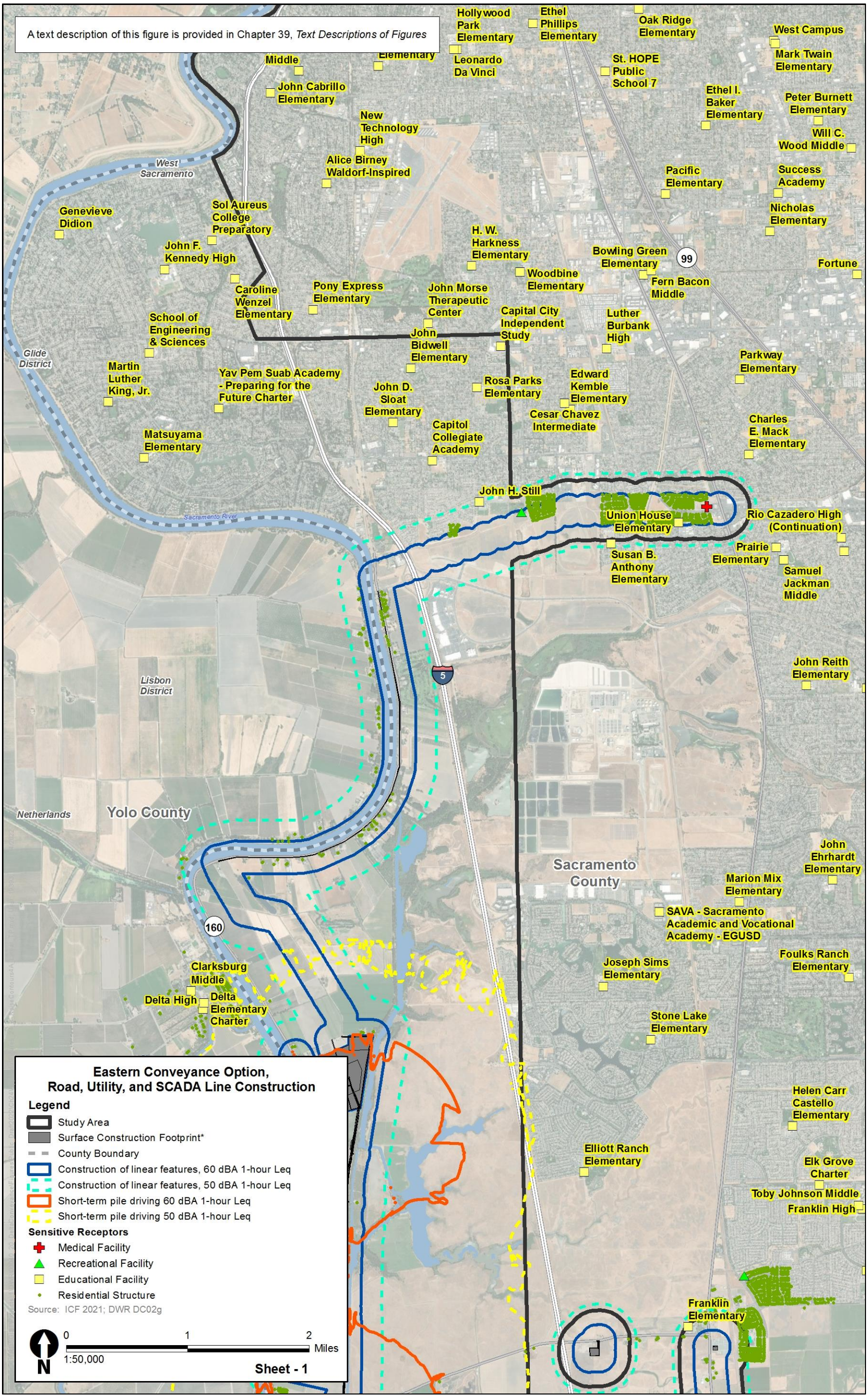
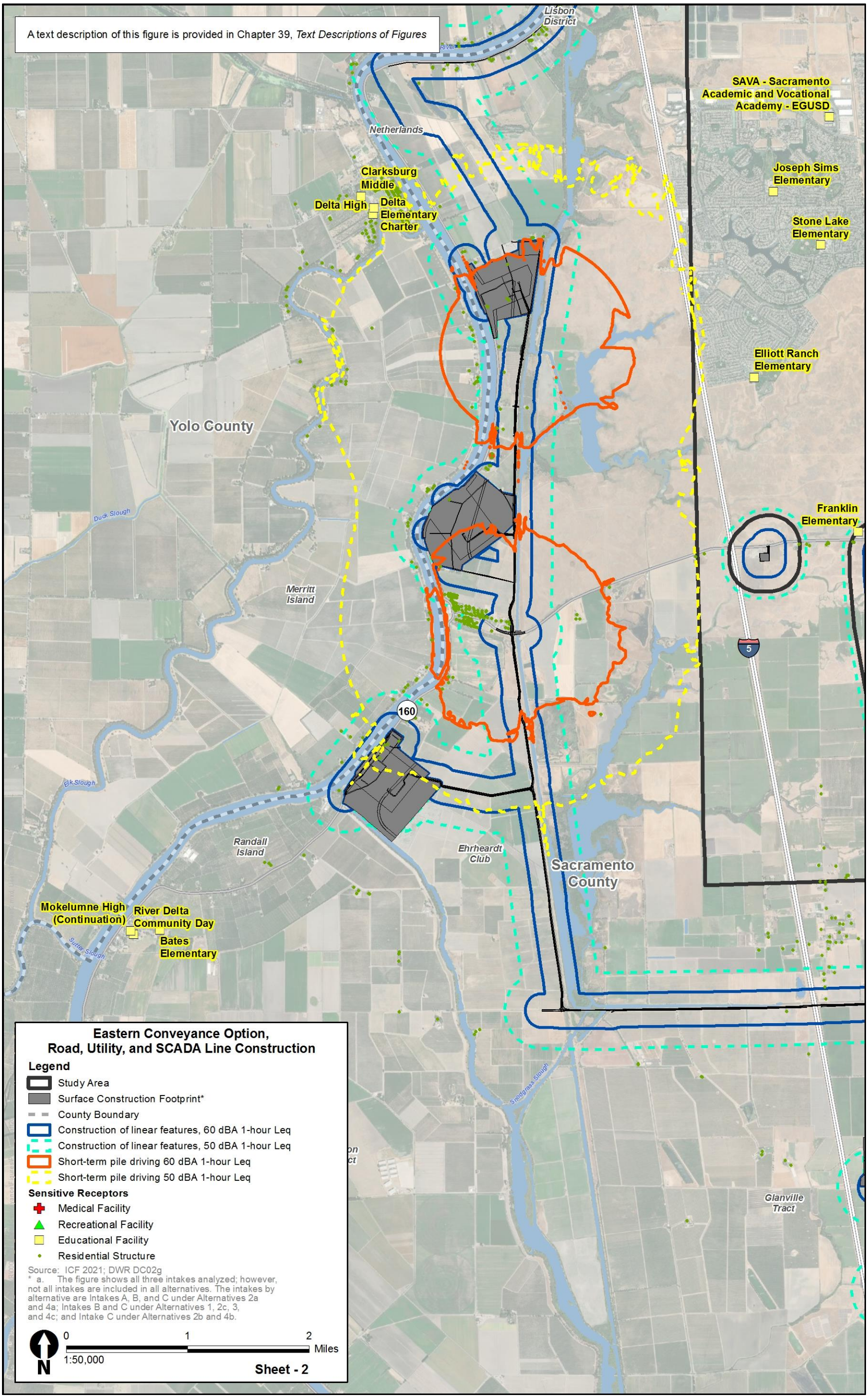


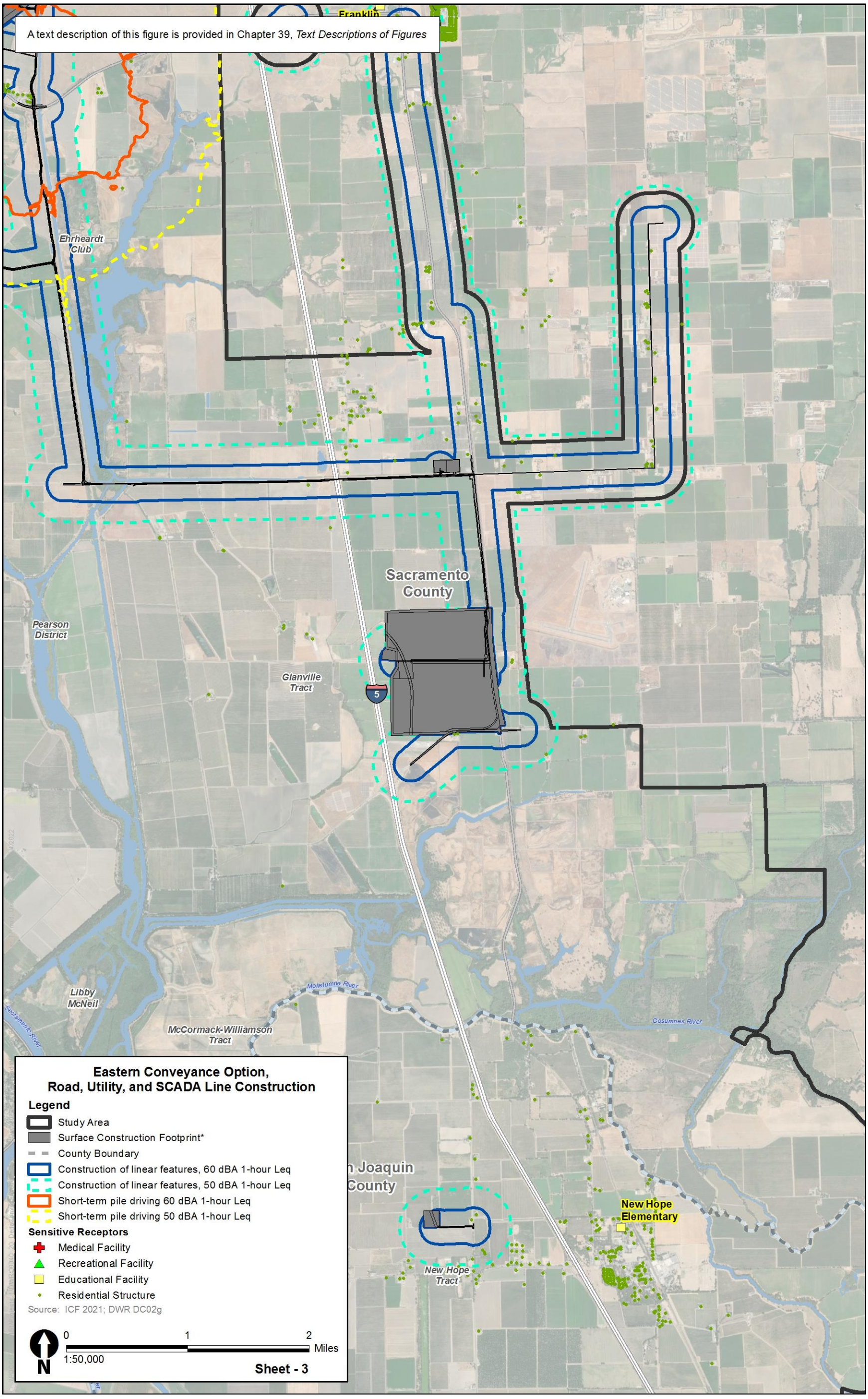
Figure 24A-6. Index of Figures for Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



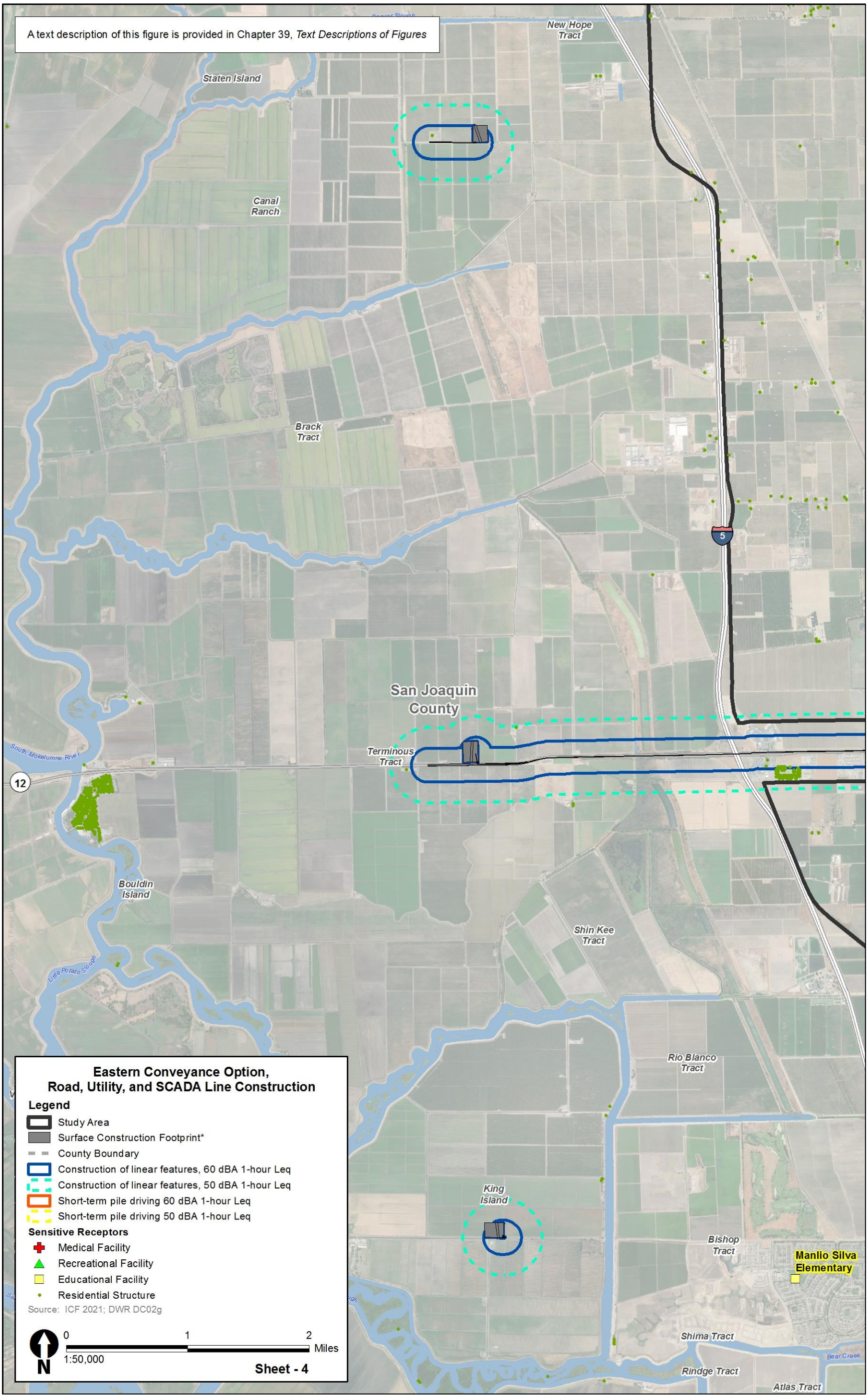
Figures 24A-6a. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



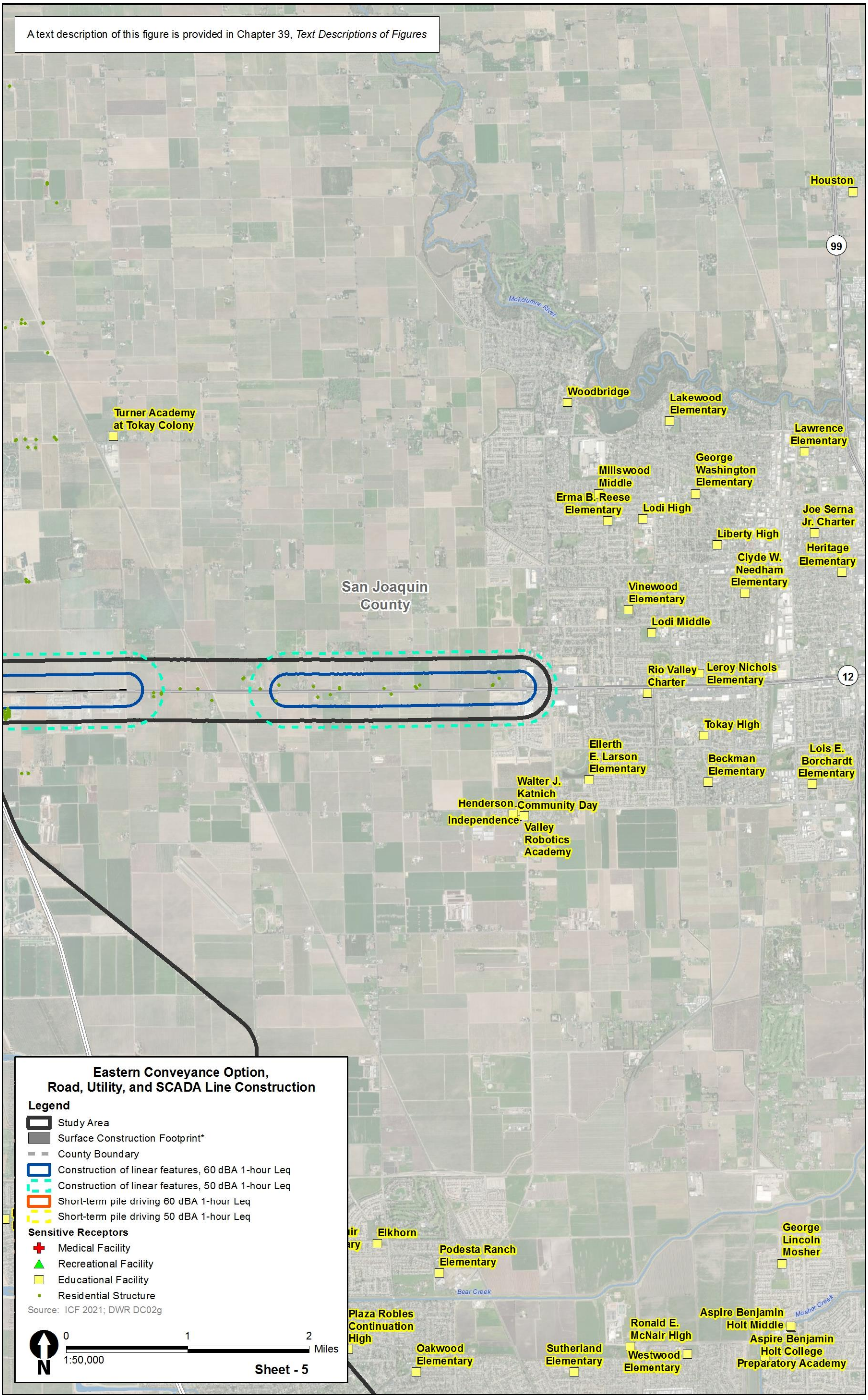
Figures 24A-6b. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



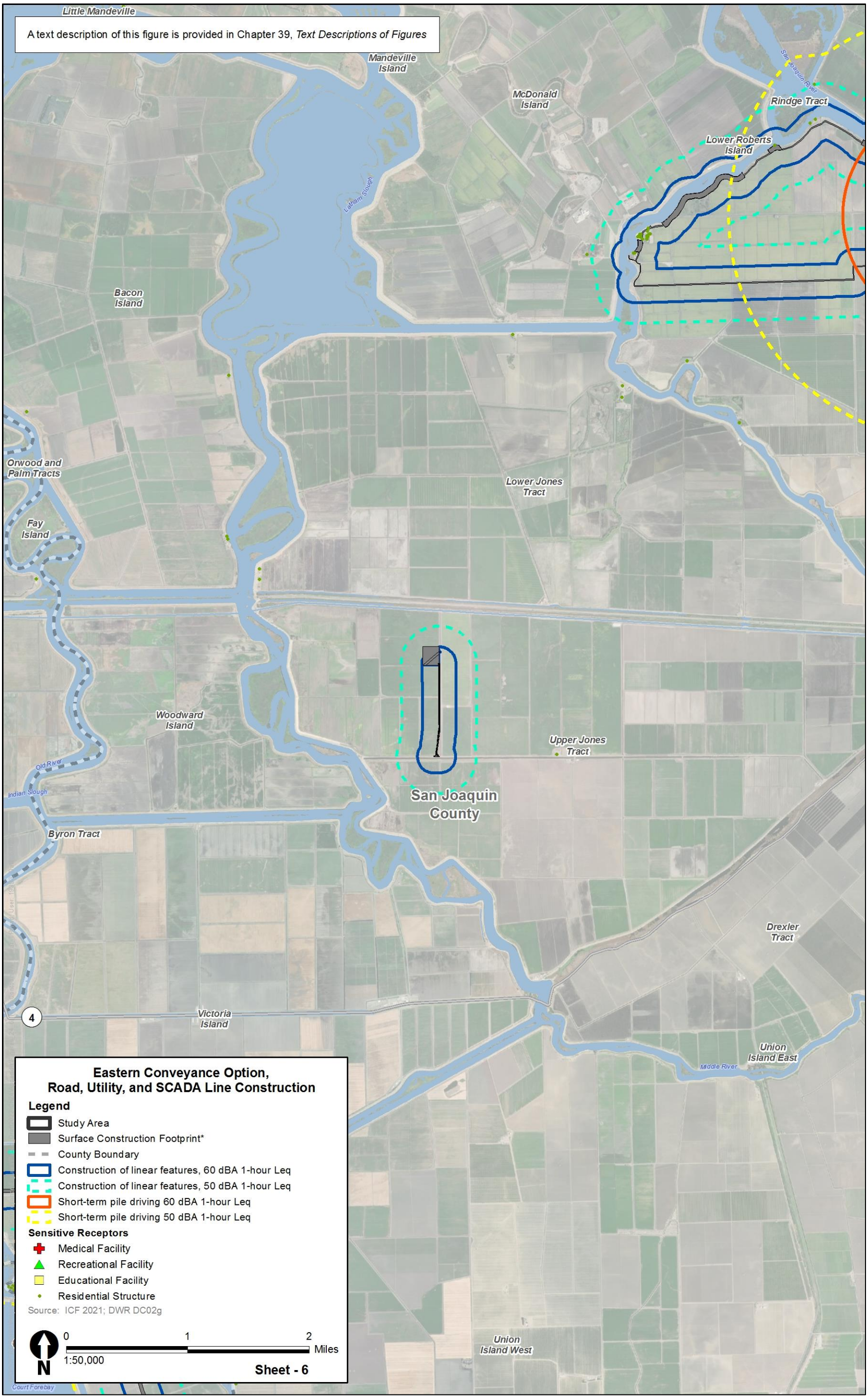
Figures 24A-6c. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



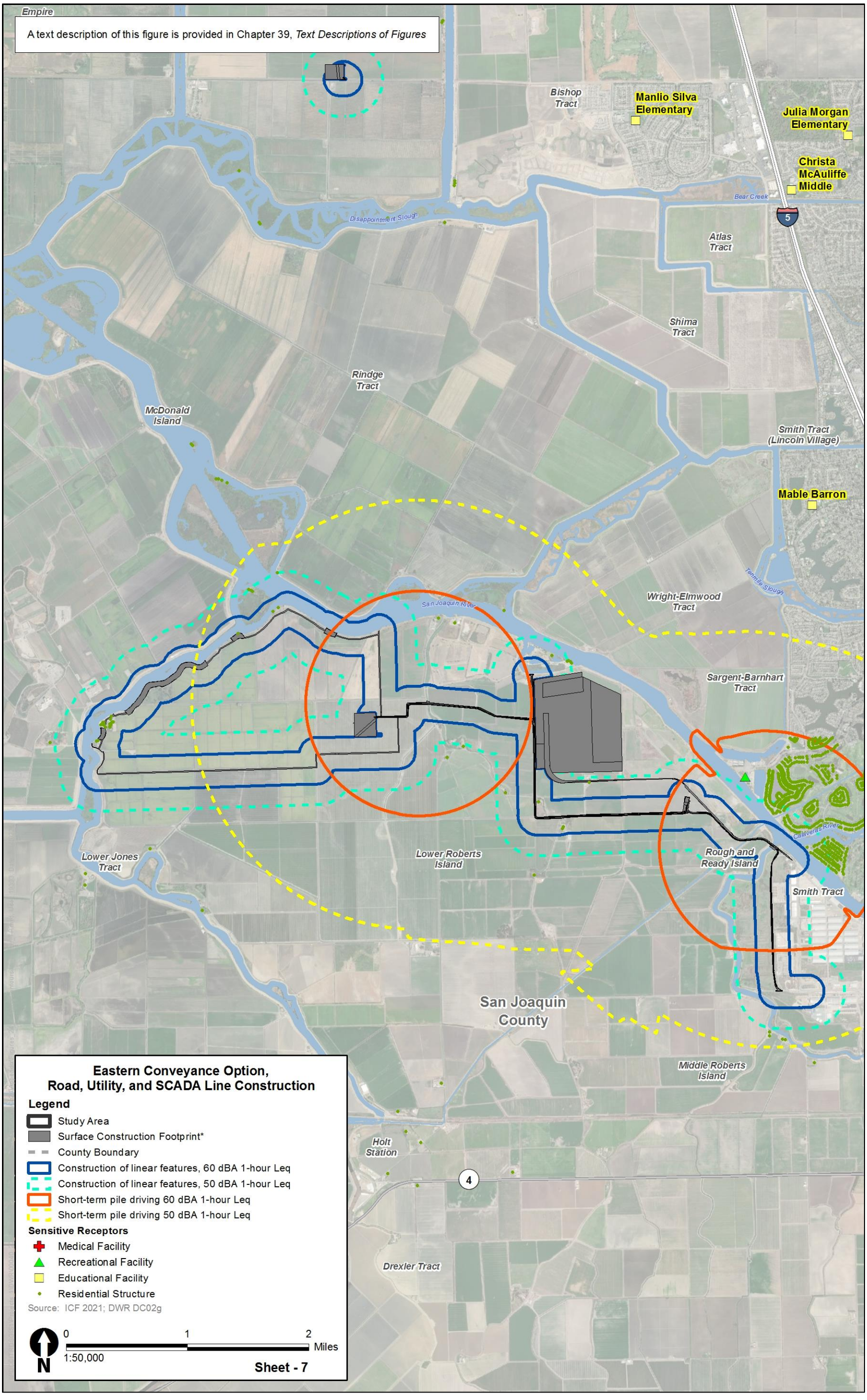
Figures 24A-6d. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-6e. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



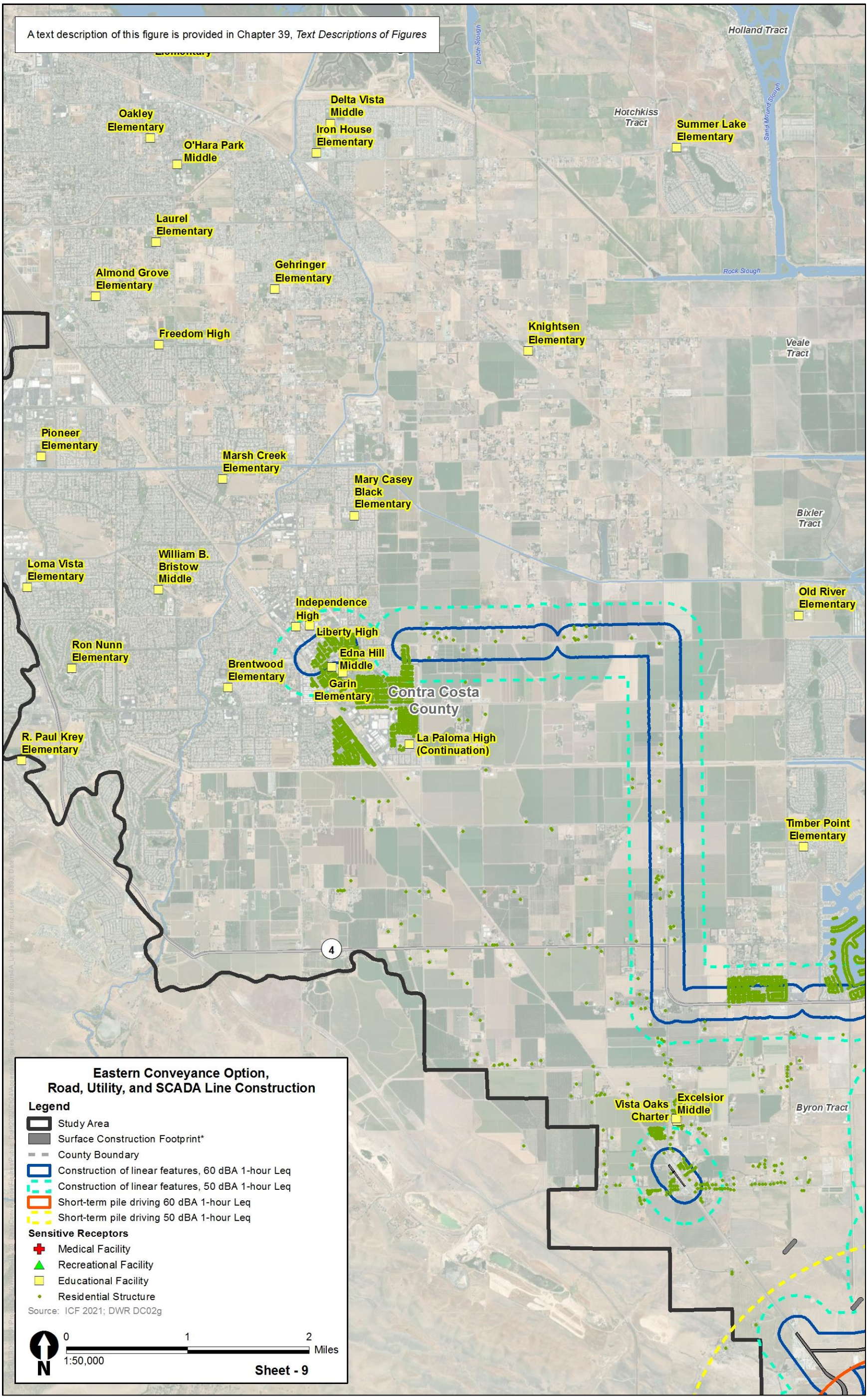
Figures 24A-6f. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



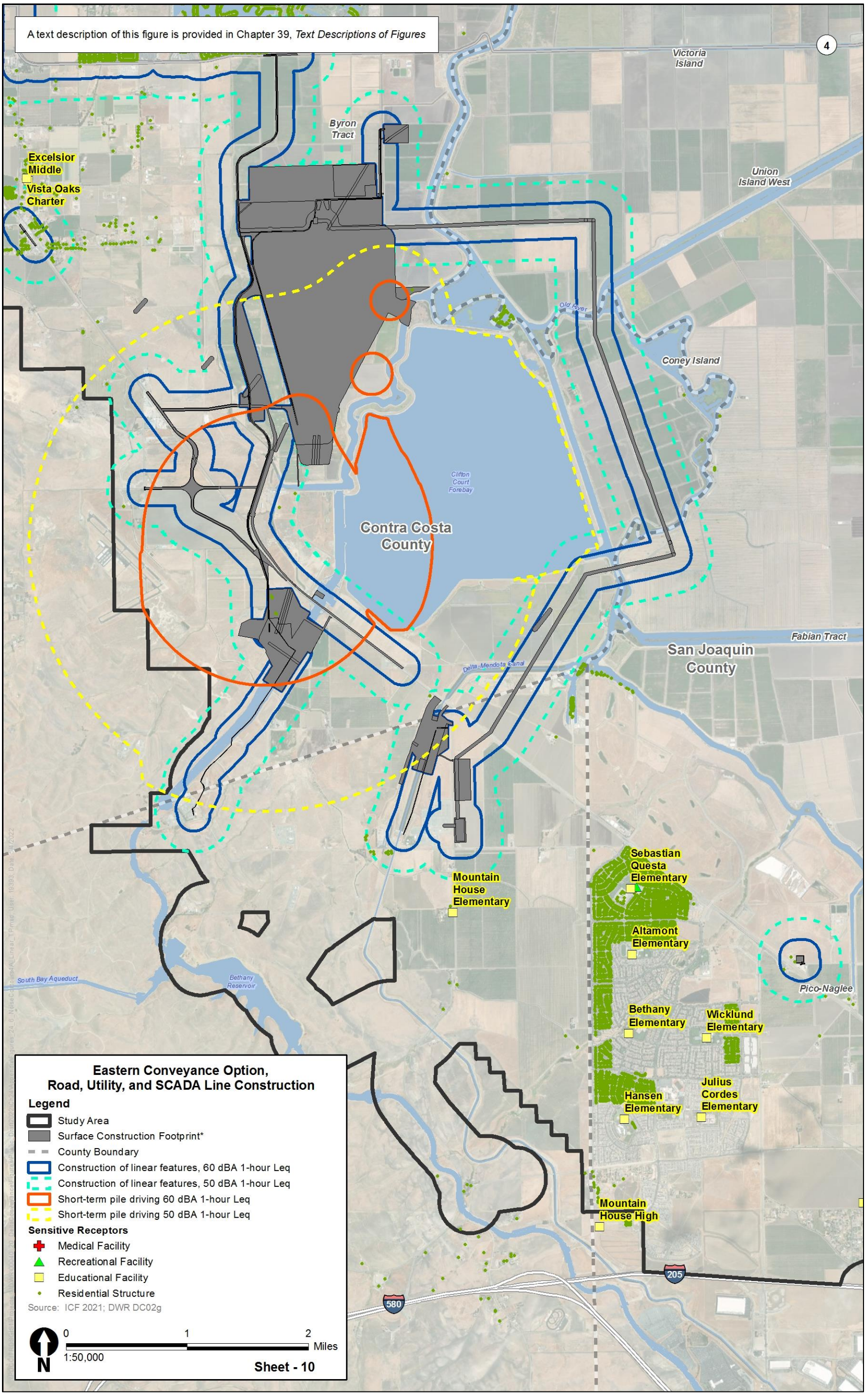
Figures 24A-6g. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-6h. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-6i. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-6j. Sound Level Contours for Eastern Alignment Alternative 4a, Bridge, Road, Utility, and SCADA Line Construction

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Appendix 24A.3

Bethany Reservoir Alignment

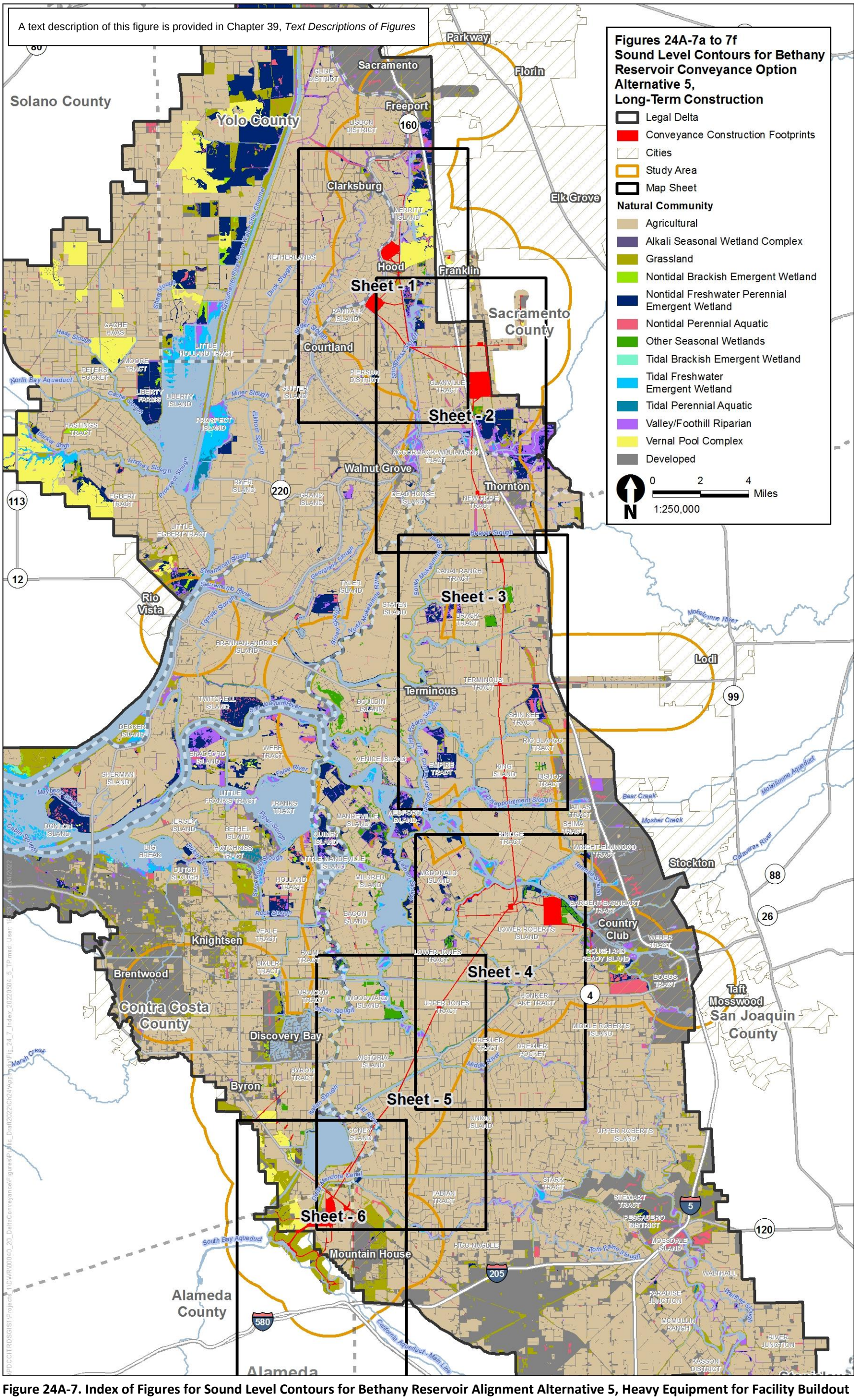
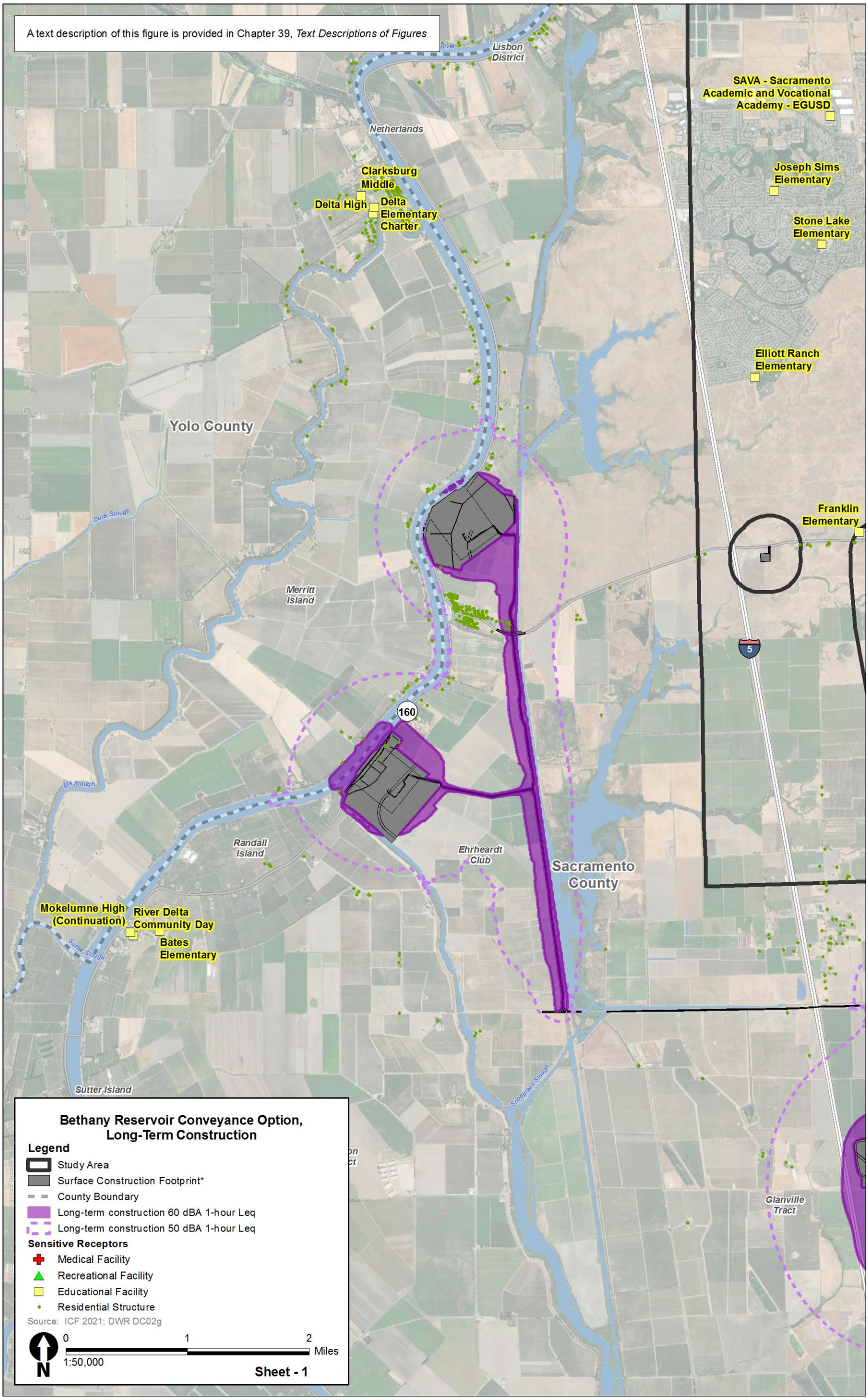
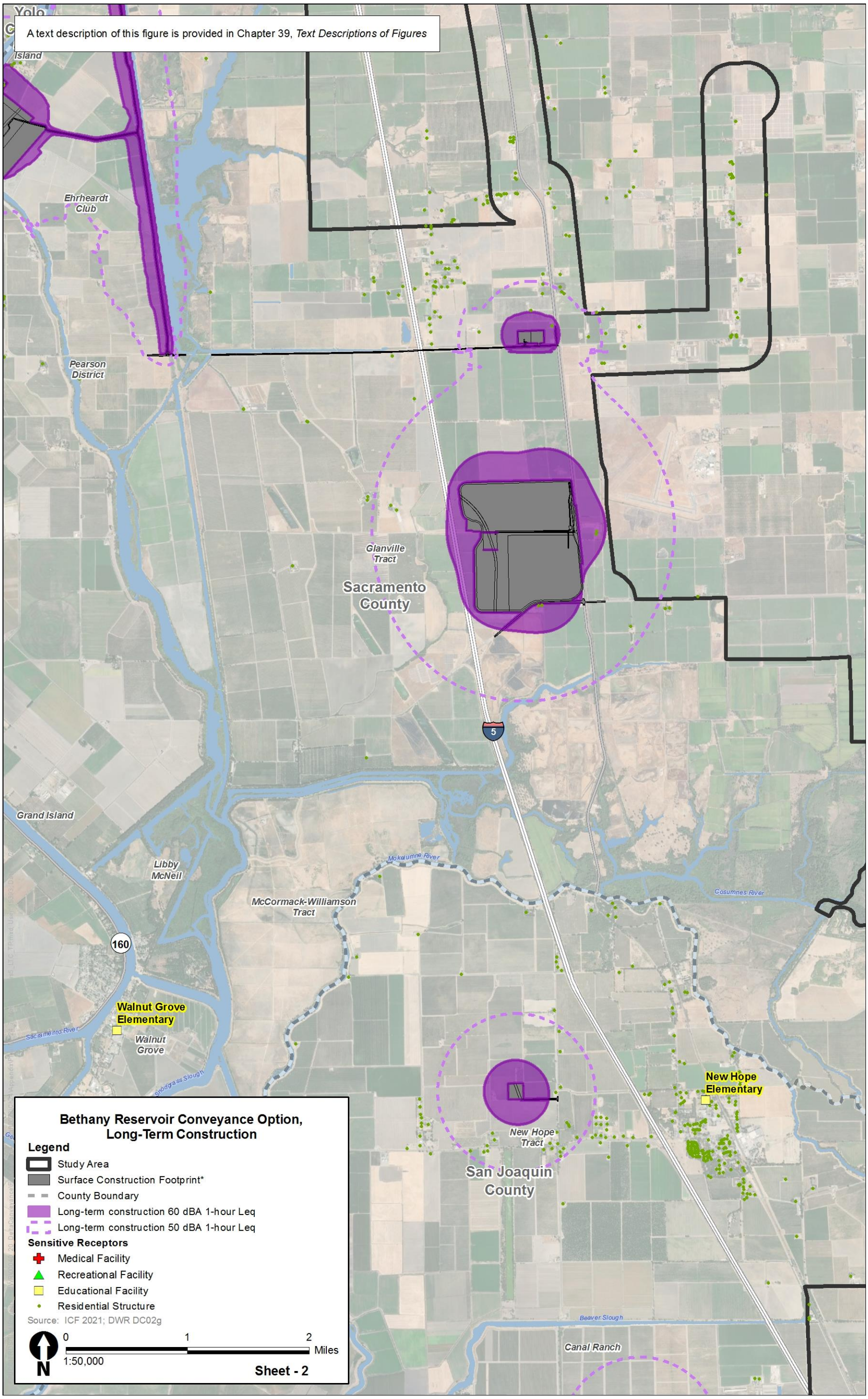


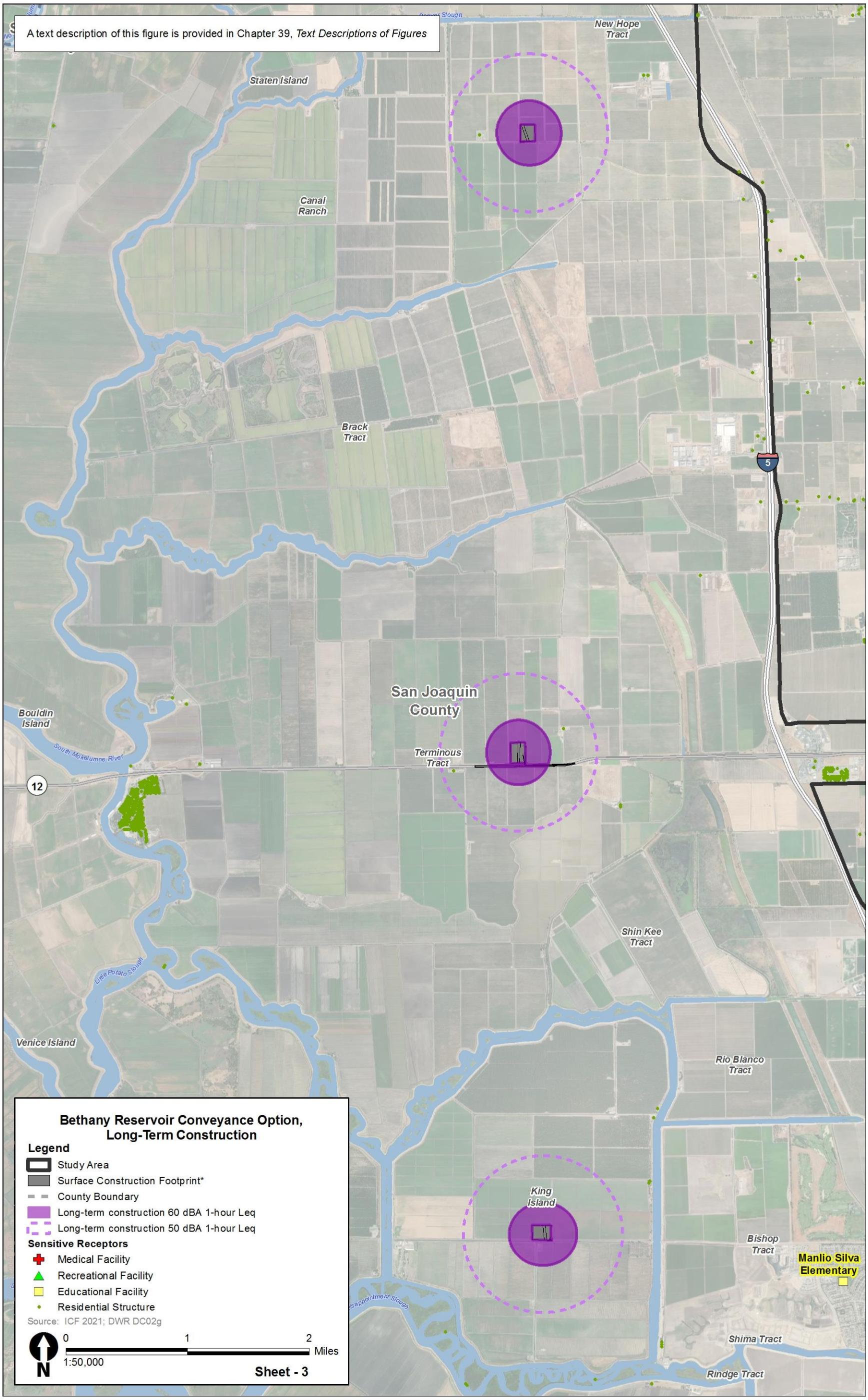
Figure 24A-7. Index of Figures for Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout



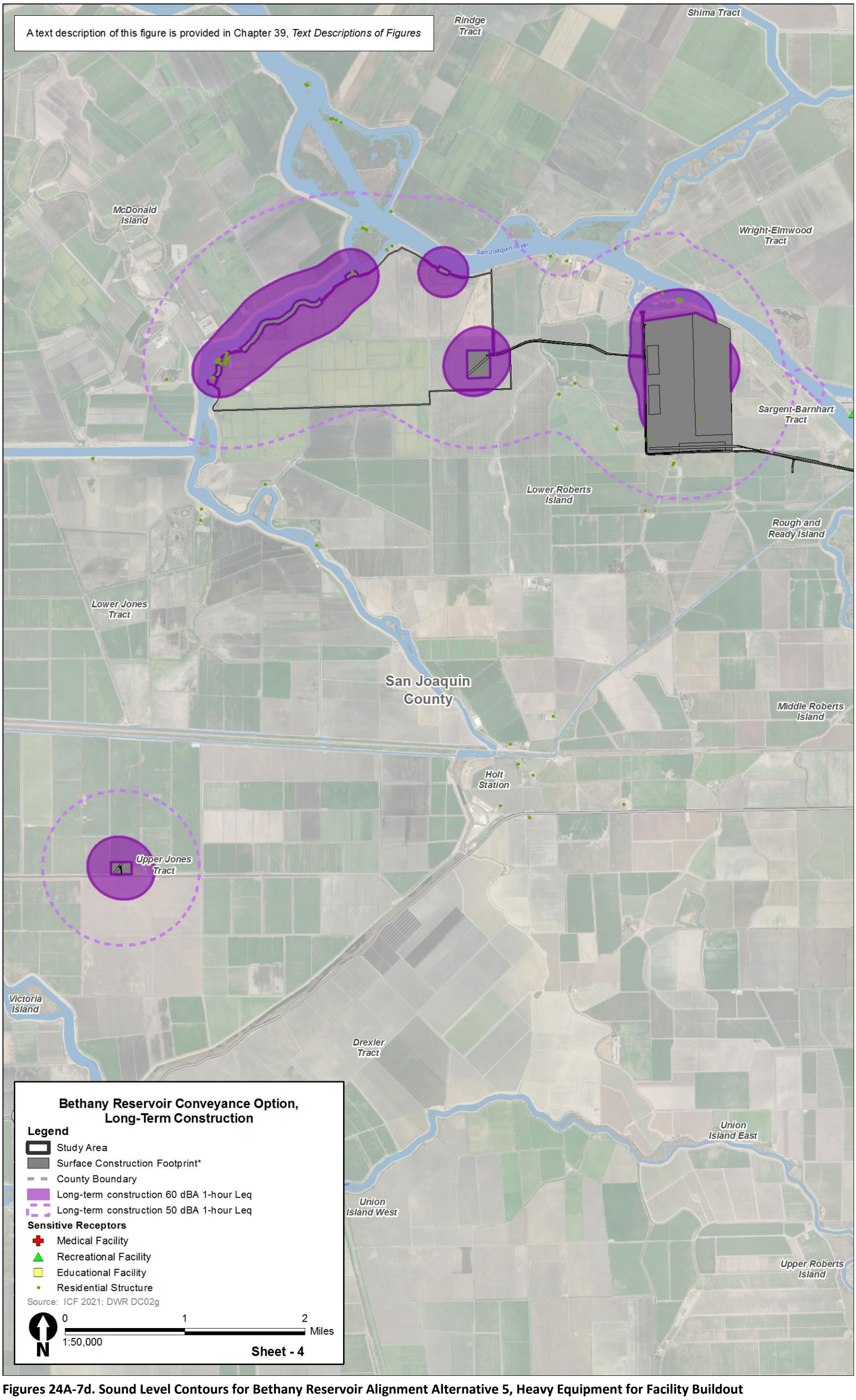
Figures 24A-7a. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout



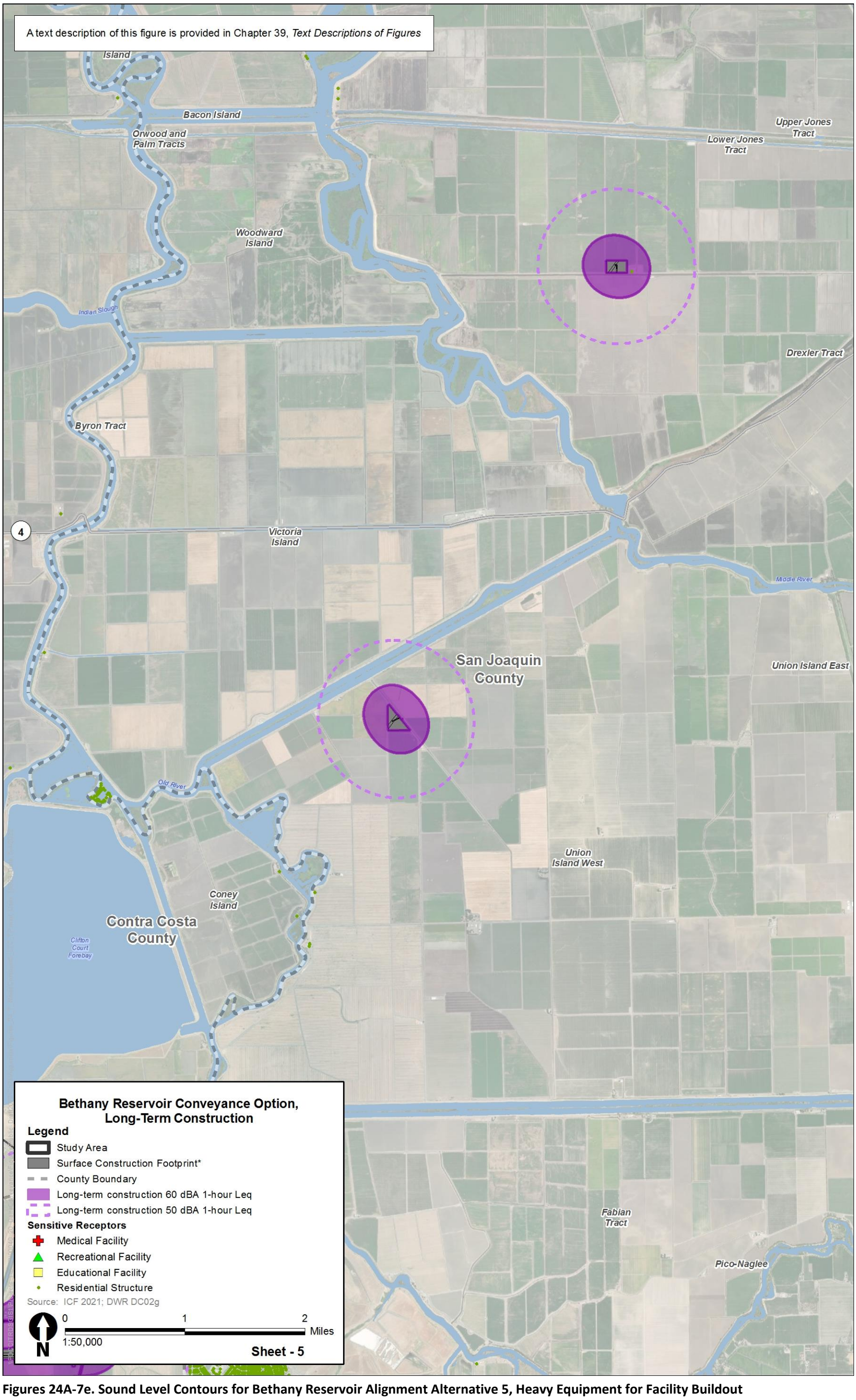
Figures 24A-7b. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout



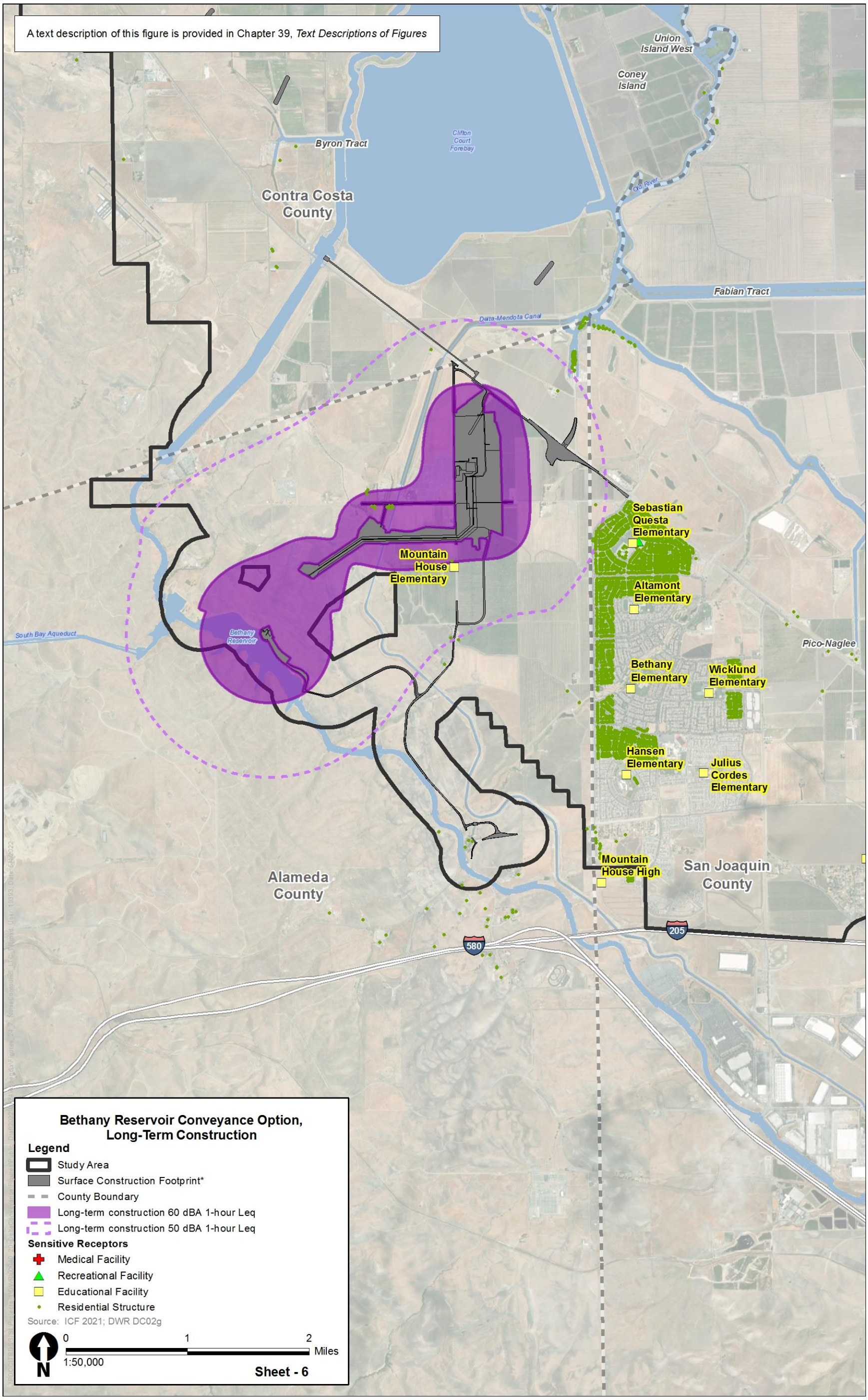
Figures 24A-7c. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout



Figures 24A-7d. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout



Figures 24A-7e. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout



Figures 24A-7f. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout

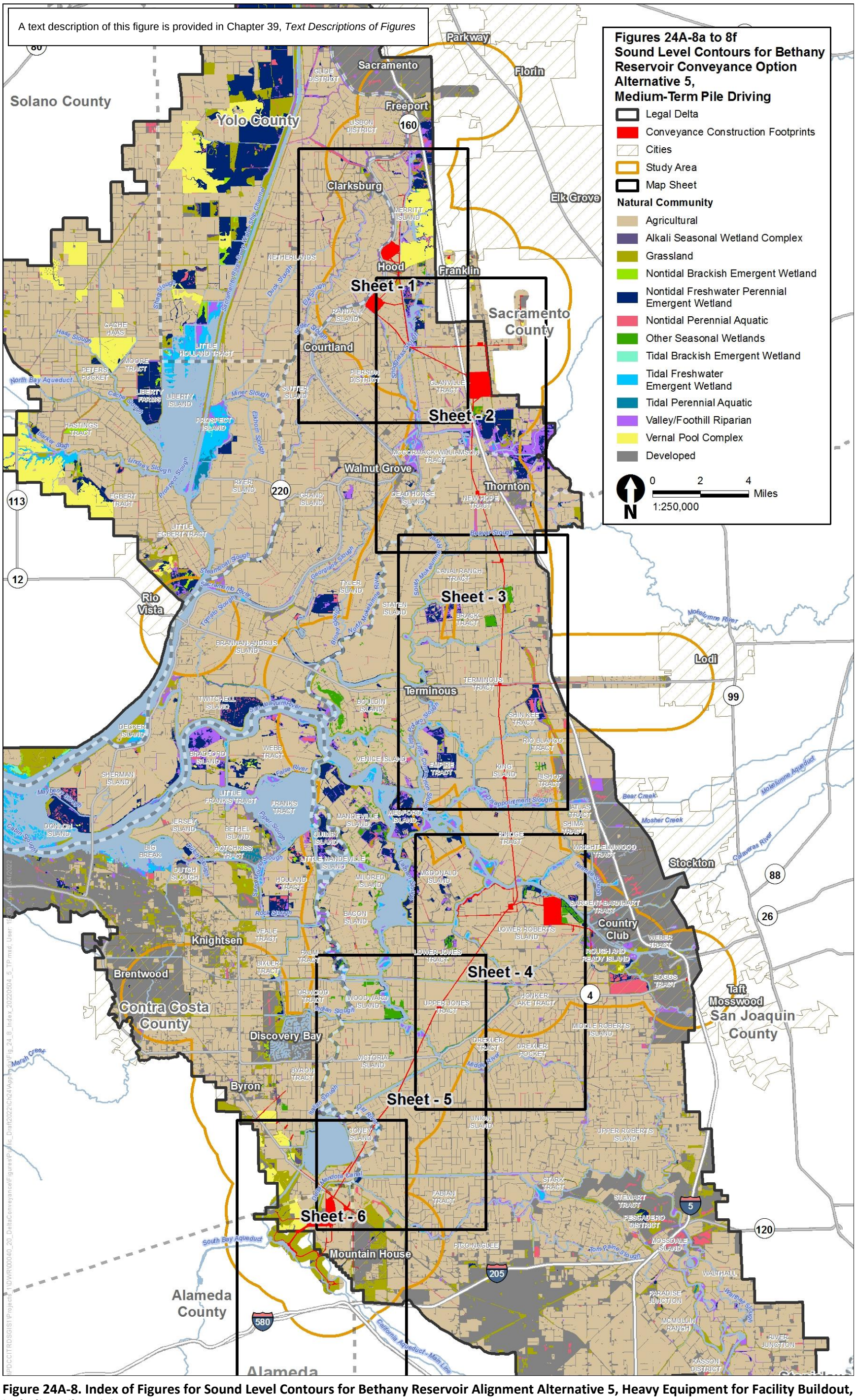
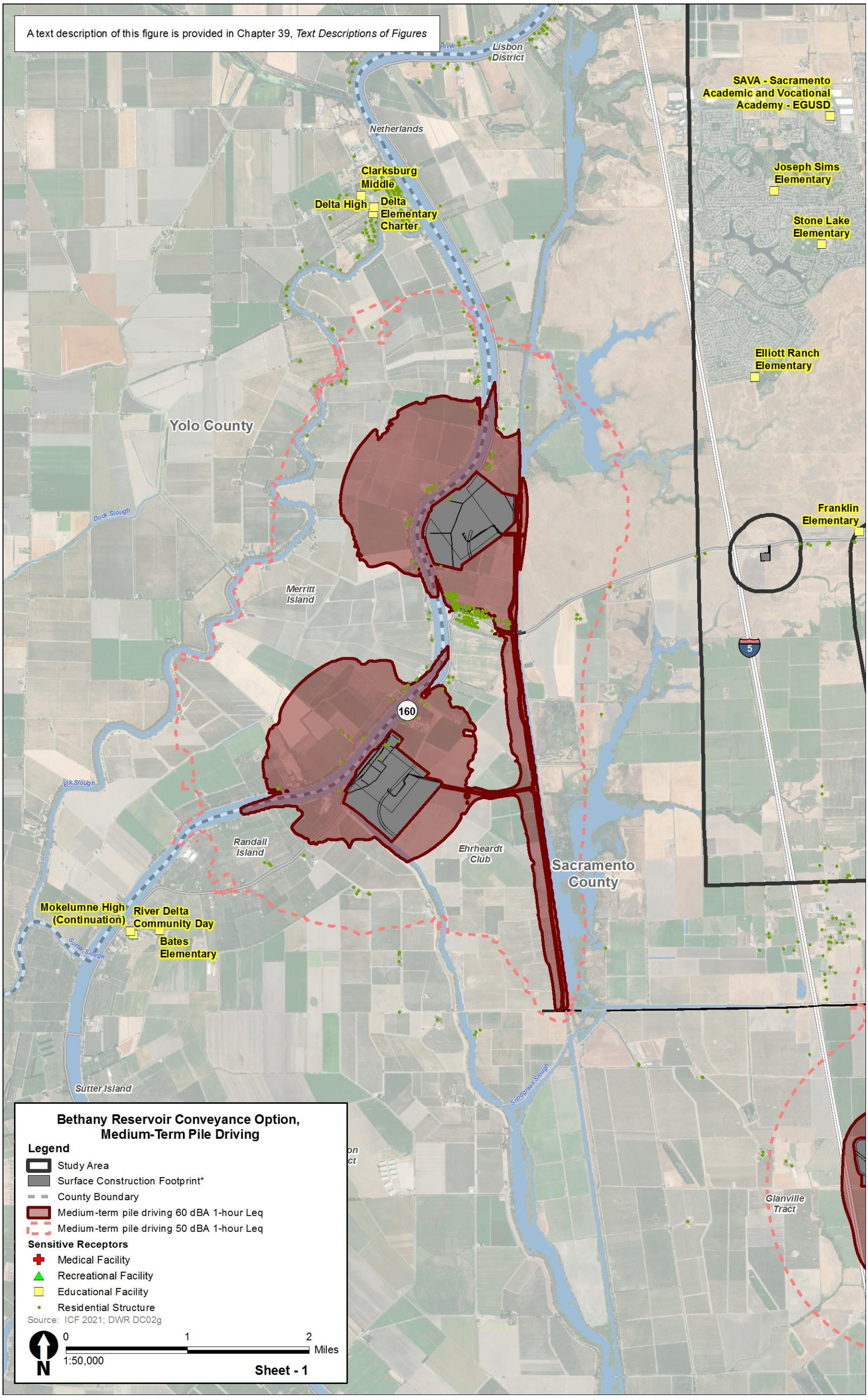
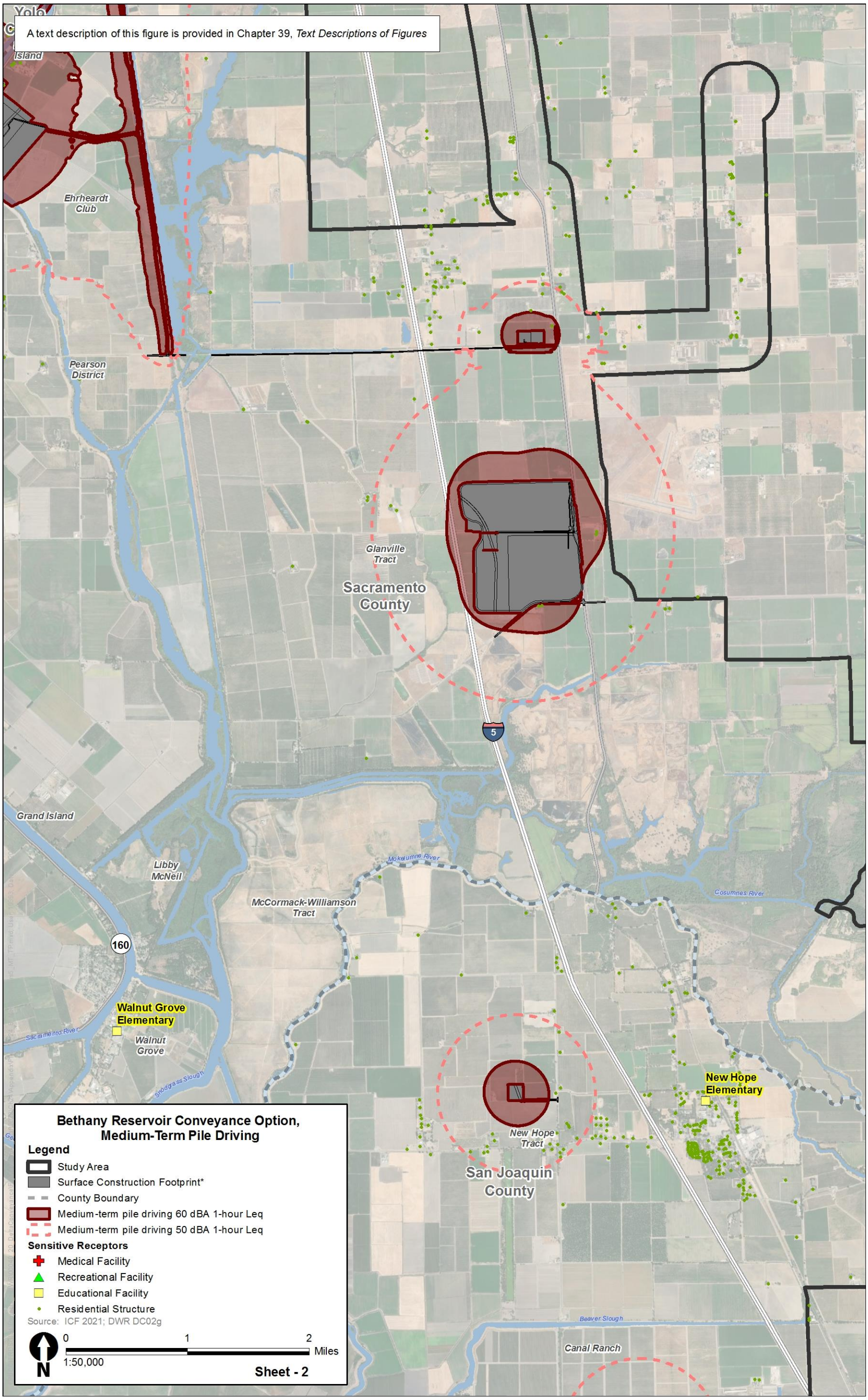


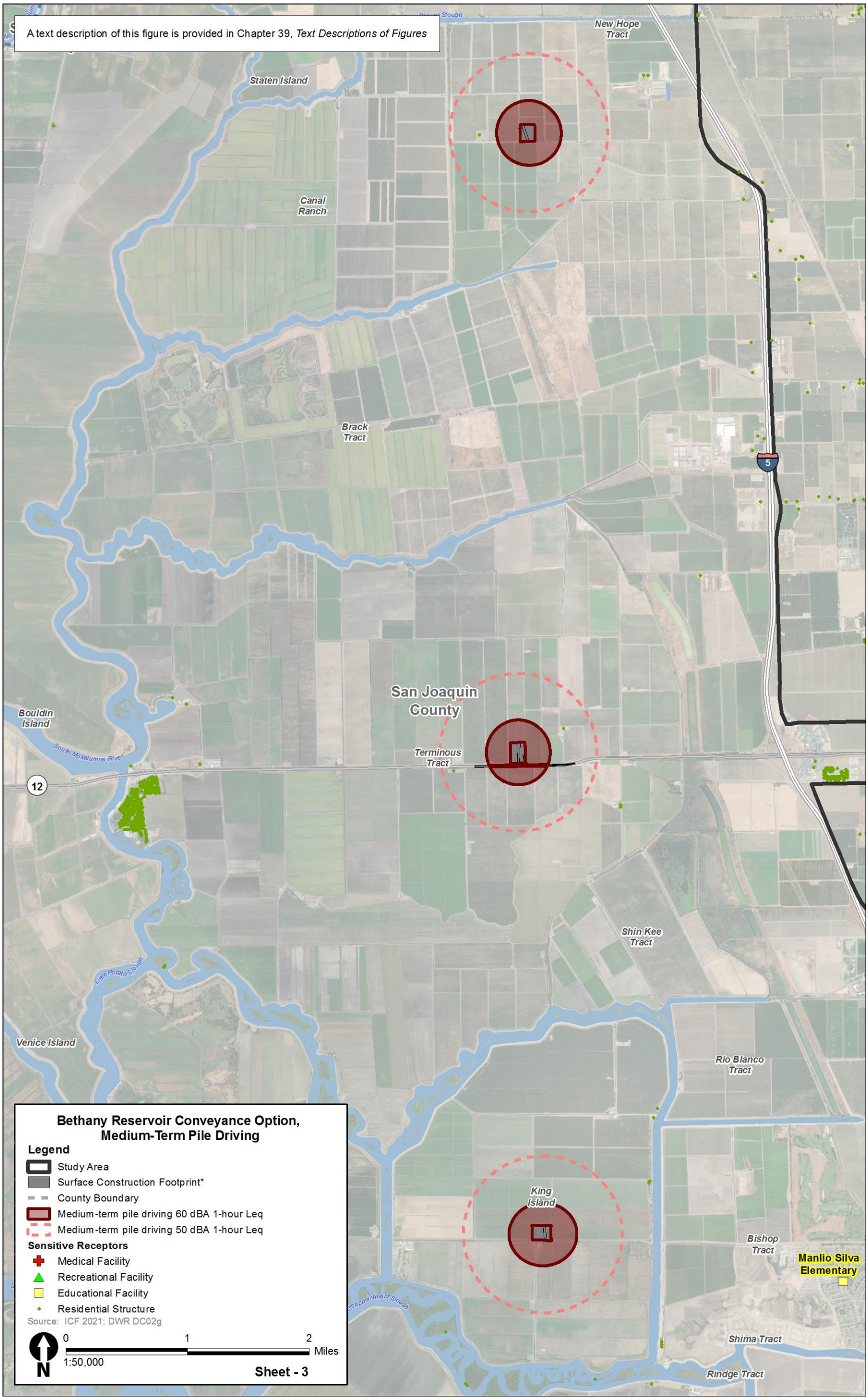
Figure 24A-8. Index of Figures for Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout, including Pile Driving



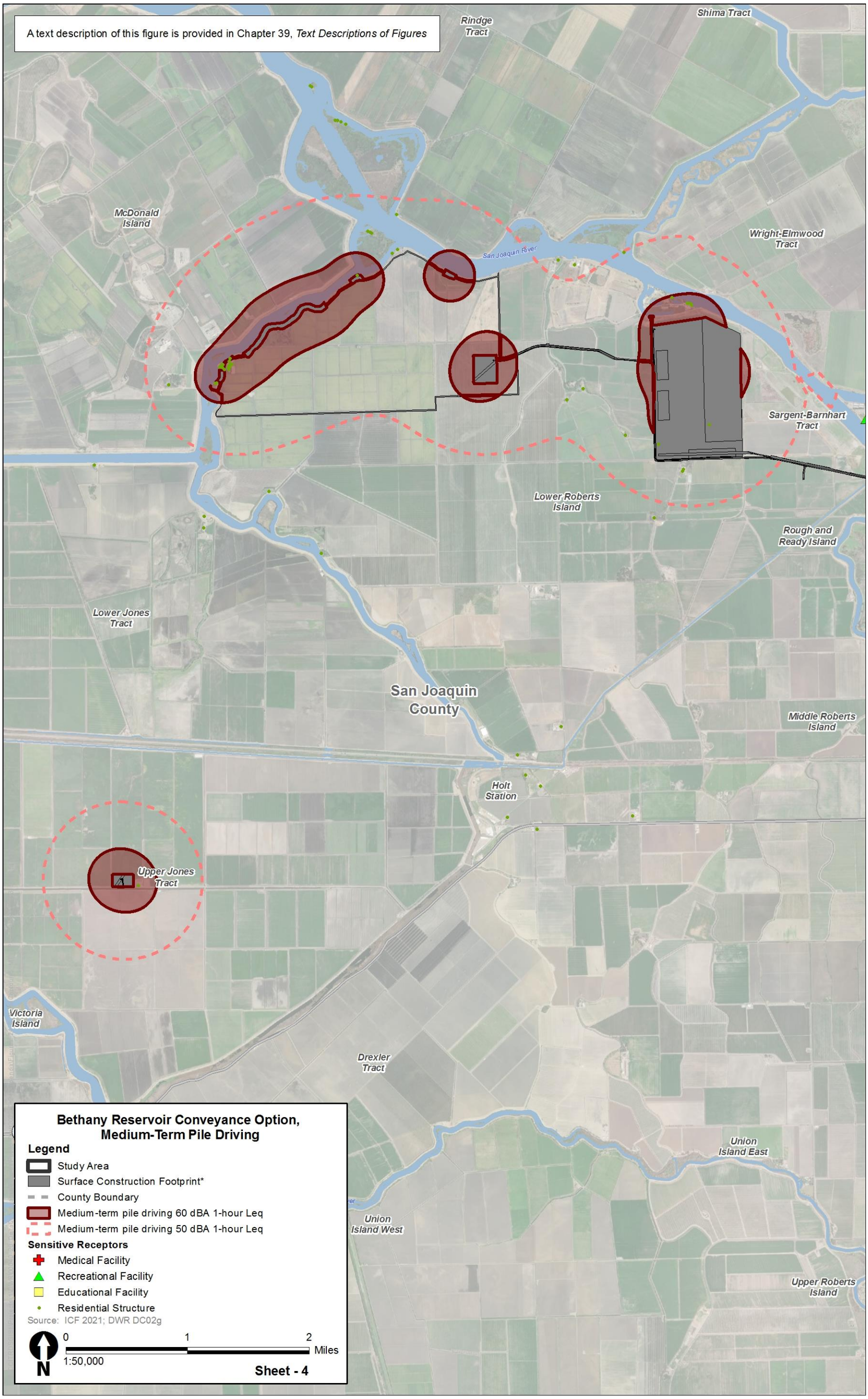
Figures 24A-8a. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout, including Pile Driving



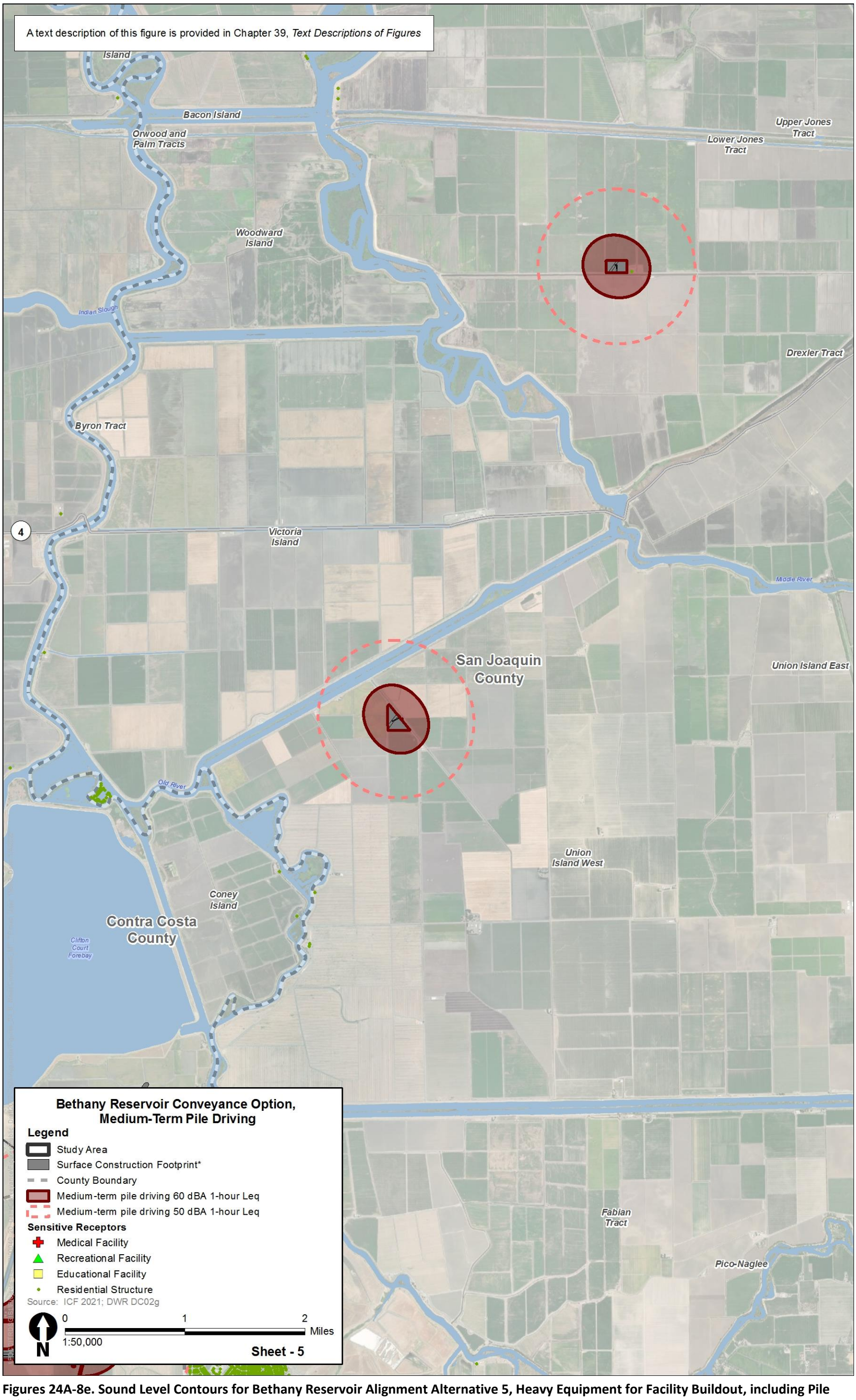
Figures 24A-8b. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout, including Pile Driving



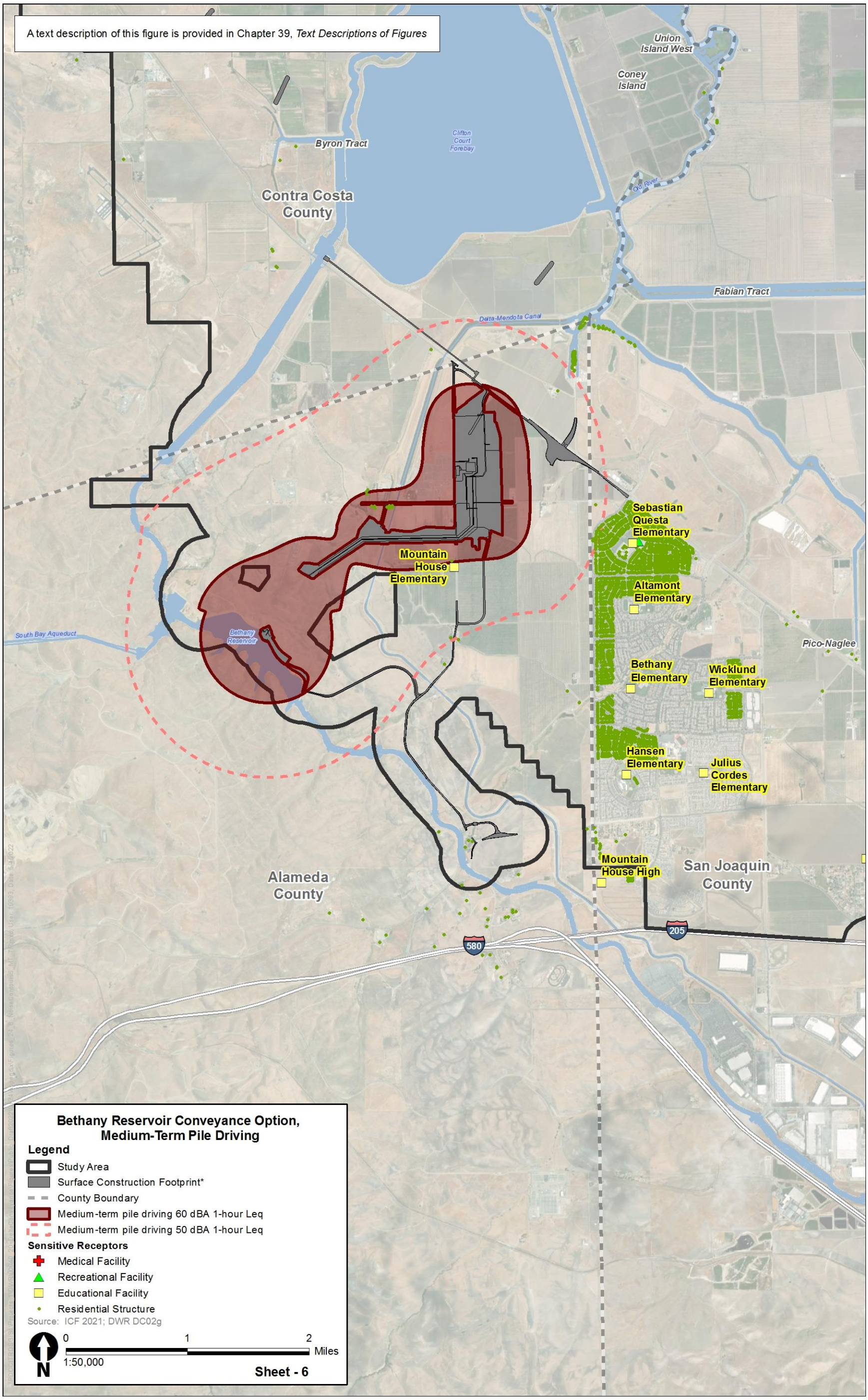
Figures 24A-8c. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-8d. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-8e. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout, including Pile Driving



Figures 24A-8f. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Heavy Equipment for Facility Buildout, including Pile Driving

A text description of this figure is provided in Chapter 39, *Text Descriptions of Figures*

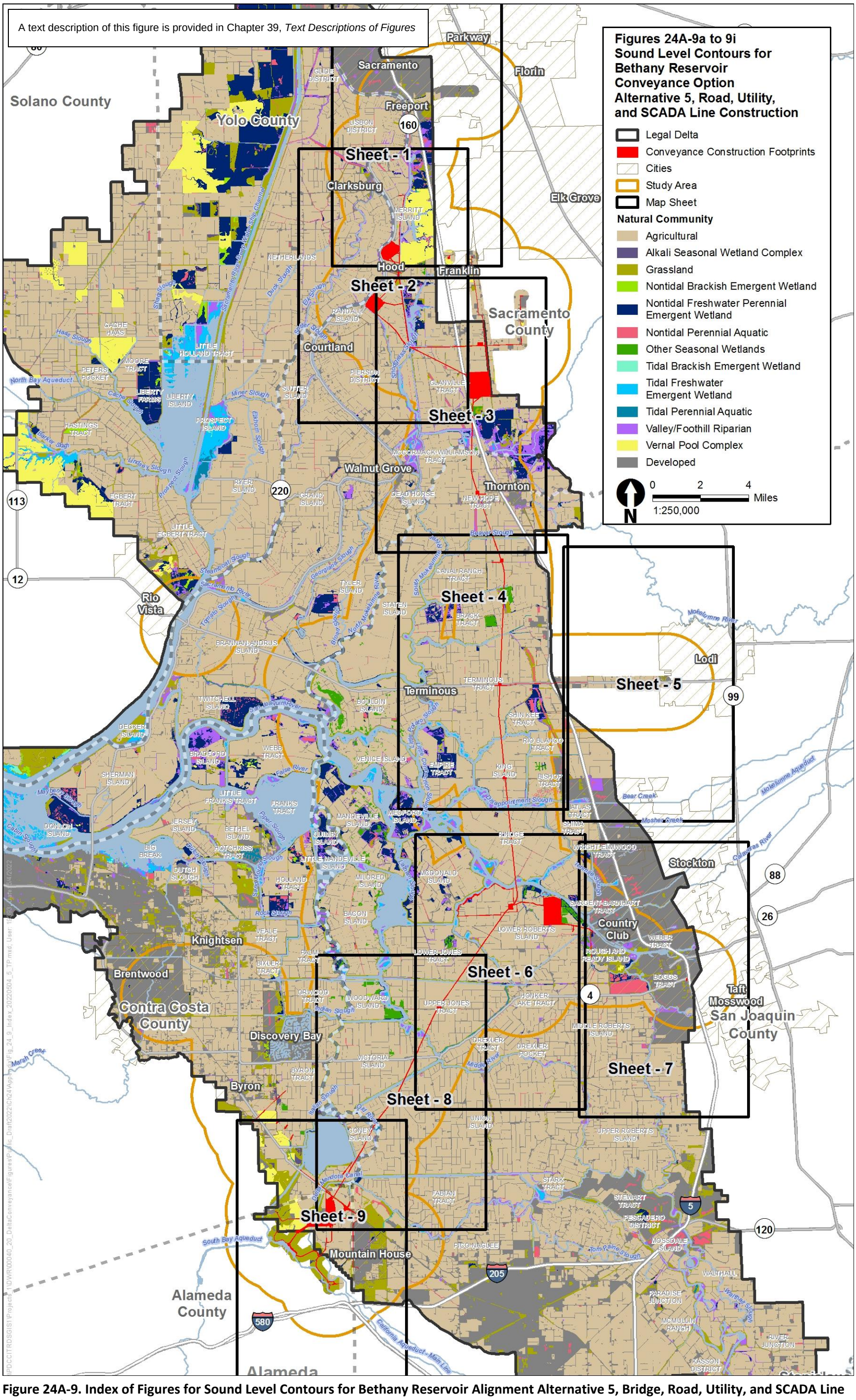
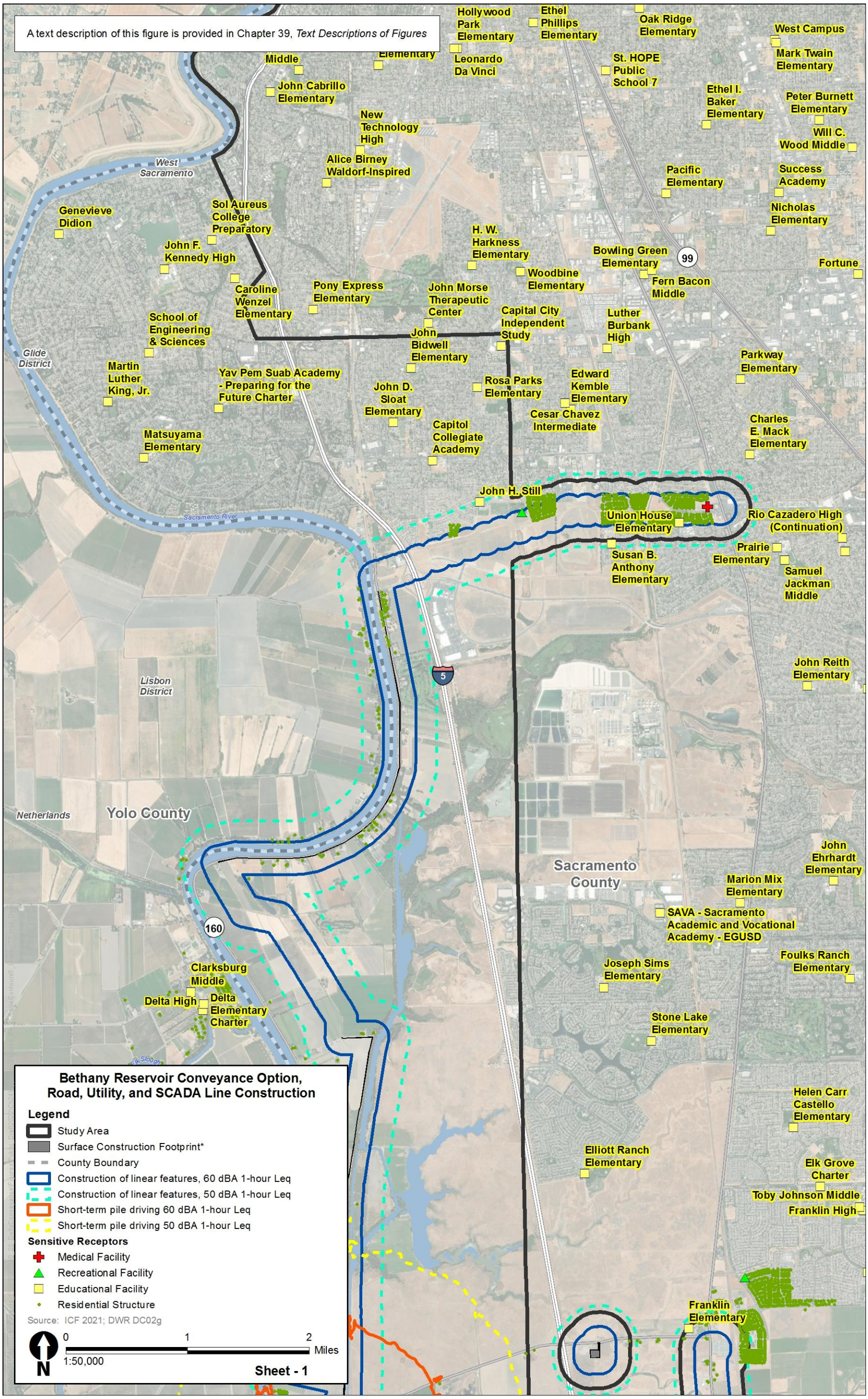
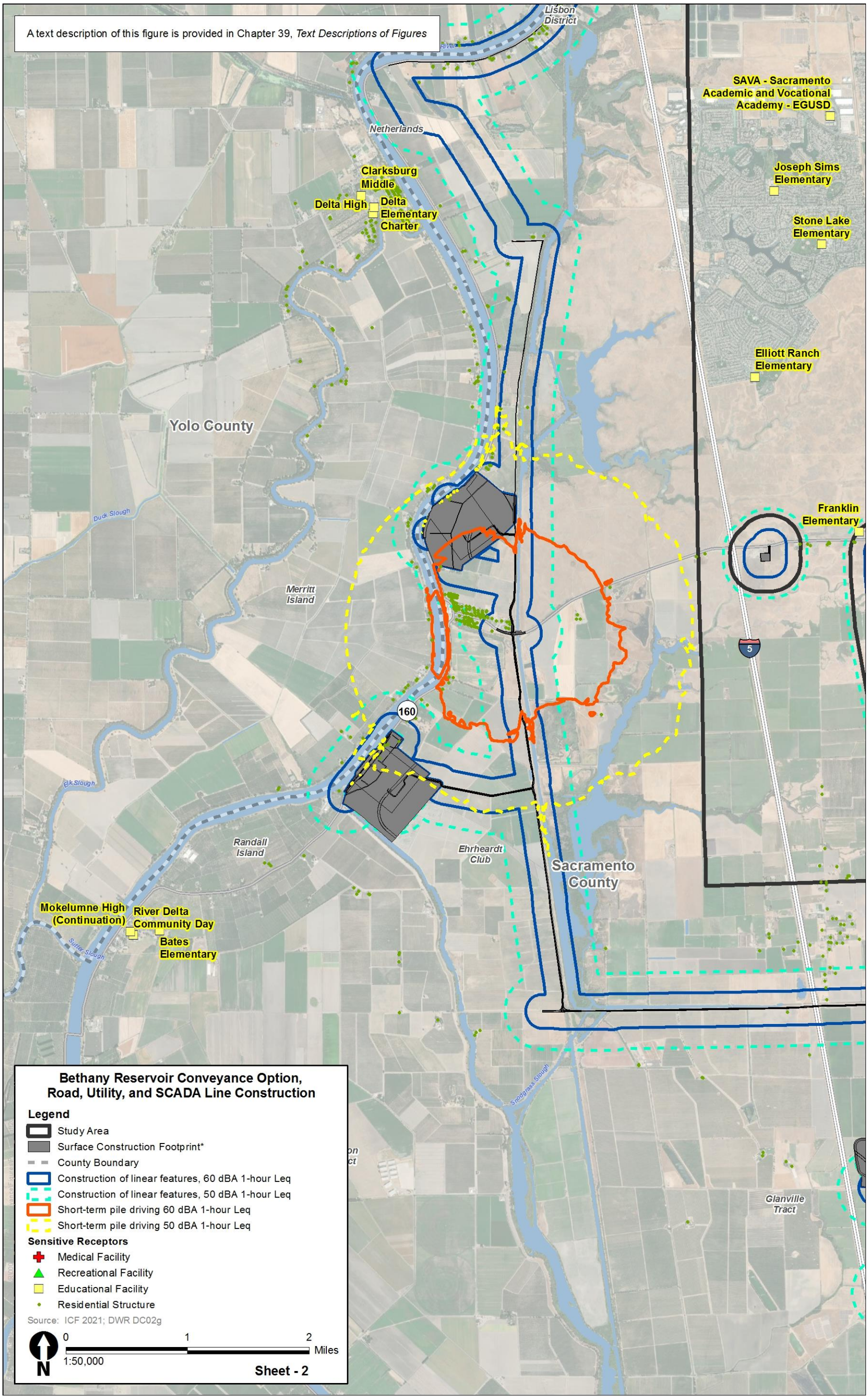


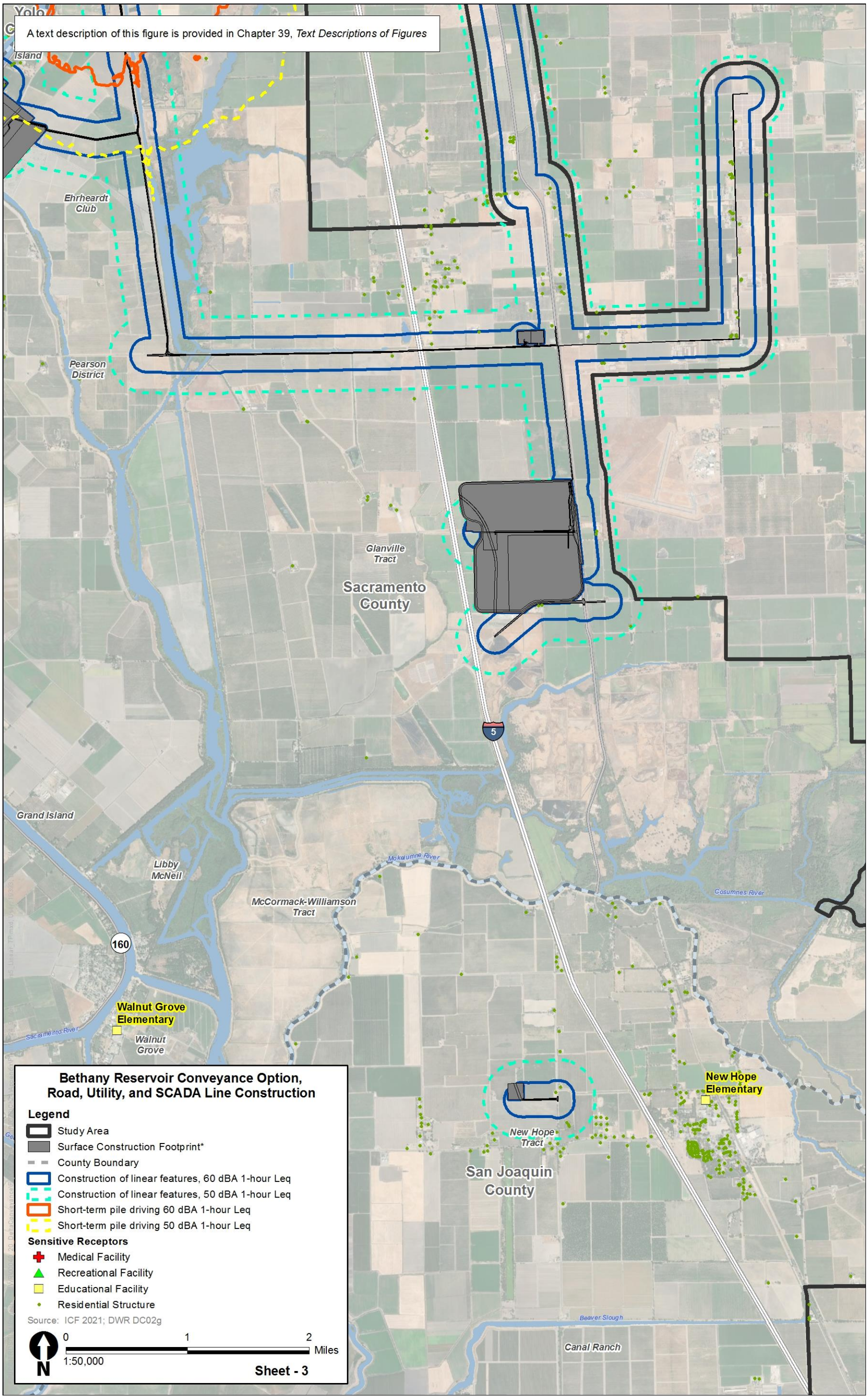
Figure 24A-9. Index of Figures for Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction



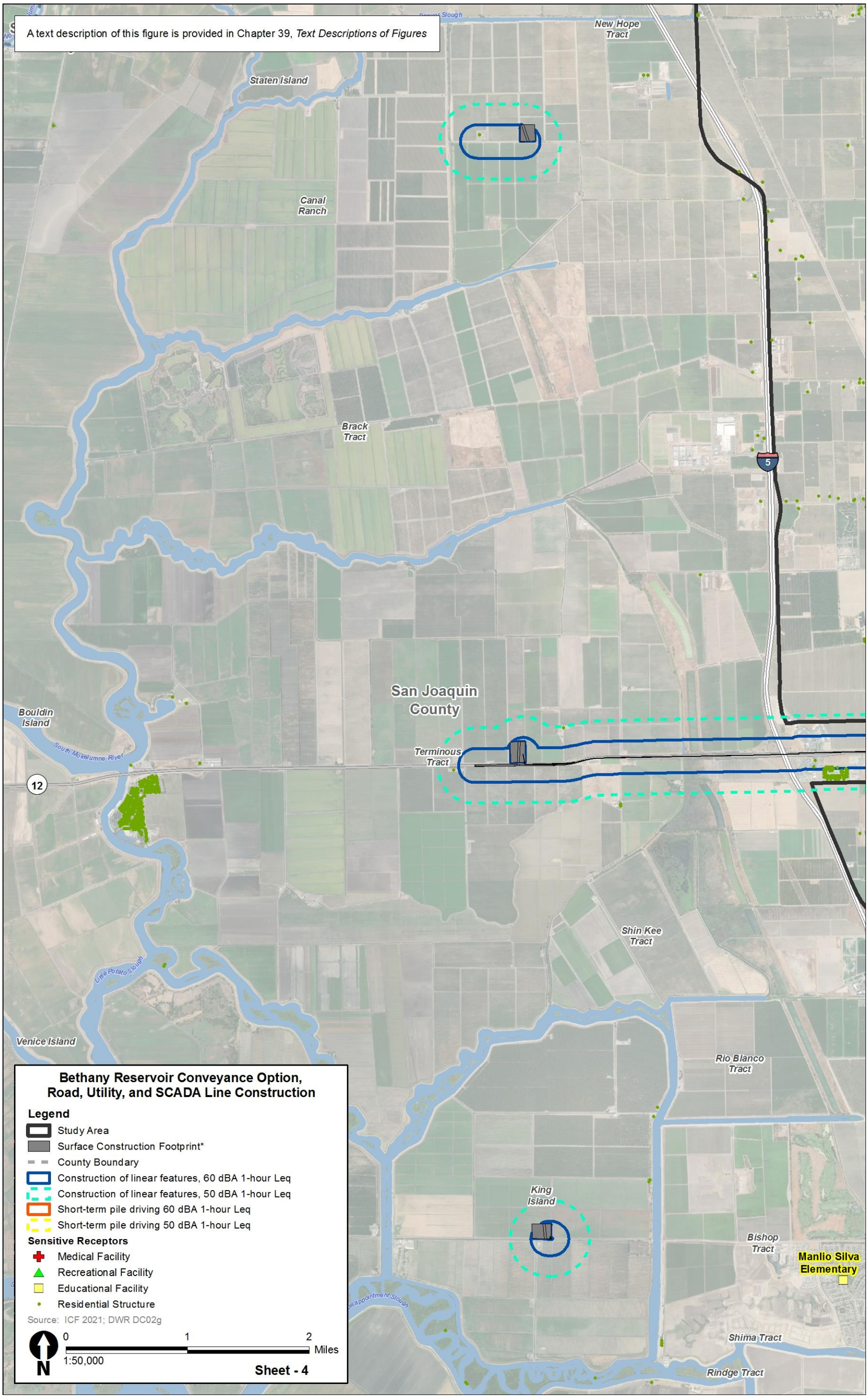
Figures 24A-9a. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction



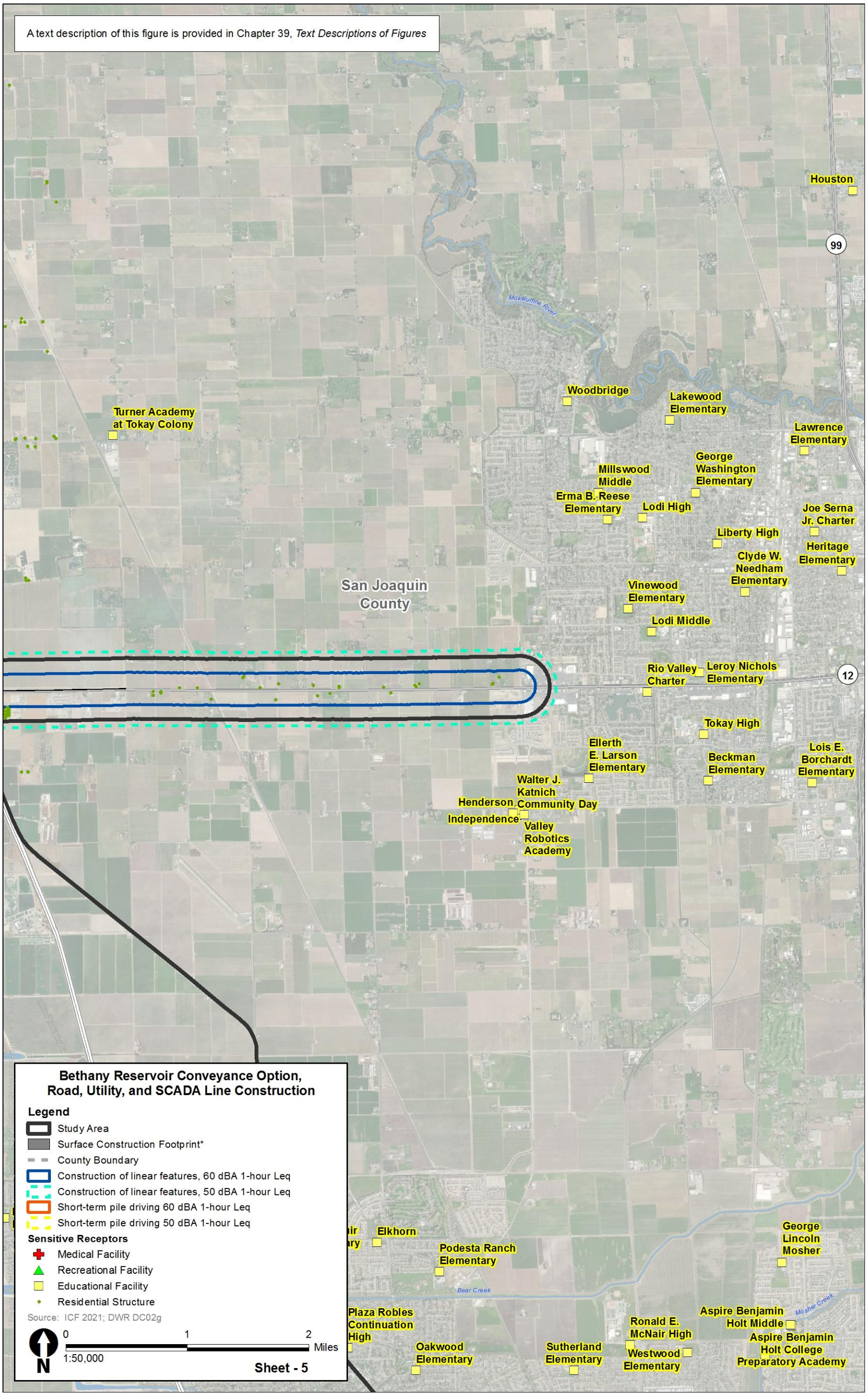
Figures 24A-9b. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction



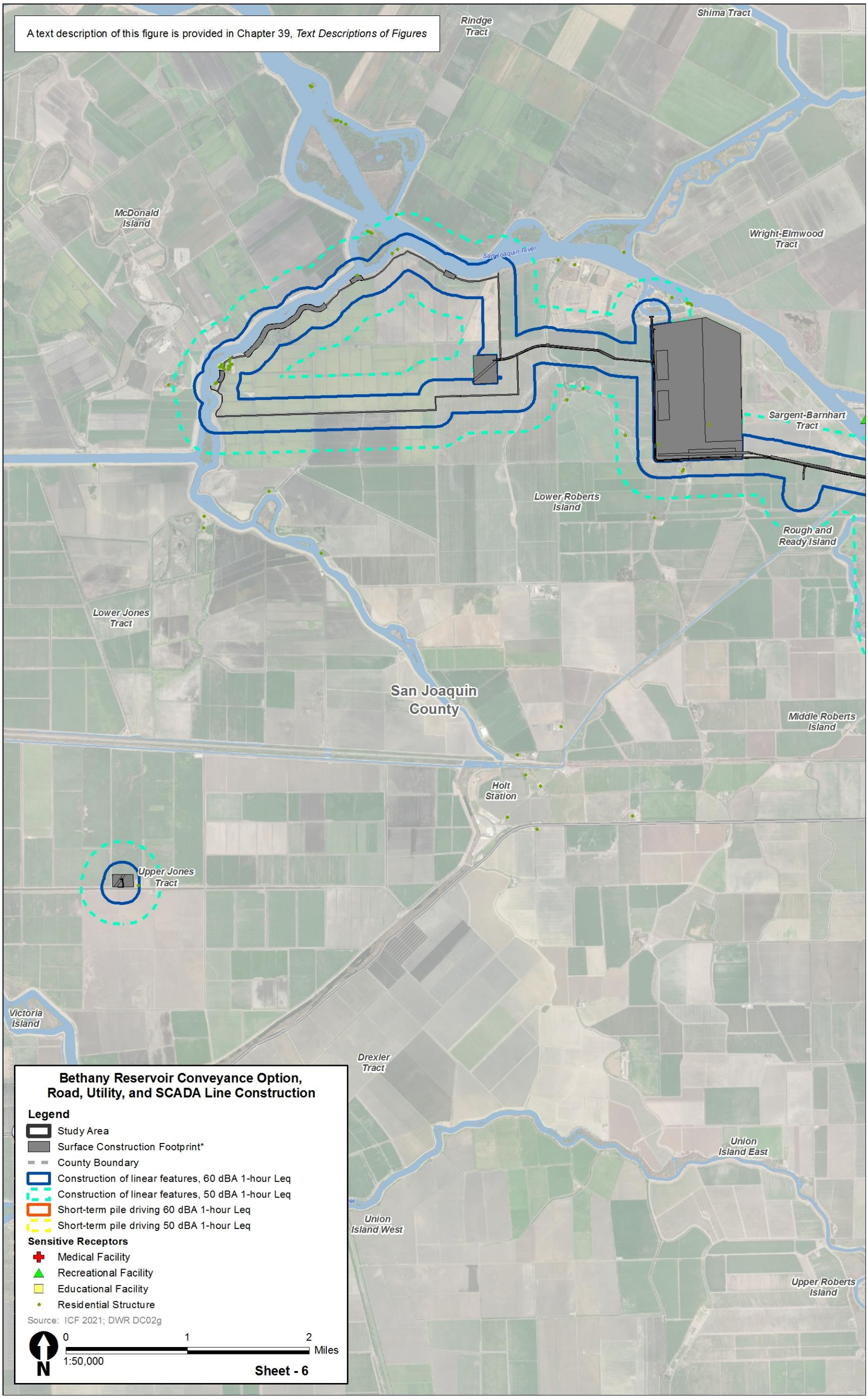
Figures 24A-9c. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction



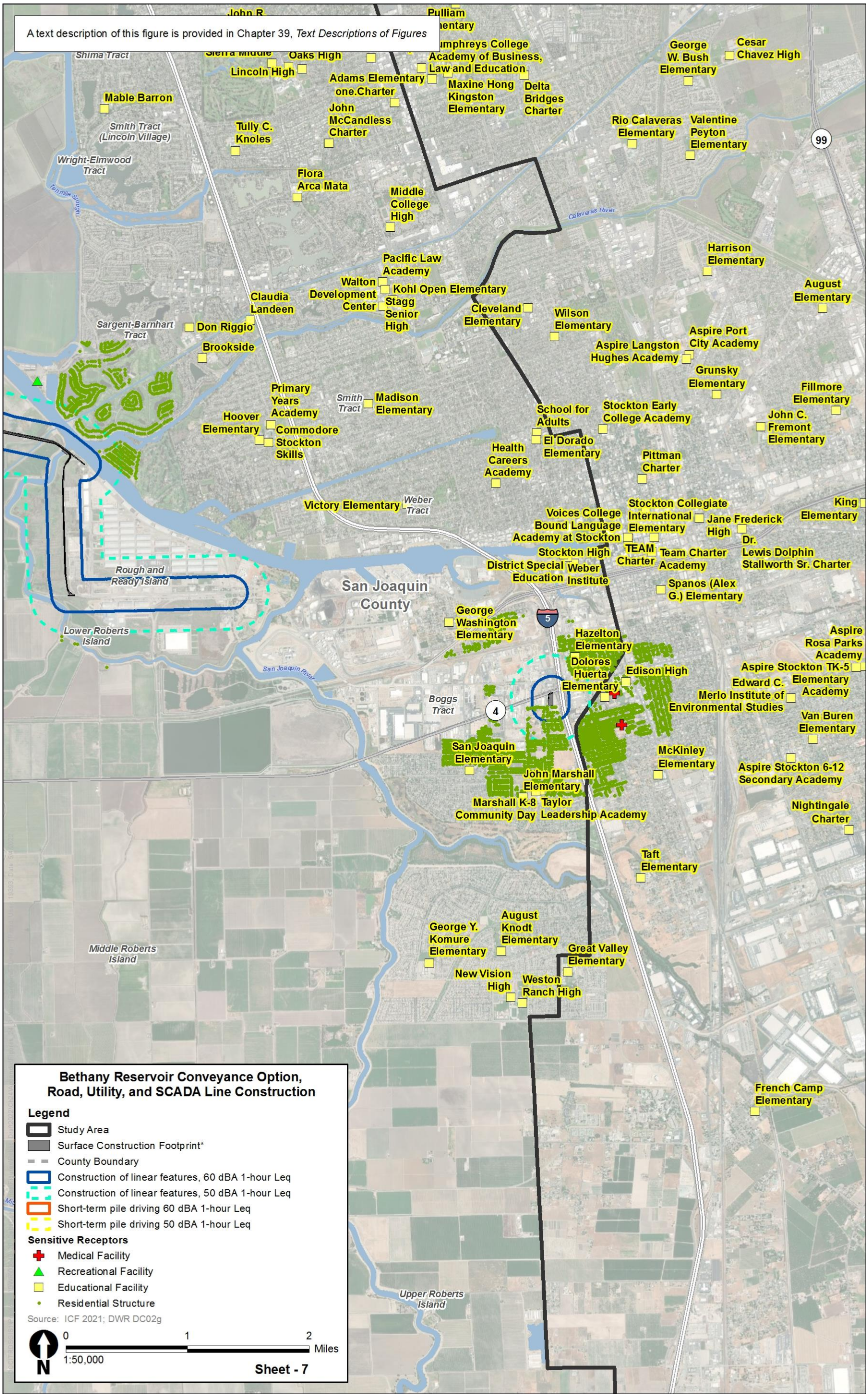
Figures 24A-9d. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction



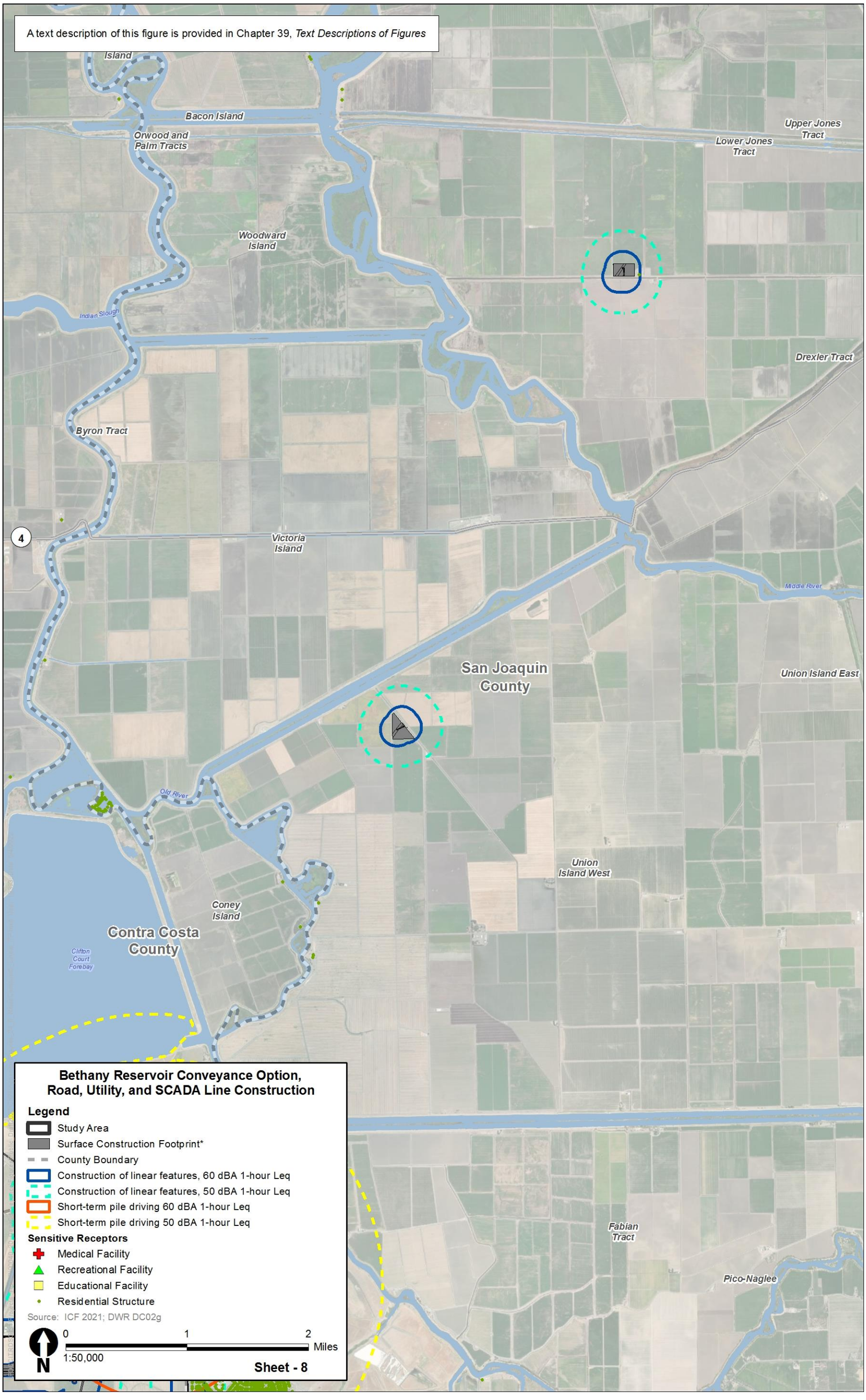
Figures 24A-9e. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction



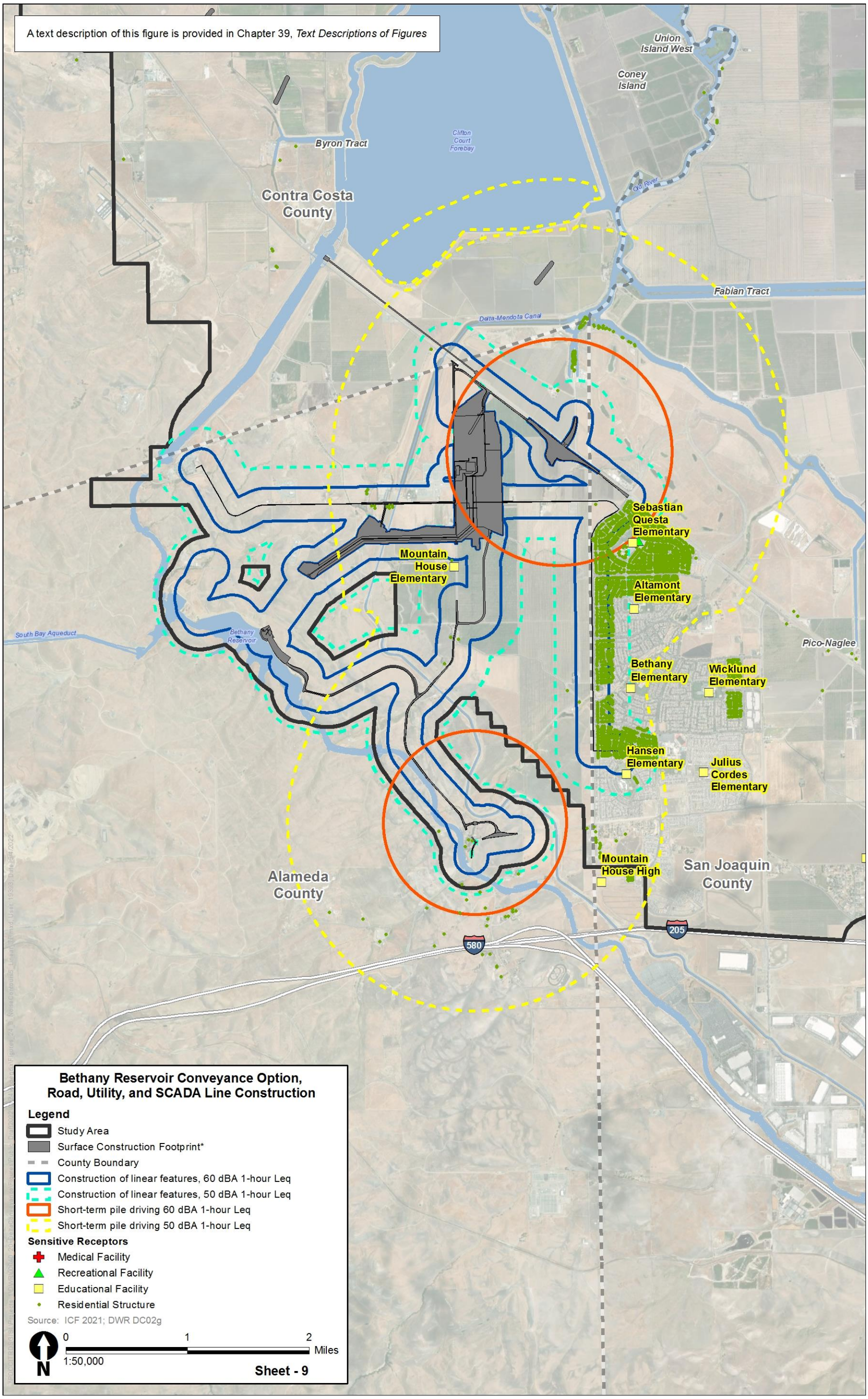
Figures 24A-9f. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-9g. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-9h. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction



Figures 24A-9i. Sound Level Contours for Bethany Reservoir Alignment Alternative 5, Bridge, Road, Utility, and SCADA Line Construction