Attachment B: Wetland and Waters Assessment Map 11 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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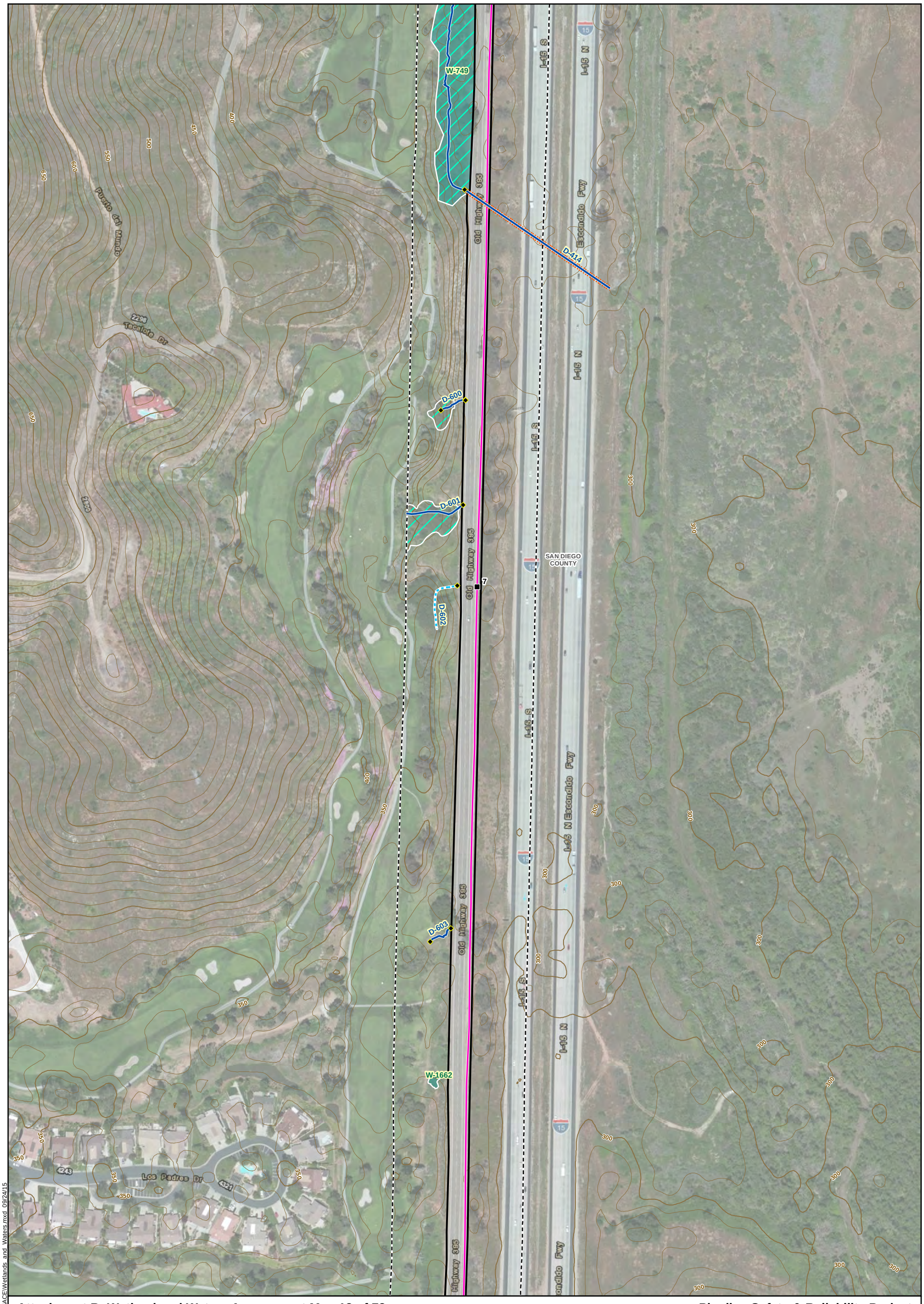

Attachment B: Wetland and Waters Assessment Map 12 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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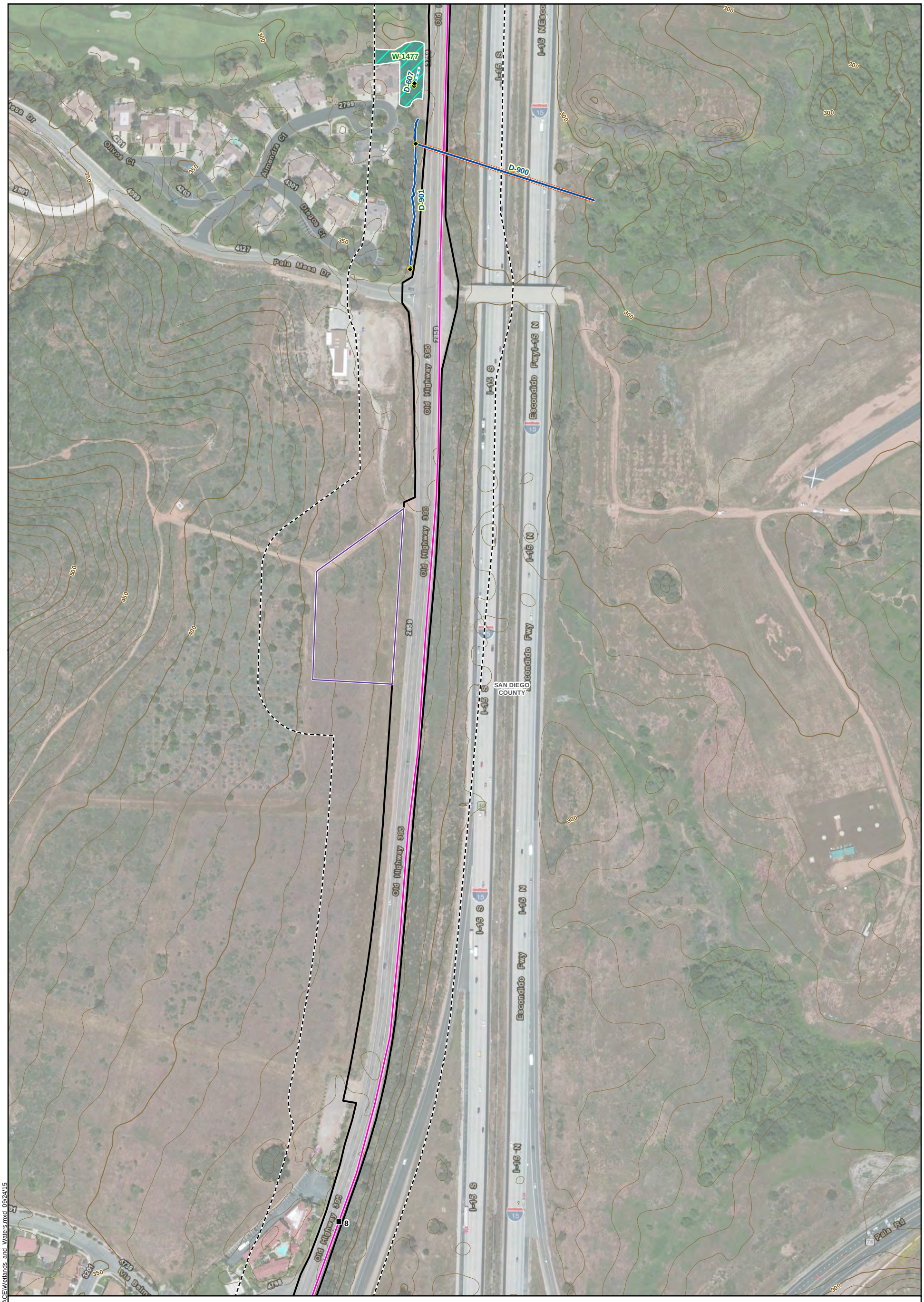

Attachment B: Wetland and Waters Assessment Map 13 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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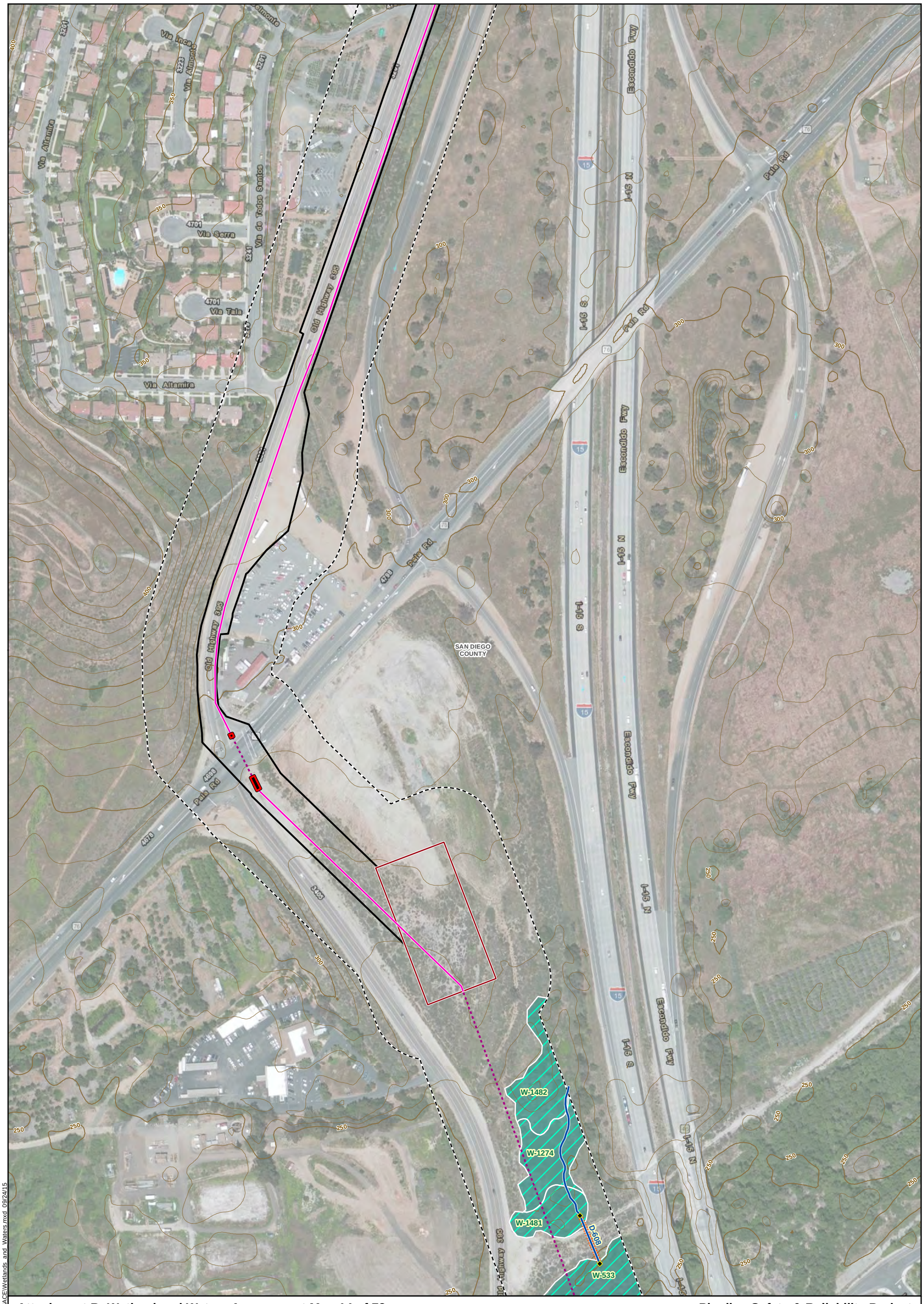

Attachment B: Wetland and Waters Assessment Map 14 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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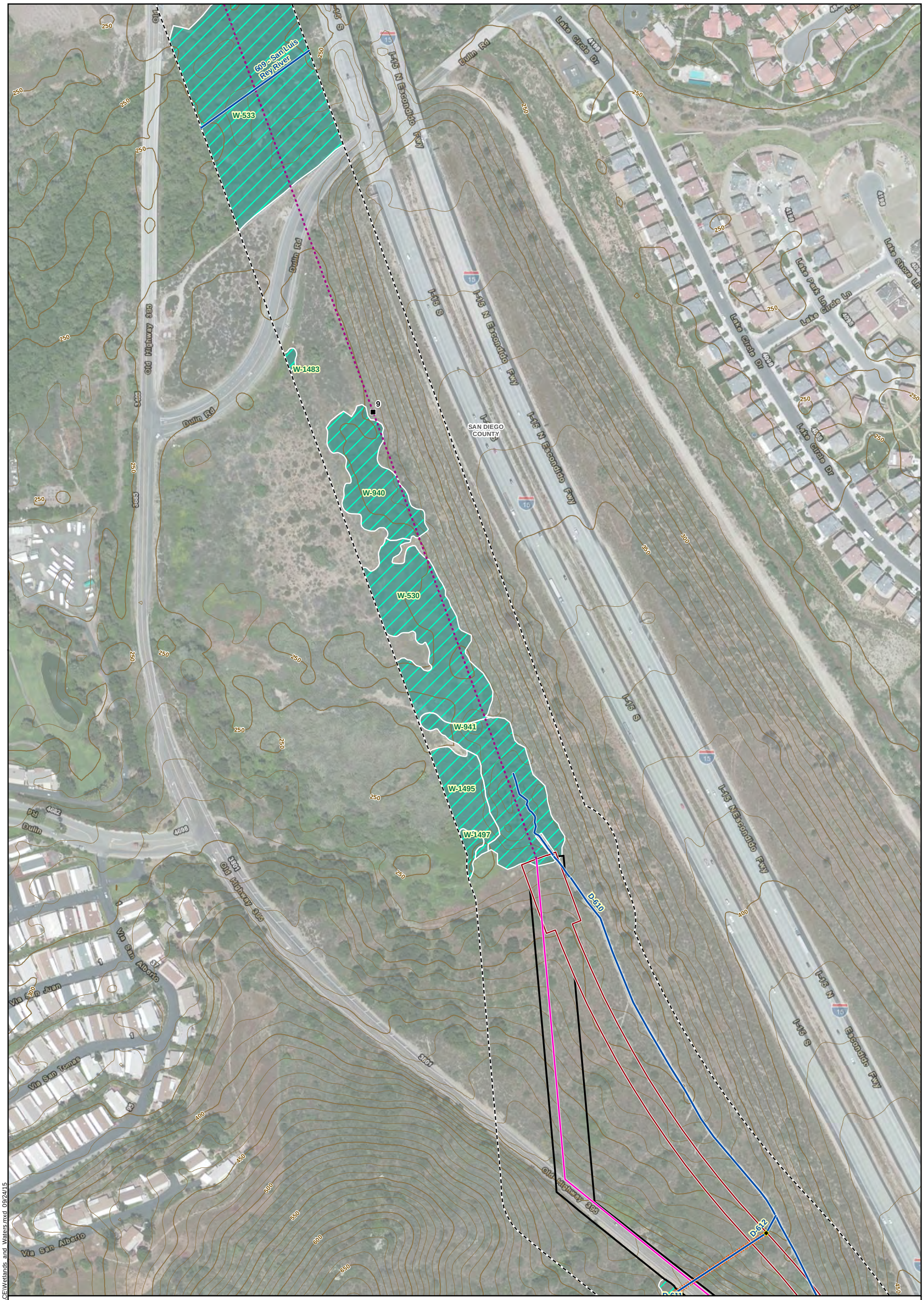

Attachment B: Wetland and Waters Assessment Map 15 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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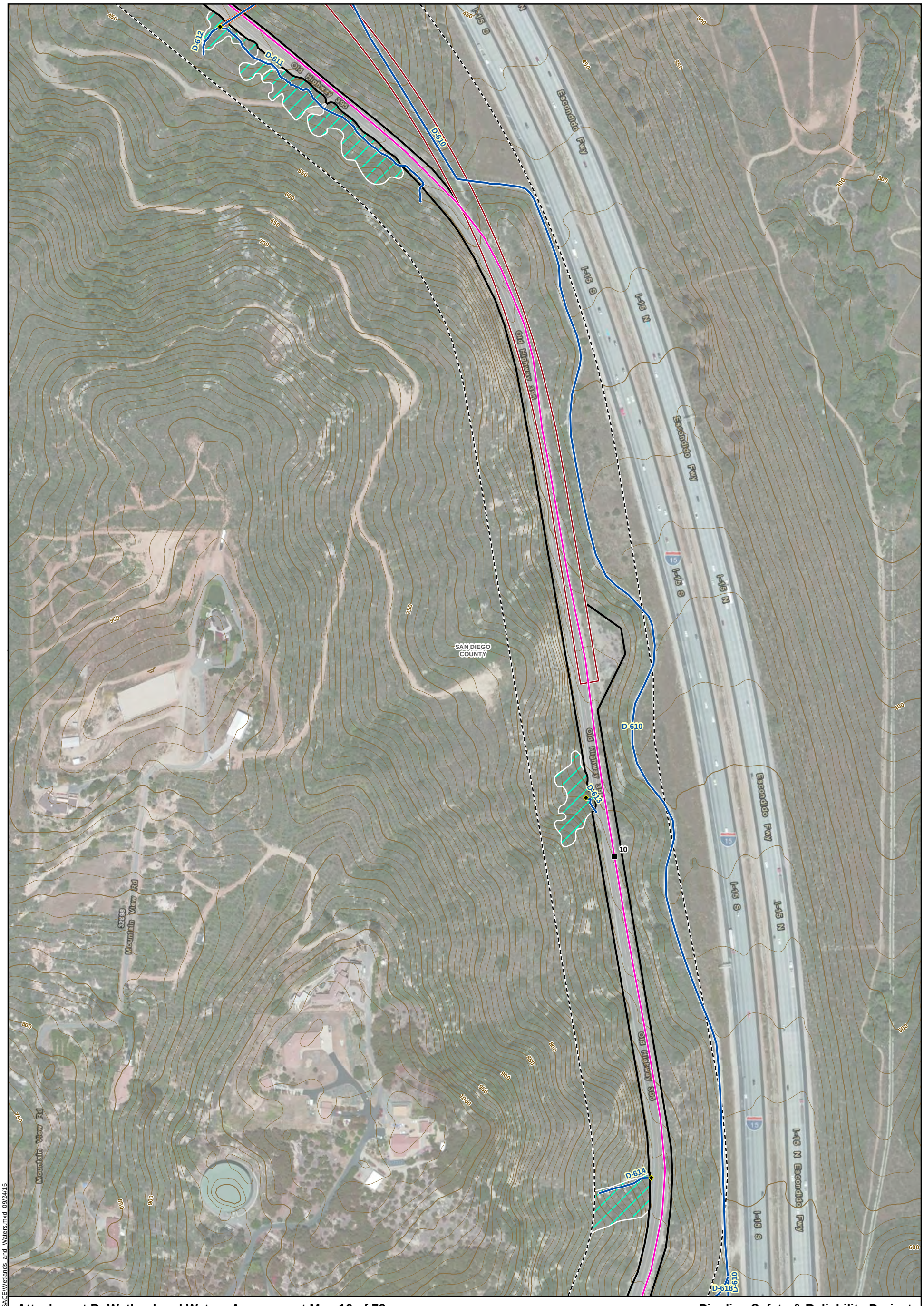

Attachment B: Wetland and Waters Assessment Map 16 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 17 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 18 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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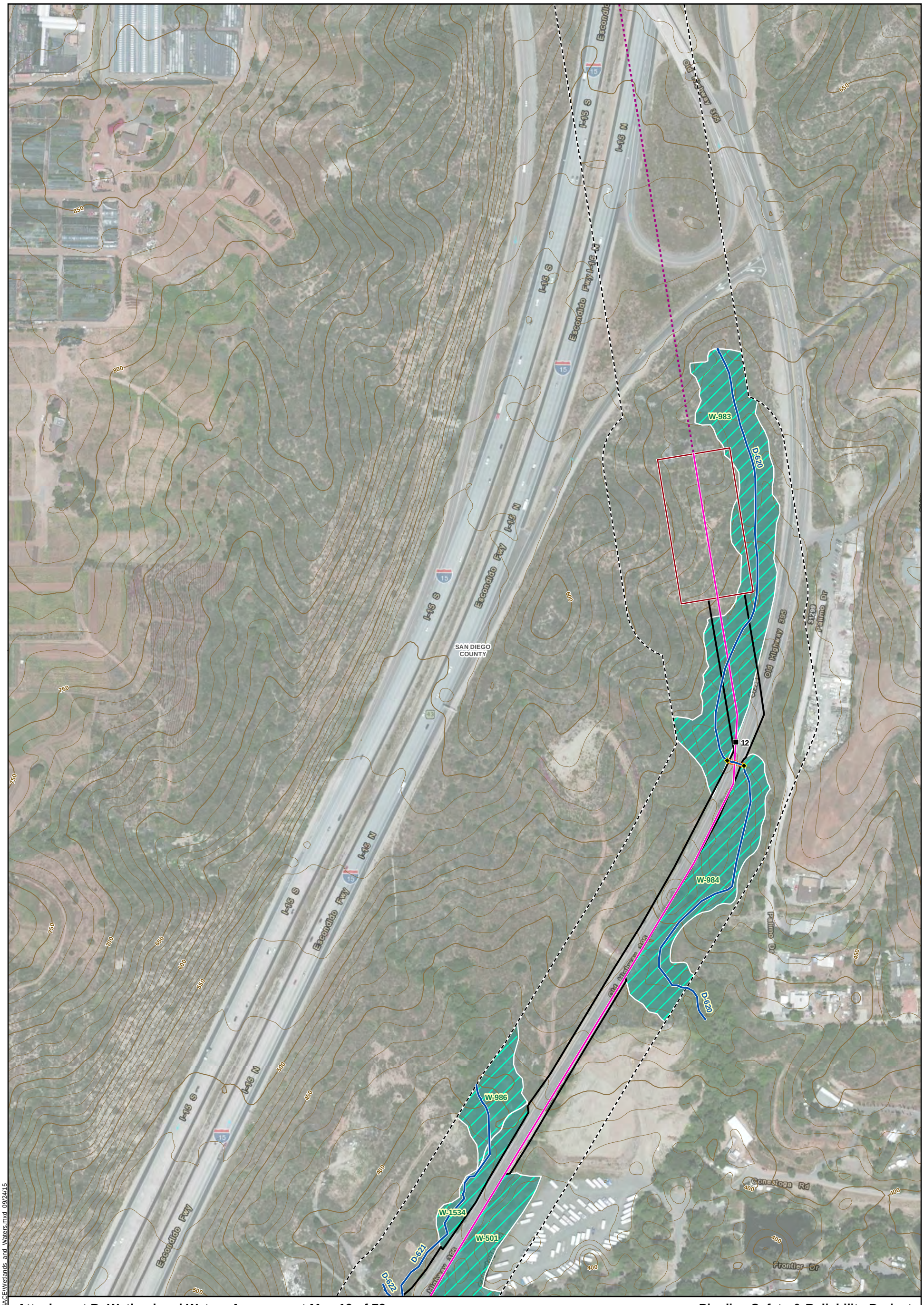
SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL



Attachment B: Wetland and Waters Assessment Map 19 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 20 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 21 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 22 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 23 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 24 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

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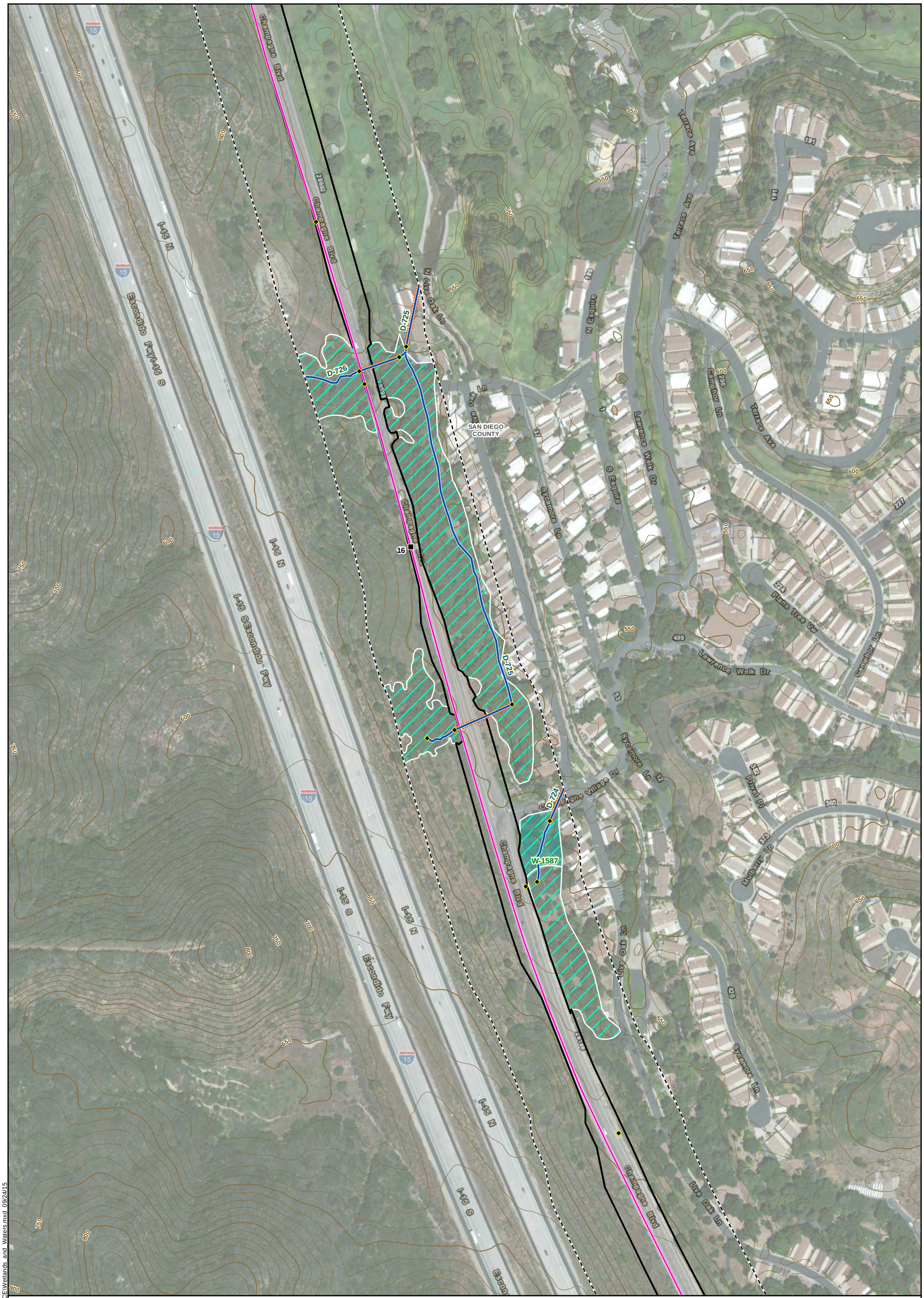

Attachment B: Wetland and Waters Assessment Map 25 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 26 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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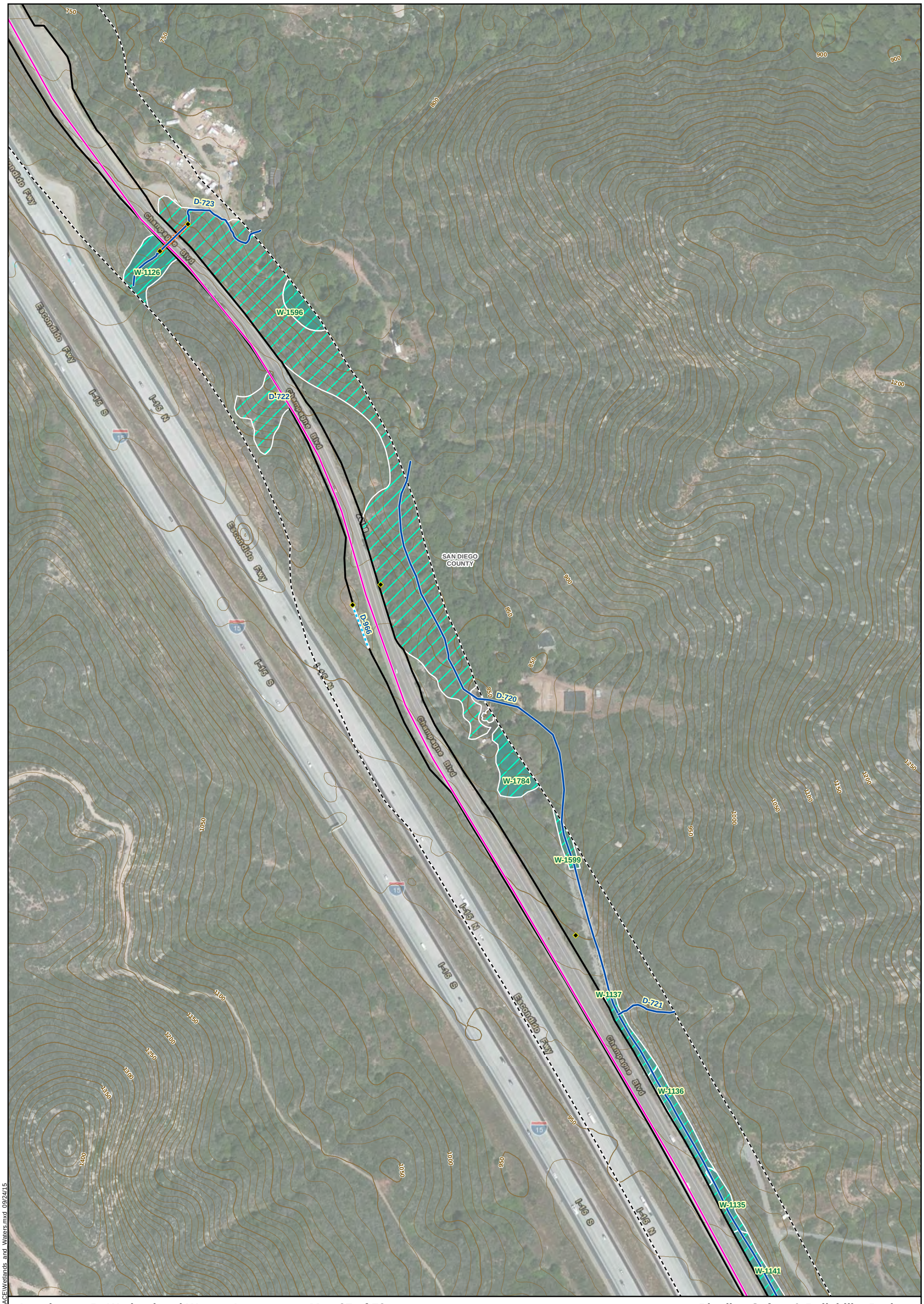

Attachment B: Wetland and Waters Assessment Map 27 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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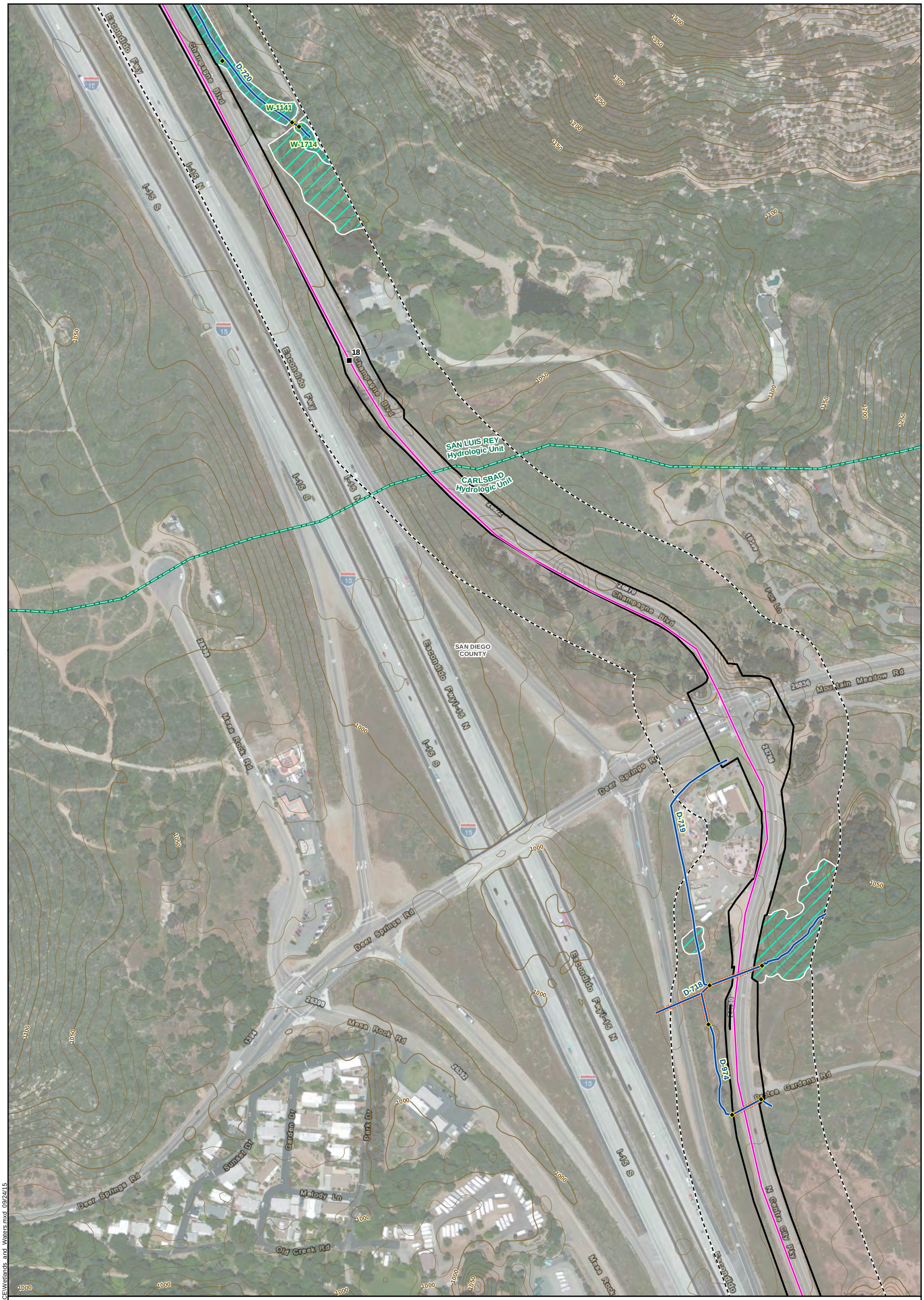

Attachment B: Wetland and Waters Assessment Map 28 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 29 of 72

Pipeline Safety & Reliability Project

Milepost
Proposed Project Route
Proposed Trenchless
Cross-Tie Connector Line
Existing Facility

Permanent
Aboveground Facility

Temporary
Bore Pit
Horizontal Directional Drill Workspace
Laydown Area
Right-of-Way Limits

Contour (10-foot Interval)
Biological Resource Survey
City/County Boundary
Hydrologic Unit Watershed Boundary

Culvert
Non-Jurisdictional Feature
USACE/RWQCB Drainage
Culverted segment

CDFW Riparian Vegetation
USACE/RWQCB Wetland
USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 30 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 31 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 32 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 33 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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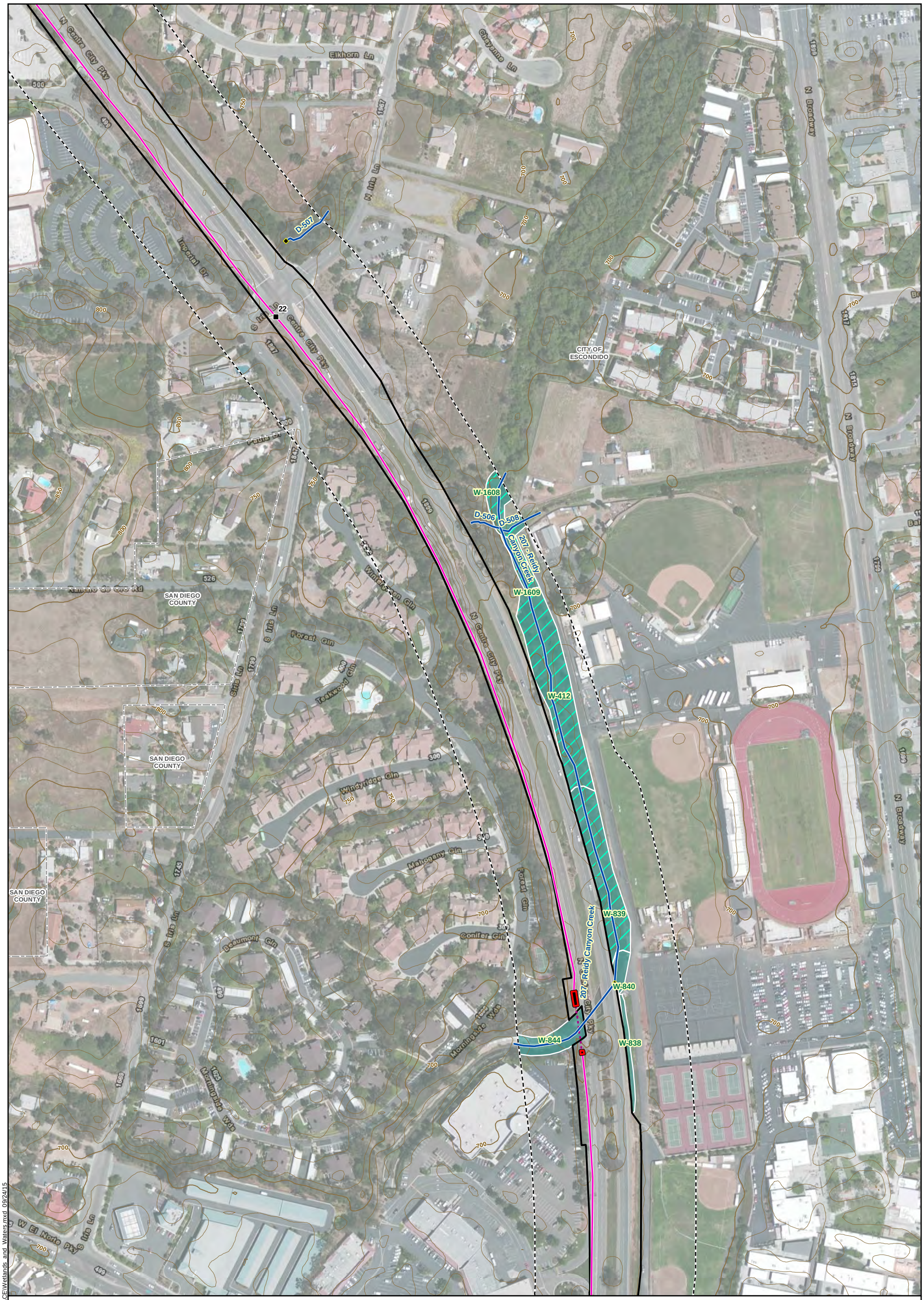
SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL



Attachment B: Wetland and Waters Assessment Map 34 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 35 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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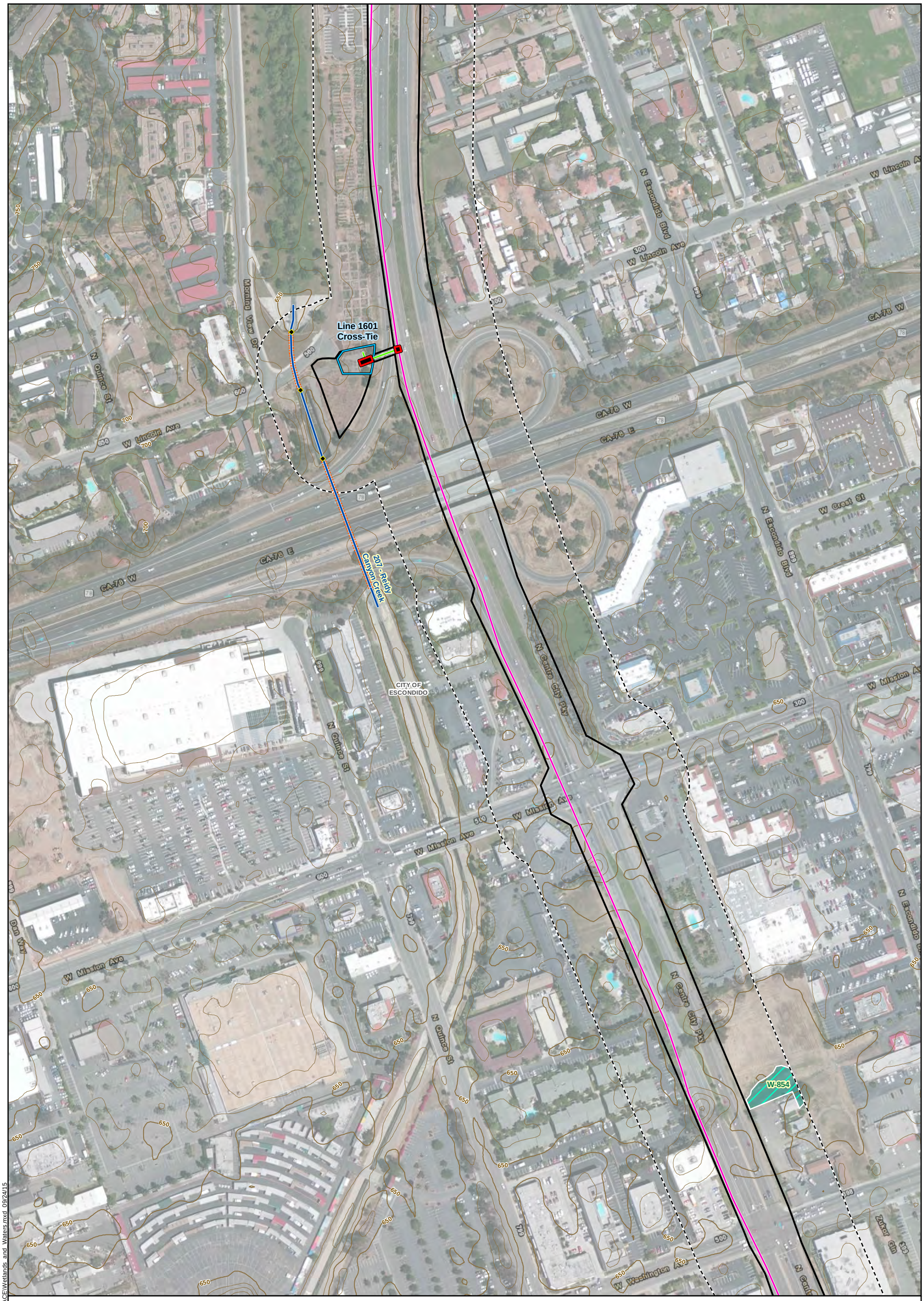

Attachment B: Wetland and Waters Assessment Map 36 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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Attachment B: Wetland and Waters Assessment Map 37 of 72

Pipeline Safety & Reliability Project

Milepost
Proposed Project Route
Proposed Trenchless
Cross-Tie Connector Line
Existing Facility

Permanent
Aboveground Facility

Temporary
Bore Pit
Horizontal Directional Drill Workspace
Laydown Area
Right-of-Way Limits

Contour (10-foot Interval)
Biological Resource Survey
City/County Boundary
Hydrologic Unit Watershed Boundary

Culvert
Non-Jurisdictional Feature
USACE/RWQCB Drainage
Culverted segment

CDFW Riparian Vegetation
USACE/RWQCB Wetland
USACE/RWQCB Drainage

1:3,000
0 200 400 Feet

SoCalGas A Sempra Energy utility
SDGE A Sempra Energy utility
INSIGNIA ENVIRONMENTAL

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Attachment B: Wetland and Waters Assessment Map 38 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary
- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment
- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | NSIGNIA ENVIRONMENTAL

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Attachment B: Wetland and Waters Assessment Map 39 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

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SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

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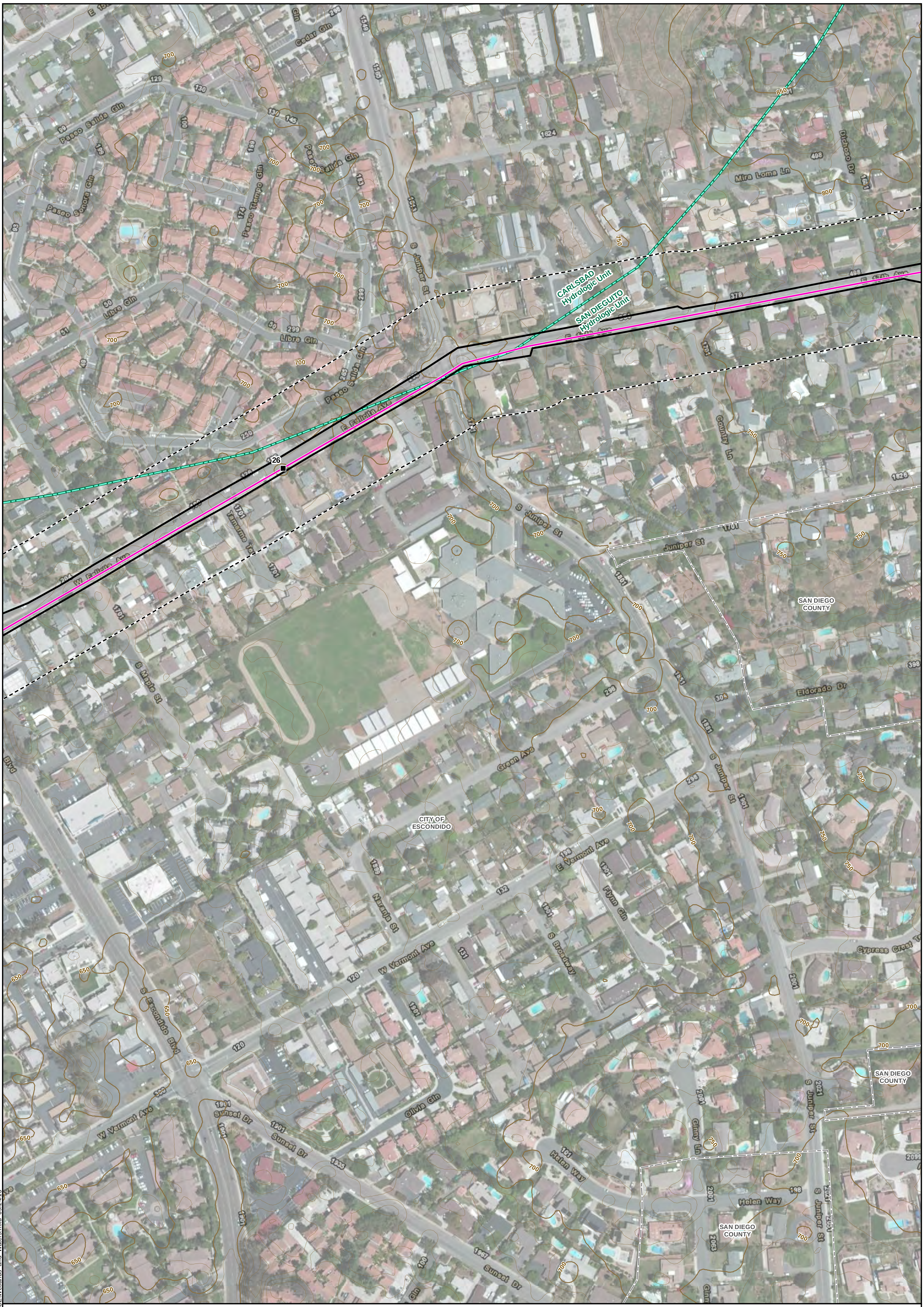


Attachment B: Wetland and Waters Assessment Map 40 of 72

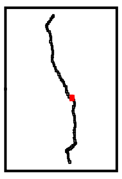
Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary
- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment
- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage



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SoCalGas A Sempra Energy utility
SDGE A Sempra Energy utility
INSIGNIA ENVIRONMENTAL

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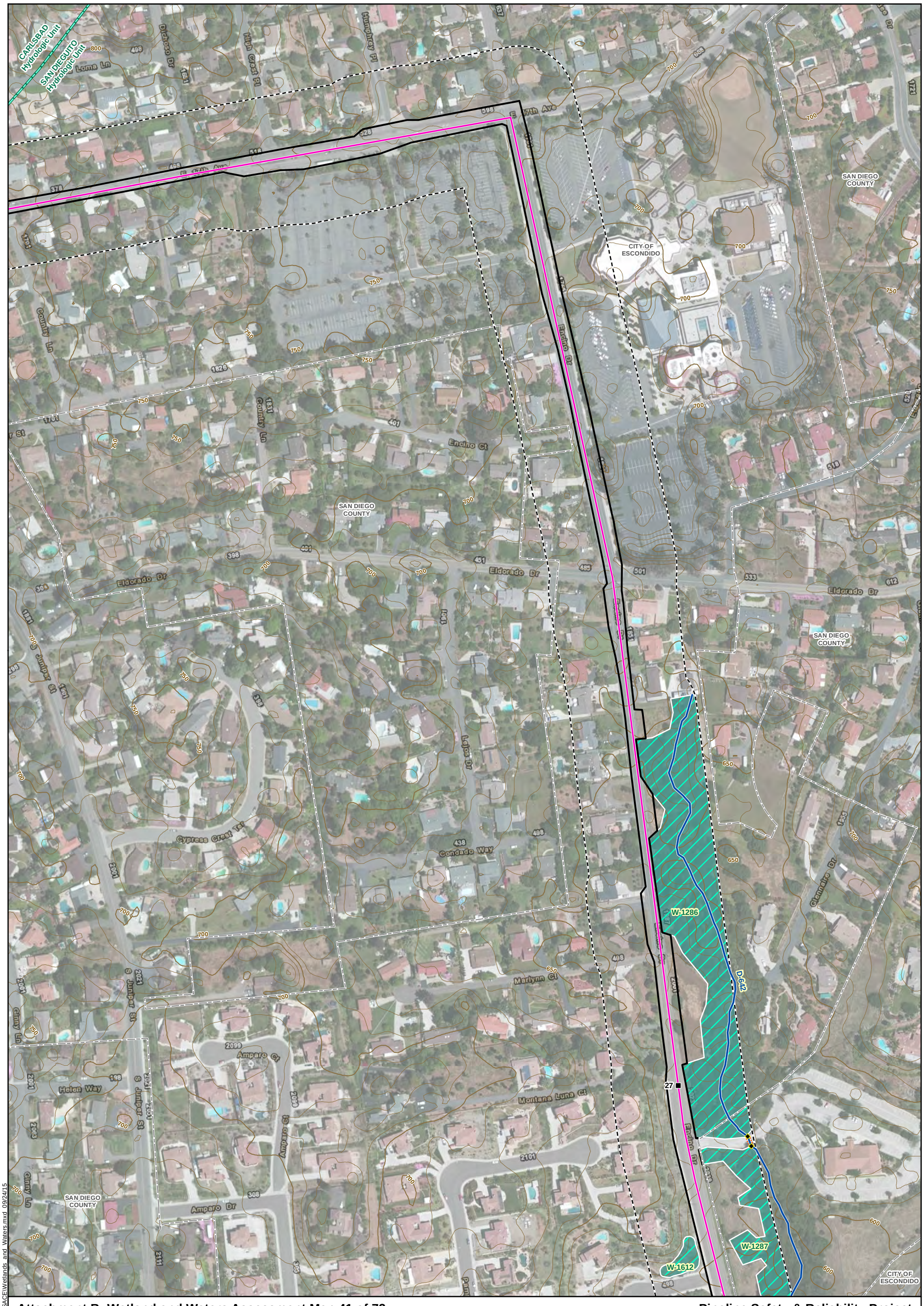

Attachment B: Wetland and Waters Assessment Map 41 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

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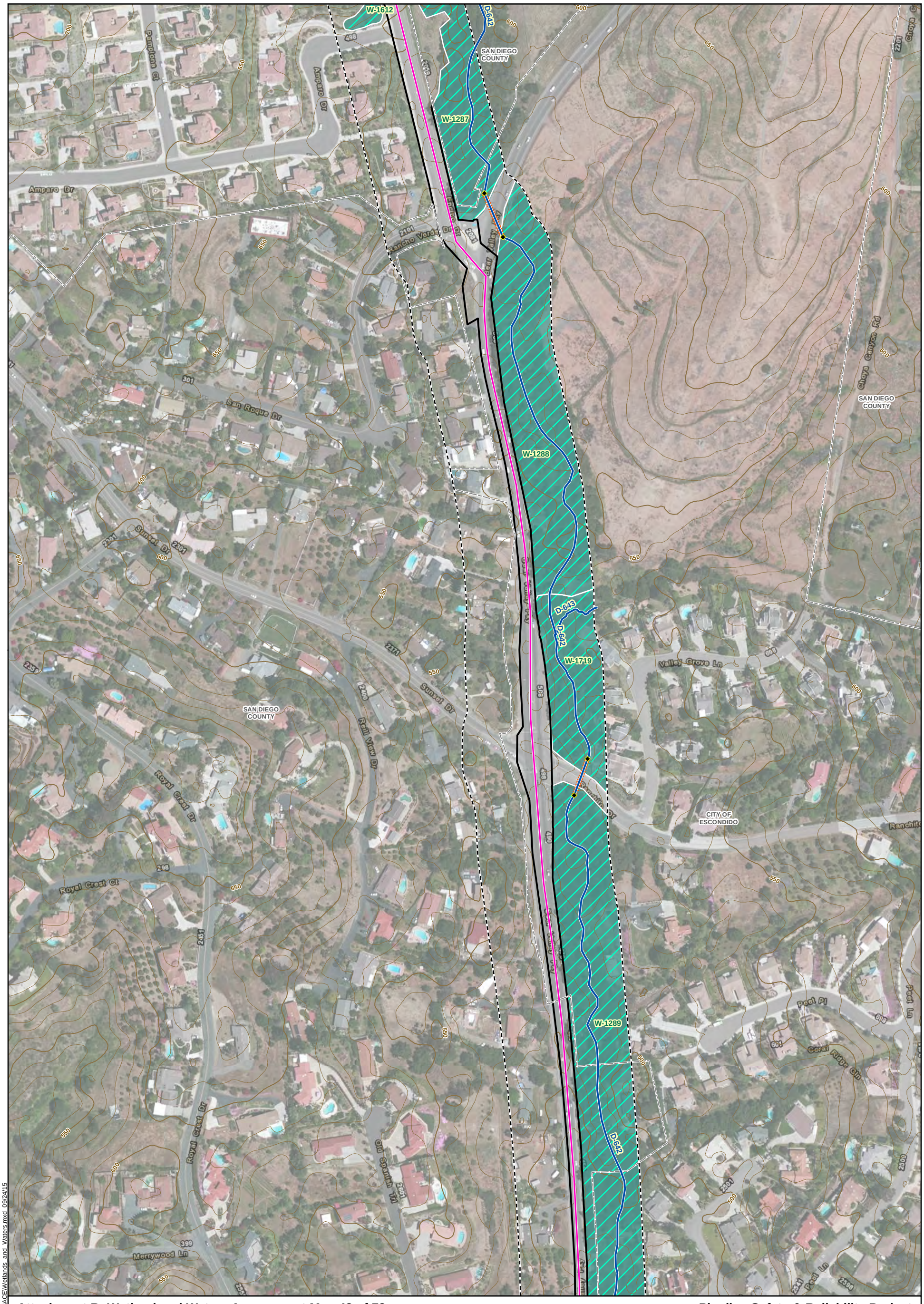

Attachment B: Wetland and Waters Assessment Map 42 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

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Attachment B: Wetland and Waters Assessment Map 43 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 44 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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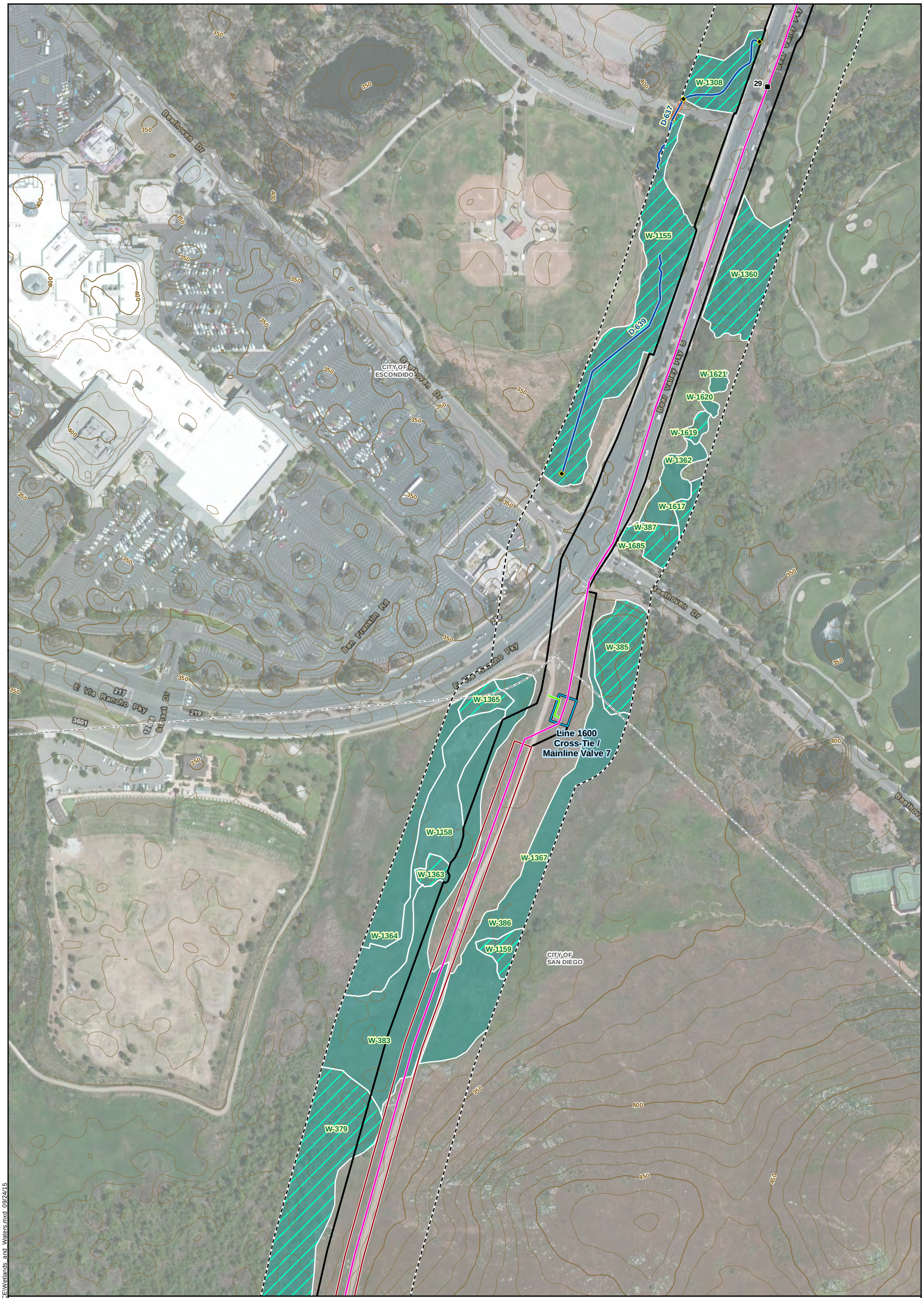

Attachment B: Wetland and Waters Assessment Map 45 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

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Attachment B: Wetland and Waters Assessment Map 46 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

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Attachment B: Wetland and Waters Assessment Map 47 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 48 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 49 of 72

Pipeline Safety & Reliability Project

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Attachment B: Wetland and Waters Assessment Map 50 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 51 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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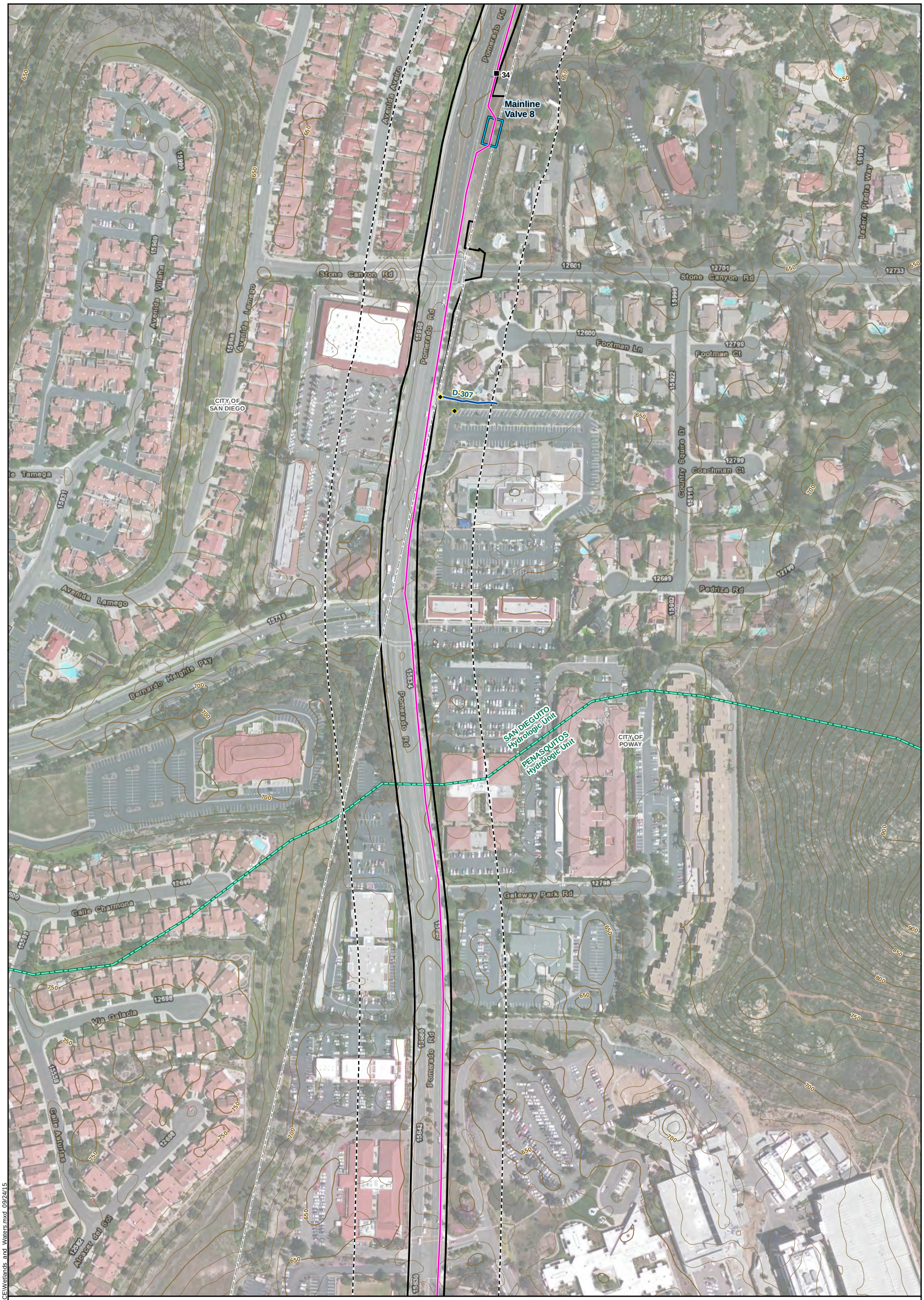

Attachment B: Wetland and Waters Assessment Map 52 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

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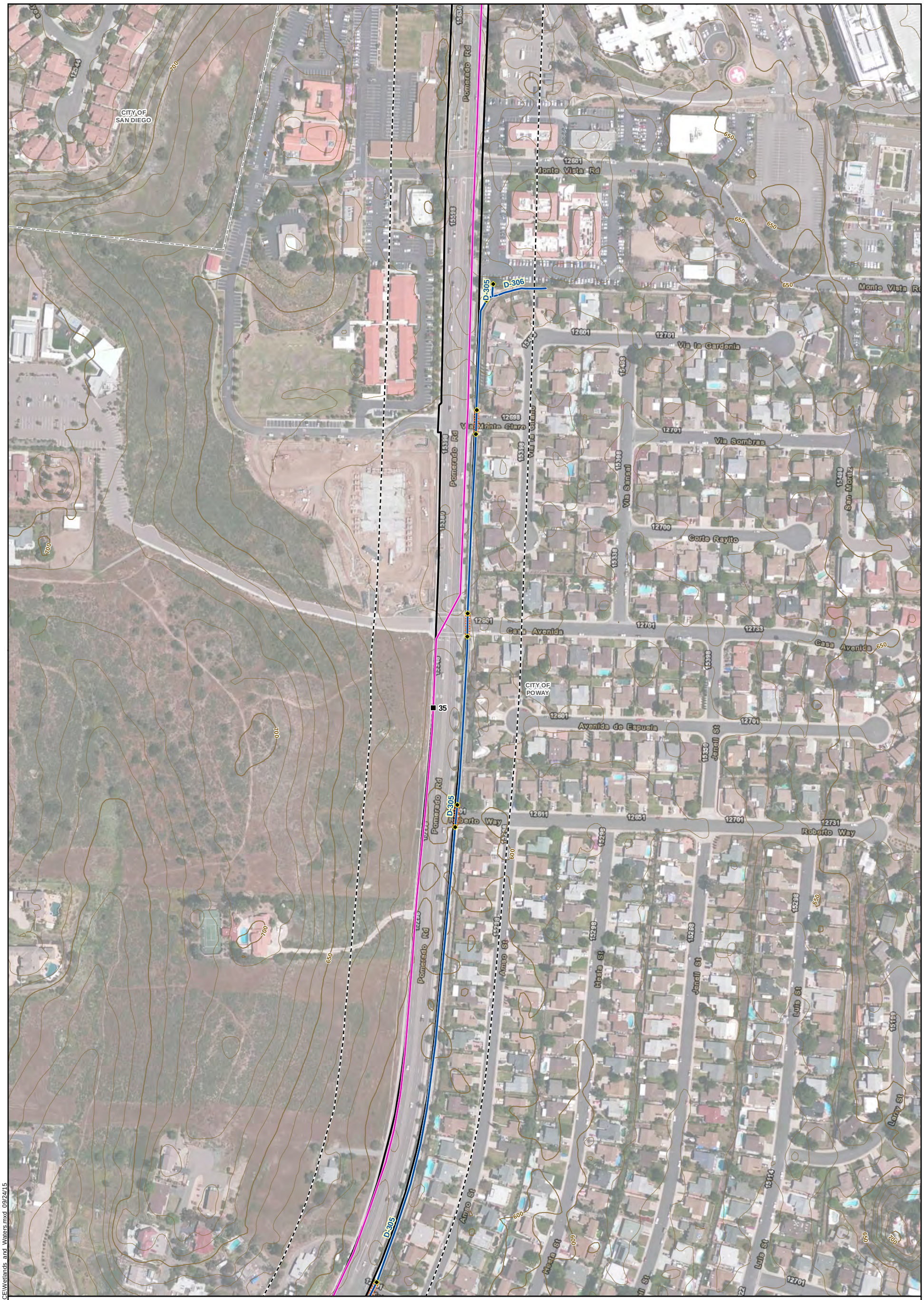

Attachment B: Wetland and Waters Assessment Map 53 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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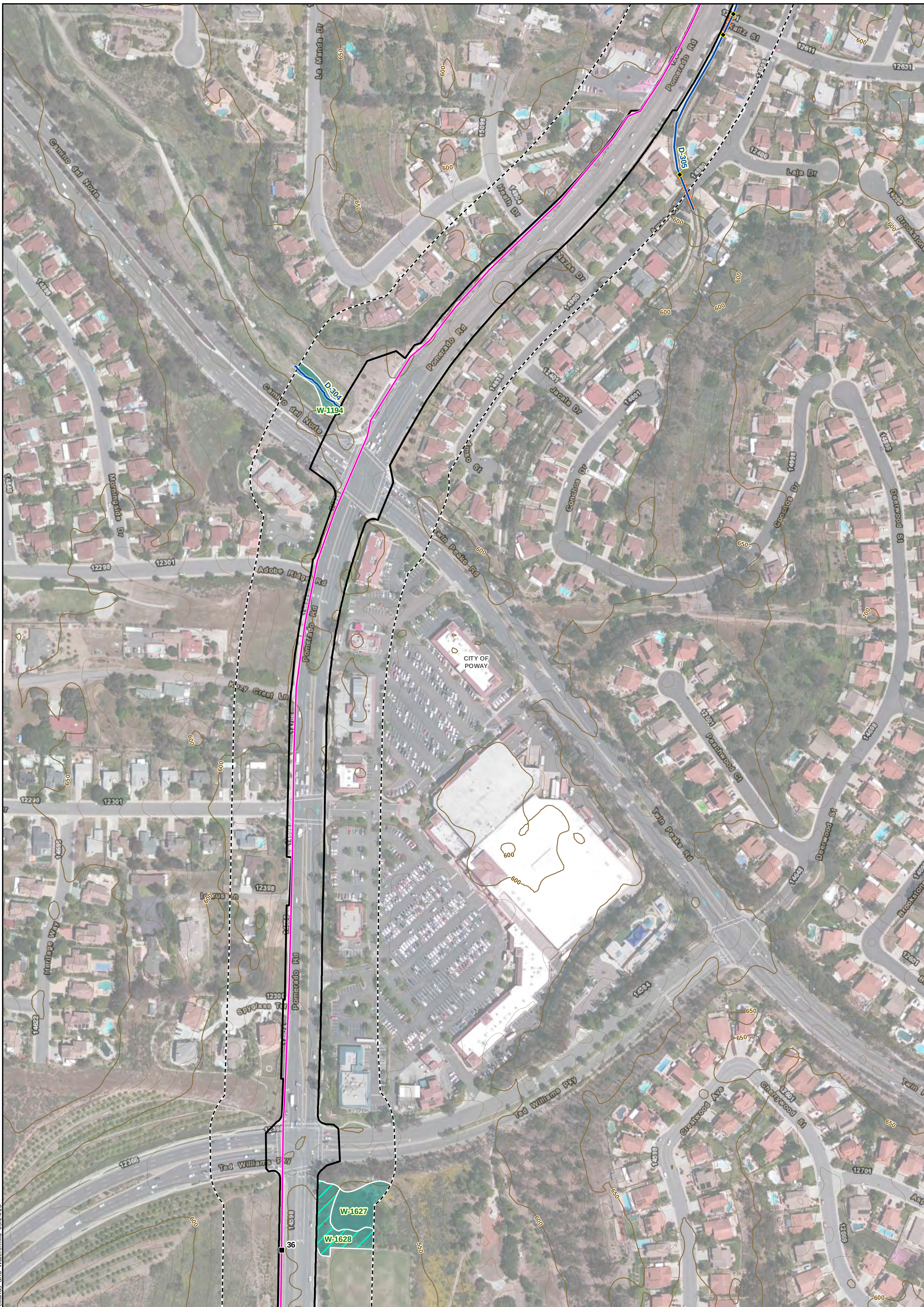

Attachment B: Wetland and Waters Assessment Map 54 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary
- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment
- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

1:3,000

0 200 400 Feet

SoCalGas A Sempra Energy utility
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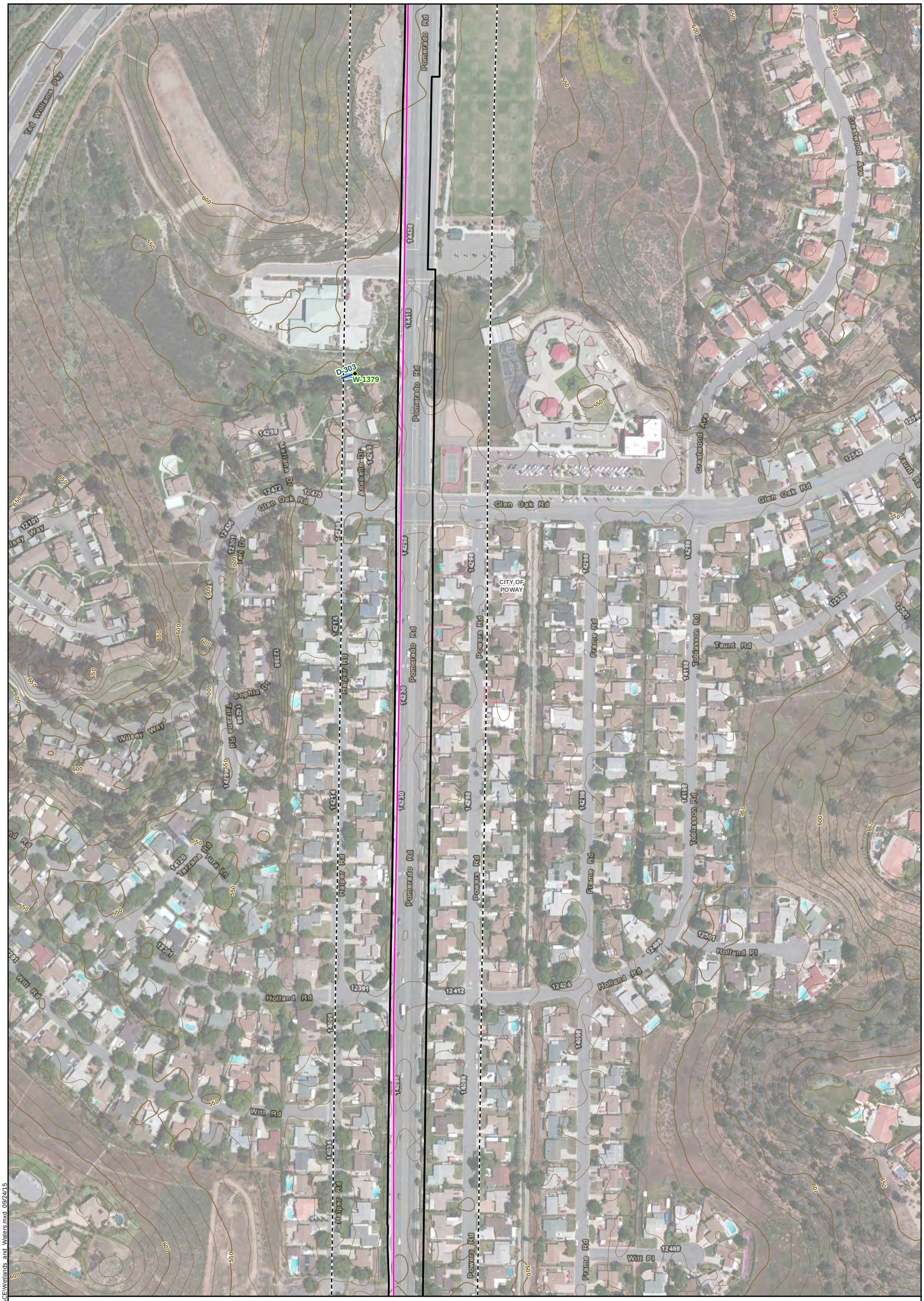
Attachment B: Wetland and Waters Assessment Map 55 of 72

Pipeline Safety & Reliability Project



Milepost
Proposed Project Route
Proposed Trenchless
Cross-Tie Connector Line
Existing Facility

Permanent
Aboveground Facility

Temporary
Bore Pit
Horizontal Directional Drill Workspace
Laydown Area
Right-of-Way Limits

Contour (10-foot Interval)
Biological Resource Survey
City/County Boundary
Hydrologic Unit Watershed Boundary

Culvert
Non-Jurisdictional Feature
USACE/RWQCB Drainage
Culverted segment

CDFW Riparian Vegetation
USACE/RWQCB Wetland
USACE/RWQCB Drainage

1:3,000
0 200 400 Feet

SoCalGas A Sempra Energy utility
SDGE A Sempra Energy utility
INSIGNIA ENVIRONMENTAL

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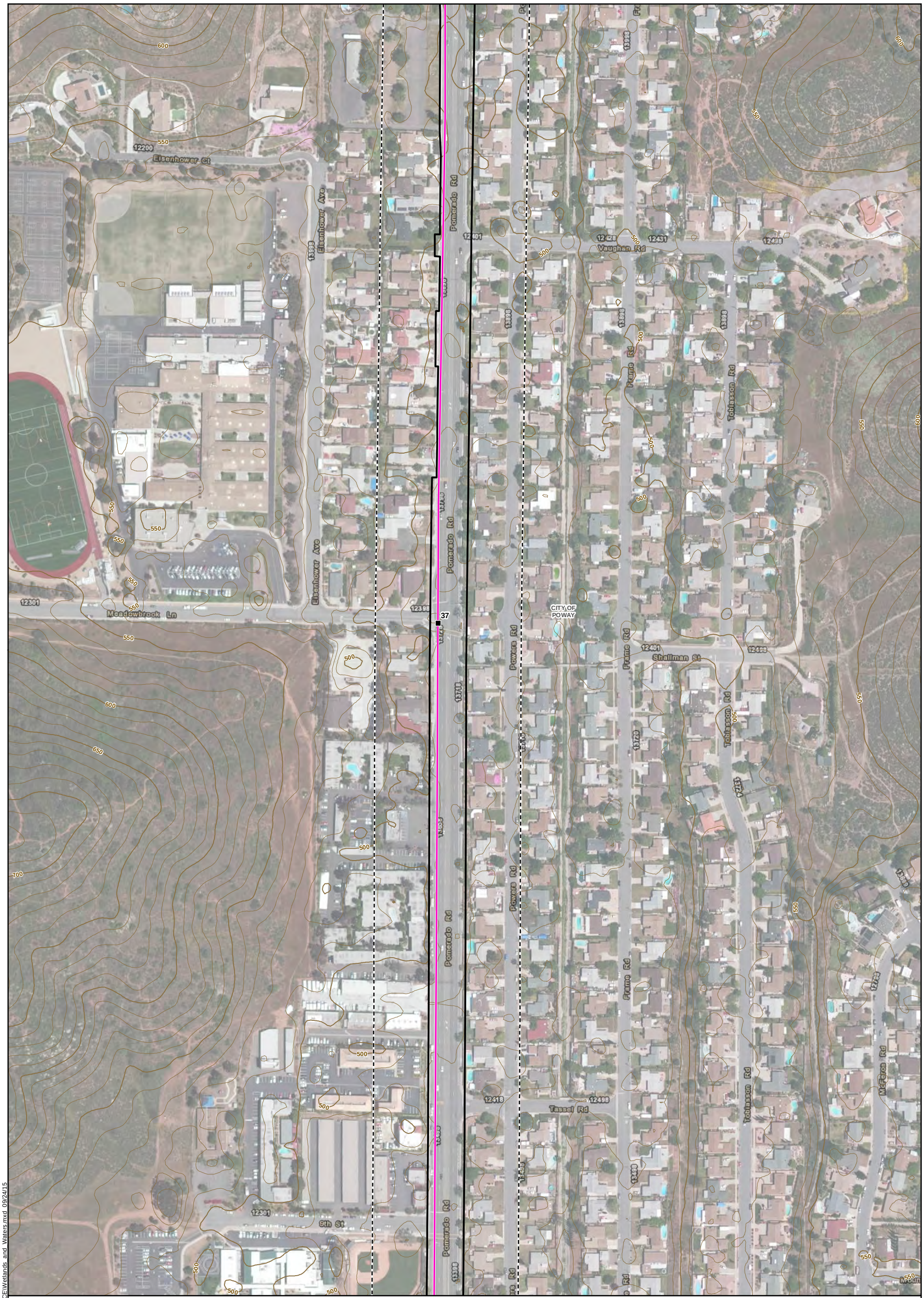

Attachment B: Wetland and Waters Assessment Map 56 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 57 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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Attachment B: Wetland and Waters Assessment Map 58 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary
- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment
- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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0 200 400 Feet

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Attachment B: Wetland and Waters Assessment Map 59 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 60 of 72

Pipeline Safety & Reliability Project

Attachment B: Wetland and Waters Assessment Map 61 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

- Contour (10-foot Interval)
- Biological Resource Survey
- City/County Boundary
- Hydrologic Unit Watershed Boundary

- Culvert
- Non-Jurisdictional Feature
- USACE/RWQCB Drainage
- Culverted segment

- CDFW Riparian Vegetation
- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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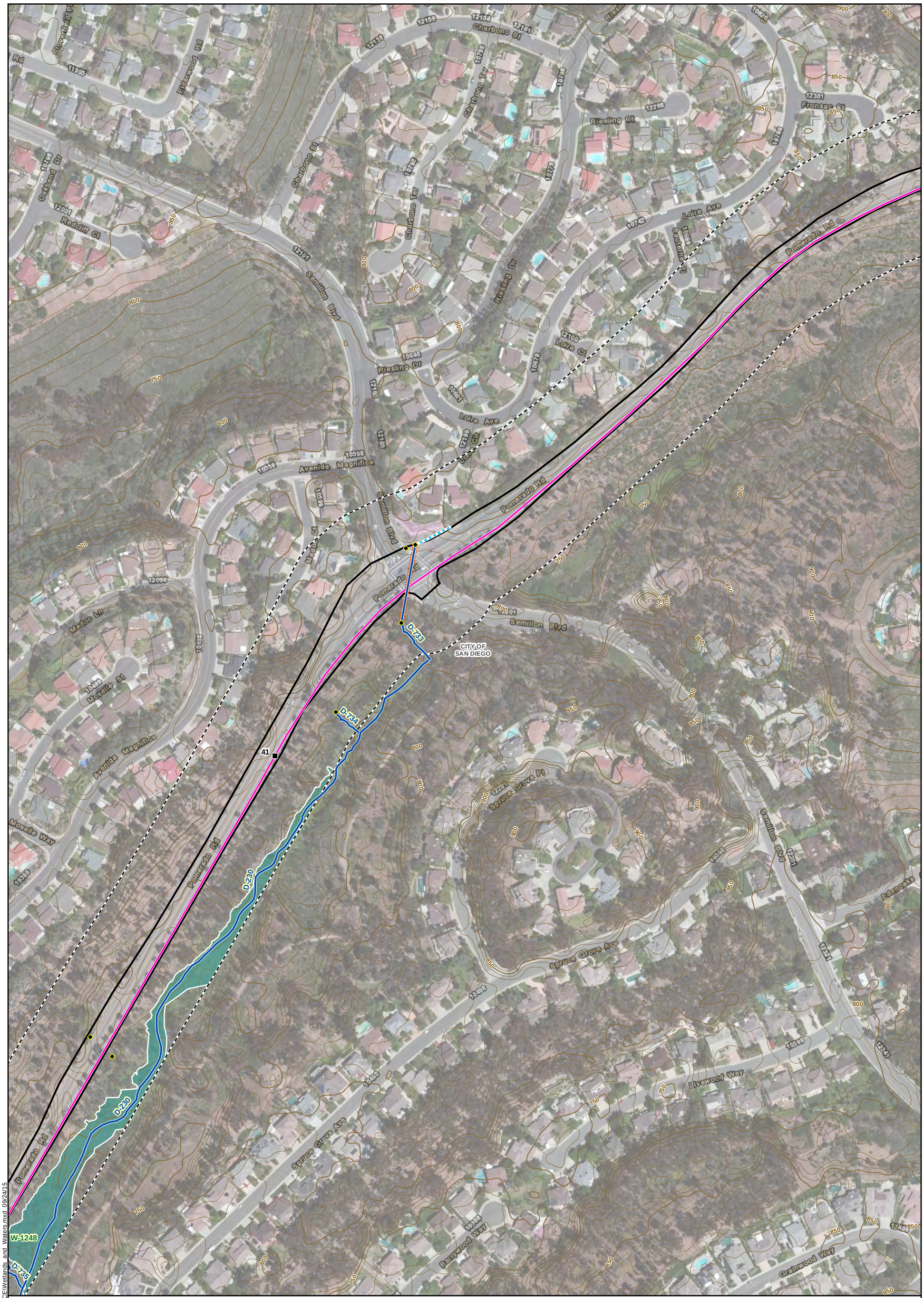

Attachment B: Wetland and Waters Assessment Map 62 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

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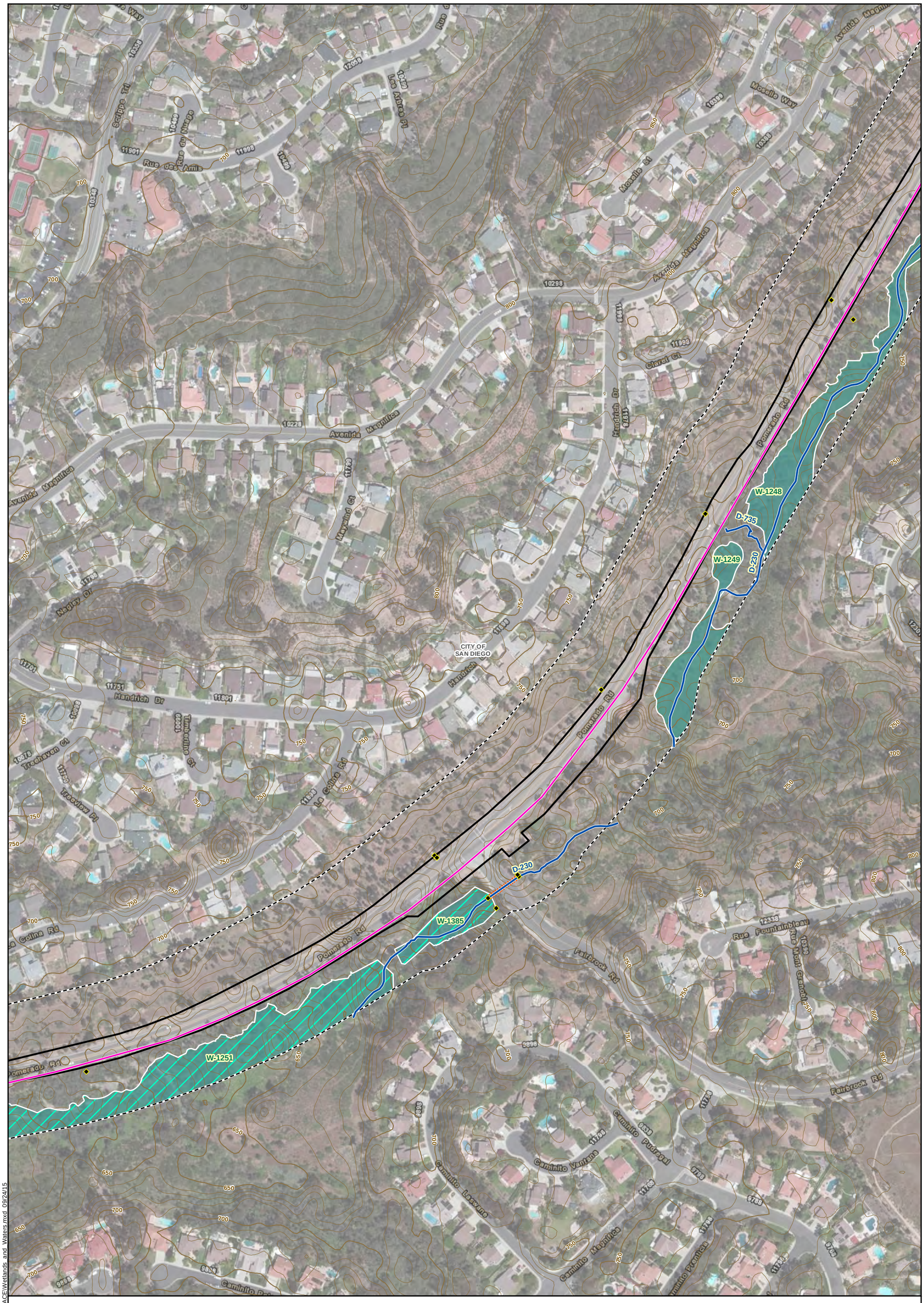

Attachment B: Wetland and Waters Assessment Map 63 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
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Attachment B: Wetland and Waters Assessment Map 64 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
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- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 65 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

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- Laydown Area
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- Non-Jurisdictional Feature
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- Culverted segment

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- USACE/RWQCB Wetland
- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 66 of 72

Pipeline Safety & Reliability Project

	Permanent	Temporary			
Milepost	Aboveground Facility	Bore Pit	Contour (10-foot Interval)	Culvert	CDFW Riparian Vegetation
Proposed Project Route		Horizontal Directional Drill Workspace	Biological Resource Survey	Non-Jurisdictional Feature	USACE/RWQCB Wetland
Proposed Trenchless		Laydown Area	City/County Boundary	USACE/RWQCB Drainage	USACE/RWQCB Drainage
Cross-Tie Connector Line		Right-of-Way Limits	Hydrologic Unit Watershed Boundary	Culverted segment	
Existing Facility					

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Attachment B: Wetland and Waters Assessment Map 67 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

Permanent
- Aboveground Facility

Temporary
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Right-of-Way Limits

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- Culvert
- Non-Jurisdictional Feature
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- USACE/RWQCB Drainage

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Elliot Field Station
(University of California
San Diego Natural Reserve System)

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CITY OF
SAN DIEGO
600
650
D-97D
D-102
600
650

Attachment B: Wetland and Waters Assessment Map 68 of 72

Pipeline Safety & Reliability Project

Milepost
Proposed Project Route
Proposed Trenchless
Cross-Tie Connector Line
Existing Facility

Permanent
Aboveground Facility

Temporary
Bore Pit
Horizontal Directional Drill Workspace
Laydown Area
Right-of-Way Limits

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Non-Jurisdictional Feature
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USACE/RWQCB Wetland
USACE/RWQCB Drainage

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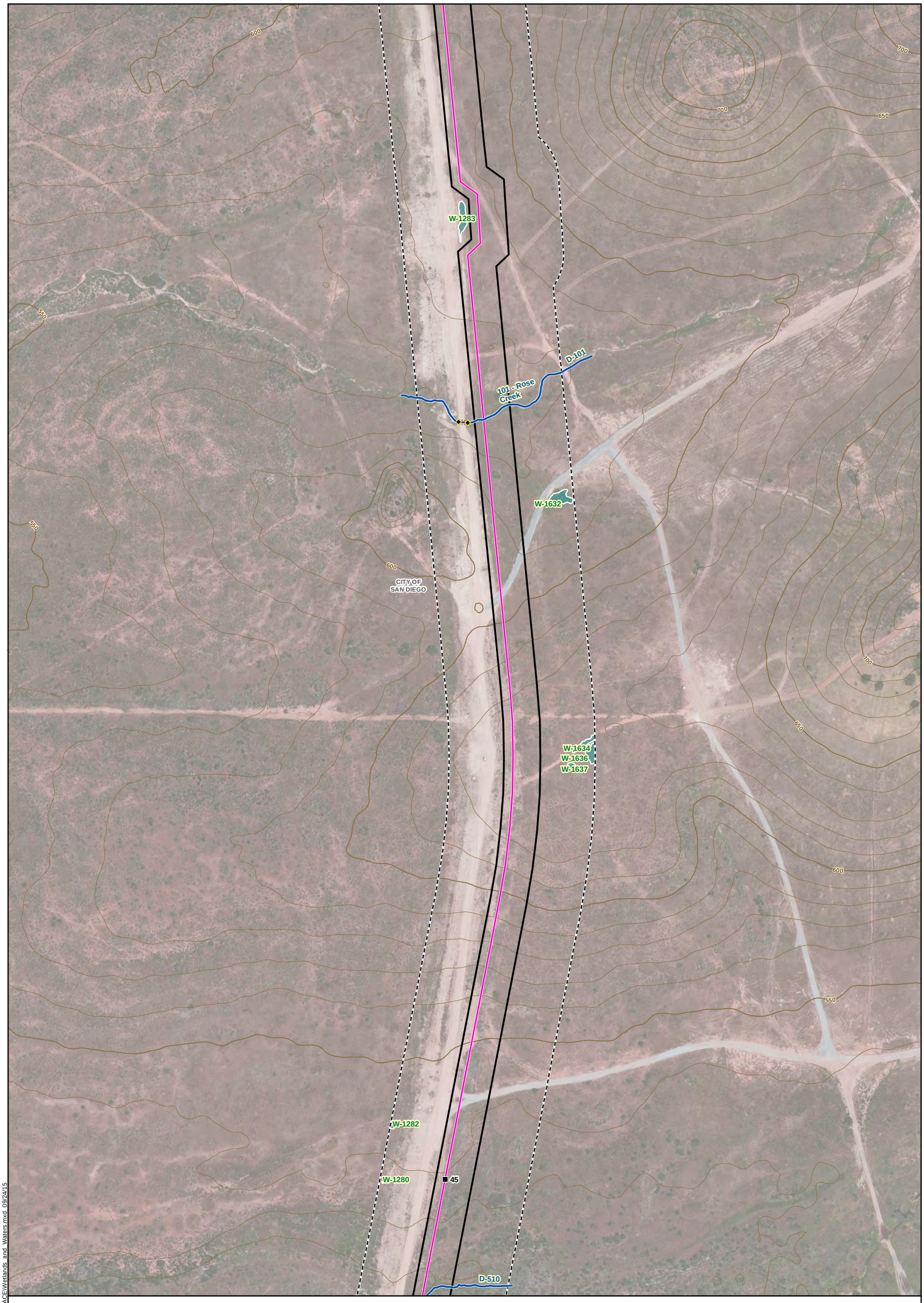

Attachment B: Wetland and Waters Assessment Map 69 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

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- Bore Pit
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- USACE/RWQCB Drainage

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Attachment B: Wetland and Waters Assessment Map 70 of 72

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless
- Cross-Tie Connector Line
- Existing Facility

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- USACE/RWQCB Drainage

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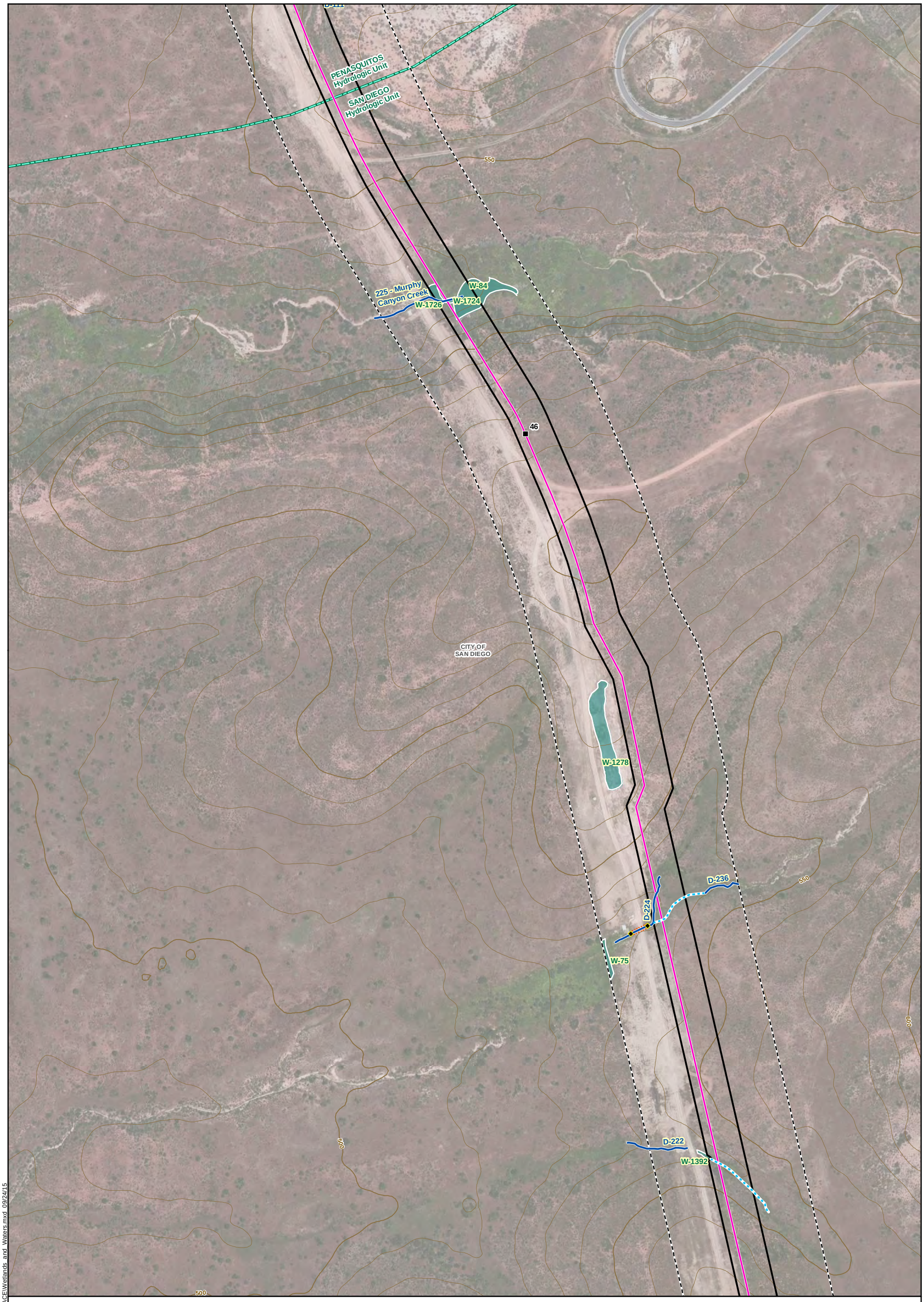

Attachment B: Wetland and Waters Assessment Map 71 of 72

Pipeline Safety & Reliability Project

Milepost
Proposed Project Route
Proposed Trenchless
Cross-Tie Connector Line
Existing Facility

Permanent
Aboveground Facility

Temporary
Bore Pit
Horizontal Directional Drill Workspace
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USACE/RWQCB Drainage

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SoCalGas
A Sempra Energy utility
SDGE
A Sempra Energy utility
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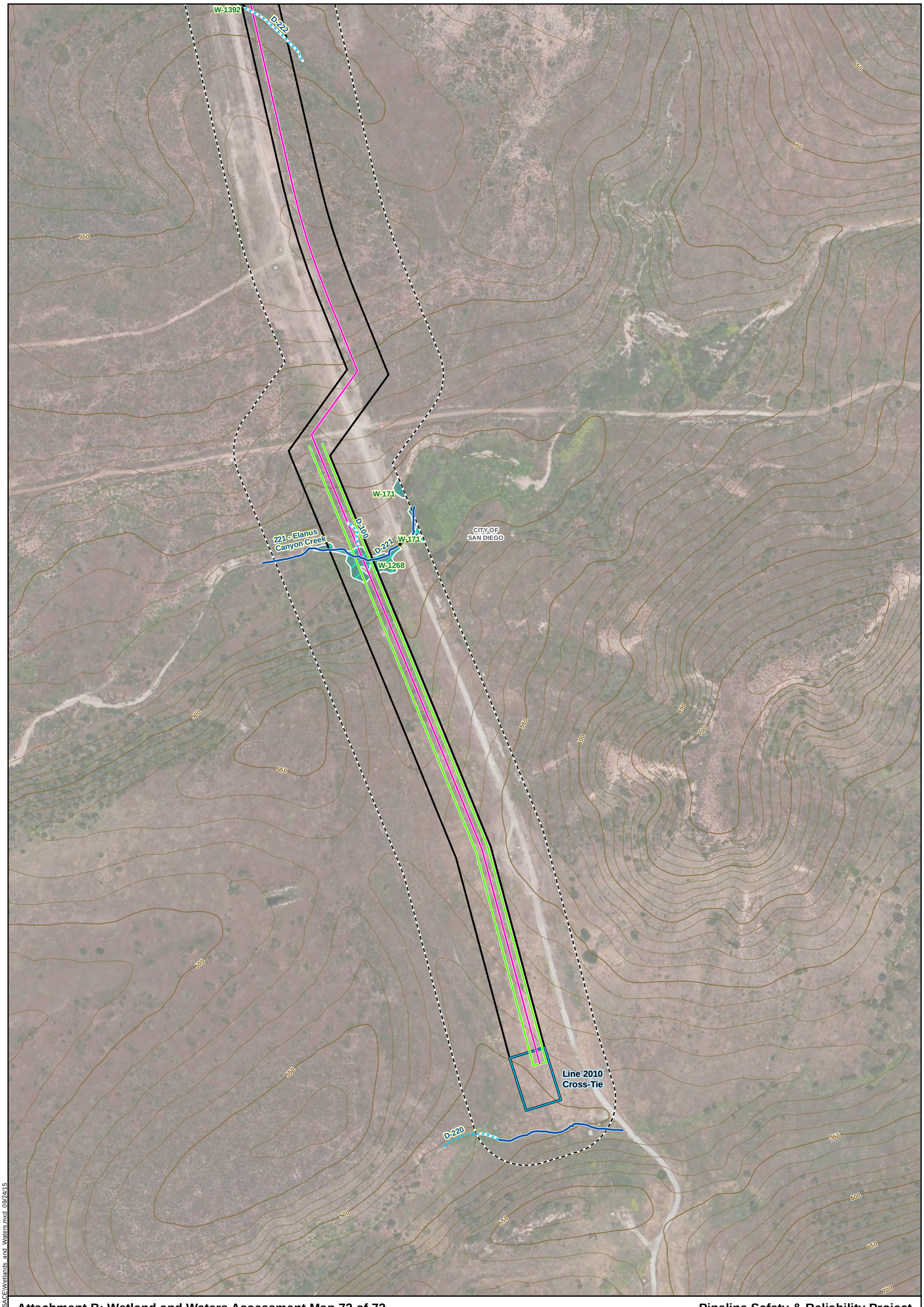

Attachment B: Wetland and Waters Assessment Map 72 of 72

Pipeline Safety & Reliability Project

- Milepost
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ATTACHMENT C: WETLAND AND WATER SURVEY RESULTS

ATTACHMENT C: WETLAND AND WATER SURVEY RESULTS

Table C-1: Drainage Features

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Average Ordinary High Water Mark (OHWM) Width (feet)	Average OHWM Depth (feet)	Approximate USACE- and RWQCB-Jurisdictional Area (acres)	Average Top of Bank (TOB) Width (feet)	Average TOB Depth (feet)	Approximate CDFW-Jurisdictional Area (acres)	Feature Description
D-201	Intermittent	1	1-2	2991.3	4.6	0.5	0.3	40.0	11	2.8	Unnamed tributary to Rainbow Creek
D-202	Ephemeral	1	2	148.6	2.0	0.3	0.0	4.0	3	0.0	Unnamed tributary to Rainbow Creek
D-203	Intermittent	2	4	502.7	7.9	1.0	0.1	48.5	8	0.6	Rainbow Creek
D-400	Ephemeral	3	6	222.6	2.0	0.0	0.0	5.0	2	0.0	Unnamed tributary to the San Luis Rey River
D-401	Ephemeral	3	6	124.8	1.5	0.0	0.0	5.0	2	0.0	Unnamed tributary to the San Luis Rey River
D-402	Ephemeral	3	6	57.8	1.5	0.0	0.0	7.8	6	0.0	Unnamed tributary to the San Luis Rey River
D-403	Ephemeral	3	6	341.0	2.0	0.2	0.0	49.4	15	0.4	Unnamed tributary to the San Luis Rey River
D-405	Ephemeral	4	8	373.9	3.0	0.5	0.0	14.8	15	0.1	Unnamed tributary to the San Luis Rey River
D-406	Ephemeral	4	8	268.1	2.0	0.0	0.0	8.0	5	0.1	Unnamed tributary to the San Luis Rey River
D-415	Ephemeral	4	7	55.9	1.0	0.0	0.0	4.9	2	0.0	Unnamed tributary to the San Luis Rey River
D-525	Ephemeral	4	6	475.2	5.0	1.0	0.1	7.9	3	0.1	Unnamed tributary to the San Luis Rey River
D-407	Ephemeral	4-5	8	207.5	1.0	0.0	0.0	3.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-404	Ephemeral	4-6	7-10	9297.4	2.9	0.6	0.6	16.7	7	3.6	Unnamed tributary to the San Luis Rey River
D-408	Ephemeral	5	9	195.2	1.0	0.0	0.0	3.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-409	Ephemeral	5	9	335.8	2.4	0.5	0.0	13.9	6	0.1	Unnamed tributary to the San Luis Rey River
D-410	Ephemeral	5	9	308.4	2.0	0.0	0.0	10.0	4	0.1	Unnamed tributary to the San Luis Rey River
D-411	Ephemeral	5	9	276.9	1.5	0.0	0.0	3.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-412	Ephemeral	5	9	331.9	1.5	0.0	0.0	5.0	3	0.0	Unnamed tributary to the San Luis Rey River
D-413	Ephemeral	6	10	153.1	2.0	0.2	0.0	19.9	10	0.1	Unnamed tributary to the San Luis Rey River
D-414	Ephemeral	7	11-12	909.7	4.0	0.5	0.1	7.0	2	0.2	Unnamed tributary to the San Luis Rey River
D-600	Ephemeral	7	12	75.1	2.0	0.1	0.0	3.0	2	0.0	Unnamed tributary to the San Luis Rey River
D-601	Ephemeral	7	12	164.0	1.5	0.1	0.0	3.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-603	Ephemeral	7	12	77.0	1.0	0.1	0.0	2.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-900	Ephemeral	7	13	315.7	1.5	0.2	0.0	3.5	1	0.0	Unnamed tributary to the San Luis Rey River
D-901	Ephemeral	7	13	350.4	1.0	0.1	0.0	2.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-608	Intermittent	9	14	503.6	1.0	0.3	0.0	10.0	1	0.1	Unnamed tributary to the San Luis Rey River
D-609	Perennial	9	15	363.1	49.5	0.0	0.4	482.1	0.0	4.0	San Luis Rey River

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Average Ordinary High Water Mark (OHWM) Width (feet)	Average OHWM Depth (feet)	Approximate USACE- and RWQCB-Jurisdictional Area (acres)	Average Top of Bank (TOB) Width (feet)	Average TOB Depth (feet)	Approximate CDFW-Jurisdictional Area (acres)	Feature Description
D-610	Intermittent	9-10	15	4837.6	9.4	0.1	0.6	18.4	2.8	2.0	Unnamed tributary to the San Luis Rey River
D-612	Ephemeral	9-10	15-16	458.9	1.0	0.5	0.0	3.0	2	0.0	Unnamed tributary to the San Luis Rey River
D-611	Ephemeral	10	16	794.5	7.0	0.5	0.1	10.0	3	0.2	Unnamed tributary to the San Luis Rey River
D-613	Ephemeral	10	16	55.6	1.0	0.3	0.0	2.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-614	Ephemeral	10	16	149.9	2.0	0.2	0.0	3.0	3	0.0	Unnamed tributary to the San Luis Rey River
D-615	Ephemeral	10	17	611.0	4.7	1.2	0.1	8.2	4	0.1	Unnamed tributary to the San Luis Rey River
D-618	Ephemeral	10	16	748.7	6.0	0.5	0.1	25.0	8	0.4	Unnamed tributary to the San Luis Rey River
D-616	Ephemeral	11	17	72.2	3.0	0.1	0.0	5.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-619	Ephemeral	11	18	234.9	2.5	0.2	0.0	9.0	6	0.1	Unnamed tributary to the San Luis Rey River
D-650	Ephemeral	11	17	112.8	2.5	0.1	0.0	4.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-651	Ephemeral	11	17	217.3	3.0	0.5	0.0	8.0	4	0.0	Unnamed tributary to the San Luis Rey River
D-653	Ephemeral	11	17	517.1	4.0	0.2	0.1	8.0	2	0.1	Unnamed tributary to the San Luis Rey River
D-903	Ephemeral	11	17	255.9	3.0	0.1	0.0	5.0	1	0.0	Unnamed tributary to the San Luis Rey River
D-620	Intermittent	12	19	1987.9	11.2	3.3	0.5	30.3	10	1.4	Unnamed tributary to Bonsall Creek, which is a tributary to the San Luis Rey River
D-621	Intermittent	12	19	721.8	6.0	1.0	0.1	24.8	10	0.4	Unnamed tributary to Bonsall Creek, which is a tributary to the San Luis Rey River
D-622	Ephemeral	12	19-20	234.2	1.0	0.1	0.0	2.9	1	0.0	Unnamed tributary to Bonsall Creek, which is a tributary to the San Luis Rey River
D-623	Intermittent	12-13	20-21	4475.5	2.5	0.1	0.3	9.0	2.00	0.7	Unnamed tributary to Bonsall Creek, which is a tributary to the San Luis Rey River
D-624	Ephemeral	13	21	162.2	2.0	0.1	0.0	2.9	1	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-625	Ephemeral	13	21	1024.3	1.0	0.1	0.0	3.0	1	0.1	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-626	Ephemeral	13	21	374.7	1.0	0.1	0.0	4.0	3	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-627	Ephemeral	13	21	373.8	1.0	0.1	0.0	8.0	4	0.1	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-628	Ephemeral	13	21	383.8	1.0	0.1	0.0	2.0	1	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-930	Ephemeral	13	20	164.8	3.0	0.5	0.0	7.9	2	0.0	Unnamed tributary to Bonsall Creek, which is a tributary to the San Luis Rey River
D-652	Intermittent	13-14	21-22	2374.4	7.9	0.4	0.4	18.7	7	1.0	Moosa Creek

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Average Ordinary High Water Mark (OHWM) Width (feet)	Average OHWM Depth (feet)	Approximate USACE- and RWQCB-Jurisdictional Area (acres)	Average Top of Bank (TOB) Width (feet)	Average TOB Depth (feet)	Approximate CDFW-Jurisdictional Area (acres)	Feature Description
D-629	Ephemeral	14	22	358.2	0.5	0.1	0.0	1.5	1	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-630	Ephemeral	14	22	596.0	3.6	0.2	0.1	9.3	4	0.1	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-631	Ephemeral	14	22	310.3	3.8	0.4	0.0	13.8	6	0.1	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-632	Ephemeral	14	22	268.4	2.0	0.5	0.0	6.0	3	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-633	Ephemeral	15	23	510.8	1.0	0.5	0.0	2.0	2	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-634	Ephemeral	15	23	511.8	3.8	0.6	0.0	10.0	4	0.1	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-728	Ephemeral	15	24	362.2	3.0	2.0	0.0	5.0	1	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-729	Ephemeral	15	24	152.9	3.0	0.2	0.0	9.9	5	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-730	Ephemeral	15	23-24	376.0	2.5	1.0	0.0	3.0	1	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-731	Ephemeral	15	23	436.1	1.0	0.1	0.0	8.0	5	0.1	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-732	Ephemeral	15	23	266.9	2.0	0.2	0.0	5.0	4	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-921	Ephemeral	15	24	94.4	2.0	0.2	0.0	4.0	3	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-724	Ephemeral	16	25	272.7	2.0	1.0	0.0	4.0	1	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-725	Ephemeral	16	25	1466.5	4.0	2.0	0.1	5.0	2	0.2	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-726	Ephemeral	16	25	300.9	3.0	0.1	0.0	3.5	1	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-727	Ephemeral	16	24	515.1	3.0	2.0	0.0	6.0	3	0.1	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-902	Ephemeral	16	24	252.0	1.5	0.1	0.0	3.0	1	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-722	Ephemeral	17	27	23.4	1.0	1.0	0.0	2.0	5	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Average Ordinary High Water Mark (OHWM) Width (feet)	Average OHWM Depth (feet)	Approximate USACE- and RWQCB-Jurisdictional Area (acres)	Average Top of Bank (TOB) Width (feet)	Average TOB Depth (feet)	Approximate CDFW-Jurisdictional Area (acres)	Feature Description
D-723	Ephemeral	17	27	508.4	2.5	0.8	0.0	3.5	2	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-718	Ephemeral	18	28	508.0	4.0	0.2	0.1	5.0	2	0.1	Unnamed tributary to San Marcos Creek
D-719	Ephemeral	18	28	485.9	1.0	0.1	0.0	4.0	2	0.0	Unnamed tributary to San Marcos Creek
D-721	Intermittent	18	27	165.6	0.5	1.0	0.0	0.8	2	0.0	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-974	Ephemeral	18	28	484.1	2.0	0.1	0.0	3.0	5	0.0	Unnamed tributary to San Marcos Creek
D-715	Ephemeral	19	29-30	404.7	5.0	0.3	0.1	9.9	3	0.1	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-716	Intermittent	19	29	94.0	4.0	0.3	0.0	9.7	2	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-717	Ephemeral	19	29	444.9	1.0	0.1	0.0	3.0	1	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-708	Ephemeral	20	31	438.4	3.0	0.5	0.0	4.5	2	0.1	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-709	Ephemeral	20	31	86.9	1.5	0.1	0.0	1.5	2	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-710	Ephemeral	20	31	169.5	3.0	0.2	0.0	5.0	2	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-711	Ephemeral	20	31	473.4	1.5	0.2	0.0	3.0	1	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-712	Ephemeral	20	31	327.9	2.5	0.3	0.0	3.6	2	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-713	Ephemeral	20	31	490.8	4.9	0.4	0.1	5.9	3	0.1	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-714	Ephemeral	20	30	229.7	7.0	0.3	0.0	8.0	2	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-973	Ephemeral	20	30	401.7	2.0	0.2	0.0	6.0	4	0.1	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-700	Ephemeral	21	32	2132.3	1.0	0.5	0.1	4.0	2	0.2	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-707	Ephemeral	21	32	235.3	1.5	0.1	0.0	3.0	0.0	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-206	Ephemeral	22	33	581.2	5.0	0.5	0.1	14.0	6	0.2	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Average Ordinary High Water Mark (OHWM) Width (feet)	Average OHWM Depth (feet)	Approximate USACE- and RWQCB-Jurisdictional Area (acres)	Average Top of Bank (TOB) Width (feet)	Average TOB Depth (feet)	Approximate CDFW-Jurisdictional Area (acres)	Feature Description
D-506	Ephemeral	22	34	85.5	1.0	0.0	0.0	2.9	1	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-507	Ephemeral	22	34	120.3	3.0	0.2	0.0	6.0	2	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-508	Intermittent	22	34	74.7	12.0	1.0	0.0	37.0	5	0.1	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-965	Ephemeral	22	33	60.6	5.0	0.5	0.0	14.0	6	0.0	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-207	Intermittent	22-24	34, 36	2286.6	15.9	0.4	0.8	23.6	20	1.2	Reidy Canyon Creek
D-208	Intermittent	24	37	560.3	18.0	0.3	0.2	39.8	25	0.5	Escondido Creek
D-643	Ephemeral	27	42	154.8	1.0	0.1	0.0	29.0	10	0.1	Unnamed tributary to the San Dieguito River
D-642	Intermittent	27-28	41-43	7051.3	3.3	0.7	0.5	16.5	4	2.7	Unnamed tributary to the San Dieguito River
D-637	Ephemeral	29	44	354.7	2.1	0.5	0.0	4.2	2	0.0	Unnamed tributary to the San Dieguito River
D-639	Ephemeral	29	45	699.1	4.0	0.3	0.1	5.0	1	0.1	Unnamed tributary to the San Dieguito River
D-211	Ephemeral	30	47	260.0	3.4	0.6	0.0	14.1	3	0.1	Unnamed tributary to the San Dieguito River
D-212	Ephemeral	30	47	456.5	2.8	0.6	0.0	8.3	3	0.1	Unnamed tributary to the San Dieguito River
D-505	Ephemeral	30	47	111.4	1.0	0.0	0.0	2.9	2	0.0	Unnamed tributary to the San Dieguito River
D-967	Intermittent	30	46	350.1	N/A	N/A	Refer to Table D-2: Wetland Features (Features W-377, W-380, W-1374, W-1375, W-1376, and W-1625)	N/A	N/A	Refer to Table D-2: Wetland Features (Features W-377, W-380, W-1374, W-1375, W-1376, and W-1625)	San Dieguito River/Lake Hodges
D-214	Ephemeral	32	49	487.6	3.0	0.3	0.0	9.9	3	0.1	Unnamed tributary to the San Dieguito River
D-215	Ephemeral	33	50	1712.4	9.0	0.2	0.4	37.9	18	1.5	Unnamed tributary to the San Dieguito River
D-307	Ephemeral	34	52	143.4	1.5	0.1	0.0	4.0	3	0.0	Unnamed tributary to the San Dieguito River
D-308	Ephemeral	34	51	199.3	4.0	0.5	0.0	6.0	3	0.0	Unnamed tributary to the San Dieguito River
D-305	Ephemeral	35	53-54	3311.4	5.0	0.2	0.4	14.9	7	1.1	Unnamed tributary to Poway Creek
D-306	Ephemeral	35	53	104.7	4.1	0.1	0.0	10.2	3	0.0	Unnamed tributary to Poway Creek
D-303	Intermittent	36	55	34.2	10.0	1.0	0.0	20.0	8	0.0	Unnamed tributary to Poway Creek
D-304	Intermittent	36	54	166.5	15.0	2.0	0.1	29.9	10	0.1	Unnamed tributary to Poway Creek
D-300	Intermittent	38	58	447.5	3.1	0.3	0.0	7.8	4	0.1	Unnamed tributary to Poway Creek
D-301	Intermittent	38	57	521.2	24.9	2.0	0.3	39.8	5	0.5	Poway Creek

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Average Ordinary High Water Mark (OHWM) Width (feet)	Average OHWM Depth (feet)	Approximate USACE- and RWQCB-Jurisdictional Area (acres)	Average Top of Bank (TOB) Width (feet)	Average TOB Depth (feet)	Approximate CDFW-Jurisdictional Area (acres)	Feature Description
D-302	Intermittent	38	57	489.2	9.3	0.5	0.1	30.2	6	0.3	Unnamed tributary to Poway Creek
D-232	Ephemeral	39	59	193.5	5.0	0.5	0.0	12.0	4	0.1	Unnamed tributary to Beeler Creek
D-233	Intermittent	39	59	655.6	15.0	2.0	0.2	49.9	4	0.8	Beeler Creek
D-500	Ephemeral	39	59	143.4	1.0	0.0	0.0	4.0	3	0.0	Unnamed tributary to Beeler Creek
D-501	Ephemeral	39	59	306.8	3.0	0.0	0.0	7.0	3	0.1	Unnamed tributary to Beeler Creek
D-526	Ephemeral	40	60	126.4	3.0	1.0	0.0	3.0	3	0.0	Unnamed tributary to Beeler Creek
D-733	Ephemeral	41	62	335.3	0.3	0.1	0.0	2.0	1	0.0	Unnamed tributary to Carroll Canyon Creek
D-734	Ephemeral	41	62	84.3	1.0	1.0	0.0	4.9	1	0.0	Unnamed tributary to Carroll Canyon Creek
D-735	Ephemeral	41	63	168.8	3.0	0.1	0.0	3.0	0.0	0.0	Unnamed tributary to Carroll Canyon Creek
D-230	Intermittent	41-43	62-67	5198.7	3.7	0.3	0.4	7.7	3	0.9	Carroll Canyon Creek
D-738	Ephemeral	42	64	470.2	10.0	2.0	0.1	19.9	8	0.2	Unnamed tributary to Carroll Canyon Creek
D-739	Ephemeral	42	65	352.6	1.0	1.0	0.0	2.0	1	0.0	Unnamed tributary to Carroll Canyon Creek
D-740	Ephemeral	43	66	254.4	5.0	3.0	0.0	8.0	2	0.1	Unnamed tributary to Carroll Canyon Creek
D-741	Ephemeral	43	66	317.3	1.0	0.2	0.0	4.0	3	0.0	Unnamed tributary to Carroll Canyon Creek
D-805	Ephemeral	43	67	177.3	3.6	0.4	0.0	9.3	3	0.0	Unnamed tributary to Carroll Canyon Creek
D-102	Ephemeral	44	68	428.9	2.0	0.0	0.0	4.0	2	0.0	Unnamed tributary to Rose Creek
D-103	Ephemeral	44	68	374.7	1.6	0.1	0.0	2.6	1	0.0	Unnamed tributary to Rose Creek
D-101	Ephemeral	45	69	497.61	2.5	0.1	0.0	4.0	1	0.1	Rose Creek
D-104	Intermittent	45	70	414.8	3.0	0.2	0.0	9.0	5	0.1	San Clemente Canyon Creek
D-510	Ephemeral	45	69	250.0	8.0	0.5	0.1	8.0	0.0	0.1	Unnamed tributary to San Clemente Creek
D-228	Ephemeral	45-46	70	297.0	0.0	0.5	0.0	0.0	2	0.0	Unnamed tributary to Penasquitos Creek
D-229	Ephemeral	45-47	70	46.7	20.1	0.3	0.0	44.0	3	0.1	Unnamed tributary to Penasquitos Creek
D-109	Ephemeral	46	70	184.5	1.5	0.2	0.0	3.0	1	0.0	Unnamed tributary to Penasquitos Creek
D-110	Ephemeral	46	70	136.8	1.0	0.1	0.0	3.0	2	0.0	Unnamed tributary to Penasquitos Creek
D-111	Ephemeral	46	70	20.2	1.0	0.1	0.0	3.0	1	0.0	Unnamed tributary to Penasquitos Creek
D-220	Ephemeral	46	72	315.3	2.0	0.5	0.0	5.0	3	0.0	Unnamed tributary to the San Diego River
D-221	Intermittent	46	72	504.4	4.0	1.0	0.1	11.8	4	0.1	Elanus Canyon Creek
D-222	Ephemeral	46	71	105.1	0.5	0.1	0.0	2.0	1	0.0	Unnamed tributary to the San Diego River
D-224	Ephemeral	46	71	250.3	2.0	0.1	0.0	4.0	2	0.0	Unnamed tributary to the San Diego River
D-225	Ephemeral	46	71	237.1	4.0	0.5	0.0	10.0	2	0.1	Murphy Canyon Creek

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Average Ordinary High Water Mark (OHWM) Width (feet)	Average OHWM Depth (feet)	Approximate USACE- and RWQCB-Jurisdictional Area (acres)	Average Top of Bank (TOB) Width (feet)	Average TOB Depth (feet)	Approximate CDFW-Jurisdictional Area (acres)	Feature Description
D-226	Ephemeral	46	70	197.8	1.0	0.1	0.0	3.0	1	0.0	Unnamed tributary to Penasquitos Creek
D-236	Ephemeral	46	71	102.3	3.0	0.1	0.0	5.0	2	0.0	Unnamed tributary to the San Diego River
D-720	Intermittent	15, 17, 18	23, 24, 26-28	6401.8	7.5	0.4	1.0	13.9	4.8	2.5	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
Total				**96299.8**	**N/A**	**N/A**	**10.5**	**N/A**	**N/A**	**35.0**	

Table C-2: Wetland Features

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-604	Southern Coast Live Oak Riparian Forest	PFO	1	1	1.7
W-614	Southern Coast Live Oak Riparian Forest	PFO	1	1	0.8
W-619	Southern Coast Live Oak Riparian Forest	PFO	1	1	0.3
W-621	Southern Willow Scrub	PFO	1	1	0.1
W-623	Coastal and Valley Freshwater Marsh (disturbed)	PEM	1	1, 2	0.0
W-631	Coastal and Valley Freshwater Marsh (disturbed)	PEM	1	2	0.1
W-633	Coastal and Valley Freshwater Marsh (disturbed)	PEM	1	2	0.1
W-1396	Southern Willow Scrub	PFO	1	2	0.0
W-1436	Mule Fat Scrub	PSS	1	2	0.0
W-1439	Southern Willow Scrub	PFO	1	2	0.1
W-663	Southern Coast Live Oak Riparian Forest	PFO	2	4	0.7
W-1397	Emergent Wetland	PEM	2	4	0.0
W-1414	Southern Willow Scrub	PFO	3	6	0.1
W-701	Mule Fat Scrub	PSS	4	8, 7	0.0
W-705	Southern Willow Scrub	PFO	4	8	0.4
W-1429	Southern Willow Scrub (disturbed)	PFO	4	8	1.0
W-1444	Freshwater Seep (disturbed)	PEM	4	6, 7	0.1
W-1445	Southern Willow Scrub (disturbed)	PFO	4	6, 7	0.2
W-1448	Mule Fat Scrub	PSS	4	8, 7	0.0
W-1450	Southern Willow Scrub	PFO	4	8	0.4

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-560	Southern Coast Live Oak Riparian Forest	PFO	5	9	2.6
W-724	Southern Coast Live Oak Riparian Forest	PFO	5	9, 8	1.9
W-733	Southern Coast Live Oak Riparian Forest	PFO	5	9, 10	3.2
W-735	Southern Coast Live Oak Riparian Forest	PFO	5	10	0.4
W-1430	Southern Coast Live Oak Riparian Forest	PFO	5	8	1.0
W-1431	Southern Willow Scrub	PFO	5	8, 9	0.8
W-1432	Southern Willow Scrub	PFO	5	9	0.5
W-1458	Southern Willow Scrub	PFO	5	9	0.7
W-558	Southern Coast Live Oak Riparian Forest	PFO	6	10	2.5
W-1427	Southern Willow Scrub (disturbed)	PFO	6	11	1.0
W-1428	Southern Willow Scrub (disturbed)	PFO	6	11	0.7
W-749	Southern Willow Scrub	PFO	7	11, 12	2.3
W-1477	Southern Willow Scrub	PFO	7	13	0.3
W-1662	Freshwater Seep	PEM	7	12	0.0
W-530	Arundo-Dominated Riparian	PSS	9	15	2.0
W-533	Southern Cottonwood-Willow Riparian Forest	PFO	9	14, 15	0.5
W-940	Southern Willow Scrub	PFO	9	15	1.1
W-941	Southern Cottonwood-Willow Riparian Forest	PFO	9	15	1.5
W-1274	Mule Fat Scrub	PSS	9	14	0.7
W-1481	Southern Cottonwood-Willow Riparian Forest (disturbed)	PFO	9	14	0.4

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-1482	Southern Cottonwood-Willow Riparian Forest (disturbed)	PFO	9	14	0.7
W-1483	Mule Fat Scrub	PSS	9	15	0.0
W-1495	Arundo-Dominated Riparian	Palustrine Scrub-Shrub (PSS)	9	15	0.6
W-1497	Southern Willow Scrub (disturbed)	PFO	9	15	0.1
W-1523	Mule Fat Scrub	PSS	11	17	0.0
W-1525	Southern Coast Live Oak Riparian Forest	PFO	11	17	0.0
W-1530	Mule Fat Scrub	PSS	11	17	0.1
W-1666	Freshwater Seep	PEM	11	17	0.0
W-501	Southern Coast Live Oak Riparian Forest (disturbed)	PFO	12	19, 20	1.4
W-983	Southern Cottonwood-Willow Riparian Forest	PFO	12	19	2.6
W-984	Southern Cottonwood-Willow Riparian Forest	PFO	12	19	1.4
W-986	Southern Willow Scrub	PFO	12	19	0.6
W-994	Southern Cottonwood-Willow Riparian Forest	PFO	12	20	2.2
W-1534	Southern Coast Live Oak Riparian Forest	PFO	12	19	0.3
W-505	Southern Willow Scrub	PFO	13	20, 21	2.8
W-998	Southern Willow Scrub (disturbed)	PFO	13	20	0.9
W-999	Mule Fat Scrub	PSS	13	20	0.5
W-1012	Tamarisk Scrub	PSS	13	21	0.3
W-1018	Southern Willow Scrub	PFO	13	21	2.6

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-1544	Mule Fat Scrub	PSS	13	20	0.3
W-1545	Mule Fat Scrub	PSS	13	20, 21	0.6
W-488	Southern Cottonwood-Willow Riparian Forest	PFO	14	22	1.2
W-1022	Southern Willow Scrub	PFO	14	21	0.4
W-1024	Southern Coast Live Oak Riparian Forest (disturbed)	PFO	14	21, 22	1.3
W-1033	Southern Coast Live Oak Riparian Forest	PFO	14	22	0.9
W-1041	Southern Willow Scrub (disturbed)	PFO	14	22	0.2
W-1558	Southern Cottonwood-Willow Riparian Forest	PFO	14	22	0.2
W-475	Mule Fat Scrub	PSS	15	24	0.4
W-512	Southern Coast Live Oak Riparian Forest (disturbed)	PFO	15	24	0.8
W-1055	Southern Willow Scrub	PFO	15	23	0.1
W-1056	Southern Coast Live Oak Riparian Forest	PFO	15	23	0.3
W-1063	Southern Coast Live Oak Riparian Forest	PFO	15	23	0.9
W-1090	Southern Coast Live Oak Riparian Forest	PFO	15	24, 23	1.1
W-1094	Southern Willow Scrub (disturbed)	PFO	15	24	0.3
W-1105	Southern Coast Live Oak Riparian Forest (disturbed)	PFO	15	24	0.2
W-1106	Southern Coast Live Oak Riparian Forest	PFO	15	24	0.3
W-1107	Southern Willow Scrub	PFO	15	24	0.2
W-1567	Southern Coast Live Oak Riparian Forest	PFO	15	23	0.4
W-1568	Southern Willow Scrub	PFO	15	23	0.7
W-1573	Southern Willow Scrub (disturbed)	PFO	15	23	0.1

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-1578	Southern Willow Scrub	PFO	15	24	0.5
W-1581	Southern Willow Scrub	PFO	15	24	0.4
W-1712	Southern Willow Scrub	PFO	15	24	0.0
W-472	Southern Coast Live Oak Riparian Forest (disturbed)	PFO	16	24	0.2
W-1101	Southern Coast Live Oak Riparian Forest (disturbed)	PFO	16	24	0.4
W-1580	Southern Coast Live Oak Riparian Forest (disturbed)	PFO	16	24	0.3
W-1587	Southern Coast Live Oak Riparian Forest	PFO	16	25	0.4
W-1122	Southern Willow Scrub (disturbed)	PFO	17	26	0.3
W-1124	Southern Willow Scrub	PFO	17	26	0.5
W-1126	Southern Willow Scrub	PFO	17	27	0.3
W-1591	Southern Coast Live Oak Riparian Forest	PFO	17	26	0.3
W-1596	Southern Coast Live Oak Riparian Forest	PFO	17	27	0.2
W-1784	Southern Coast Live Oak Riparian Forest	PFO	17	27	0.3
W-1135	Southern Willow Scrub	PFO	18	27	0.1
W-1136	Mule Fat Scrub	PSS	18	27	0.2
W-1137	Southern Willow Scrub	PFO	18	27	0.1
W-1141	Mule Fat Scrub	PSS	18	27, 28	0.5
W-1599	Mule Fat Scrub	PSS	18	27	0.1
W-1714	Southern Willow Scrub (disturbed)	PFO	18	28	0.1
W-446	Southern Coast Live Oak Riparian Forest	PFO	19	29, 30	1.6
W-771	Southern Willow Scrub	PFO	19	29	0.4

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-773	Southern Coast Live Oak Riparian Forest	PFO	19	29, 30	0.3
W-778	Southern Coast Live Oak Riparian Forest	PFO	20	30	0.5
W-1718	Southern Coast Live Oak Riparian Forest	PFO	20	30	0.0
W-803	Southern Willow Scrub	PFO	21	32	0.1
W-412	Southern Willow Scrub (disturbed)	PFO	22	34	0.8
W-826	Southern Coast Live Oak Riparian Forest	PFO	22	33	0.9
W-838	Vernal Marsh/Herbaceous Wetland	PEM	22	34	0.1
W-839	Southern Willow Scrub	PFO	22	34	0.5
W-840	Coastal and Valley Freshwater Marsh	PEM	22	34	0.1
W-844	Coastal and Valley Freshwater Marsh	PEM	22	34	0.2
W-1608	Southern Willow Scrub	PFO	22	34	0.1
W-1609	Non-Native Riparian	PFO	22	34	0.1
W-854	Arundo-Dominated Riparian	Palustrine Scrub-Shrub (PSS)	24	36	0.2
W-1286	Southern Coast Live Oak Riparian Forest	PFO	27	41	3.7
W-1287	Southern Coast Live Oak Riparian Forest	PFO	27	41, 42	2.1
W-1288	Southern Coast Live Oak Riparian Forest (disturbed)	PFO	27	42	3.7
W-1612	Southern Willow Scrub	PFO	27	41, 42	0.1
W-1719	Southern Coast Live Oak Riparian Forest	PFO	27	42	1.5
W-1289	Southern Coast Live Oak Riparian Forest	PFO	28	42, 43	7.5
W-1302	Southern Coast Live Oak Riparian Forest	PFO	28	43, 44	2.8

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-1356	Southern Willow Scrub	PFO	28	43	0.3
W-1357	Southern Willow Scrub	PFO	28	43	0.3
W-1425	Southern Willow Scrub	PFO	28	43	0.3
W-1426	Southern Willow Scrub	PFO	28	43	0.2
W-383	Cismontane Alkali Marsh	PEM	29	45	2.8
W-385	Southern Willow Scrub	PFO	29	45	0.8
W-386	Cismontane Alkali Marsh	PEM	29	45	2.2
W-387	Southern Willow Scrub	PFO	29	45	0.3
W-1155	Southern Willow Scrub	PFO	29	45, 44	2.2
W-1158	Coastal and Valley Freshwater Marsh	PEM	29	45	1.4
W-1159	Southern Willow Scrub	PFO	29	45	0.2
W-1303	Non-Native Riparian	PFO	29	44	0.9
W-1308	Southern Willow Scrub	PFO	29	45, 44	0.6
W-1360	Southern Willow Scrub	PFO	29	45, 44	1.1
W-1362	Cismontane Alkali Marsh	PEM	29	45	0.4
W-1363	Southern Willow Scrub	PFO	29	45	0.1
W-1364	Cismontane Alkali Marsh	PEM	29	45	0.8
W-1365	Southern Willow Scrub	PFO	29	45	0.2
W-1367	Coastal and Valley Freshwater Marsh	PEM	29	45	0.0
W-1617	Southern Willow Scrub	PFO	29	45	0.1
W-1619	Southern Willow Scrub	PFO	29	45	0.1

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-1620	Cismontane Alkali Marsh	PEM	29	45	0.1
W-1621	Cismontane Alkali Marsh	PEM	29	45	0.1
W-1685	Cismontane Alkali Marsh	PEM	29	45	0.0
W-377	Southern Willow Scrub	PFO	30	46	10.2
W-379	Southern Willow Scrub	PFO	30	45, 46	2.5
W-380	Tamarisk Scrub	PSS	30	46	0.8
W-1164	Southern Coast Live Oak Riparian Forest	PFO	30	47	0.1
W-1165	Southern Willow Scrub	PFO	30	47	0.1
W-1374	Southern Willow Scrub	PFO	30	46	2.1
W-1375	Cismontane Alkali Marsh	PEM	30	46	2.3
W-1376	Cismontane Alkali Marsh	PEM	30	46	0.3
W-1377	Southern Coast Live Oak Riparian Forest	PFO	30	46	0.2
W-1413	Tamarisk Scrub	PSS	30	46	0.7
W-1622	Coastal and Valley Freshwater Marsh	PEM	30	46	0.2
W-1625	Coastal and Valley Freshwater Marsh	PEM	30	46	0.1
W-1194	Coastal and Valley Freshwater Marsh	PEM	36	54	0.0
W-1379	Coastal and Valley Freshwater Marsh	PEM	36	55	0.0
W-1627	Coastal and Valley Freshwater Marsh	PEM	36	54	0.3
W-1628	Southern Willow Scrub	PFO	36	54	0.3
W-348	Southern Willow Scrub	PFO	38	57, 58	0.4
W-349	Southern Willow Scrub	PFO	38	57, 58	0.5

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-1203	Southern Willow Scrub	PFO	38	57	0.1
W-1695	Coastal and Valley Freshwater Marsh	PEM	38	58	0.0
W-338	Southern Willow Scrub (disturbed)	Palustrine Forested (PFO)	39	59	0.9
W-1210	Southern Willow Scrub	PFO	39	59	0.1
W-1212	Southern Coast Live Oak Riparian Forest (disturbed)	PFO	39	59	0.3
W-1383	Southern Willow Scrub	PFO	39	59	0.2
W-1630	Southern Willow Scrub	PFO	39	59	0.0
W-1631	Vernal Marsh/Herbaceous Wetland (disturbed)	PEM	39	59	0.0
W-1243	Southern Willow Scrub	PFO	40	61	0.1
W-1248	Vernal Marsh/Herbaceous Wetland (disturbed)	PEM	41	62, 63	2.0
W-1249	Vernal Marsh/Herbaceous Wetland (disturbed)	PEM	41	63	0.8
W-1251	Non-Native Riparian	PFO	42	63, 64	4.4
W-1252	Non-Native Riparian	PFO	42	64	0.2
W-1254	Southern Willow Scrub (disturbed)	PFO	42	65	0.6
W-1385	Southern Willow Scrub (disturbed)	PFO	42	63	0.4
W-1708	Vernal Marsh/Herbaceous Wetland (disturbed)	PEM	42	64, 65	1.0
W-1258	Southern Willow Scrub (disturbed)	PFO	43	67	0.1
W-1711	Southern Willow Scrub	PFO	43	65	0.0
W-1386	Freshwater Seep	PEM	44	68	0.1
W-1280	Vernal Pool	PEM	45	69	0.0

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-1282	Vernal Pool	PEM	45	69	0.0
W-1283	Vernal Pool	PEM	45	69	0.0
W-1391	Coastal and Valley Freshwater Marsh	PEM	45	70	0.0
W-1632	Vernal Marsh/Herbaceous Wetland	PEM	45	69	0.0
W-1634	Vernal Pool	PEM	45	69	0.0
W-1636	Vernal Pool	PEM	45	69	0.0
W-1637	Vernal Pool	PEM	45	69	0.0
W-1638	Vernal Marsh/Herbaceous Wetland	PEM	45	70	0.0
W-1639	Vernal Marsh/Herbaceous Wetland	PEM	45	70	0.0
W-1642	Mule Fat Scrub	PSS	45	70	0.1
W-75	Freshwater Seep	Palustrine Emergent (PEM)	46	71	0.0
W-84	Freshwater Seep	PEM	46	71	0.2
W-147	Freshwater Seep	PEM	46	70	0.0
W-148	Freshwater Seep	PEM	46	70	0.1
W-171	Mule Fat Scrub	Palustrine Scrub-Shrub (PSS)	46	72	0.0
W-1268	Mule Fat Scrub	PSS	46	72	0.2
W-1278	Vernal Pool	PEM	46	71	0.3
W-1279	Vernal Pool	PEM	46	70	0.0

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area (acres)
W-1392	Freshwater Seep	PEM	46	71, 72	0.0
W-1724	Coastal and Valley Freshwater Marsh	PEM	46	71	0.0
W-1726	Freshwater Seep	PEM	46	71	0.0
Total					**139.3**

ATTACHMENT D: DRAINAGE PHOTO LOG

Photograph 1: Drainage 101, looking upstream.

Photograph 2: Drainage 101, looking downstream.

Photograph 1: Drainage 102, looking downstream.

Photograph 2: Drainage 102, looking upstream.

Photograph 1: Drainage 103, looking upstream.

Photograph 2: Drainage 103, looking downstream.

Photograph 1: Drainage 104, looking upstream.

Photograph 2: Drainage 104, looking downstream.

Photograph 1: Drainage 201, looking downstream.

Photograph 2: Drainage 201, looking upstream.

Photograph 1: Drainage 202, looking upstream.

Photograph 2: Drainage 202, looking downstream.

Photograph 1: Drainage 203, looking downstream.

Photograph 2: Drainage 203, view of OHWM.

Photograph 1: Drainage 206, view of OHWM.

Photograph 2: Drainage 206, looking downstream.

Photograph 1: Drainage 211, looking downstream.

Photograph 2: Drainage 211, looking upstream.

Photograph 1: Drainage 212, looking upstream.

Photograph 2: Drainage 212, view of OHWM.

Photograph 1: Drainage 214, looking downstream.

Photograph 2: Drainage 214, looking upstream.

Photograph 1: Drainage 215, looking downstream.

Photograph 1: Drainage 220, looking upstream.

Photograph 2: Drainage 220, looking downstream.

Photograph 1: Drainage 221, view of OHWM.

Photograph 2: Drainage 221, looking upstream.

Photograph 1: Drainage 222, looking upstream.

Photograph 2: Drainage 222, looking downstream.

Photograph 1: Drainage 224, view of OHWM.

Photograph 2: Drainage 224, looking downstream.

Photograph 1: Drainage 225, looking downstream.

Photograph 2: Drainage 225, looking upstream.

Photograph 1: Drainage 226, looking downstream.

Photograph 2: Drainage 226, looking upstream.

Photograph 1: Drainage 228, looking downstream.

Photograph 2: Drainage 228, looking upstream.

Photograph 1: Drainage 229, looking upstream.

Photograph 2: Drainage 229, view of OHWM.

Photograph 1: Drainage 230, looking downstream.

Photograph 2: Drainage 230, view of OHWM.

Photograph 1: Drainage 232, looking downstream.

Photograph 2: Drainage 232, view of OHWM.

Photograph 1: Drainage 233, looking upstream.

Photograph 2: Drainage 233, view of OHWM.

Photograph 1: Drainage 300, looking upstream.

Photograph 2: Drainage 300, view of OHWM.

Photograph 1: Drainage 301, view of OHWM.

Photograph 2: Drainage 301, looking downstream.

Photograph 1: Drainage 302, looking downstream.

Photograph 2: Drainage 302, looking upstream.

Photograph 1: Drainage 303, looking upstream.

Photograph 2: Drainage 303, view of OHWM.

Photograph 1: Drainage 304, view of OHWM.

Photograph 2: Drainage 304, looking upstream.

Photograph 1: Drainage 305, looking upstream.

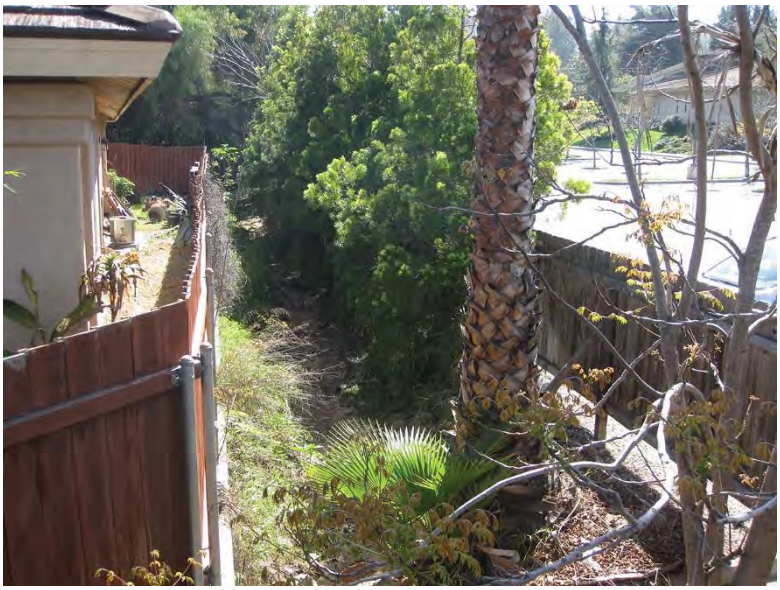
Photograph 2: Drainage 305, looking downstream.

Photograph 1: Drainage 306, looking upstream.

Photograph 2: Drainage 306, view of OHWM.

Photograph 1: Drainage 307, looking downstream.

Photograph 2: Drainage 307, looking upstream.



Photograph 1: Drainage 308, looking upstream.

Photograph 2: Drainage 308, looking downstream.

Photograph 1: Drainage 309, looking downstream.

Photograph 2: Drainage 309, looking upstream.

Photograph 1: Drainage 400, view of OHWM.

Photograph 2: Drainage 400, looking upstream.

Photograph 1: Drainage 401, view of OHWM.

Photograph 2: Drainage 401, looking downstream.

Photograph 1: Drainage 402, looking upstream.

Photograph 2: Drainage 402, looking downstream.

Photograph 1: Drainage 403, looking upstream.

Photograph 2: Drainage 403, looking downstream.

Photograph 1: Drainage 404, view of OHWM.

Photograph 2: Drainage 404, looking downstream.

Photograph 1: Drainage 405, looking downstream.

Photograph 2: Drainage 405, view of OHWM.

Photograph 1: Drainage 406, looking upstream.

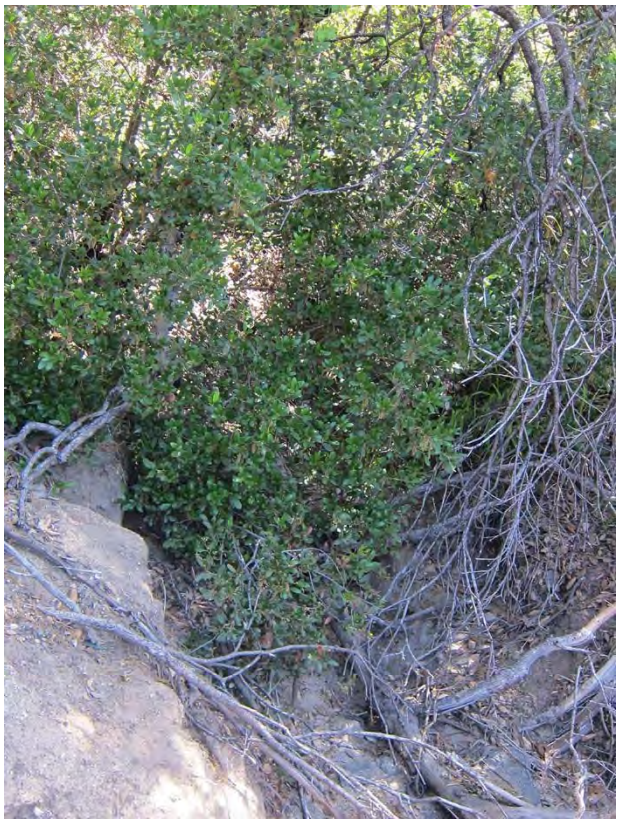
Photograph 2: Drainage 406, looking downstream.

Photograph 1: Drainage 407, looking downstream.

Photograph 2: Drainage 407, view of OHWM.

Photograph 1: Drainage 408, looking upstream.

Photograph 2: Drainage 408, looking downstream.



Photograph 1: Drainage 409, looking upstream.

Photograph 2: Drainage 409, looking downstream.

Photograph 1: Drainage 410, looking downstream.

Photograph 2: Drainage 410, looking upstream.

Photograph 1: Drainage 411, looking upstream.

Photograph 2: Drainage 411, looking downstream.

Photograph 1: Drainage 412, looking upstream.

Photograph 2: Drainage 412, view of OHWM.

Photograph 1: Drainage 413, looking upstream.

Photograph 2: Drainage 413, view of OHWM.

Photograph 1: Drainage 414, looking downstream.

Photograph 2: Drainage 414, looking upstream.

Photograph 1: Drainage 600, looking upstream.

Photograph 2: Drainage 600, view of OHWM.

Photograph 1: Drainage 601, looking upstream.

Photograph 2: Drainage 601, looking downstream.

Photograph 1: Drainage 603, view of OHWM.

Photograph 2: Drainage 603, looking upstream.

Photograph 1: Drainage 606, looking upstream.

Photograph 2: Drainage 606, looking downstream.

Photograph 1: Drainage 608, view of OHWM.

Photograph 2: Drainage 608, looking downstream.

Photograph 1: Drainage 609, looking upstream.

Photograph 2: Drainage 609, looking downstream.

Photograph 1: Drainage 610, looking upstream.

Photograph 2: Drainage 610, looking downstream.

Photograph 1: Drainage 611, looking upstream.

Photograph 2: Drainage 611, view of OHWM.

Photograph 1: Drainage 612, looking upstream.

Photograph 2: Drainage 612, view of OHWM.

Photograph 1: Drainage 613, looking downstream.

Photograph 2: Drainage 613, looking upstream.

Photograph 1: Drainage 614, looking upstream.

Photograph 2: Drainage 614, looking downstream.

Photograph 1: Drainage 615, view of OHWM.

Photograph 2: Drainage 615, looking upstream.

Photograph 1: Drainage 616, view of OHWM.

Photograph 2: Drainage 616, looking upstream.

Photograph 1: Drainage 619, looking downstream.

Photograph 2: Drainage 619, looking upstream.

Photograph 1: Drainage 620, looking upstream.

Photograph 2: Drainage 620, looking downstream.

Photograph 1: Drainage 622, looking upstream.

Photograph 2: Drainage 622, view of OHWM.

Photograph 1: Drainage 623, view of OHWM.

Photograph 2: Drainage 623, looking upstream.

Photograph 1: Drainage 624, view of OHWM.

Photograph 2: Drainage 624, looking upstream.

Photograph 1: Drainage 625, looking downstream.

Photograph 2: Drainage 625, looking upstream.

Photograph 1: Drainage 628, looking upstream.

Photograph 2: Drainage 628, view of OHWM.

Photograph 1: Drainage 629, looking downstream.

Photograph 2: Drainage 629, view of OHWM.

Photograph 1: Drainage 630, view of OHWM.

Photograph 2: Drainage 630, looking downstream.

Photograph 1: Drainage 631, looking upstream.

Photograph 2: Drainage 631, view of OHWM.

Photograph 1: Drainage 632, view of OHWM.

Photograph 2: Drainage 632, looking upstream.

Photograph 1: Drainage 633, looking downstream.

Photograph 2: Drainage 633, view of OHWM.

Photograph 1: Drainage 634, looking downstream.

Photograph 2: Drainage 634, looking upstream.

Photograph 1: Drainage 637, looking downstream.

Photograph 2: Drainage 637, looking upstream.

Photograph 1: Drainage 639, looking upstream.

Photograph 2: Drainage 639, view of OHWM.

Photograph 1: Drainage 642, looking downstream.

Photograph 2: Drainage 642, looking upstream.

Photograph 1: Drainage 643, view of OHWM.

Photograph 2: Drainage 643, looking upstream.

Photograph 1: Drainage 650, view of OHWM.

Photograph 2: Drainage 650, looking upstream.

Photograph 1: Drainage 651, looking upstream.

Photograph 2: Drainage 651, looking downstream.

Photograph 1: Drainage 652, looking upstream.

Photograph 2: Drainage 652, looking downstream.

Photograph 1: Drainage 653, looking upstream.

Photograph 2: Drainage 653, view of OHWM.

Photograph 1: Drainage 700, looking upstream.

Photograph 2: Drainage 700, view of OHWM.

Photograph 1: Drainage 704, looking downstream.

Photograph 2: Drainage 704, looking upstream.

Photograph 1: Drainage 707, looking upstream.

Photograph 2: Drainage 707, view of OHWM.

Photograph 1: Drainage 708, looking upstream.

Photograph 2: Drainage 708, view of OHWM.

Photograph 1: Drainage 709, looking downstream.

Photograph 2: Drainage 709, view of OHWM.

Photograph 1: Drainage 710, looking upstream.

Photograph 2: Drainage 710, view of OHWM.

Photograph 1: Drainage 711, view of OHWM.

Photograph 2: Drainage 711, looking downstream.

Photograph 1: Drainage 712, looking upstream.

Photograph 2: Drainage 712, looking downstream.

Photograph 1: Drainage 713, looking upstream.

Photograph 2: Drainage 713, looking downstream.

Photograph 1: Drainage 714, looking upstream.

Photograph 2: Drainage 714, view of OHWM.

Photograph 1: Drainage 715, looking upstream.

Photograph 2: Drainage 715, view of OHWM.

Photograph 1: Drainage 716, looking downstream.

Photograph 2: Drainage 716, looking upstream.

Photograph 1: Drainage 717, looking upstream.

Photograph 2: Drainage 717, view of OHWM.

Photograph 1: Drainage 718, looking downstream.

Photograph 2: Drainage 718, view of OHWM.

Photograph 1: Drainage 719, looking downstream.

Photograph 2: Drainage 719, looking upstream.

Photograph 1: Drainage 720, looking downstream.

Photograph 2: Drainage 720, view of OHWM.

Photograph 1: Drainage 721, looking upstream.

Photograph 2: Drainage 721, view of OHWM.

Photograph 1: Drainage 722, view of OHWM.

Photograph 2: Drainage 722, looking downstream.

Photograph 1: Drainage 723, looking upstream.

Photograph 2: Drainage 723, looking downstream.

Photograph 1: Drainage 724, looking downstream.

Photograph 2: Drainage 724, looking upstream.

Photograph 1: Drainage 725, looking upstream.

Photograph 2: Drainage 725, looking downstream.

Photograph 1: Drainage 726, looking downstream.

Photograph 2: Drainage 726, looking upstream.

Photograph 1: Drainage 727, looking upstream.

Photograph 2: Drainage 727, looking downstream.

Photograph 1: Drainage 728, looking upstream.

Photograph 2: Drainage 728, view of OHWM.

Photograph 1: Drainage 729, view of OHWM.

Photograph 2: Drainage 729, looking upstream.

Photograph 1: Drainage 730, looking downstream.

Photograph 2: Drainage 730, looking upstream.

Photograph 1: Drainage 731, looking downstream.

Photograph 2: Drainage 731, view of OHWM.

Photograph 1: Drainage 732, looking downstream.

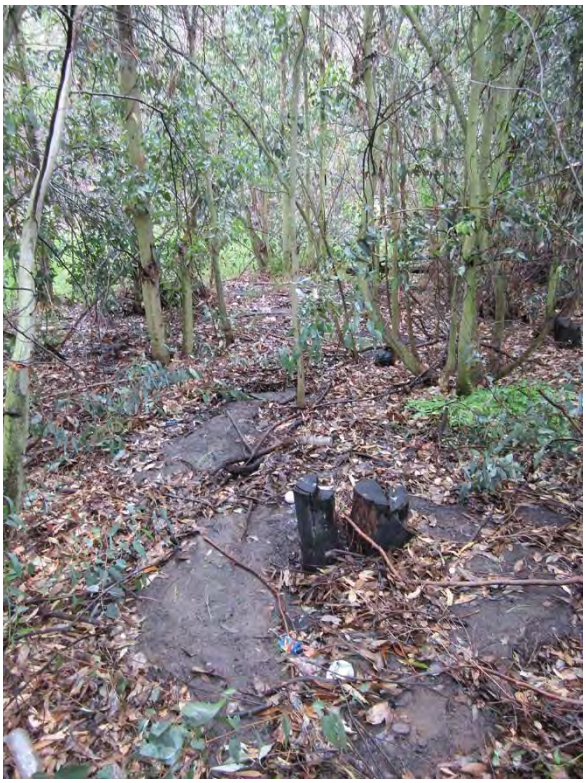
Photograph 2: Drainage 732, looking upstream.

Photograph 1: Drainage 733, looking downstream.

Photograph 2: Drainage 733, looking upstream.

Photograph 1: Drainage 734, looking downstream.

Photograph 2: Drainage 734, view of OHWM.



Photograph 1: Drainage 735, looking downstream.

Photograph 2: Drainage 735, looking upstream.

Photograph 1: Drainage 738, looking upstream.

Photograph 2: Drainage 738, looking downstream.

Photograph 1: Drainage 739, looking downstream.

Photograph 2: Drainage 739, view of OHWM.

Photograph 1: Drainage 740, looking upstream.

Photograph 2: Drainage 740, looking downstream.

Photograph 1: Drainage 741, view of OHWM.

Photograph 2: Drainage 741, looking downstream.

Photograph 1: Drainage 800, looking downstream.

Photograph 2: Drainage 800, looking upstream.

Photograph 1: Drainage 900, view of OHWM.

Photograph 2: Drainage 900, looking upstream.

Photograph 1: Drainage 901, looking downstream.

Photograph 2: Drainage 901, view of OHWM.

Photograph 1: Drainage 921, looking downstream.

Photograph 2: Drainage 921, looking upstream.

Photograph 1: Drainage 973, looking upstream.

Photograph 2: Drainage 973, looking downstream.

Photograph 1: Drainage 974, looking upstream.

Photograph 2: Drainage 974, looking downstream.

ATTACHMENT E: WETLAND AND WATERS IMPACT SUMMARY

ATTACHMENT E: WETLAND AND WATERS IMPACT SUMMARY

Table E-1: Drainage Features

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Potential Impacts to Drainage (feet)	Approximate USACE- and RWQCB-Jurisdictional Area in Survey Area (acres)	Potential Impacts to USACE- and RWQCB-Jurisdictional Area from Proposed Project (acres)	Approximate CDFW-Jurisdictional Area in Survey Area (acres)	Potential Impacts to CDFW-Jurisdictional Area from Proposed Project (acres)	Feature Description
D-201	Intermittent	1	1-2	2991.3	90.9	0.3	0.01	2.8	0.08	Unnamed tributary to Rainbow Creek
D-203	Intermittent	2	4	502.7	71.7	0.1	0.01	0.6	0.08	Rainbow Creek
D-401	Ephemeral	3	6	124.8	124.8	0.0	<0.01	0.0	0.01	Unnamed tributary to the San Luis Rey River
D-402	Ephemeral	3	6	57.8	57.8	0.0	<0.01	0.0	0.01	Unnamed tributary to the San Luis Rey River
D-403	Ephemeral	3	6	341.0	71.6	0.0	<0.01	0.4	0.08	Unnamed tributary to the San Luis Rey River
D-525	Ephemeral	4	6	475.2	106.1	0.1	0.01	0.1	0.02	Unnamed tributary to the San Luis Rey River
D-405	Ephemeral	4	8	373.9	64.8	0.0	<0.01	0.1	0.02	Unnamed tributary to the San Luis Rey River
D-406	Ephemeral	4	8	268.1	62.8	0.0	<0.01	0.1	0.01	Unnamed tributary to the San Luis Rey River
D-407	Ephemeral	4-5	8	207.5	66.7	0.0	<0.01	0.0	<0.01	Unnamed tributary to the San Luis Rey River
D-404	Ephemeral	4-6	7-10	9297.4	141.6	0.6	0.01	3.6	0.05	Unnamed tributary to the San Luis Rey River
D-408	Ephemeral	5	9	195.2	57.4	0.0	<0.01	0.0	<0.01	Unnamed tributary to the San Luis Rey River
D-409	Ephemeral	5	9	335.8	53.5	0.0	<0.01	0.1	0.02	Unnamed tributary to the San Luis Rey River
D-410	Ephemeral	5	9	308.4	50.7	0.0	<0.01	0.1	0.01	Unnamed tributary to the San Luis Rey River
D-411	Ephemeral	5	9	276.9	57.9	0.0	<0.01	0.0	<0.01	Unnamed tributary to the San Luis Rey River
D-412	Ephemeral	5	9	331.9	54.7	0.0	<0.01	0.0	0.01	Unnamed tributary to the San Luis Rey River
D-414	Ephemeral	7	11-12	909.7	69.6	0.1	0.01	0.2	0.01	Unnamed tributary to the San Luis Rey River
D-600	Ephemeral	7	12	75.1	3.1	0.0	<0.01	0.0	<0.01	Unnamed tributary to the San Luis Rey River
D-601	Ephemeral	7	12	164.0	4.7	0.0	<0.01	0.0	<0.01	Unnamed tributary to the San Luis Rey River
D-900	Ephemeral	7	13	315.7	62.4	0.0	<0.01	0.0	0.01	Unnamed tributary to the San Luis Rey River
D-612	Ephemeral	9-10	15-16	458.9	100.4	0.0	<0.01	0.0	0.01	Unnamed tributary to the San Luis Rey River
D-610	Intermittent	9-10	15	4837.6	620.8	0.6	0.08	2.0	0.25	Unnamed tributary to the San Luis Rey River
D-611	Ephemeral	10	16	794.5	89.6	0.1	0.01	0.2	0.02	Unnamed tributary to the San Luis Rey River
D-613	Ephemeral	10	16	55.6	7.9	0.0	<0.01	0.0	<0.01	Unnamed tributary to the San Luis Rey River
D-614	Ephemeral	10	16	149.9	2.7	0.0	<0.01	0.0	<0.01	Unnamed tributary to the San Luis Rey River
D-618	Ephemeral	10	16	748.7	4.0	0.1	<0.01	0.4	<0.01	Unnamed tributary to the San Luis Rey River
D-619	Ephemeral	11	18	234.9	153.4	0.0	0.01	0.1	0.03	Unnamed tributary to the San Luis Rey River

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Potential Impacts to Drainage (feet)	Approximate USACE- and RWQCB-Jurisdictional Area in Survey Area (acres)	Potential Impacts to USACE- and RWQCB-Jurisdictional Area from Proposed Project (acres)	Approximate CDFW-Jurisdictional Area in Survey Area (acres)	Potential Impacts to CDFW-Jurisdictional Area from Proposed Project (acres)	Feature Description
D-622	Ephemeral	12	19-20	234.2	71.0	0.0	<0.01	0.0	<0.01	Unnamed tributary to Bonsall Creek, which is a tributary to the San Luis Rey River
D-620	Intermittent	12	19	1987.9	215.0	0.5	0.06	1.4	0.15	Unnamed tributary to Bonsall Creek, which is a tributary to the San Luis Rey River
D-621	Intermittent	12	19	721.8	32.6	0.1	<0.01	0.4	0.02	Unnamed tributary to Bonsall Creek, which is a tributary to the San Luis Rey River
D-623	Intermittent	12-13	20-21	4475.5	95.1	0.3	0.01	0.7	0.01	Unnamed tributary to Bonsall Creek, which is a tributary to the San Luis Rey River
D-626	Ephemeral	13	21	374.7	52.0	0.0	<0.01	0.0	<0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-627	Ephemeral	13	21	373.8	52.9	0.0	<0.01	0.1	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-628	Ephemeral	13	21	383.8	40.2	0.0	<0.01	0.0	<0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-652	Intermittent	13-14	21-22	2374.4	50.9	0.4	0.01	1.0	0.04	Moosa Creek
D-629	Ephemeral	14	22	358.2	30.8	0.0	<0.01	0.0	<0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-630	Ephemeral	14	22	596.0	98.1	0.1	0.01	0.1	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-631	Ephemeral	14	22	310.3	65.0	0.0	0.01	0.1	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-207	Intermittent	22-24	34, 36	2286.6	148.7	0.8	0.03	1.2	0.07	Reidy Canyon Creek
D-730	Ephemeral	15	23-24	376.0	48.9	0.0	<0.01	0.0	<0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-633	Ephemeral	15	23	510.8	84.6	0.0	<0.01	0.0	<0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-634	Ephemeral	15	23	511.8	85.6	0.0	0.01	0.1	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-731	Ephemeral	15	23	436.1	47.8	0.0	<0.01	0.1	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-732	Ephemeral	15	23	266.9	59.2	0.0	<0.01	0.0	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-728	Ephemeral	15	24	362.2	69.9	0.0	<0.01	0.0	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Potential Impacts to Drainage (feet)	Approximate USACE- and RWQCB-Jurisdictional Area in Survey Area (acres)	Potential Impacts to USACE- and RWQCB-Jurisdictional Area from Proposed Project (acres)	Approximate CDFW-Jurisdictional Area in Survey Area (acres)	Potential Impacts to CDFW-Jurisdictional Area from Proposed Project (acres)	Feature Description
D-921	Ephemeral	15	24	94.4	68.0	0.0	<0.01	0.0	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-727	Ephemeral	16	24	515.1	83.4	0.0	0.01	0.1	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-725	Ephemeral	16	25	1466.5	80.2	0.1	0.01	0.2	0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-726	Ephemeral	16	25	300.9	34.6	0.0	<0.01	0.0	<0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-723	Ephemeral	17	27	508.4	47.1	0.0	<0.01	0.0	<0.01	Unnamed tributary to Moosa Creek, which is a tributary to the San Luis Rey River
D-718	Ephemeral	18	28	508.0	59.6	0.1	0.01	0.1	0.01	Unnamed tributary to San Marcos Creek
D-719	Ephemeral	18	28	485.9	20.5	0.0	<0.01	0.0	<0.01	Unnamed tributary to San Marcos Creek
D-974	Ephemeral	18	28	484.1	92.8	0.0	<0.01	0.0	0.01	Unnamed tributary to San Marcos Creek
D-717	Ephemeral	19	29	444.9	0.2	0.0	<0.01	0.0	<0.01	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-973	Ephemeral	20	30	401.7	86.1	0.0	<0.01	0.1	0.01	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-708	Ephemeral	20	31	438.4	53.0	0.0	<0.01	0.1	0.01	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-710	Ephemeral	20	31	169.5	5.4	0.0	<0.01	0.0	<0.01	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-711	Ephemeral	20	31	473.4	69.0	0.0	<0.01	0.0	<0.01	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-712	Ephemeral	20	31	327.9	50.5	0.0	<0.01	0.0	<0.01	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-713	Ephemeral	20	31	490.8	77.8	0.1	0.01	0.1	0.01	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-707	Ephemeral	21	32	235.3	59.7	0.0	<0.01	0.0	<0.01	Unnamed tributary to Reidy Canyon Creek, which flows into Escondido Creek
D-208	Intermittent	24	37	560.3	140.4	0.2	0.06	0.5	0.14	Escondido Creek
D-642	Intermittent	27-28	41-43	7051.3	101.7	0.5	0.01	2.7	0.02	Unnamed tributary to the San Dieguito River
D-211	Ephemeral	30	47	260.0	63.1	0.0	<0.01	0.1	<0.01	Unnamed tributary to the San Dieguito River
D-212	Ephemeral	30	47	456.5	138.3	0.0	0.01	0.1	0.02	Unnamed tributary to the San Dieguito River
D-214	Ephemeral	32	49	487.6	100.8	0.0	0.01	0.1	0.02	Unnamed tributary to the San Dieguito River

Feature ID	Hydrological Regime	Milepost Number	Page Number in Attachment A	Approximate Length of Drainage in Survey Area (feet)	Potential Impacts to Drainage (feet)	Approximate USACE- and RWQCB-Jurisdictional Area in Survey Area (acres)	Potential Impacts to USACE- and RWQCB-Jurisdictional Area from Proposed Project (acres)	Approximate CDFW-Jurisdictional Area in Survey Area (acres)	Potential Impacts to CDFW-Jurisdictional Area from Proposed Project (acres)	Feature Description
D-215	Ephemeral	33	50	1712.4	228.1	0.4	0.05	1.5	0.20	Unnamed tributary to the San Dieguito River
D-302	Intermittent	38	57	489.2	106.1	0.1	0.02	0.3	0.08	Unnamed tributary to Poway Creek
D-301[1]	Intermittent	38	57	521.2	104.5	0.3	0.06	0.5	0.10	Poway Creek
D-300[1]	Intermittent	38	58	447.5	114.0	0.0	0.01	0.1	0.01	Unnamed tributary to Poway Creek
D-233[1]	Intermittent	39	59	655.6	186.1	0.2	0.06	0.8	0.21	Beeler Creek
D-501[1]	Ephemeral	39	59	306.8	119.7	0.0	0.01	0.1	0.02	Unnamed tributary to Beeler Creek
D-733	Ephemeral	41	62	335.3	134.8	0.0	<0.01	0.0	0.01	Unnamed tributary to Carroll Canyon Creek
D-230	Intermittent	41-43	62-67	5198.7	121.1	0.4	0.01	0.9	0.02	Carroll Canyon Creek
D-738	Ephemeral	42	64	470.2	70.7	0.1	0.02	0.2	0.03	Unnamed tributary to Carroll Canyon Creek
D-739	Ephemeral	42	65	352.6	82.9	0.0	<0.01	0.0	<0.01	Unnamed tributary to Carroll Canyon Creek
D-740	Ephemeral	43	66	254.4	140.5	0.0	0.02	0.1	0.03	Unnamed tributary to Carroll Canyon Creek
D-741	Ephemeral	43	66	317.3	58.2	0.0	<0.01	0.0	0.01	Unnamed tributary to Carroll Canyon Creek
D-102	Ephemeral	44	68	428.9	104.7	0.0	<0.01	0.0	0.01	Unnamed tributary to Rose Creek
D-103	Ephemeral	44	68	374.7	57.5	0.0	<0.01	0.0	<0.01	Unnamed tributary to Rose Creek
D-101	Ephemeral	45	69	497.61	109.4	0.0	0.01	0.1	0.01	Rose Creek
D-510	Ephemeral	45	69	250.0	90.3	0.1	0.02	0.1	0.02	Unnamed tributary to San Clemente Creek
D-104	Intermittent	45	70	414.8	56.5	0.0	<0.01	0.1	0.01	San Clemente Canyon Creek
D-228	Ephemeral	45-46	70	297.0	129.4	0.0	0.01	0.0	0.02	Unnamed tributary to Penasquitos Creek
D-109	Ephemeral	46	70	184.5	51.6	0.0	<0.01	0.0	<0.01	Unnamed tributary to Penasquitos Creek
D-224	Ephemeral	46	71	250.3	131.2	0.0	0.01	0.0	0.01	Unnamed tributary to the San Diego River
D-225	Ephemeral	46	71	237.1	76.6	0.0	0.01	0.1	0.02	Murphy Canyon Creek
D-221	Intermittent	46	72	504.4	131.0	0.1	0.01	0.1	0.04	Elanus Canyon Creek
Total				**96299.8**	**7,437.0**	**10.5**	**0.82**	**35.0**	**2.70**	

[1] This drainage is located within the approximately one-mile pre-lay segment of existing pipe within the City of Poway where an existing pipeline may be used and where construction of a new pipeline may not be required. As a result, impacts to this drainage as stated in the table are likely an overestimate.

Table E-2: Wetland Features

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area within Survey Area (acres)	Potential Impacts to USACE- and RWQCB-Jurisdictional Area from Proposed Project (acres)
W-1445	Southern Willow Scrub (disturbed)	PFO	4	6, 7	0.2	0.03
W-941	Southern Cottonwood-Willow Riparian Forest	PFO	9	15	1.5	0.0
W-983	Southern Cottonwood-Willow Riparian Forest	PFO	12	19	2.6	0.70
W-999	Mule Fat Scrub	PSS	13	20	0.5	<0.01
W-844	Coastal and Valley Freshwater Marsh	PEM	22	34	0.2	<0.01
W-383	Cismontane Alkali Marsh	PEM	29	45	2.8	1.28
W-379	Southern Willow Scrub	PFO	30	45, 46	2.5	0.14
W-1377	Southern Coast Live Oak Riparian Forest	PFO	30	46	0.2	0.08
W-1386	Freshwater Seep	PEM	44	68	0.1	0.08
W-1391	Coastal and Valley Freshwater Marsh	PEM	45	70	0.0	0.03
W-1638	Vernal Marsh/Herbaceous Wetland	PEM	45	70	0.0	<0.01
W-1639	Vernal Marsh/Herbaceous Wetland	PEM	45	70	0.0	<0.01
W-84	Freshwater Seep	PEM	46	71	0.2	0.10
W-148	Freshwater Seep	PEM	46	70	0.1	0.11
W-1268	Mule Fat Scrub	PSS	46	72	0.2	0.10
W-1724	Coastal and Valley Freshwater Marsh	PEM	46	71	0.0	<0.01

Wetland Identification Number	Vegetation Type	Cowardin Classification	Milepost Number	Page Number in Attachment A	Approximate USACE- and RWQCB-Jurisdictional Area within Survey Area (acres)	Potential Impacts to USACE- and RWQCB-Jurisdictional Area from Proposed Project (acres)
W-1726	Freshwater Seep	PEM	46	71	0.0	0.02
Total					**139.3**	**2.70**

ATTACHMENT D: QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

Pipeline Safety & Reliability Project U.S. Fish and Wildlife Service Protocol Presence/ Absence 2015 Survey Report for the Quino Checkerspot Butterfly (*Euphydryas editha quino*)

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June 8, 2015

ROCKS
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1. SUMMARY

This report summarizes the surveys conducted by Rocks Biological Consulting (RBC) and Insignia Environmental (Insignia) for the federally-listed endangered Quino checkerspot butterfly (*Euphydryas editha quino*; QCB) for the San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas) Pipeline Safety & Reliability Project (Proposed Project). Surveys were conducted in accordance with the U.S. Fish and Wildlife Service (USFWS) 2014 QCB survey guidelines (USFWS 2014; QCB survey guidelines) within the recommended Quino Survey Area identified in the QCB survey guidelines between February 15 and May 6, 2015. The QCB host plants dot-seed plantain (*Plantago erecta*) and purple owl's clover (*Castilleja exserta* ssp. *exserta*) were documented within the Quino Survey Area. Survey results were negative for QCB.

2. INTRODUCTION

2.1. PROJECT DESCRIPTION

The Proposed Project involves construction, operation, and maintenance of an approximately 47-mile-long, 36-inch-diameter natural gas transmission pipeline that will carry natural gas from SDG&E's existing Rainbow Metering Station to the pipeline's terminus on Marine Corps Air Station (MCAS) Miramar. The Proposed Project is located in San Diego County, California, and crosses the cities of Escondido, Poway, and San Diego. U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps (quads) that cross the Proposed Project include: the Temecula, Bonsall, San Marcos, Valley Center, Escondido, Poway and La Mesa quads.

2.2. SURVEY LOCATION AND BACKGROUND

Surveys for QCB were conducted exclusively within MCAS Miramar, which is land administered by the U.S. Marine Corps within the La Mesa and Poway U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps (Figure 1).

The portion of the Proposed Project that occurs within the USFWS-recommended Quino Survey Area is 179 acres. The majority of this area is on MCAS Miramar (160 acres) and was surveyed in 2015. The remaining 19 acres occur on the University of California Elliot Field Station, a component of the Eliot Chaparral Reserve; this area was not surveyed during the 2015 surveys due to access restrictions.

There is no QCB USFWS-designated critical habitat within five miles of the Proposed Project. There are four recent California Natural Diversity Database (CNDDB) locations for QCB within five miles of the Proposed Project area. According to the MCAS Miramar Integrated Natural Resources Management Plan (INRMP 2014), no confirmed QCB sightings have been reported on MCAS Miramar. MCAS Miramar commissioned a protocol-level survey for QCB in 2011 within 1,400 acres of suitable habitat in East Miramar. No QCB were detected during the surveys (USMC 2014).

2.3. QUINO CHECKERSPOT BUTTERFLY NATURAL HISTORY

Quino checkerspot butterfly, a member of the brush-footed butterfly family (Nymphalidae), was listed as federally endangered in January 1997. QCB is one of 12 subspecies of the *Euphydryas editha* checkerspot and was formerly known as *E. e. wrightii* (USFWS 2003).

Historically, QCB ranged from Los Angeles and western San Bernardino counties south through Orange, western Riverside, and San Diego counties into northern Baja California, Mexico. Currently, QCB are known to occur in portions of southwestern Riverside County, San Diego County, and northern Baja California (Mattoni et al. 1997). Habitat loss and degradation are considered primary causes of the dramatic decline of the species. Both the larval and adult stages have specific habitat requirements that have been impacted due to development, invasive non-native vegetation, overgrazing, poorly planned fire management practices, drought conditions, overcollection by butterfly collectors, and off-road vehicles (USFWS 1997).

QCB's distribution is defined primarily by location of its most common primary larval food plant, dot-seed plantain. Other potential larval food plants include purple owl's clover, desert plantain (*Plantago patagonica*), Parish's owl clover (*Castilleja densiflora* ssp. *gracilis*), Southern Chinese houses (*Collinsia concolor),* Chinese houses (*Collinsia heterophylla*), Coulter's snapdragon (*Antirrhinum coulterianum*), and stiff-branched bird's-beak (*Cordylanthus rigidus*) (USFWS 2014).

QCB use a variety of sparsely vegetated habitats including open coastal sage scrub and chaparral, vernal pool complexes, oak woodland, and desert pinyon-juniper woodland. Densely vegetated areas and extensive open grasslands are not known to support QCB (Mattoni et al. 1997, USFWS 2014).

QCB primarily feed on the nectar of small annuals that flower concurrently with the adult flight season. Although most perennials are not in flower during the flight period, some may be used for nectar sources later in the season (Mattoni et al. 1997). QCB have a short tongue and therefore cannot feed on flowers with deep corolla tubes. In addition, they prefer to nectar on flowers that have a platform-like surface, which they use to remain upright while feeding (USFWS 2003). Species that have been documented as nectar sources include goldfields (*Lasthenia* spp.), gilia (*Gilia* spp.), farinose ground pink (*Linanthus dianthiforus*), chia (*Salvia columbariae*), annual lotus (*Acmispon* spp.), yerba santa (*Eriodictyon* spp.), lomatium (*Lomatium* spp.), common muilla (*Muilla* spp.), popcorn flowers (*Plagiobothrys* spp. and *Cryptantha* spp.), yellow pincushion (*Chaenactis glabriuscula var. glabriuscula*), phacelia (*Phacelia* spp.), redmaids (*Calandrinia menziesii*), fiddleneck (*Amsinckia* spp.), yarrow (*Achillea millefolium*), California buckwheat (*Eriogonum fasciculatum* var*. fasciculatum*), onion (*Allium* spp.), blue dicks (*Dichelostemma capitatum*), tidy tips (*Layia* spp.), gumplant (*Grindelia* spp.), tarplants (*Deinandra* spp.), goldenbush (*Isocoma* spp. and *Ericameria* spp.), sugar bush (*Rhus ovata*), and long-stem golden yarrow (*Eriophyllum* spp.) (Mattoni et al. 1997, USFWS 2003, Pratt and Emmel 2009, Preston et al. 2012).

Typically, there is one adult generation of QCB per year, with a four- to six-week flight period beginning in late February and continuing through May (Emmel and Emmel 1973), although the timing of the flight period can vary considerably from year to year depending on rainfall and temperature patterns. Adult life span averages from 10 to 14 days, and emergence is staggered

(USFWS 2002). The full life cycle of a QCB butterfly includes egg, larva, pupa, and adult with larval stages divided into five to seven instars. Adult QCB spend their time searching for mates, feeding on nectar, defending territories, basking in the sun, and, in the case of females, searching for sites to deposit eggs (USFWS 2002).

3. METHODS

3.1. VEGETATION COMMUNITY MAPPING

Insignia biologists mapped vegetation communities within the Quino Survey Area as identified in the QCB survey guidelines (USFWS 2014) during the fall of 2014. Biologists noted vegetation communities and boundaries on a hard-copy field map printed at a 1:200' scale. These boundaries and vegetation community names were later recorded as a Geographic Information System (GIS) shapefile using ArcMap software. Minimum mapping units for upland vegetation communities was generally an acre or less. For wetland/riparian communities, no minimum mapping unit was established so as to ensure that even very small wetland areas were documented. Vegetation classifications conform to Oberbauer et al. (2008).

3.2. HABITAT ASSESSMENT

A habitat assessment was conducted within the Proposed Project areas within the USFWS recommended Quino Survey Area plus a 150-foot buffer on both sides of Proposed Project components (Figure 2). The habitat assessment was conducted by Shirley Innecken (TE-82480A-0) of Insignia in September of 2014 and Lee Ripma (TE-221290-3.1) on February 11, 2015.

Due to access restrictions on the Elliot Field Station, 19 acres that are within the USFWS Survey Area were not included in the habitat assessment or focused surveys. Additional QCB surveys will be conducted within the 19 acres on the Elliot Field Station prior to construction of the Proposed Project. The area comprising the 2015 habitat assessment was 160 acres. Out of the 160 acres within the habitat assessment area for 2015, 19 acres were determined to be "excluded areas". Excluded areas can include orchards, developed areas, in-fill parcels less than one acre dominated by non-native vegetation, active agriculture, and closed-canopy woody vegetation (USFWS 2014). Approximately 141 acres of land exclusively within MCAS Miramar not meeting the excluded areas definition comprise the 2015 Quino Survey Area.

3.3. BUTTERFLY SURVEYS

On January 30, 2015 a 15-day pre-survey notification letter was sent to the USFWS stating the intent to conduct QCB surveys for the Proposed Project. Butterfly surveys were conducted by walking slowly through non-excluded habitat within the Quino Survey Area and identifying butterflies with the aid of close-focus binoculars. Butterfly taxonomy follows Butterflies and Moths of North America (www.butterfliesandmoths.org 2015). The 2015 Quino Survey Areas were visited weekly beginning the third week of February and ending the second Saturday in May in accordance with QCB survey guidelines (USFWS 2014). Surveys were conducted from February 15 to May 6, 2015 by RBC biologists Jim Rocks (TE-063230-4), Melanie Rocks (TE-082908-1), Lee Ripma (TE-221290-3.1), Monica Alfaro (TE-05124-2), Melanie Dicus (TE-049175-3), Garrett

Huffman (TE-20168A-0), and Brian Lohstroh (TE-063608-5). Surveys were conducted on 27 separate days. During the surveys, each biologist surveyed an average of eight acres per hour. The 19 acres that were determined to be excluded areas (as described above) were also surveyed because these areas occur were between areas included in the Quino Survey Area. Survey dates, conditions, and personnel are presented in Table 1, below.

Table 1. Quino Checkerspot Butterfly Survey Dates/Conditions

Survey	Date	Surveyor(s)	Time (Start-End)	Temp F (Start-End)	Cloud Cover (Start-End)	Wind Range in mph (Start-End)
#1a	2/15/15	LR, MA, MR	930-1145	73-84	0-0	0-2; 1-5
#1b	2/16/15	BL, JR	1030-1605	70-66	5-5	1-6; 0-3
#1c	2/18/15	LR, JR	955-1350	67-74	10-100	0-1; 1-6
#2a	2/22/15	LA, MA	1107-1250	70-68	90	3-5; 2-7
#2b	2/24/15	LR	1405-1615	75-71	0	4-7; 1-4
#2c	2/25/15	LR, BL, MD	1010-1330	63-75	0	0-1 to
#3a	3/4/15	GH, MD, BL	0900-1330	62-67	0-0	0-2; 3-7
#3b	3/6/15	GH	0850-1200	66-80	0-0	0-2; 2-4
#4a	3/8/15	GH, MA	0930-1330	68-77	0-0	2-6; 2-4
#4b	3/10/15	GH, MD	0900-1600	61-80	0-25	2-4; 1-5
#5a	3/15/15	GH	0900-1300	78-91	30-30	4-8;4-7
#5b	3/17/15	GH, MD	0830-1545	68-80	40-75	2-7; 2-8
#6a	3/22/15	GH	0930-1245	64-72	25-40	3-7; 1-4
#6b	3/25/15	GH, MD	1000-1630	70-78	0-0	0-1 to 1-7
#7a	3/29/15	GH	0830-1130	66-81	30-40	3-6, 3-5
#7	4/1/15	GH, MD	0845-1630	66-71	0	0-1, 3-7
#8a	4/5/15	GH	0930-1330	70-72	40-30	2-5, 4-6
#8b	4/6/15	GH, MD	0915-1630	64-65	40-10	3-7, 7-10
#9a	4/12/15	GH	1215-1515	77-81	0-0	2-4, 2-5
#9b	4/15/15	GH	0830-1600	67-80	0-0	0-2;4-10
#9c	4/16/15	GH	1100-1830	84-76	0-0	5-7, 5-8
#10a	4/19/15	GH	0900-1245	76-82	0-10	1-3, 2-7
#10b	4/21/15	GH, BL	0830-1445	71-80	100-60	0-2, 3-8
#11a	4/26/15	GH	1145-1445	76-74	30-10	2-5, 3-7
#11b	4/30/15	GH, MR	0830-1500	78-87	5-1	2-4, 4-8
#12a	5/3/15	GH	1200-1445	75-79	30-15	3-6; 4-8
#12b	5/6/15	GH, LR	1000-1630	70-68	100-90	1-4, 3-8

Italics: Indicates surveys of pistol range area, which could only be accessed on Sundays and altered the overall survey schedule.

Surveyors: BL= Brian Lohstroh, GH= Garrett Huffman, LR= Lee Ripma, JR = Jim Rocks, MA= Monica Alfaro, MD= Melanie Dicus, MR = Melanie Rocks

3.4. LARVAL HOST PLANTS AND NECTAR SOURCES

Surveyors recorded the locations of QCB host plants using handheld Geographic Position System (GPS) devices. For each occurrence, surveyors noted the larval host plant species, the diameter of the patch, and the density of the patch. Low density is defined as less than 20% cover (less than 40 plants per square meter), medium density is defined as 20-50% cover (40 to 100 plants per square meter), and high is defined as greater than 50% cover (greater then 100 plants per square meter). Each surveyor noted nectar sources present during the surveys on QCB survey forms. Taxonomy follows Rebman and Simpson (2014).

4. RESULTS

4.1. SUITABLE HABITAT AND VEGETATION COMMUNITIES

As described above, the total area included in the 2015 Quino Survey Area was 141 acres. Dominant vegetation communities within the 2015 Quino Survey Area included three primary vegetation communities:

1) Chamise chaparral dominated by chamise (*Adenostoma fasciculatum*);
2) Southern mixed chaparral dominated by Ramona-lilac (*Ceanothus tomentosus*), San Diego mountain-mahogany (*Cercocarpus minutiflorus*) and felt-leaf yerba santa (*Eriodictyon crassifolium* var. *crassifolium*); and
3) Coastal sage scrub dominated by California buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*) and deerweed (*Acmispon glaber* var. *glaber*).

Within many of these shrub-dominated habitats, RBC biologists noted the presence of open patches ashy spike-moss (*Selaginella cinerascens*) and a variety of annual plants including common goldfields (*Lasthenia gracilis*), small-flower soap-plant (*Chlorogalum parviflorum*), pygmyweed (*Crassula connata*), dot-seed plantain, and long-beak filaree (*Erodium botrys*). Many of the annuals in these openings are potential QCB nectar sources and have the potential to support QCB.

4.2. BUTTERFLY SURVEYS

No Quino checkerspot butterflies were observed during focused surveys. The 141-acre Quino Survey Area supported a relatively high diversity of butterfly species in 2015 with a total of 32 butterfly species observed during the twelve surveys (Attachment A). Butterflies observed during focused surveys represent 26% of the documented butterflies in San Diego County (Shiraiwa 2010). The number of butterfly species observed during each survey varied widely with a high of 13 species (survey one, seven, and ten) and low of four (survey two). Only one butterfly was observed on all 27 survey days, Behr's metalmark (*Apodemia virgulti*). Other commonly observed species include orange sulphur (*Colias eurytheme*), funereal duskywing (*Erynnis funeralis*) (24 of 27 days), painted lady (*Vanessa cardui*) (20 of 27 days), marine blue (*Leptotes marina*) (19 of 27 days), common buckeye (*Junonia coenia*) (17 of 27 days), and checkered white (*Pontia protodice*) (16 of 27 days). A complete list of butterflies observed during each survey is presented in Attachment A and field notes are included in Attachment B.

4.3. LARVAL HOST PLANTS AND NECTAR SOURCES

Two larval host plants were detected in the Quino Survey Area, dot-seed plantain and purple owl's clover. There were 82 total dot-seed plantain occurrences, 76 with low density and six with medium density. There were 12 total owl's clover occurrences, 10 with low density and two with medium density. These were scattered throughout the Quino Survey Area and tended to be concentrated in the more open areas of shrub-dominated communities.

Nectar sources for butterflies were present throughout the survey duration. In February and March QCB larval host plants and nectar sources were abundant and observed throughout the Quino Survey Area. By late April and May their numbers declined precipitously due to seasonal senescence brought on by dry, warm conditions.

Documented QCB nectar sources observed during the surveys are detailed in Table 2, below.

Table 2. Quino Checkerspot Butterfly Nectar Sources, February-May, 2015

Scientific Name	Common Name	QCB Larval Host Plant	Documented QCB Nectar Source	General Nectar Source
Acmispon glaber var. *glaber*	deerweed			X
Allium praecox	early onion		X	
Amsinckia menziesii var. *intermedia*	rancher's fiddleneck		X	
**Anagallis arvensis*	scarlet pimpernel			X
Antirrhinum nuttallianum ssp. *subsessile*	big-gland Nuttall's snapdragon			X
Bloomeria crocea var. *crocea*	common goldenstar			X
Bloomeria clevelandii	san diego goldenstar			X
Brassica nigra	black mustard			X
Brodiaea orcuttii	orcutt's brodiaea			X
Calandrinia breweri	brewer's redmaids			X
Calandrinia ciliata	red maids		X	
Calochortus splendens	splendid mariposa lily			X
Calochortus weedii var. *weedii*	weed's mariposa lily			X
Calystegia macrostegia ssp. *tenuifolia*	san diego morning-glory			X
Castilleja exserta ssp. *exserta*	owl's-clover	X		
Ceanothus tomentosus	Ramona-lilac			X
Chaenactis glabriuscula var. *glabriuscula*	yellow pincushion			X
Chlorogalum parviflorum	small-flower soap-plant			X
Clarkia purpurea ssp. *quadrivulnera*	four-spot clarkia			X
Corethrogyne filaginifolia var. *filaginifolia*	sand-aster			X
Crocanthemum scoparium	rockrose			X
Cryptantha intermedia var. *intermedia*	Nievita's cryptantha		X	
Deinandra fasciculata	fascicled tarweed		X	
Dichelostemma capitatum ssp.	blue dicks		X	

capitatum				
Encelia californica	California encelia			X
Emmenanthe penduliflora var. *penduliflora*	whispering bells			X
Eriodictyon crassifolium var. *crassifolium*	felt-leaf yerba santa		X	
Eriogonum fasciculatum var. *fasciculatum*	coast California buckwheat		X	
**Erodium botrys*	long-beak filaree			X
**Erodium cicutarium*	red-stem filaree			X
**Erodium moschatum*	white-stem filaree			X
Eschscholzia californica	California poppy			X
Gilia diegensis	gilia		X	
**Hedypnois cretica*	Crete hedypnois			X
**Hypochaeris glabra*	smooth cat's ear			X
Isocoma menziesii var. *menziesii*	spreading goldenbush		X	
Lasthenia gracilis	common goldfields		X	
Lathyrus vestitus var. *alefeldii*	san diego sweet pea			X
Lomatium dasycarpum ssp. *dasycarpum*	woolly-fruited lomatium		X	
Lupinus bicolor	miniature lupine			
Marah macrocarpa	chilicothe			X
**Medicago polymorpha*	California burclover			X
**Melilotus indicus*	indian sweetclover			X
Mimulus aurantiacus	monkey flower bush			X
Muilla maritima	common muilla		X	
Navarretia hamata ssp. *hamata*	hooked skunkweed			X
Nuttallanthus texanus	blue toadflax			X
Osmadenia tenella	osmadenia			X
**Oxalis pes-caprae*	Bermuda-buttercup			X
Pectocarya linearis var. *ferocula*	slender pectocarya			X
Plagiobothrys collinus var. *gracilis*	San Diego popcornflower		X	
Plantago erecta	dot-seed plantain	X		
Primula clevelandii	padre's shooting star			X
Pseudognaphalium californicum	California everlasting			
Reseda luteola	dyer's rocket			X
Rhus integrifolia	lemonadeberry			X
Sidalcea malviflora ssp. *sparsifolia*	checker-bloom			X
**Silene gallica*	common catchfly			
Sisyrinchium bellum	blue-eyed-grass			X
**Sisymbrium orientale*	eastern rocket			X
Solanum parishii	Parish's nightshade			X

**Sonchus asper* ssp. *asper*	prickly sow-thistle			X
**Vicia villosa* ssp. *varia*	hairy vetch			X
* Non-native species				

5. CERTIFICATION

We certify that the information in this survey report and attached figures fully and accurately represent our work.

Jim Rocks
TE-063230-4

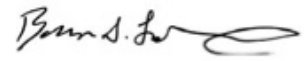
Melanie Rocks
TE-082908-2

Lee Ripma
TE-221290-3.1

Monica Alfaro
TE-05124-2

Melanie Dicus
TE-049175-3

Garrett Huffman
TE-20168A-0



Brian Lohstroh
TE-063608-5

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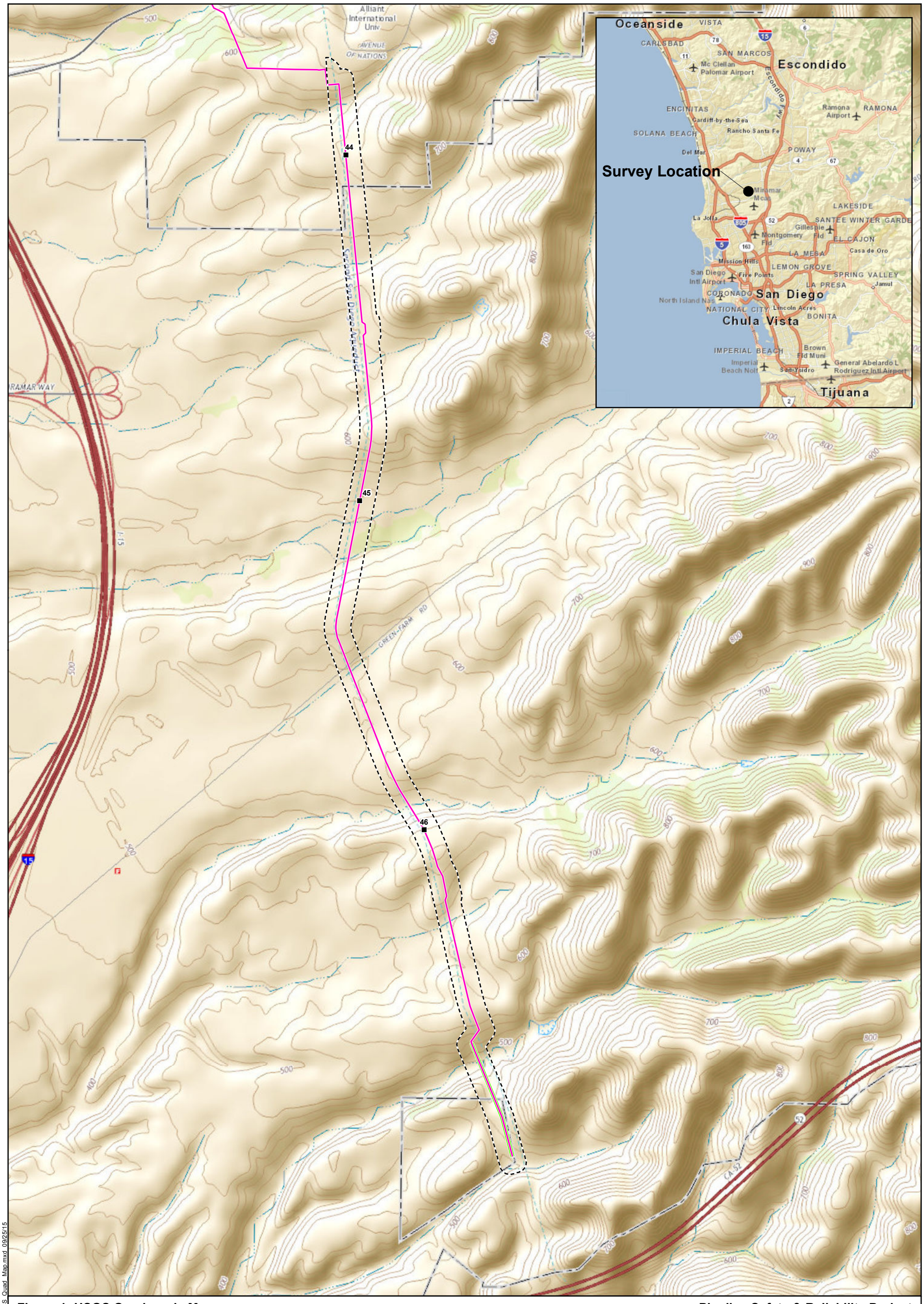

Figure 1: USGS Quadrangle Map **Pipeline Safety & Reliability Project**

- Milepost
- Proposed Project Route
- Cross-Tie Connector Line
- Survey Area

U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps: La Mesa, Poway

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0 1,000 2,000 Feet

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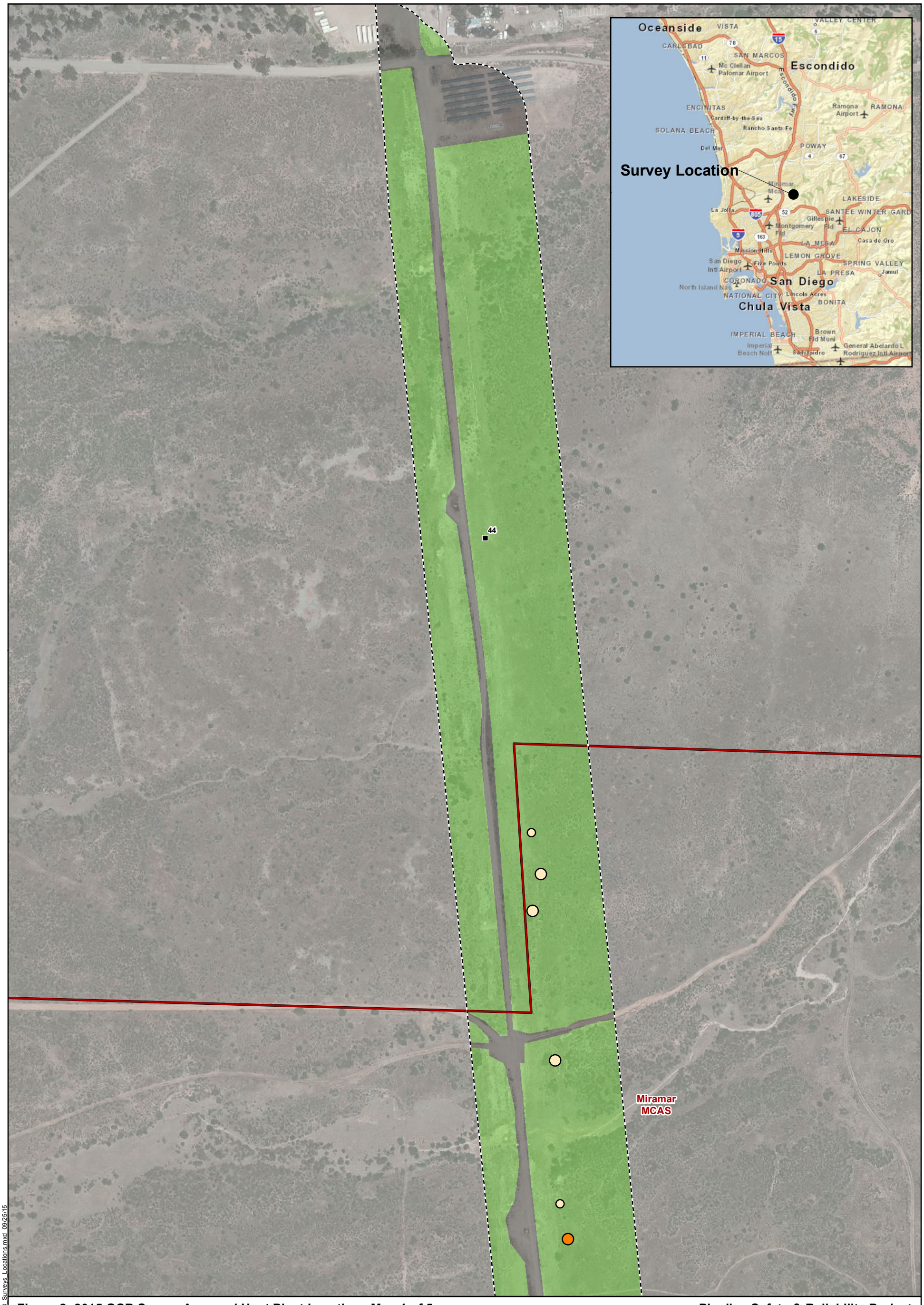

Figure 2: 2015 QCB Survey Area and Host Plant Locations Map 1 of 5

Pipeline Safety & Reliability Project

- Milepost
- Survey Area
- MCAS Miramar
- QCB Survey Area
- Excluded from QCB Survey Area

QCB larval host plants

- dot-seed plantain *(Plantago erecta)* [Low Density]
- dot-seed plantain *(Plantago erecta)* [Medium Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Low Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Medium Density]

QCB larval host plant patch diameter

- <3m
- 3 - 10m
- >10m

U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps: La Mesa, Poway

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:3,000

0 200 400 Feet

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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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Figure 2: 2015 QCB Survey Area and Host Plant Locations Map 2 of 5

Pipeline Safety & Reliability Project

- Milepost
- Survey Area
- MCAS Miramar
- QCB Survey Area
- Excluded from QCB Survey Area

QCB larval host plants

- dot-seed plantain *(Plantago erecta)* [Low Density]
- dot-seed plantain *(Plantago erecta)* [Medium Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Low Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Medium Density]

QCB larval host plant patch diameter

- <3m
- 3 - 10m
- >10m

U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps: La Mesa, Poway

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:3,000

0 200 400 Feet

N

SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

INSIGNIA ENVIRONMENTAL

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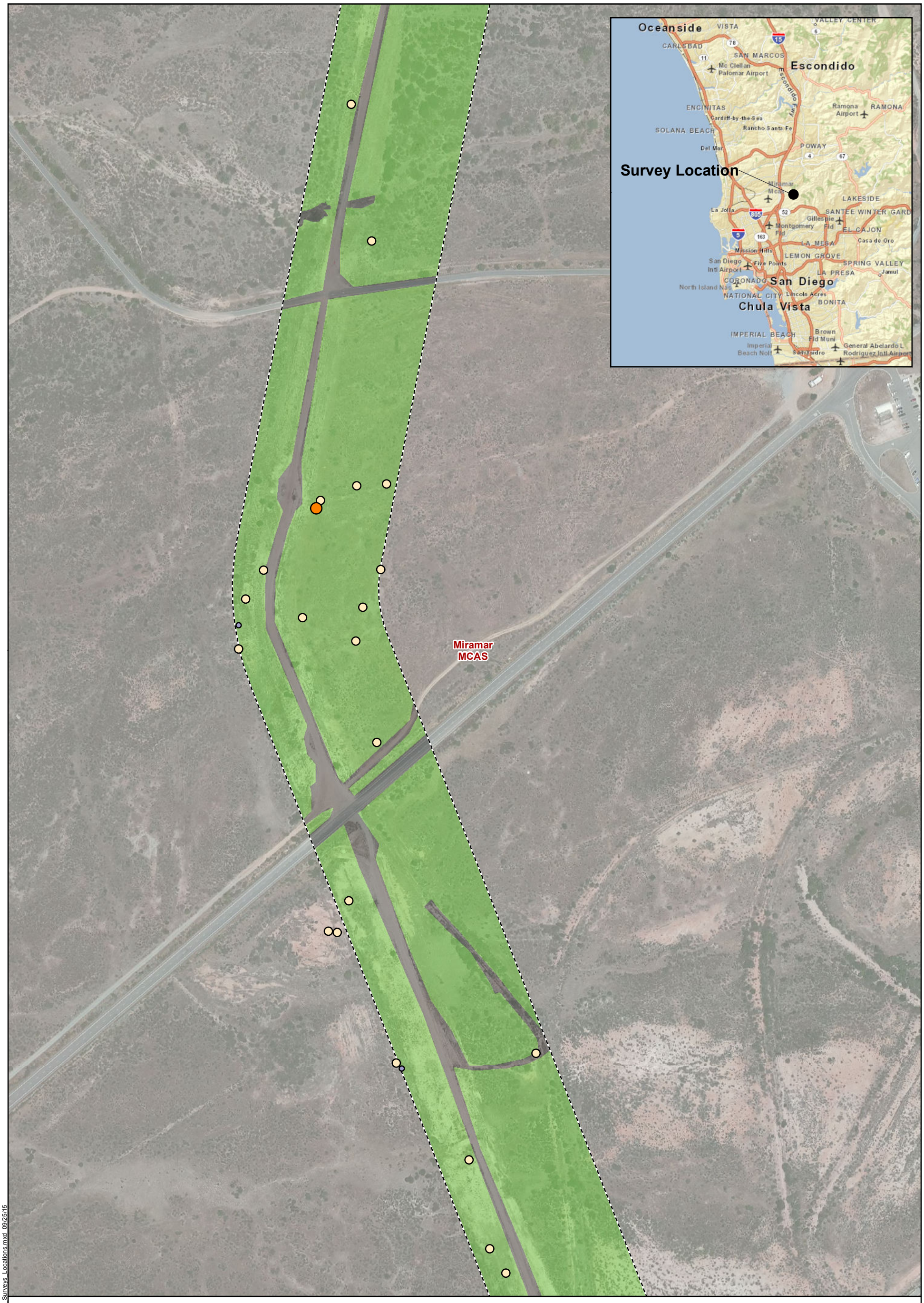

Figure 2: 2015 QCB Survey Area and Host Plant Locations Map 3 of 5 — **Pipeline Safety & Reliability Project**

- Milepost
- Survey Area
- MCAS Miramar
- QCB Survey Area
- Excluded from QCB Survey Area

QCB larval host plants

- dot-seed plantain *(Plantago erecta)* [Low Density]
- dot-seed plantain *(Plantago erecta)* [Medium Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Low Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Medium Density]

QCB larval host plant patch diameter

- <3m
- 3 - 10m
- >10m

U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps: La Mesa, Poway

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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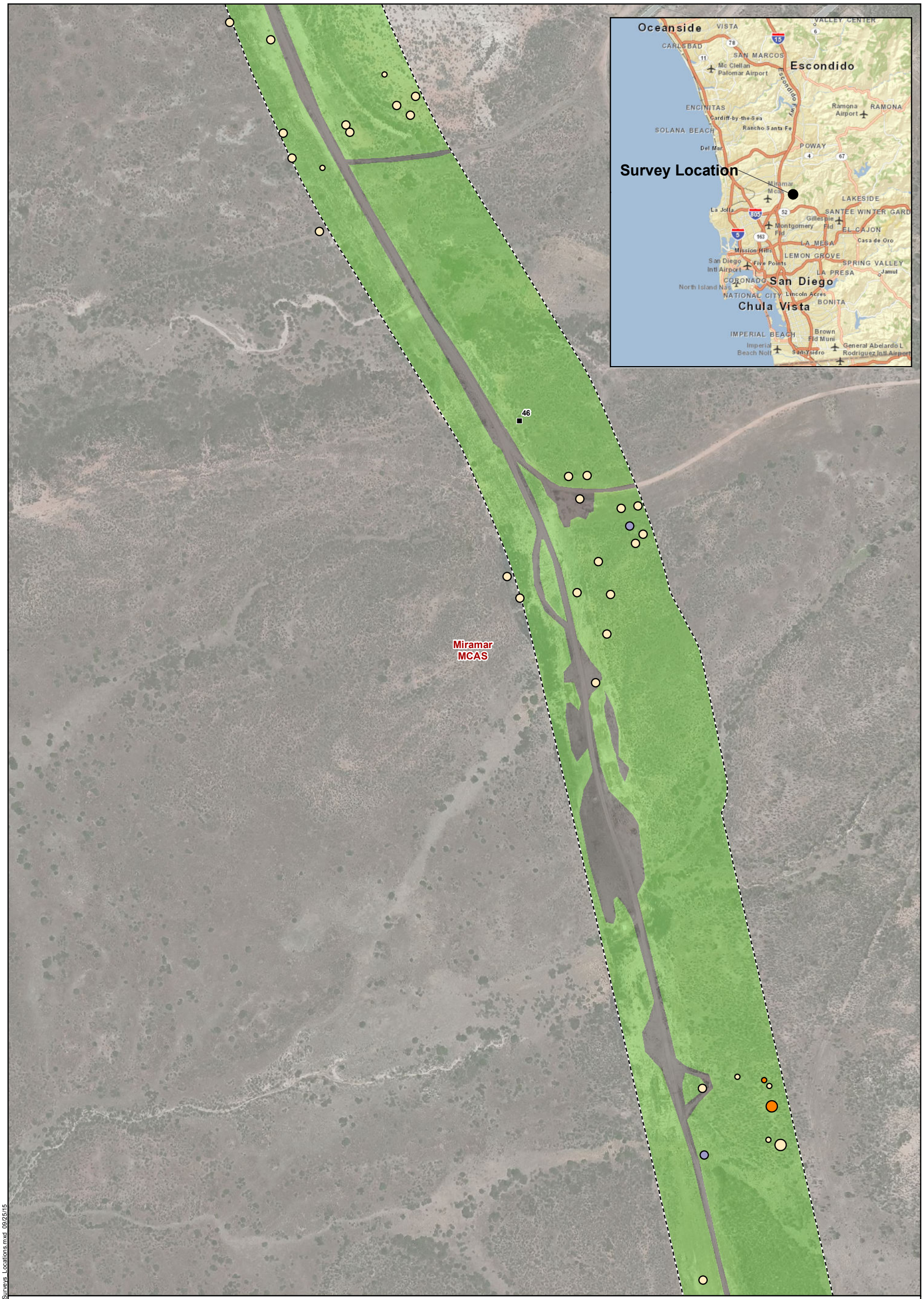

Figure 2: 2015 QCB Survey Area and Host Plant Locations Map 4 of 5

Pipeline Safety & Reliability Project

- Milepost
- Survey Area
- MCAS Miramar
- QCB Survey Area
- Excluded from QCB Survey Area

QCB larval host plants

- dot-seed plantain *(Plantago erecta)* [Low Density]
- dot-seed plantain *(Plantago erecta)* [Medium Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Low Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Medium Density]

QCB larval host plant patch diameter

- <3m
- 3 - 10m
- >10m

U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps: La Mesa, Poway

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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Figure 2: 2015 QCB Survey Area and Host Plant Locations Map 5 of 5 — **Pipeline Safety & Reliability Project**

- Milepost
- Survey Area
- MCAS Miramar
- QCB Survey Area
- Excluded from QCB Survey Area

QCB larval host plants

- dot-seed plantain *(Plantago erecta)* [Low Density]
- dot-seed plantain *(Plantago erecta)* [Medium Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Low Density]
- owl's clover *(Castilleja exserta ssp. exserta)* [Medium Density]

QCB larval host plant patch diameter

- <3m
- 3 - 10m
- >10m

U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps: La Mesa, Poway

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:3,000
0 200 400 Feet

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Attachment A:

All Butterflies Observed

	Survey Number	#1 PR	#1	#1	#2 PR	#2	#2	#3	#3 PR	#4 PR	#4	#5 PR	#5	#6 PR	#6	#7 PR
	Date	2/15/15	2/16/15	2/18/15	2/22/15	2/24/15	2/25/15	3/4/15	3/6/15	3/8/15	3/10/15	3/15/15	3/17/15	3/22/15	3/25/15	3/29/15
	Surveyor(s)	LR, MA, MR	BL, JR	LR, JR	LA, MA	LR	LR, BL, MD	GH, MD, BL	GH	GH, MA	GH, MD	GH	GH, MD	GH	GH, MD	GH
Nymphalidae (Brush Footed Butterflies)																
	Adelpha californica (California Sister)															
	Chlosyne gabbii (Gabb's Checkerspot)								X			X		X		X
	Junonia coenia (Common Buckeye)		X	X			X	X	X				X		X	X
	Speyeria callippe comstocki (Comstock's Fritillary)															
	Vanessa annabella (West Coast Lady)		X				X								X	
	Vanessa cardui (Painted Lady)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Vanessa atalanta (Red Admiral)		X					X				X				
Danaidae																
	Danaus gilippus (Queen)														X	
	Danaus plexippus (Monarch)						X									
Hesperidae																
	Erynnis funeralis (Funereal Duskywing)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	Hylephila phyleus (Fiery Skipper)															
	Pyrgus albescens (White Checkered-Skipper)															
Lycaenidae (Hairstreaks)																
	Brephidium exilia (Western Pygmy-Blue)															
	Callophrys perplexa (Perplexing Hairstreak)		X				X				X					
	Euphilotes bernardino (Bernardino Dotted-Blue)															
	Glaucopsyche lygdamus (Silvery Blue)	X	X	X	X	X	X	X	X	X	X	X	X	X		
	Hemiargus ceraunus (Ceraunus (Edward's) Blue)		X													
	Leptotes marina (Marine Blue)	X	X	X			X	X			X		X	X	X	X
	Plebejus acmon (Acmon Blue)															
	Strymon melinus (Gray Hairstreak)		X	X									X			X
	Satyrium saepium (Hedgerow Hairstreak)															
Riodinidae (Metalmarks)																
	Apodemia virgulti (Behr's Metalmark)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Papilionidae (Swallowtails)																
	Papilio zelicaon (Anise Swallowtail)															
Pieridae (Whites and Orangetips)																
	Anthocharis sara (Sara's Orangetip)								X	X	X	X	X	X	X	X
	Colias eurytheme (Orange Sulphur)		X	X			X	X	X	X	X	X	X	X	X	X
	Colias harfordii (Harford's Sulphur)	X									X	X	X			
	Pieris rapae (Cabbage White)													X	X	
	Phoebis sennae marcellina (Southwest Cloudless Sulphur)		X	X												
	Pontia protodice (Checkered White)											X	X	X	X	X
	Zerene cesonia (Southern Dogface)										X					
	Unidentifed Sulphur	X														
Satyridae (Satyrids)																
	Coenonympha tullia californica (Common California Ringlet)															
	Total Butterfly Species Observed	7	13	9	4	4	10	8	8	6	10	10	11	10	11	9

	Survey Number	#7	#8 PR	#8	#9 PR	#9	#9	#10 PR	#10	#11 PR	#11	#12 PR	#12
	Date	4/1/15	4/5/15	4/6/15	4/12/15	4/15/15	4/16/15	4/19/15	4/21/15	4/26/15	4/30/15	5/3/15	5/6/15
	Surveyor(s)	GH, MD	GH	GH, MD	GH	GH	GH	GH	GH, BL	GH	GH, MR	GH	GH, LR
Nymphalidae (Brush Footed Butterflies)													
	Adelpha californica (California Sister)										X		
	Chlosyne gabbii (Gabb's Checkerspot)	X	X		X					X	X		
	Junonia coenia (Common Buckeye)	X		X	X	X	X	X	X	X	X		
	Speyeria callippe comstocki (Comstock's Fritillary)	X		X					X	X	X	X	
	Vanessa annabella (West Coast Lady)					X			X				
	Vanessa cardui (Painted Lady)	X		X					X	X			X
	Vanessa atalanta (Red Admiral)												X
Danaidae													
	Danaus gilippus (Queen)												
	Danaus plexippus (Monarch)												
Hesperidae													
	Erynnis funeralis (Funereal Duskywing)	X		X		X	X	X	X	X	X	X	X
	Hylephila phyleus (Fiery Skipper)		X		X		X	X	X	X	X		
	Pyrgus albescens (White Checkered-Skipper)			X									
Lycaenidae (Hairstreaks)													
	Brephidium exilia (Western Pygmy-Blue)						X			X		X	
	Callophrys perplexa (Perplexing Hairstreak)												
	Euphilotes bernardino (Bernardino Dotted-Blue)								X		X	X	X
	Glaucopsyche lygdamus (Silvery Blue)												
	Hemiargus ceraunus (Ceraunus (Edward's) Blue)												
	Leptotes marina (Marine Blue)	X		X		X	X		X	X	X	X	X
	Plebejus acmon (Acmon Blue)							X	X				
	Strymon melinus (Gray Hairstreak)	X		X	X		X	X	X				
	Satyrium saepium (Hedgerow Hairstreak)	X		X									
Riodinidae (Metalmarks)													
	Apodemia virgulti (Behr's Metalmark)	X	X	X	X	X	X	X	X	X	X	X	X
Papilionidae (Swallowtails)													
	Papilio zelicaon (Anise Swallowtail)						X						
Pieridae (Whites and Orangetips)													
	Anthocharis sara (Sara's Orangetip)	X		X	X								
	Colias eurytheme (Orange Sulphur)	X	X	X	X	X	X	X	X	X	X	X	X
	Colias harfordii (Harford's Sulphur)												
	Pieris rapae (Cabbage White)	X											
	Phoebis sennae marcellina (Southwest Cloudless Sulphur)												
	Pontia protodice (Checkered White)	X		X	X	X	X	X	X	X	X	X	X
	Zerene cesonia (Southern Dogface)												
	Unidentifed Sulphur												
Satyridae (Satyrids)													
	Coenonympha tullia californica (Common California Ringlet)										X		
	Total Butterfly Species Observed	13	4	12	8	7	10	8	13	11	12	8	8

Attachment B:

All Surveyor Field Notes

22 - Lee work w/ Monica
Monica 1 - Monica & (Garret)
8 - Monica

ROCKS
BIOLOGICAL CONSULTING

→ Restricted range ~27 acres

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: Lee Ripnga w/ Melanie Rocks & Monica Alfaro

Date 2/15/15 Survey # 1 of 12

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	930	73.1	0%	0-1
End	1144	84.5	0%	1-4

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
✓	*Vanessa cardui* (Painted Lady) MLL
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
✓	*Erynnis funeralis* (Funereal Duskywing) 1
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
✓	*Glaucopsyche lygdamus* (Silvery Blue) 11
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
✓	*Apodemia mormo virgulti* (Behr's Metalmark) 1
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
	Colias eurytheme (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
	~~Silvery blue~~
	Sulfer (unknown from afar)

List nectar sources and plant communities observed

Lasthenia cal.
Ac mispon glabre
Cryptantha
Plagio collinus
Solanum (xantii)
Marah macrocarpa
Lomatium (yellow fls, div leaves)

NNG
Chamise Chap
Sparse DCSS

Encelia cal.
Nuttalanthus texanus
Erodium botrys
Latharus
Dichlostima cap
dasycarpum

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low, medium, high)_date_observer

low ~~<10 per sq. foot~~ <20% cover per square foot
med 20-50% cover, per sq. foot
high >50% cover

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: Monica Alfaro

Date 2/15/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	9:31	73.1	0%	0-2
End	11:44	84.5	0%	1-5

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
X	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
1	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
	Apodemia mormo virgulti (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
	Colias eurytheme (Orange Sulphur)
X	*Colias* harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed Wild hyacynth, Deerweed Allium hys?

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low, medium, high)_date_observer

32.85595 117.08922
2 ft diam (Low)
32.85571 117.08929
15 ~~12~~ ft diam Low
32.85532 -117.08901
Med ~~40~~ 35 ft
✓ Entered LAR
32.85515 -117.08913
60 ft Low → Med

ROCKS BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: Melanie Rocks

Date 2/15/2015 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0930	73.1	0	0-1
End	1145	84.5	0	1-5

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
IIII	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
1	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
1	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
	Apodemia mormo virgulti (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
	Colias eurytheme (Orange Sulphur)
11	*Colias* harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed

Acmispon glaber, Eri fasc

Pla ere, Dich cap

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low, medium, high)_date_observer

Pla ere - low dens (point)
just S of gate
on small hilltop
W of access rd.

ROCKS
BIOLOGICAL CONSULTING

Project Name: ~~Sp~~ 3602 project

Surveyor Name: B. Lohstroh

Date 2/16/15 Survey # 1

pistol/gate → ~~Rte~~ North (midsection)

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1030	70	5	1-6 (4)
End	1605	66	5	0-3

Nectar Sources Present: chrysanthia intermedia
Acmispon scop
erodium
calandrinia b. cil.
sparsy
Calochortus
Dec cap
Linaria canadensis
Lotus scoparius
scrophularia
Silene gal.
Pelecanthemum scop
yerba Santa
ceanothus dum.
Rhus Int
Linanthus dianth, Chorizanthe, orcutt, D-c
Loeflingia cal

	Nymphalidae (Brush Footed Butterflies)
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkerspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
1	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
IIII	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
1	*Vanessa atalanta* (Red Admiral)
	Danaidae
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)

	Hesperidae
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
IIII	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)
	Lycaenidae (Hairstreaks)
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
III	*Callophrys perplexa* (Perplexing Hairstreak)
IIII	*Strymon melinus* (Gray Hairstreak)
IIII IIII IIII	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
1	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
	Riodinidae (Metalmarks)
	Apodemia mormo (Mormon Metalmark)
IIII	Apodemia virgulti (Behr's Metalmark)
	Papilionidae (Swallowtails)
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
	Pieridae (Whites and Orangetips)
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
IIIIII	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Satyridae (Satyrids)
	Coenonympha californica (Common California Ringlet)
	Others
[redacted]	
11	SW checkered skipper
11	edwards blue

Notes (host plant locations, QCB occurrences, etc):

ROCKS
BIOLOGICAL CONSULTING

Project Name: 3602

Surveyor Name: J. Rocks

Date 2/16/15 Survey # _____

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1050	70	0	1-6
End	1605	66	0	

Nectar Sources Present: Acm Gla, Cal Cil, Ero Mos, Dic Cap, Sperg boc, Cal Mac, Cal Brew, Rec Linfer, Cryp Int, Erio d Crass, Sil Gal, Mim Aur, Cor Fil, All prae, Dod Cle, Hel Sco, Rhu Int, Lin Dia, Oxa Pes Cap

	Nymphalidae (Brush Footed Butterflies)
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkerspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
II	Junonia coenia (Common Buckeye)
I	*Vanessa annabella* (West Coast Lady)
II	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
I	*Vanessa atalanta* (Red Admiral) (nettle feeder)
	Danaidae
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)

	Hesperidae
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
IIII	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)
	Lycaenidae (Hairstreaks)
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
II	*Callophrys perplexa* (Perplexing Hairstreak)
III	*Strymon melinus* (Gray Hairstreak)
II	Glaucopsyche lygdamus (Silvery Blue)
I	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
I	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
	Riodinidae (Metalmarks)
	Apodemia mormo (Mormon Metalmark)
III	Apodemia virgulti (Behr's Metalmark)
	Papilionidae (Swallowtails)
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
	Pieridae (Whites and Orangetips)
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
III	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Satyridae (Satyrids)
	Coenonympha californica (Common California Ringlet)
	Others
II	SW Cloudless Sulphur
I	Edward's (Ceraunus) Blue

Notes (host plant locations, QCB occurrences, etc):

Plantago erecta

Castilleja exserta

ROCKS BIOLOGICAL CONSULTING

Project 3602

Surveyor Name: J. Rocks

Date 2/18/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0950	67	0	1-3
End	1350	74	100 thin	1-6

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
1	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
III	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
IIII II	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Starting at north end near UC reserve, walking south

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
1	*Strymon melinus* (Gray Hairstreak)
IIII II	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
III	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
IIII	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
II	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
1	SW Cloudless Sulphur

List nectar sources and plant communities observed

Ero Mos, AcmGla, BraNig, Vicia sp., EriFas MuiMar, CalCil, DicCap

082908-1 221090-3.1

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

Plantago erecta - found numerous patches, some in the 1000s but spread out & low density

Castilleja exserta - found 1 individual w/ only a couple of fls. Looking dry.

Tentacheta area - small, multivanted w/ plantago
Calindrenia breweri - fire follower lvs broader

flared base

ROCKS
BIOLOGICAL CONSULTING

Project SDG&E

Surveyor Name: Lee Ripma

Date 2/18/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	9:55 ~~67.1~~	67.1	10% sunny w/ high circus	0-1
End	1350	74.0	100%	1-6

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
✓	*Junonia coenia* (Common Buckeye) ||
	Vanessa annabella (West Coast Lady)
✓	*Vanessa cardui* (Painted Lady) ||
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
✓	*Erynnis funeralis* (Funereal Duskywing) ||||
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
✓	*Strymon melinus* (Gray Hairstreak) |
✓	*Glaucopsyche lygdamus* (Silvery Blue) |||
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
✓	*Apodemia mormo virgulti* (Behr's Metalmark) ||
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
✓	*Colias eurytheme* (Orange Sulphur) ||
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed

Acmispon glaber
Eschultzia cal
Calindrenia breweri & ciliata
Alium praecox
Dichostema cap
Muila maritima

Chamise Chap & disturbed Chamise Chap

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

~~TE 221290-3.1~~

ROCKS BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: Lee Ripma

Date 2/22/15 Survey # 2 pistol range

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1107	70.5	90%	3-5
End	1250	68.0	90%	2-7

> survey conditions favorable & in protocol for the survey, slightly below temp @ end.

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
✓	*Vanessa cardui* (Painted Lady) |
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
✓	*Erynnis funeralis* (Funereal Duskywing) ||||
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
✓	*Glaucopsyche lygdamus* (Silvery Blue) |
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
✓	*Apodemia mormo virgulti* (Behr's Metalmark) |||
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
	Colias eurytheme (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed

Cynara — Dichlostema cap.

~~Cirsium~~ Anthriscus antaliscus

Penacheatea aurea (marked, list 4)

Nuttallanthus texanus — Cardamine hetrophyla (check)

Lasthenia cal. — Ac mospn glaberr

Solanum xanti

Monica - QCB SD Vignera Eri. fas, Latharys

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low, medium, high)_date_observer

ROCKS BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: Monica Alfaro

Date 2/22/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	11:07	70.5	90 %	3-5 mph
End	12:50	68.0	90 %	4-7 mph

Survey weather conditions favorable throughout dipped below C very end

	Nymphalidae (Brush Footed Butterflies)
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
X	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
	Danaidae
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
	Hesperidae
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
1	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

	Lycaenidae (Hairstreaks)
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
	Riodinidae (Metalmarks)
	Apodemia mormo virgulti (Behr's Metalmark)
	Papilionidae (Swallowtails)
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
	Pieridae (Whites and Orangetips)
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
	Colias eurytheme (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
	Satyridae (Satyrids)
	Coenonympha californica (Common California Ringlet)
	Others

List nectar sources and plant communities observed Wild hyacinth
Allium
Lotsco
filaree
popcorn flower

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low, medium, high)_date_observer

11 S 0491635 3635316 2ft diam low

0491666 3635259 4ft diam low

4631 Mt Forde 2 sets

ROCKS BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: Lee Ripma

Date 2/24/15 Survey # 2 main area

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1409	75.5	0%	4-7
End	1615	71.3	0%	1-4

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
✓	*Vanessa cardui* (Painted Lady) 1
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
✓	*Pyrgus albescens* (White Checkered-Skipper)
✓	*Erynnis funeralis* (Funereal Duskywing) 111
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
✓	*Strymon melinus* (Gray Hairstreak)
✓	*Glaucopsyche lygdamus* (Silvery Blue) 1111
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
✓	*Apodemia mormo virgulti* (Behr's Metalmark) 11
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
	Colias eurytheme (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed

Eri. fas.
Dicholostima cap.
Acmispon glabra
Pseudognat. cal.
E. botrys
Allium praecox
Allium haematochiton
Eschaltzia cal.

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low, medium, high)_date_observer

One additional pt. of Castilleja exserta mapped, all other ~~host~~ host plants mapped already

ROCKS
BIOLOGICAL CONSULTING

Project PIPELINE 3602

Surveyor Name: MELANIE DICUS

Date 02-25-2015 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	10:10	63.9	5	0-1
End	13:30	75	0	2-4

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
X	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
X	*Danaus plexippus* (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
X	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
X	*Callophrys perplexa* (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
X	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
X	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
X	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed

CHAMISE CHAPARRAL, CSS
CRYPTANTHA SP, AMSINCKIA SP,
DICHELOSTEMMA CAPITATA, ACMISPON
GLABER, ERIOGONUM FASCICULATUM,
LASTHENIA GRACILIS, ERODICTYON CROSSII,
ISOCOMA MENZIESII, SISYRHYNCHIUM BELLUM
PLAGIOBOTHRYS SP, HELIANTHEMUM

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

ROCKS BIOLOGICAL CONSULTING

Project SDGE 3602 Pipeline

Surveyor Name: B. Lohstroh

Date 2/25/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1010	63.9	CLR %	0-9
End	1330	75°	CLR %	2-4 mph

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
I	*Junonia coenia* (Common Buckeye)
I	*Vanessa annabella* (West Coast Lady)
II	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
I	*Danaus plexippus* (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
IIII	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
II	*Callophrys perplexa* (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
IIII	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
I	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
IIII	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
IIII	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed

Acmispon scop
Eri Sp
Dichelostemma pentandrum
Dichelostemma capitatum
Lasthenia cal
Castilleja
Spergularia
Erodium
Calandrinia ko
Ceanothus tor
Mimulus
Cammissonia ch
Lotus sp
Calandrinia
Allium
Linanthus can
Silene gal
Eschscholzia
Erodium p.c
Castilleja p
Cryptantha
Pectocarya

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

CE = Castelleja exserta

ROCKS BIOLOGICAL CONSULTING

Project Pipeline 3602

Surveyor Name: Lee Ripma

Date 2/25/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1010	63.9	0	0-1
End	1330	75	0	2-4

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
✓	*Vanessa cardui* (Painted Lady) IIII
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
✓	*Danaus plexippus* (Monarch) 1
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
✓	*Erynnis funeralis* (Funereal Duskywing) IIII III
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
✓	*Callophrys perplexa* (Perplexing Hairstreak) 1
	Strymon melinus (Gray Hairstreak)
✓	*Glaucopsyche lygdamus* (Silvery Blue) IIII II
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
✓	*Leptotes marina* (Marine Blue) II
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
✓	*Apodemia mormo virgulti* (Behr's Metalmark) IIII III
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
✓	Pontia protodice (Checkered White)
✓	*Colias eurytheme* (Orange Sulphur) II 1
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
	~~blue w/ 2 spots, edges romantic~~

List nectar sources and plant communities observed

Lastrevia cal Pentachaeta aurea
Dichelostemma cap.
Allium praecox
compositae
Gilia

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

Marked Clar. poly longispina
pop of 200

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 3/4/15 Survey # 3

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0900	62	0	0-2
End	1330	67	0	3-7

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
20	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
50	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
10	*Glaucopsyche lygdamus* (Silvery Blue)
	Icaricia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
5	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
30	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CHAMISE CHAPARRAL, CSS: ERIOGONUM FASCICULATUM, DICHELOSTEMMA CAPITATA, ALLIUM, ACMISPON GLABER, CRYPTANTHA LATHYRUS VESTITUS, LINARIA CANADENSIS, MIMULUS AURANTIACUS, ESCHSCHOLZIA CALIFORNICA.

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

ROCKS
BIOLOGICAL CONSULTING

Project Marmar 3602

Surveyor Name: B. Lohstroh

Date 3/4/15 Survey # 3

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0915	62	0	0-2 mph
End	1330	67	0	3-7

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
1	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
IIII	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
1	*Vanessa atalanta* (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
IIII IIII	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
IIII IIII	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
IIII IIII	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
IIII IIII	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
IIII	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed erodium, Acmispon, sololivump, Dichcap, Vicia, Ev. fac, Descurainia, medpoly, Amsg. Arv. Spergularia, P. Group cal., Silene gal., Lupinus succ, Mimulus, Ericod. crass., Hilliam pra, Hyp. glab., Calmac, Lac cal, clarkia, pen, aurea, castilleja dav. v. fissa, Eschscholzia, Brassicas, Hed. creatica, Eschscholz. cal., Prunus ill., Oxalis p-c, Cryptantha sp.

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla*)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: MELANIE DICUS

Date 03-04-2015 Survey # 3

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0900	62	Ø	Ø-2
End	1330	67	Ø	3-7

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
11	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
1	*Vanessa atalanta* (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
HO	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
15	*Glaucopsyche lygdamus* (Silvery Blue)
	Icaricia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
2	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
10	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
6	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

List nectar sources and plant communities observed ESS, CHAMISE CHAP
ACMISPON GLABER ESCHSCHOLZIA CA
DICHELOSTEMMA CAPITATA LASTHENIA GRACILIS
ALLIUM SP. DELANDRA FASCICULATA
ERIOGONUM FASCICULATUM BRASSICA NIGRA
CRYPTANTHA SP. SISYRINCHIUM BELLUM
AMSINCKIA SP. HYPOCHAERIS SP.
SILENE GALLICA HEDYPNOIS CRETICUS
PLAGIOBOTHRYS SP. SISYMBRIUM ORIENTALE

ROCKS
BIOLOGICAL CONSULTING

Project MIRAMAR PISTOL RANGE

Surveyor Name: GARRETT HUFFMAN

Date 3/16/15 Survey #_____

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0650	66	0	0-2
End	1200	80	0	2-4

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
1	*Charidryas gabbii* (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
2	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
10	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
20	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
15	*Glaucopsyche lygdamus* (Silvery Blue)
	Icaricia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
30	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
5	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
2	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed

CHAMISE CHAPARRAL, CSS, GRASSLAND
DICHELOSTEMMA CAPITATUM, PSEUDOGNAPHALIUM CALIFORNICUM, ESCHSCHOLZIA CALIFORNICA, AMSINCKIA LYCOPSOIDES, CRYPTANTHA SP., ERODIUM, ALLIUM SP., LATHYRUS VESTITUS, ERIOGONUM FASCICULATUM, MIMULUS AURANTIACUS

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla*)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES OBSERVED:
SAPH, CORA, WREN, HOLA, CATO, BEWR, SAGS, BGGN, WTSW, ANHU, COYE, LASP, NOMO, RCSP, CAQU, LEGO

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN
AND MONICA ALFARO
Date 3/8/15 Survey # 4

		Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
	Start	0930	68	0	2-6
MA	End	1230	76	0	2-6
GH	END	1330	77	0	2-4

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
5	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
15	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
10	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
15	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
10	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
5	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CHAMISE CHAPARRAL, CSS NON-NATIVE GRASSLAND. DICHELOSTEMMA CAPITATUM, ESCHSCHOLZIA CALIFORNICA, ALLIUM SP., MIMULUS AURANTIACUS, LATHYRUS VESTITUS, AMSINCKIA GLABER, ANAGALLIS ARVENSIS, LUPINUS BICOLOR.

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN LIST: RLSP, CORA, CATO, WEME, LASP, SPTO, MODO, YRWA, ANHU, HOLA, WTSW, SAGS, CAKI, COYE, WREN, BUSH

CASTILLEJA_5ft_10w_03082015_GH
32.85713 -117.08996

CASTILLEJA_10ft_med_03082015_GH
32.85533 -117.08896

ROCKS
BIOLOGICAL CONSULTING

NON- PISTOL RANGE
SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 3/10/15 Survey # 4

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0900	61	0	2-4
End	1600	80	25	1-5

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
14	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
45	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
16	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
5	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
17	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
5	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
10	*Colias eurytheme* (Orange Sulphur)
2	*Colias harfordii* (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CHAMISE CHAPARRAL, CSS ACMISPON GLABER, ALLIUM SP., DICHOLOSTEMMA CAPITATA, VICIA, CLARKIA, ERIOGONUM FASCICULATUM, PSEUDOGNAPHALIUM CALIFORNICA, COROTHROGYNE FILAGINIFOLIA, ERODIUM, ESCHSCHOLZIA CALIFORNICA

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum,*
Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES: HOLA, LASP, YRWA, SAGS, WCSP, SPTO, CATO, CORA, ANHU, WREN, COYE, CAQU, BEWR, RCSP, WEME, HOFI, WTSW, LEGO, NOMO, MOOD, WCBL, RTHA.

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: MELANIE DICUS

Date 03-10-2015 Survey # 4

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0900	61	0	2-4
End	1600	80	25	1-5

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
14	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
65	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
3	*Callophrys perplexa* (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
25	*Glaucopsyche lygdamus* (Silvery Blue)
	Icaricia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
11	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
25	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
4	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
9	*Colias eurytheme* (Orange Sulphur)
3	*Colias harfordii* (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
1	COLIAS/ZERENE CESONIA

List nectar sources and plant communities, observed CSS, CHAMISE CHAPARRAL, DICHELOSTEMMA

AMSINCKIA	HELIANTHEMUM	VICIA
PLAGIOBOTHRYS	OENANDRA	ACHNISPON
CRYPTANTHA	ALLIUM	ESCHSCHOLZIA
PHACELIA	SILENE	SONCHUS
LINANTHUS	PENTACHAETA	CLARKIA
LASTHENIA	HEDYPNOIS	STEPHANOMERIA
ERODIOPHYLLUM	HYPOCHAERIS	MELILOTUS
ACHNISPON	ERODIUM	BRASSICA

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRET HUGHMAN

Date 3/15/15 Survey # 5

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0900	78°	30%	4-8
End	1300	91°	30%	4-7

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
2	*Charidryas gabbii* (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
9	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
1	*Vanessa atalanta* (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
15	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
3	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
8	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
18	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
1	Pontia protodice (Checkered White)
7	*Colias eurytheme* (Orange Sulphur)
2	*Colias* harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CHAMISE CHAPARRAL, CSS NON-NATIVE GRASSLAND

ACMISPON GLABER, ERIOGONUM FASCICULATUM, DICHELOSTEMMA CAPITATUM, VESTITUS, LUPINUS BICOLOR, ESCHSCHOLZIA CALIFORNICA ANAGUS ARVENSIS

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum,*
Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES: RTHA, CORA, BUSH, WCMC, HOLA, BLGR, CAGN, SPTO, CATO, WCSP, RCSP, MODO, ANHU, SAGS, WREN.

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 03/17/15 Survey # 5

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0830	68	40	2-7
End	1545	80	75	2-8

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
1	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
22	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
1	*Strymon melinus* (Gray Hairstreak)
6	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
6	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
17	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
10	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
1	Pontia protodice (Checkered White)
10	*Colias eurytheme* (Orange Sulphur)
1	*Colias harfordii* (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL, ACMISPON GLABER, ERODIUM, ERIOGONUM FASCICULATUM, DICHELOSTEMMA CAPITATA, VICIA SP., DEINANDRA FASCICULATA, MELILOTUS INDICUS, CRYPTANTHA, ALLIUM, NAVARRETIA HAMATA, HELIANTHEMUM SCOPARIUM, DIOMERIA CROCEA, ESCHSCHOLZIA CALIFORNICA, OXALIS

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum,*
Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES: HOLA, RLSP, SAGS, WRCN, CORA, LASP, HOLA, WCSP, LEGO, CATH, BEWR, CATO, BLGN, SPTO, BUSH, NOFL, COYE, ANHU, HAFL, CAKI, LOSH, WEBL

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: MELANIE DICUS

Date 03-17-2015 Survey # 5

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0830	68	40	2-7
End	1545	80	75	2-8

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
1	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
8	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
27	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
3	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
14	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
40	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
6	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
1	Pontia protodice (Checkered White)
9	*Colias eurytheme* (Orange Sulphur)
1	*Colias* harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE
PLAGIOBOTHRYS, CRYPTANTHA, AMSINCKIA, ACMISPON, LUPINUS, ERIOGONUM FASCICULATUM, CLARKIA, HESPEROIS, MELILOTUS, HYPOCHAERIS, PENTACHAETA, ADENOSTOMA, GILIA, BRASSICA, SISYMBRIUM, ESCHSCHOLZIA, NAVARRETIA, BLOOMERIA, OXALIS, ERODIUM, CRYPTANTHA

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

ROCKS
BIOLOGICAL CONSULTING

PISTOL RANGE
SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN
~~SHANNON WALSH~~

Date 03/22/15 Survey # 6

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0930	64	25	3-7
End	1245	72	40	1-4

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
3	*Charidryas gabbii* (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
3	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
7	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
2	*Glaucopsyche lygdamus* (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
1	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
4	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
9	*Anthocharis sara* (Sara's Orangetip)
1	*Pieris rapae* (Cabbage White)
1	Pontia protodice (Checkered White)
3	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL ALMISPON, ERIOGONUM, ERODIUM DICHELOSTEMMA, VESTITUS, LUPINUS, VICIA, ESCHSCHOLZIA

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN LIST - CATO, WCME, SATO, WCSP, LAKI, AMCR, CORA, WEKI, GRSP, BGLN, LREN, LEGO, RTHA, HOLA

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 3/25/15 Survey # 6

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1000	70	Ø	Ø-1
End	1630	78	Ø	1-7

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
5	*Junonia coenia* (Common Buckeye)
1	*Vanessa annabella* (West Coast Lady)
5	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
1	*Danaus gilippus* (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
27	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
32	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
19	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
4	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
2	Pontia protodice (Checkered White)
	Colias eurytheme (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE CHAP ALMISPON, ERIOGONUM, DEINANDRA, ERODIUM, DICHOSTEMMA, VICIA, LASTHENIA, CRYPTANTHA, ALLIUM

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum,*
Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN LIST: BGGN, CATO, HOLA, RLSP, SPTO, MODO, SAGS, LBBR, LEGO, SAGS, LBBR, LEGO, LOEA, CATH, SOSP, BUSH, MOMO, WEME, VASP, WEK)

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: MELANIE DICUS

Date 03-25-2015 Survey # 6

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1000	70	0	0-1
End	1630	78	0	1-7

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
10	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
5	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
1	*Danaus gilippus* (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
18	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
25	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
26	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
4	*Anthocharis sara* (Sara's Orangetip)
1	*Pieris rapae* (Cabbage White)
3	Pontia protodice (Checkered White)
17	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed ESS, CHAMISE CHAP PLATYROBOTRYS, CRYPTANTHA, LUPINUS, HELIANTHEMUM, LASTHENIA, DELPHINIUM, BLOOMERIA, PENTACHAETA, MICROSTOMA, ALYSSUM, ERODIUM, NAVARRETIA, PHACELIA, ADENOSTOMA, VERBASCUM

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum,*
Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

ROCKS
BIOLOGICAL CONSULTING

PISTOL RANGE

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT Huffman - SHANNON WALSH

Date 3/29/15 Survey # 7

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0830	66	30	3-6
End	1130	81	40	3-5

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
1	*Charidryas gabbii* (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
2	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
1	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
	Erynnis funeralis (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
1	*Strymon melinus* (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
3	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
5	*Apodemia mormo virguli* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
10	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
1	Pontia protodice (Checkered White)
1	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS
DENDROA, ACMISPON, VICIA, ERIOGONUM, ERODIUM, SALVIA, DICHELOSTEMMA, CRYPTANTHA, MUILLA

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN LIST; LASP, CATU, HOLA, SOSP, WREN, WCSP, RTHA, WTSW, SPTO, MOPO, WCME, SAPH, SAVS, COYE, RCSP

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN
SHANNON WALSH

Date 4/1/15 Survey # 7

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0845	64	0	0-1
End	1630	71	0	3-6

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
5	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
2	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
17	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
2	*Strymon melinus* (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
17	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodiniclae (Metalmarks)	
13	*Apodemia mormo virguli* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
3	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
1	Pontia protodice (Checkered White)
21	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis icle (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL CHLOROGALUM, LASTHENIA, SILENE, PHACELIA, ERIOGONUM, ACMISPON, DICHELOSTEMMA, CRYPTANTHA, SALVIA, ESCHSCHOLZIA.

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN LIST: WREN, HOLA, COHU, LEGO, LASP, NOMO, CATO, BGGN, SPTO, SAGS, CORA, CAPU, WCSP, WESJ, BEWR, RCSP, COVE, AMCR, WEME, BUSH, CATH

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: MELANIE DICUS

Date 04-01-2015 Survey # 7

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0845	66	Ø	Ø-1
End	1630	71	Ø	3-7

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
1	*Charidryas gabbii* (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
8	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
2	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
11	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
1	*Strymon melinus* (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
30	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
15	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
2	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
3	Pontia protodice (Checkered White)
21	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
3	SPEYERIA CALLIPPE COMSTOCKI
1	SATYRIUM SAEPIUM

List nectar sources and plant communities observed CSS, CHAMISE CHAP ERIOGONUM FASCICULATUM, ACMISPON GLABER, DEINANDRA FASCICULATA, SALVIA MELLIFERA, CRYPTANTHA, ADENOSTOMA FASCICULATUM, BRASSICA NIGRA, ESCHSCHOLZIA CALIFORNICA, ANTIRRHINUM NUTTALLIANUM, ERIOPHYLLUM CONFERTIFLORUM, BRODIAEA ORCUTTII, BLOOMERIA CLEVELANDII, SONCHUS ASPER, SILENE GALLICA, HELIANTHEMUM SCOPARIUM, SIDALCEA MALVIFLORA

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

ROCKS
BIOLOGICAL CONSULTING

PISTOL RANGE

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 4/5/15 Survey #_____

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0930	70	40	2-5
End	1330	72	30	4-6

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
1	*Charidryas gabbii* (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
1	*Hylephila phyleus* (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
	Erynnis funeralis (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
4	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
3	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL DEINANDRA, ERIOGONUM, ALMISPON, CRYPTANTHA, SALVIA, VICIA, CALOCHORTUS

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN LIST: WREN, SPTO, HOLA, ANHU, RTHA, SAGS, CLSW, CORA, CAKI, WEME, WCSP, SAVS, GRSP, WTSW, CATO, BGGN.

ROCKS BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: MELANIE DICUS

Date 04-06-2015 Survey # 8

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0915	64	40%	3-7
End	16	65	10%	7-10

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
2	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
1	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
1	*Pyrgus albescens* (White Checkered-Skipper)
5	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
1	*Strymon melinus* (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
7	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
2	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
1	Pontia protodice (Checkered White)
21	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
1	SPEYERIA CALLIPPE CONSTANCIA
1	SATYRIUM SAEPIUM

List nectar sources and plant communities observed CSS, CHAPARRAL ORNANDRA, ERODIUM, SILENE, SALVIA, ERIOGONUM, ACHILLEA, GONIUM, CENTAUREA, DICHELOSTEMMA, CALOCHORTUS, MIMULUS, OSMADENIA, NAVARRETIA, HELIANTHEMUM, CRYPTANTHA, SIDALCEA, SISYRINCHIUM, ERIOPHYLLUM, HYPOCHAERIS, HEDYPNOIS, ANTIRRHINUM

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

ROCKS
BIOLOGICAL CONSULTING

NUN PISTOL

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 4/6/15 Survey # 8

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0915	64	40	3-7
End	1630	65	10	7-10

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
2	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
1	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
3	*Strymon melinus* (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
15	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Rioclinidae (Metalmarks)	
20	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
1	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
25	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
~~25~~	*Eurema nicippe* (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL VICIA, ERIOGONUM, ACMISPON DEINANDRA, CROSSOSOMA, ERIOPHYLLUM, LYCIUM, CRYPTANTHA, CALOCHORTUS, SALVIA, MIMULUS

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum,* *Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN LIST: CATO, SPTO, RCSP, WREN, SAGS, BGGN, HOLA, CUSW, WEME, NOMO, SAPH, CORA, WTSW, CAQU, CAKI, BEWR, HOFI, CATH, ANHU, TUVU, RTHA, BUSH

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 04/12/15 Survey # 9

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1215	77	Ø	2-4
End	1515	81	Ø	2-5

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
2	*Charidryas gabbii* (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
1	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
1	*Hylephila phyleus* (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
	Erynnis funeralis (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
1	*Strymon melinus* (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
4	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
1	*Anthocharis sara* (Sara's Orangetip)
	Pieris rapae (Cabbage White)
1	Pontia protodice (Checkered White)
3	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL

DEINANDRA, ERIOGONUM, ALMISPON, CHALOCHORTUS, DICHOLOSTEMMA, PSEUDOGNAPHALIUM, ERODIUM, CRYPTANTHA, SALVIA VICIA, MIMULUS, BLOOMERIA

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (Plantago *erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES: HOLA, SPTO, CATO, SAGS, LLEME, LUREN CATH, NOMO, SOSP, LEGO, CLSW, CORA, COVE, WEKI

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 4/15/15 Survey # 9

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0830	67	Ø	0-2
End	1600	80°	Ø	4-10

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
2	*Junonia coenia* (Common Buckeye)
1	*Vanessa annabella* (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
9	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
5	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
5	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
4	Pontia protodice (Checkered White)
17	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS; CHAMISE CHAPARRAL DRYMANDRA, ERIOGONUM, ERODIUM, ACMISPON, DICHOLOSTEMMA, VICIA, CALOCHORTUS

List notes and GPS point name
write UTMs or Lat/Longs as bac
GPS all QCB occurrences
GPS all potential host plant loca
erecta, Plantago patagonica, Ar
coulterianum,
Cordylanthus rigidus, Castilleja
Collinsia heterophylla)
Format: plant name_diameter of
occurrence_density (low >20% c
medium 20-50%, high >50%)_da

AVIAN LIST:
SAGS, HUFI, BGGN,
CATO, HOLA, SOSP,
CORA, WREN, LEGO
MOOD, LASP, RTHA,

ROCKS
BIOLOGICAL CONSULTING

NON PISTOL

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 4/16/15 Survey # 9

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1100	84	0	5-7
End	1830	76	0	5-8

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
6	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
1	*Hylephila phyleus* (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
9	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
3	*Strymon melinus* (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
3	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
1	*Brephidium exilis* (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
6	*Apodemia mormo virguli'i* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
1	*Papilio zelicaon* (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
6	Pontia protodice (Checkered White)
10	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL DEINANDRA, ALMISPON, ERIOPHYLLUM, ERODIUM, MIMULUS, PSEUDOGNAPHALIUM, CALOCHORTUS, BLOOMERIA, SALVIA

List notes and GPS
write UTMs or Lat/L
GPS all QCB occur
GPS all potential ho
erecta, Plantago pa
coulterianum,
Cordylanthus rigidu
Collinsia heterophyl
Format: plant name
occurrence_density
medium 20-50%, hi

AVIAN
SPECIES:
NOMO
MODO
HOFI
LEGO
SPTO
SAGS
HOLA
CATO
BGGN
LOSH
COYE
BUSH
WREN
LASO
LENI

ROCKS
BIOLOGICAL CONSULTING

PISTOL RANGE

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 4/19/15 Survey # 10

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0830	76	0	1-3
End	1245	82	10	2-7

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
1	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
2	*Hylephila phyleus* (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
0	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
1	*Strymon melinus* (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
4	*Icarcia acmon* (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
9	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
11	Pontia protodice (Checkered White)
5	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL, DEINANDRA, ERIOGONUM, ERODIUM, SALVIA, CRYPTANTHA, VICIA

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla*)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES: SAGS, ANHU, BEWR, CORA, MOBO, CATO, LEGO, RCSP, HOLA, WEME, LOSH, WTSW, SAVS, NOMO, HOFI, CLSW,

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades 3602

Surveyor Name: B. Lohstroh

Date April 21, 2015 Survey # 10

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0830	71	100	0-2
End	1445	80	60	3-8

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
2	*Junonia coenia* (Common Buckeye)
1	*Vanessa annabella* (West Coast Lady)
3	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
14	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
1	*Strymon melinus* (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
4	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
5	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
8	Pontia protodice (Checkered White)
12	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
11	Bernardino blue
1	Comstock Fritillary

List nectar sources and plant communities observed Eri. fac, Dien. Fac, Erodium spp, Sal mel, Reseda, Mim aur, Cal SPL, Psedog Apcal, Acmispon glaber, stephanomeria, Osm ten, Ant Nut, Cryp int, Chrologalum, Nav-ham, Bloomeria cleve, cirsium vul, vicia, sonchus, Cal Mac, Solanum par, Eriophcon, Brodiaea, ocrcutlii, sid mal, Hel sco, cheanactis, Hyp. glab, Escholz cal, MEZ Nod, Conmel, stachys, solanum sp.

PE observed, senescent.

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

ROCKS
BIOLOGICAL CONSULTING

PISTOL RANGE
SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 4/20/15 Survey # 11

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1145	76	30	2-5
End	1445	74	10	3-7

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkerspot)
2	*Charidryas gabbii* (Gabb's Checkerspot)
	Phyciodes mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
5	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
1	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
1	*Hylephila phyleus* (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
4	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icaricia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
10	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
1	*Brephidium exilis* (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
2	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
10	*Pontia protodice* (Checkered White)
6	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
	COMSTOCK'S FRITILLARY (SPEYERIA CALLIPPE)

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL

DICHONDRA, ERIOGONUM

VICIA

List notes and GPS point names here, please write: UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla*)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES:

CALT, NOMO, PHAI, BGGN, HOLA, ANHU, GRSP, RCSP, CORA, LEGO, SAGS, COYE

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 4/21/16 Survey # 10

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0900	71	100	0-2
End	1445	80	60	3-8

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Chandryes gabbii (Gabb's Checkerspot)
	Phyocides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
3	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
2	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
16	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
9	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
9	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
5	*Pontia protodice* (Checkered White)
15	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
5	EUPHILOTES BERNADINO

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL DELINANDRA, ERIOGONUM, ERODIUM, PSEUDOGNAPHALIUM, OSMIDENIA, CALOCHORTUS, SALVIA, CRYPTANTHA, VICIA

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN: WEKI, WEME, RCSP, ANHU, CATO, SPTO, SAGS, CORA, BLGN, NOMO, TBEUR, WREN, CLSW, RTHA, LEGO, CATH, HOLA, BUSH, LASP, HOFI, MODU

ROCKS
BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 4/30/15 Survey # 11

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0830	78	5	2-4
End	1500	87	1	4-8

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
1	*Charidryas gabbii* (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
2	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
1	*Hylephila phyleus* (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
7	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
1	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
2	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
17	Pontia protodice (Checkered White)
12	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
1	*Coenonympha californica* (Common California Ringlet)
Others	
3	BLANDING'S BLUE
1	CA SISTER
2	COMSTOCK FRITILLARY

List nectar sources and plant communities observed

CSS + CHAMISE CHAPARRAL

DUDLEYA, ERODIUM, ERIOGONUM, ACMISPON, SALVIA, CROCANTHEMUM, CALOCHORTUS

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES:
CATO, CORA, HOLA, CAQU, SPTO, MODO, COVE, WREN, NOMO, SAGS, CATH, RTHA, SOTO, SAPH, ANHU, BGGN, LEGO

ROCKS BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: Melanie Rocks

Date 4/30/2015 Survey # 11

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0830	78	5%	2-4
End	1500	87	1%	4-8

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
11	*Charidryas gabbii* (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
1	*Junonia coenia* (Common Buckeye)
	Vanessa annabella (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
12	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
	Leptotes marina (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
1	*Everes amyntula* (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
2	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
9	Pontia protodice (Checkered White)
14	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
6	*Coenonympha californica* (Common California Ringlet)
Others	
10	Un-ID White
1	Mourning Cloak

List nectar sources and plant communities observed

DCSS, Chamise Chaparral, WNG, DIST/DEV

Dei fasc, osmadenia, Placer

Eri fasc, Crocanthemum

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum, Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)*
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

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PISTOL RANGE
SDG&E Natural Gas System Potential Upgrades

Surveyor Name: CHRISTI HUGEMAN

Date 5/3/15 Survey # 12

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1200	75	30	3-6
End	1445	79	15	4-8

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
5	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
2	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
2	*Brephidium exilis* (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
3	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
4	Pontia protodice (Checkered White)
3	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
3	COMSTOCK'S FRITILLARY
2	BERNARDINO BLUE

List nectar sources and plant communities observed CSS, CHAMISE CHAPARRAL DENDROMECON, ERIOGONUM

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum,*
Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES; HOLA, RLSP, CLSW, COTO, SPTO, COVE, HOFI

ROCKS BIOLOGICAL CONSULTING

SDG&E Natural Gas System Potential Upgrades

Surveyor Name: Lee Ripma

Date 5/6/15 Survey # 12

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	10:00	70.4	10%	1-4
End	1320	78.1	100%	2-5

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
	Vanessa cardui (Painted Lady)
	Vanessa virginiensis (American Lady)
	Vanessa atalanta (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
✓	*Erynnis funeralis* (Funereal Duskywing) III
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
✓	*Leptotes marina* (Marine Blue) ||
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
✓	*Apodemia mormo virgulti* (Behr's Metalmark) |
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
	Pontia protodice (Checkered White)
	Colias eurytheme (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	

List nectar sources and plant communities observed

Deinandra fas.

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum,*
Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

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SDG&E Natural Gas System Potential Upgrades

Surveyor Name: GARRETT HUFFMAN

Date 5/10/15 Survey # 12

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1000	70.4	100	1-4
End	1630	68	90	3-8

Nymphalidae (Brush Footed Butterflies)	
	Euphydras editha quino (Quino Checkerspot)
	Euphydras chalcedona (Chalcedon Checkspot)
	Charidryas gabbii (Gabb's Checkerspot)
	Phycoides mylitta (Mylitta Crescent)
	Thessalia leanira (Leanira Checkerspot)
	Nymphalis antiopa (Mourning Cloak)
	Basilarchia lorquini (Lorquin's Admiral)
	Junonia coenia (Common Buckeye)
	Vanessa annabella (West Coast Lady)
1	*Vanessa cardui* (Painted Lady)
	Vanessa virginiensis (American Lady)
1	*Vanessa atalanta* (Red Admiral)
Danaidae	
	Danaus gilippus (Queen)
	Danaus plexippus (Monarch)
Hesperidae	
	Heliopetes ericetorum (Northern White-Skipper)
	Hylephila phyleus (Fiery Skipper)
	Pyrgus albescens (White Checkered-Skipper)
5	*Erynnis funeralis* (Funereal Duskywing)
	Erynnis tristis (Mournful Duskywing)
	Erynnis propertius (Propertius Duskywing)
	Ochlodes agricola (Rural Skipper)

Lycaenidae (Hairstreaks)	
	Atlides halesus (Great Purple Hairstreak)
	Incisalia augustinus (Western Brown Elfin)
	Callophrys perplexa (Perplexing Hairstreak)
	Strymon melinus (Gray Hairstreak)
	Glaucopsyche lygdamus (Silvery Blue)
	Icarcia acmon (Acmon Blue)
	Celastrina ladon (Echo Blue)
4	*Leptotes marina* (Marine Blue)
	Philotes sonorensis (Sonoran Blue)
	Plebejus melissa (Melissa Blue)
	Everes amyntula (Western Tailed-Blue)
	Brephidium exilis (Western Pygmy-Blue)
Riodinidae (Metalmarks)	
1	*Apodemia mormo virgulti* (Behr's Metalmark)
Papilionidae (Swallowtails)	
	Papilio eurymedon (Pale Swallowtail)
	Papilio rutulus (Western Tiger Swallowtail)
	Papilio zelicaon (Anise Swallowtail)
Pieridae (Whites and Orangetips)	
	Anthocharis cethura (Desert Orangetip)
	Anthocharis sara (Sara's Orangetip)
	Pieris rapae (Cabbage White)
1	Pontia protodice (Checkered White)
3	*Colias eurytheme* (Orange Sulphur)
	Colias harfordii (Harford's Sulphur)
	Eurema nicippe (Sleepy Orange)
	Nathalis iole (Dainty Sulphur)
Satyridae (Satyrids)	
	Coenonympha californica (Common California Ringlet)
Others	
2	BERNARDINO BLUE

List nectar sources and plant communities observed CSS, CHAMISE CHAP

DEINANDRA, ERIOGONUM,

ECHIUM

List notes and GPS point names here, please write UTMs or Lat/Longs as backup:
GPS all QCB occurrences
GPS all potential host plant locations (*Plantago erecta, Plantago patagonica, Antirrhinum coulterianum,*
Cordylanthus rigidus, Castilleja exserta, and Collinsia heterophylla)
Format: plant name_diameter of occurrence_density (low >20% cover per sq foot, medium 20-50%, high >50%)_date_observer

AVIAN SPECIES:

SAGS, RCSP, CAFO, BGGN.

HOLA, LEGO, LEN1, SPTO,

LASP, BUSH, WTSW, BLGR,

RTHA.

ATTACHMENT E: COASTAL CALIFORNIA GNATCATCHER SURVEY REPORT

Pipeline Safety & Reliability Project U.S. Fish and Wildlife Service Protocol Presence/Absence 2015 Survey Report for the Coastal California Gnatcatcher (*Polioptila californica californica*)

Prepared for:
Insignia Environmental
904 Second Street
Encinitas, CA 92024

Prepared by:
Rocks Biological Consulting
2621 Denver Street, Suite B
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(619) 843-6560

September 9, 2015

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1. SUMMARY

This report summarizes surveys conducted by Rocks Biological Consulting (RBC) for the federally-listed threatened coastal California gnatcatcher (CAGN; *Polioptila californica californica*) for the San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company Pipeline Safety & Reliability Project (Proposed Project). Surveys were conducted in accordance with the U.S. Fish and Wildlife Service (USFWS) 1997 CAGN presence/absence survey protocol (USFWS 1997; CAGN survey protocol) for Natural Community Conservation Planning (NCCP) areas. Surveys were conducted between April 14 and June 1, 2015. A total of five CAGN pairs and three individual CAGN were detected during the 2015 surveys.

2. INTRODUCTION

2.1. PROJECT DESCRIPTION

The Proposed Project involves construction, operation, and maintenance of an approximately 47-mile-long, 36-inch-diameter natural gas transmission pipeline that will carry natural gas from SDG&E's existing Rainbow Metering Station to the pipeline's terminus on Marine Corps Air Station (MCAS) Miramar.

2.2. SURVEY LOCATION AND BACKGROUND

The Proposed Project is located in San Diego County, California, and crosses the cities of Escondido, Poway, and San Diego, unincorporated communities of San Diego County and federal land. U.S. Geological Survey (USGS) 7.5-minute series quadrangle maps (quads) that cross the Proposed Project include Temecula, Bonsall, San Marcos, Valley Center, Escondido, Poway, and La Mesa quads (Figure 1).

Surveys were conducted within suitable habitats as described in the USFWS CAGN survey protocol along the Proposed Project alignment. The area comprising the Biological Resource Survey Area (BRSA) was 2,264.1 acres; of this a total of 575.6 acres are CAGN-suitable vegetation communities. MCAS Miramar lands, which are administered by the Department of the Navy/U.S. Marine Corps (USMC), were excluded from the 2015 survey area because the USMC regularly surveys these areas for CAGN. A total of 97.7 acres of MCAS Miramar lands were excluded from the 2015 survey area. As a result, a total of 478.5 acres was included in the 2015 CAGN Survey Area.

2.3. COASTAL CALIFORNIA GNATCATCHER NATURAL HISTORY

The CAGN is a year-round resident of southern California found in the six southernmost California counties (San Bernardino, Ventura, Los Angeles, Orange, San Diego, and Riverside) located within the coastal plain. Coastal California gnatcatchers typically occur in coastal sage scrub (CSS) vegetation communities of southern California, especially in locations dominated by California sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum fasciculatum*). Other shrubs in CAGN-occupied CSS include black

sage (*Salvia mellifera*), California bush sunflower (*Encelia californica*), white sage (*Salvia apiana*), lemonadeberry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and brittlebush (*Encelia farinosa*).

Coastal California gnatcatchers are typically found in stands of CSS that have moderate shrub canopy cover, generally greater than 50 percent (Beyers and Wirtz 1997). Coastal California gnatcatchers will use sparsely vegetated CSS as long as perennial shrubs are available, although there appears to be a minimum cover threshold below which the habitat becomes unsuitable (USFWS 2007). The relative density of shrub cover influences CAGN territory sizes, with territory sizes increasing as shrub cover decreases, likely due to limited resource availability (Beyers and Wirtz 1997). The CAGN preys upon arthropods, including insects such as leafhoppers and planthoppers (Homoptera) and spiders commonly found in CSS plant communities (Burger et al. 1999). Beyers and Wirtz (1997) speculate that the non-native grasses and forbs that typically occupy the gaps between shrub species do not support a sufficient insect fauna and that there are probably differences in insect availability among shrub species as well, which may explain CAGN's shrub preference.

The breeding season of the coastal California gnatcatcher extends from approximately February 15 through August 30, with peak nesting activity typically occurring from mid-March through mid-May; incubation takes 14 days. The young fledge at 8 to 13 days of age and are dependent upon their parents for as little as three to four weeks (ERCE 1990) or may associate with their parents for up to several months (USFWS 1997).

3. METHODS

3.1. VEGETATION COMMUNITY MAPPING AND SUITABLE HABITATS

Vegetation mapping was conducted within all areas north of MCAS Miramar on October 28, November 4, and November 11, 2014, and January 5, 2015. Vegetation mapping in these areas was finalized during habitat assessments and special-status plant surveys conducted in the spring of 2015. Biologists noted vegetation communities and boundaries on a hard-copy field map printed at a scale of one foot to 200 feet. These boundaries and vegetation community names were later recorded as a Geographic Information System (GIS) shapefile using ArcMap software. Minimum mapping units for upland vegetation communities was generally an acre or less. For wetland/riparian communities, no minimum mapping unit was established so as to ensure that even very small wetland areas were documented. Vegetation classifications conform to Oberbauer et al. (2008).

The following vegetation communities were considered CAGN suitable: 1) Diegan coastal sage scrub: 2) Southern mixed chaparral; 3) Chamise chaparral; 4) Coastal sage-chaparral transition; and 5) Open coast live oak woodland (less than 50% cover). Modified versions of these habitats through disturbance or fire were also considered suitable habitats, as were habitats dominated by atypical species or revegetated/restored areas (USFWS 1997).

3.2. COASTAL CALIFORNIA GNATCATCHER SURVEYS

On January 30, 2015 a 15-day pre-survey notification letter was sent to the USFWS stating the intent to conduct CAGN surveys for the Proposed Project. CAGN survey methodology followed the CAGN survey protocol for NCCP[1] areas, which requires three (3) protocol surveys. CAGN surveys in NCCP areas can be conducted any time of year; however, the peak breeding period of February 15 through August 30 is preferable (USFWS 1997).

Surveys for the Proposed Project were conducted in the 478.5-acre CAGN Survey Area during three individual surveys spaced by at least one week during the peak-breeding season (March to June). Surveys were conducted by meandering through suitable habitat at a rate of approximately four acres/hour generally working north to south within the CAGN Survey Area. Taped vocalizations were used sparingly to elicit a CAGN response and were ceased upon hearing or observing a CAGN. Surveyors recorded the locations of CAGN using handheld Geographic Position System (GPS) devices. CAGN were observed with the aid of 8x42 binoculars and details of CAGN behavior were recorded on field survey forms, provided in Attachment B – Surveyor Field Notes. A total of 23 surveys were conducted from April 14 to June 1, 2015. Survey dates, conditions, and personnel are presented in Table 1 Coastal California Gnatcatcher Survey Dates/Conditions, below.

[1] The Proposed Project is located within the San Diego Multiple Species Conservation Plan, the Multiple Habitat Conservation Plan, and the North County Multiple Species Conservation Plan.

Table 1. Coastal California Gnatcatcher Survey Dates/Conditions

Survey Number	Date	Surveyor(s)	Time (Start-End)	Temp F (Start-End)	Cloud Cover (Start-End)	Wind Range in mph (Start-End)
#1	4/14/15	GH	0600-1200	60-76	100-0	0; 2-5
#1	4/16/15	SW	0600-1200	43-75	0-0	0-2; 0-1
#1	4/17/15	SW	0600-1040	39-73	0-0	1-4; 0-1
#1	4/18/15	SW	0600-1200	55-77	0-0	0-3; 0-1
#1	4/19/15	SW	0600-0830	54-60	0-0	0-2; 0-1
#1	4/23/15	BL	0610-1145	55-57	100-100	0-1; 3-5
#1	4/23/15	MD	0600-1200	59-66	100-100	0-2; 0-1
#1	4/24/15	BL	0610-1145	57-57	100-100	0-1; 1-5
#1	4/26/15	GH, SW	0900-1130	60-76	50-30	0-2; 1-3
#1	4/29/05	BL	0820-1000	70-82	0-0	0-1; 0-3
#2	4/25/15	SW	0600-1130	53-63	100-100	0-2; 2-5
#2	5/1/15	SW, GH	0600-1200	68-90	10-20	0-2; 2-5
#2	5/3/15	SW	0615-1115	61-70	100-40	0-1; 1-3
#2	5/3/15	GH	1130-1200	74-75	40-30	3-7; 3-6
#2	5/4/15	SW, GH	0600-1200	61-75	100-80	1-4; 1-3
#2	5/5/15	SW, GH	0600-1200	60-66	100-80	0-3; 1-4
#2	5/7/15	SW	0600-1145	64-65	100-90	0-1; 3-6
#3	5/13/15	SW, GH	0600-1200	56-80	100-60	0-2; 1-3
#3	5/17/15	GH	0600-1200	60-70	100-20	1-3; 2-5
#3	5/17/15	SW	0610-1200	59-70	100-5	1-5; 0-2
#3	5/24/15	GH	0600-1200	57-66	100-100	1-4; 2-4
#3	5/25/15	GH	0600-1200	55-66	100-100	1-3; 3-5
#3	6/1/15	SW	0545-1200	62-75	100-20	0-1; 2-4

Surveyors: BL= Brian Lohstroh (TE-063608-5), GH= Garrett Huffman (TE-20168A-0), MD= Melanie Dicus (TE-049175-3), SW=Shannon Walsh (authorized individual under TE-221290-3.1)

4. RESULTS

4.1. COASTAL CALIFORNIA GNATCATCHER CRITICAL HABITAT

The USFWS has designated 641.1 acres of critical habitat for the CAGN throughout the BRSA for the Proposed Project. As mentioned, surveys for CAGN were conducted on 478.5 acres within the BRSA, of which 298.4 acres are also within critical habitat for CAGN. Critical habitat is shown on Figure 2 2015 CAGN Survey Area and Sightings. CAGN occurrences in critical habitat are discussed in Section 4.3.

4.2. SUITABLE HABITAT AND VEGETATION COMMUNITIES

As described above, the total area included in the 2015 CAGN Survey Area was 478.5 acres. Suitable vegetation communities included five primary vegetation communities:

1) Diegan coastal sage scrub (CSS) species are typically up to three feet in height and drought deciduous, typical consistent species include California sagebrush, California buckwheat, white sage, and laurel sumac. Some areas were modified versions of Diegan coastal sage scrub including areas notably open, disturbed, restored, burned, or areas dominated specifically by a single species or low diversity community such as *Adolphia californica* (spineshrub) dominated, *Opuntia* or *Cylindropuntia* (cactus) dominated, or *Baccharis* (coyote bush or broom baccharis) dominated;
2) Southern mixed chaparral (M-CHAP) is dominated by broad, leathery-leaved, woody shrubs that are four to nine feet in height and form a dense vegetation canopy. Dominant species include scrub oaks (*Quercus* spp.), chamise (*Adenostoma fasciculatum*), and several manzanita (*Arctostaphylos* spp.) and ceanothus (*Ceanothus* spp.) species;
3) Chamise chaparral (C-CHAP) dominated by chamise (*Adenostoma fasciculatum*);
4) Coastal sage-chaparral transition (CSS-CHAP) is comprised of a mix of leathery-leaved chaparral species and drought-deciduous sage scrub species. This often post-fire successional vegetation community is characterized by a co-dominance of California sagebrush and chamise. Other plant species often found in coastal sage-chaparral transition include black sage, ceanothus species and poison oak (*Toxicodendron diversilobum*); and
5) Open Coast Live Oak Woodland (CLOW-O) is dominated by coast live oak (*Quercus agrifolia*), an evergreen oak that reaches 32-82 feet (10-25 meters) in height. Open coast live oak woodland has a coast live oak canopy cover of less than 50 percent absolute cover. Coast live oak is often co-dominant with other CSS or chaparral species, such as California buckwheat or California sagebrush. As a result of the presence of these CSS or chaparral shrub species, open coast live oak woodland was mapped as CAGN suitable habitat. Some areas were modified versions of open coast live oak woodland, including areas notably disturbed, or burned.

All CAGN suitable vegetation communities are presented in Figure 2 2015 CAGN Survey Area and Sightings.

4.3. 2015 COASTAL CALIFORNIA GNATCATCHER SURVEYS

A total of 20 CAGN individuals were observed during the 2015 focused surveys. These individuals included 13 adults – five CAGN pairs and three individual CAGN – and seven fledglings.

The CAGN Survey Area supported a moderate diversity of bird species with 70 species observed over 23 surveys. The 70 bird species observed represent 14 percent of all bird

species documented within San Diego County[2]. A complete list of birds observed during surveys is presented in Attachment A and field notes are included in Attachment B. Detailed results are described below from the northern end to southern end of the Proposed Project and presented in Figure 2 2015 CAGN Survey Area and Sightings.

The CAGN pair depicted on Figure 2 Page 6 (Unique ID 27) was observed in CSS habitat and just north of Canonita Drive. A male was observed and heard calling on all three surveys, and a female was also observed with the male in this area during the third survey. This pair is within USFWS designated CAGN critical habitat.

The CAGN pair on Figure 2 Page 8 (Unique ID 3) was observed in CSS habitat just north of Dulin Road. A male CAGN was observed on all three surveys and during the third survey both the male and female were observed feeding two fledglings. This pair is within USFWS designated critical habitat.

Three CAGN territories were identified within revegetated CSS between Old Hwy 395 and I-15 (Figure 2; page 10). The northern-most observation (Unique ID 21) was a single male that responded to the taped CAGN call during only the second survey. The second observation was a CAGN pair (Unique ID 22), which was observed defending a territory on the second survey only. Another CAGN pair (Unique ID 23) was observed on all three surveys. During the first survey, they were aggressively defending a large area of habitat and during the second survey they were observed feeding at least one fledgling. On the third survey a group of four juveniles were observed foraging independently near the pair, and the adults were observed incubating a nest with three eggs. This nest was likely a second clutch based on the observation of fledglings nearby. All three territories are within USFWS designated CAGN critical habitat.

An individual CAGN was observed in the CSS habitat south of Casa Avenida (Figure 2 page 24; Unique ID 14). In this area, one male responded to the taped CAGN call during the first survey but was not subsequently observed.

A CAGN pair was observed in the CSS habitat just south of Ted Williams Parkway during all three surveys (Figure 2 page 25; Unique ID 16). A fledge was observed in the pair's territory during survey one but did not appear to be directly interacting with the pair.

The CAGN on Figure 2 page 27 (Unique ID 25) was observed in the CSS habitat north of Scripps Poway Parkway. One male responded to the taped CAGN call during the second survey but was not subsequently observed.

In summary, five CAGN pairs and three single male CAGN were identified within the CAGN Survey Area during the 2015 breeding season; four of the five pairs and one of three individuals were within USFWS designated critical habitat. Three of the five pairs were observed with fledglings, for a total of 20 CAGN individuals detected during the surveys.

[2] San Diego County Bird Atlas (Unit 2004) documents 492 bird species in San Diego County

4.4 2015 MCAS MIRAMAR SURVEYS

MCAS Miramar conducted CAGN surveys in 2013 and documented four CAGN breeding pairs within a quarter mile of the BRSA for the Proposed Project (USMC 2013). MCAS Miramar is currently conducting 2015 surveys for CAGN and the survey results, once available, will be incorporated in future documents regarding the Proposed Project.

5. CERTIFICATION

We certify that the information in this survey report and attached figures fully and accurately represent our work.

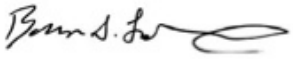
Jim Rocks
TE-063230-4

Lee Ripma
TE-221290-3.1

Shannon Walsh
Authorized Individual under TE-221290-3.1

Melanie Dicus
TE-049175-3

Garrett Huffman
TE-20168A-0



Brian Lohstroh
TE-063608-5

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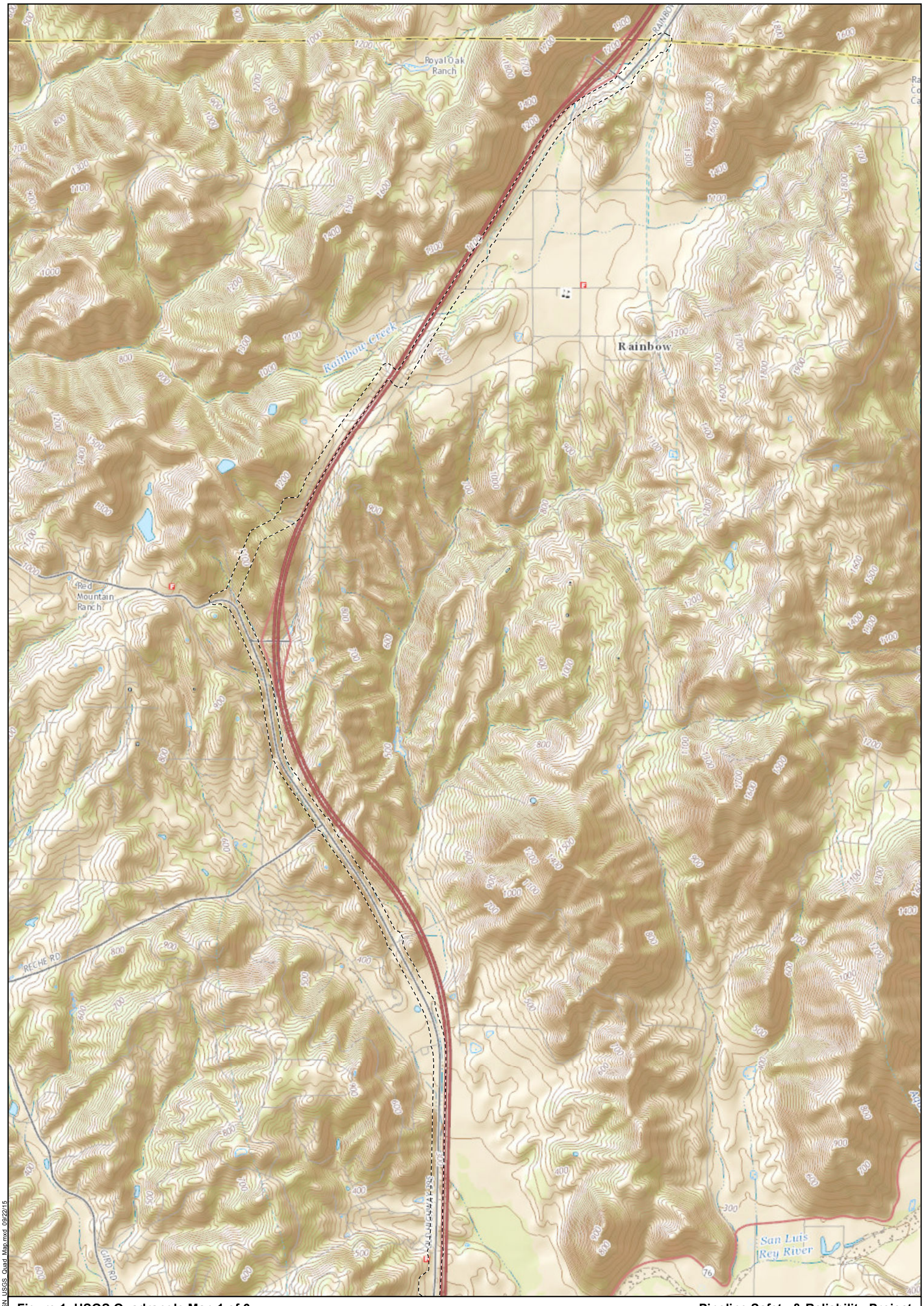

Figure 1: USGS Quadrangle Map 1 of 6

Pipeline Safety & Reliability Project

Biological Resource Survey Area

1:30,000

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SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

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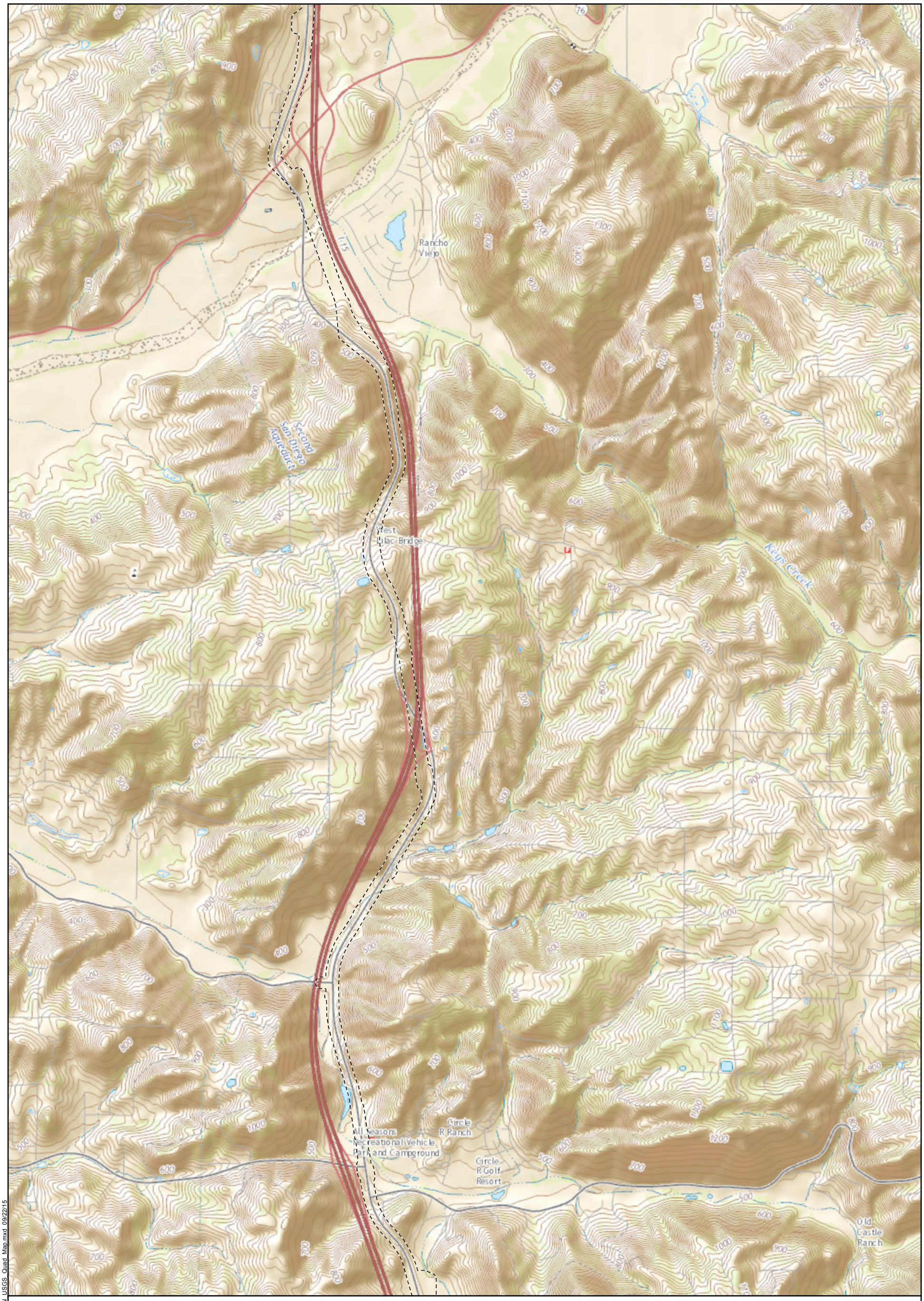

Figure 1: USGS Quadrangle Map 2 of 6 **Pipeline Safety & Reliability Project**

Biological Resource Survey Area

1:30,000

0 0.5 1 Miles

SoCalGas A Sempra Energy utility SDGE A Sempra Energy utility INSIGNIA ENVIRONMENTAL

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Figure 1: USGS Quadrangle Map 3 of 6

Pipeline Safety & Reliability Project

Biological Resource Survey Area

1:30,000

0 0.5 1 Miles

SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

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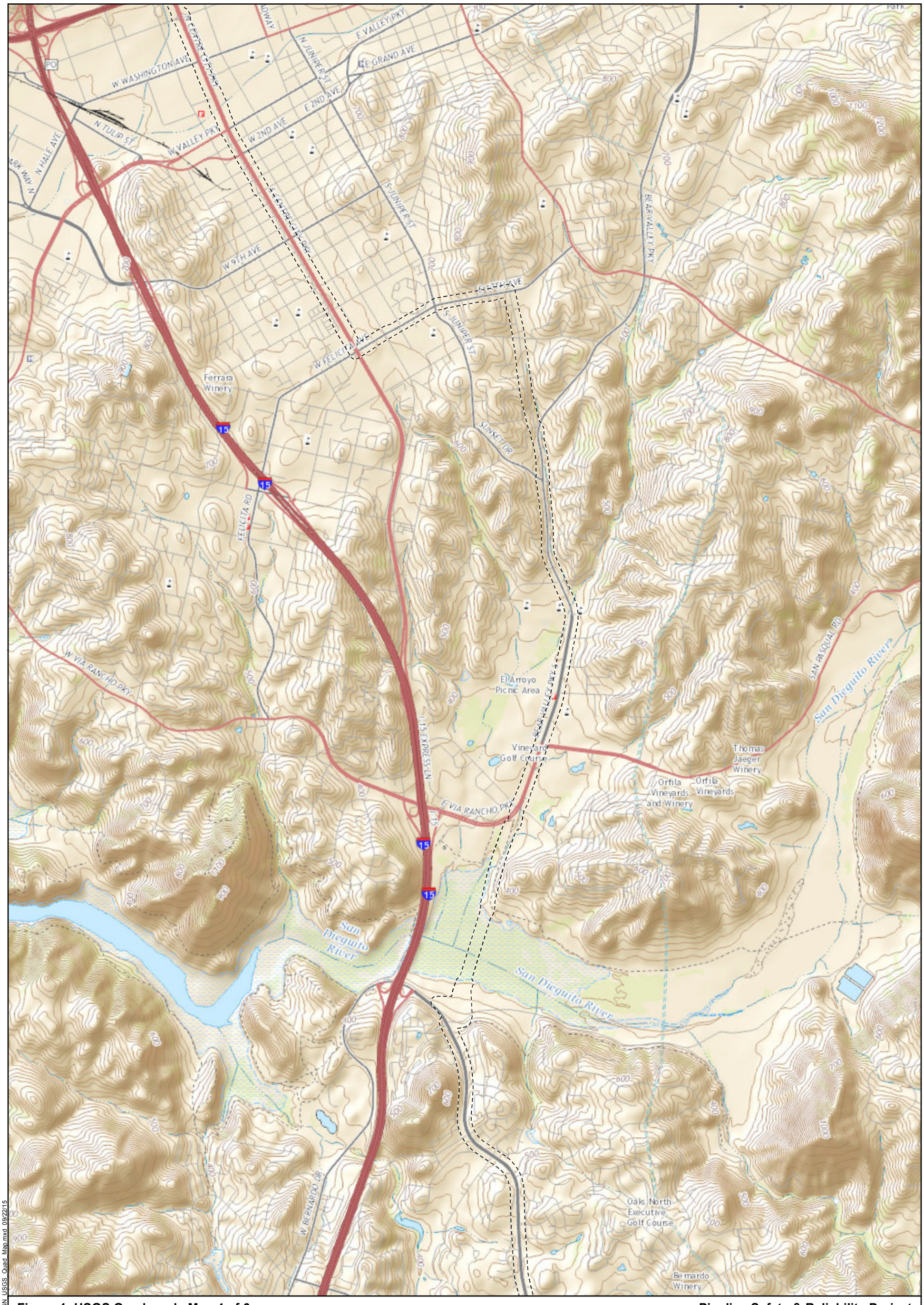

Figure 1: USGS Quadrangle Map 4 of 6

Pipeline Safety & Reliability Project

Biological Resource Survey Area

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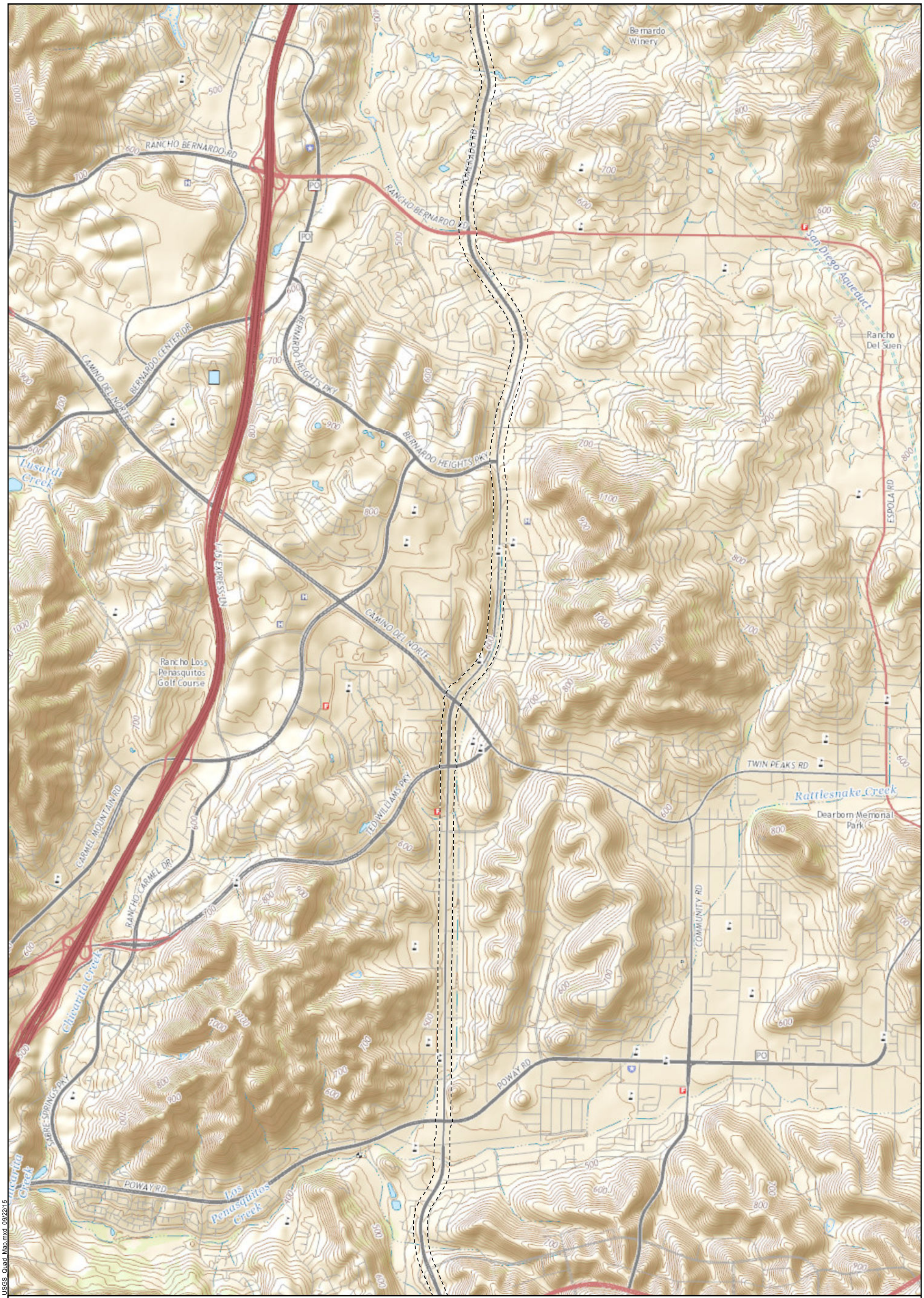

Figure 1: USGS Quadrangle Map 5 of 6

Pipeline Safety & Reliability Project

Biological Resource Survey Area

1:30,000

0 0.5 1 Miles

SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

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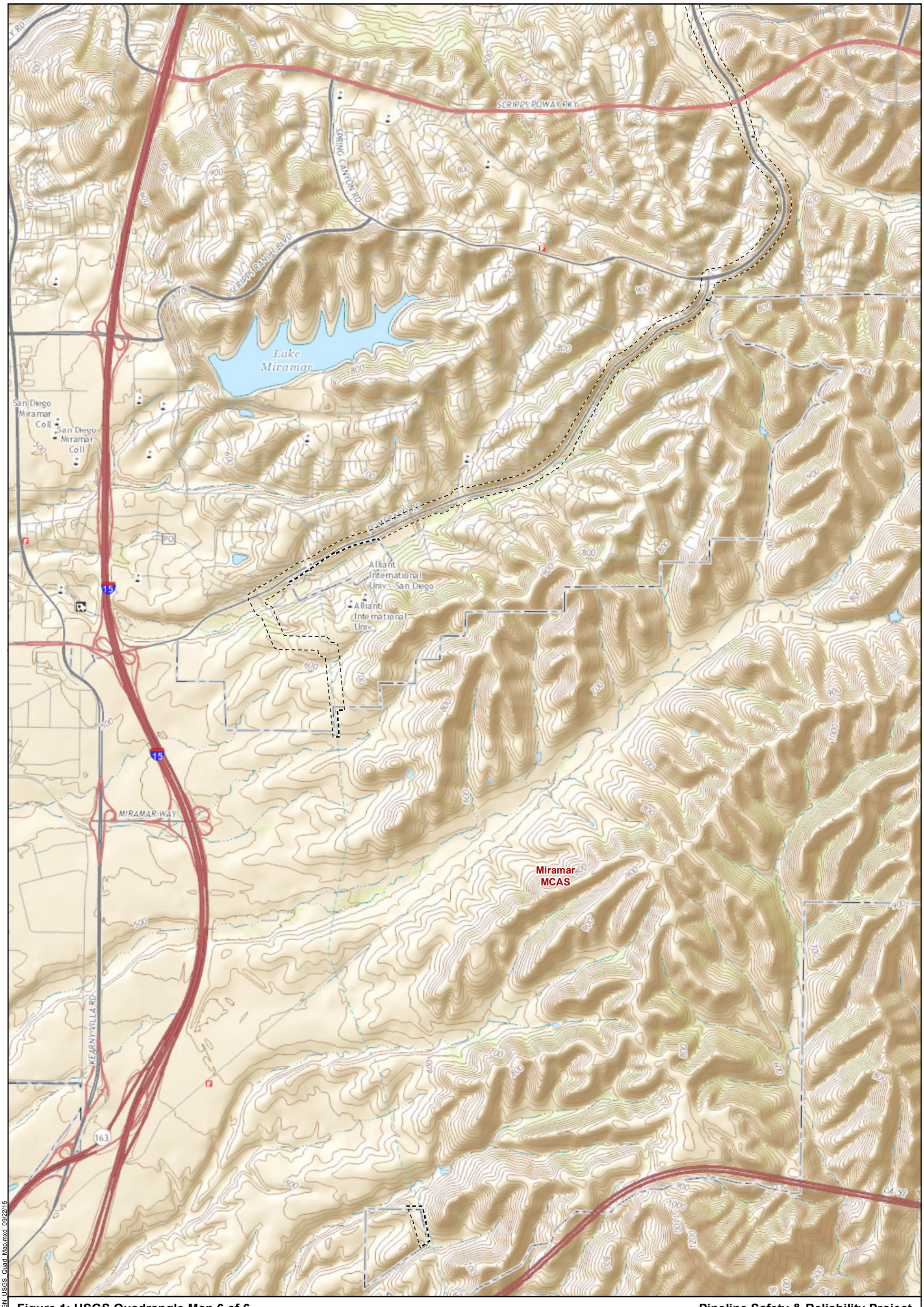

Figure 1: USGS Quadrangle Map 6 of 6

Pipeline Safety & Reliability Project

Biological Resource Survey Area

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0 0.5 1 Miles

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Figure 2: 2015 CAGN Survey Area and Sightings Map 1 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

SoCalGas A Sempra Energy utility
SDGE A Sempra Energy utility
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Figure 2: 2015 CAGN Survey Area and Sightings Map 2 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
M-CHAP - Southern Mixed Chaparral
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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Figure 2: 2015 CAGN Survey Area and Sightings Map 3 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
M-CHAP - Southern Mixed Chaparral
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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Figure 2: 2015 CAGN Survey Area and Sightings Map 4 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

- CLOW-O - Open Coast Live Oak Woodland (<50%)
- CSS - Diegan Coastal Sage Scrub
- CSS-O - Diegan Coastal Sage Scrub (open)
- M-CHAP - Southern Mixed Chaparral
- dCSS - Diegan Coastal Sage Scrub (disturbed)
- rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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SDGE A Sempra Energy utility

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Figure 2: 2015 CAGN Survey Area and Sightings Map 5 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-O - Diegan Coastal Sage Scrub (open)
M-CHAP - Southern Mixed Chaparral
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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Figure 2: 2015 CAGN Survey Area and Sightings Map 6 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
CSS-OPU - Diegan Coastal Sage Scrub
dCLOW-O - Open Coast Live Oak Woodland (<50%) (disturbed)
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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Figure 2: 2015 CAGN Survey Area and Sightings Map 7 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
CSS-O - Diegan Coastal Sage Scrub (open)
dCLOW-O - Open Coast Live Oak Woodland (<50%) (disturbed)
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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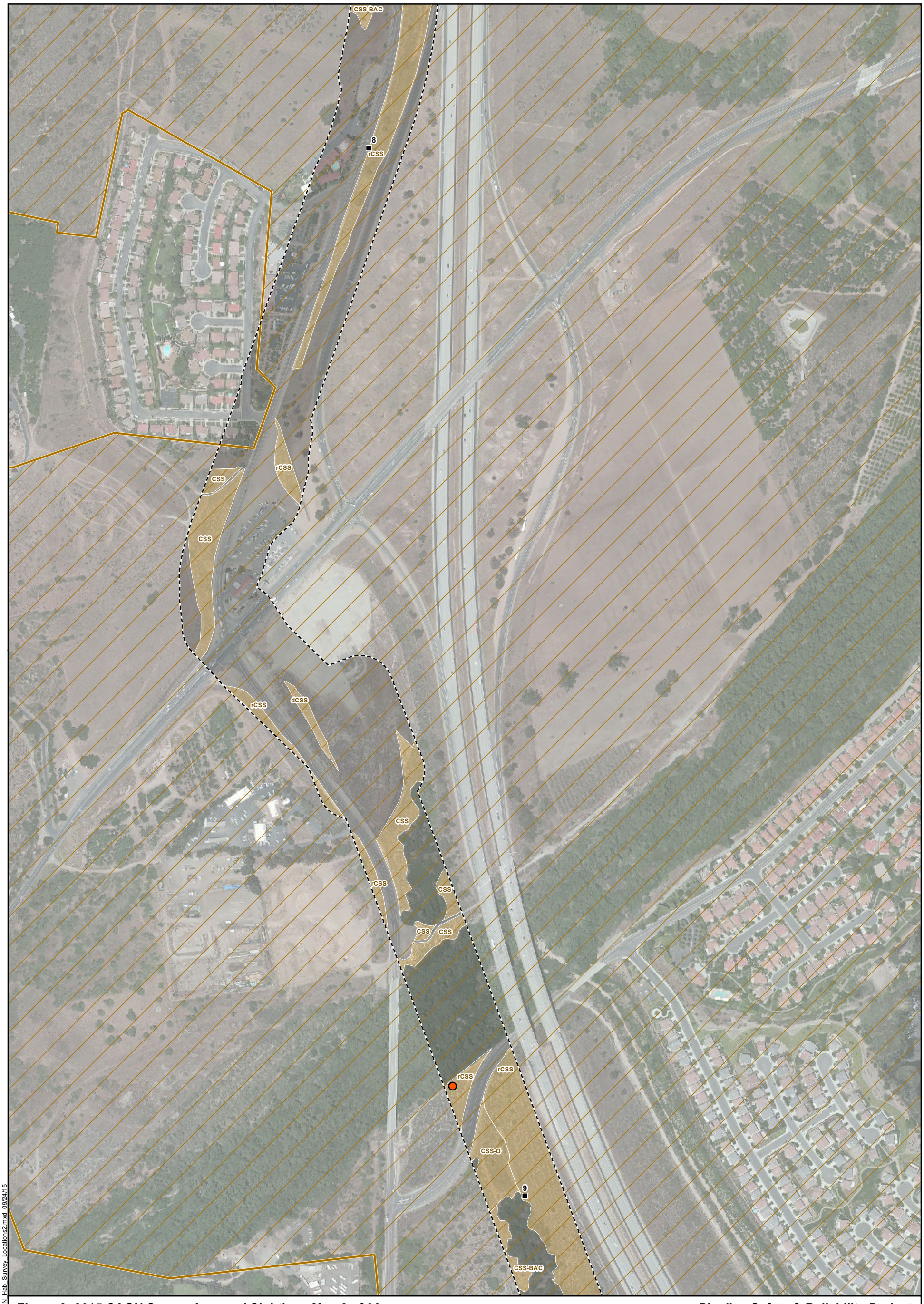

Figure 2: 2015 CAGN Survey Area and Sightings Map 8 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
CSS-O - Diegan Coastal Sage Scrub (open)
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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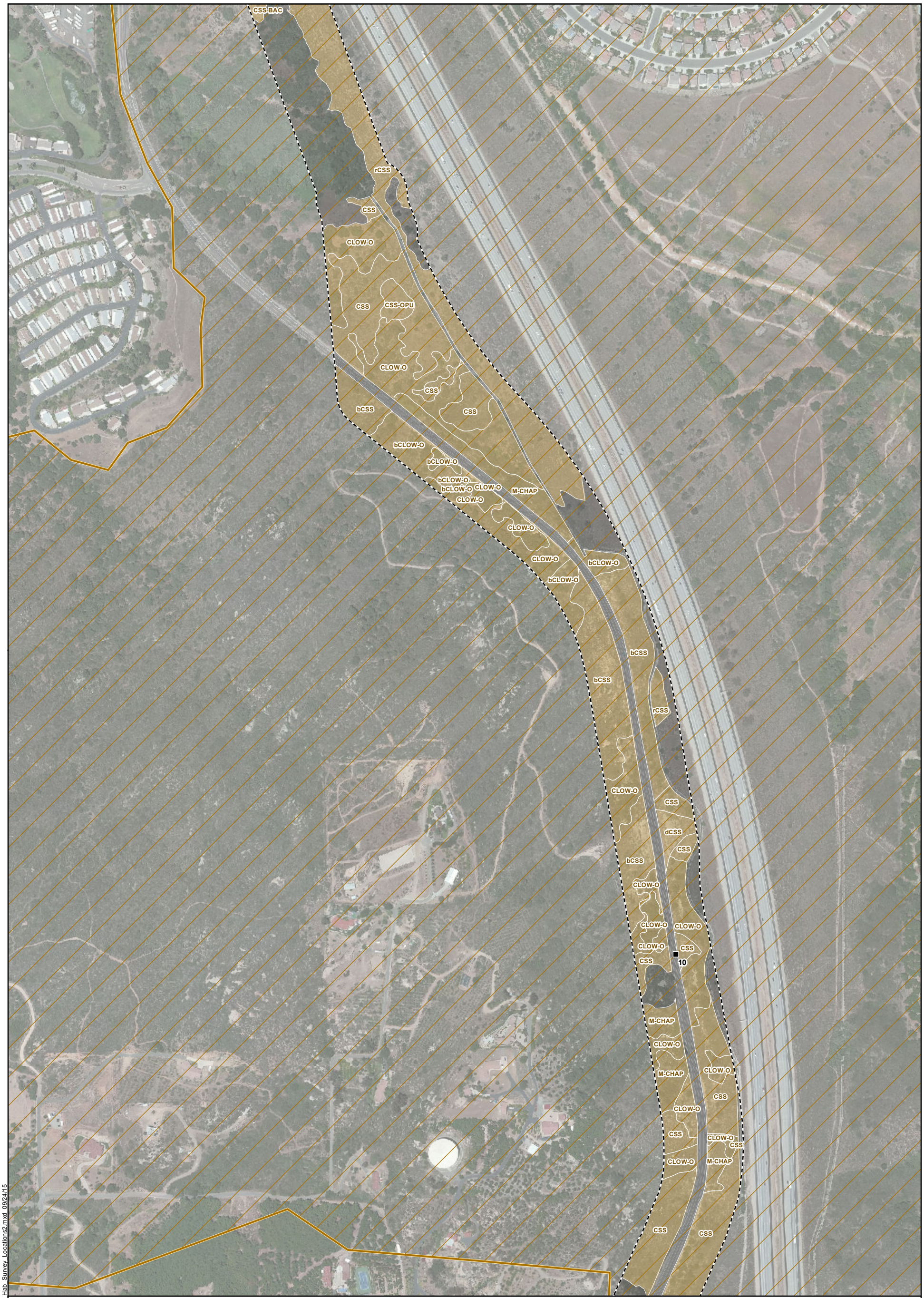


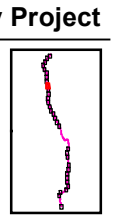
Figure 2: 2015 CAGN Survey Area and Sightings Map 9 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
CSS-OPU - Diegan Coastal Sage Scrub
M-CHAP - Southern Mixed Chaparral
bCLOW-O - Open Coast Live Oak Woodland (<50%) (burned)
bCSS - Diegan Coastal Sage Scrub (burned)
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)



- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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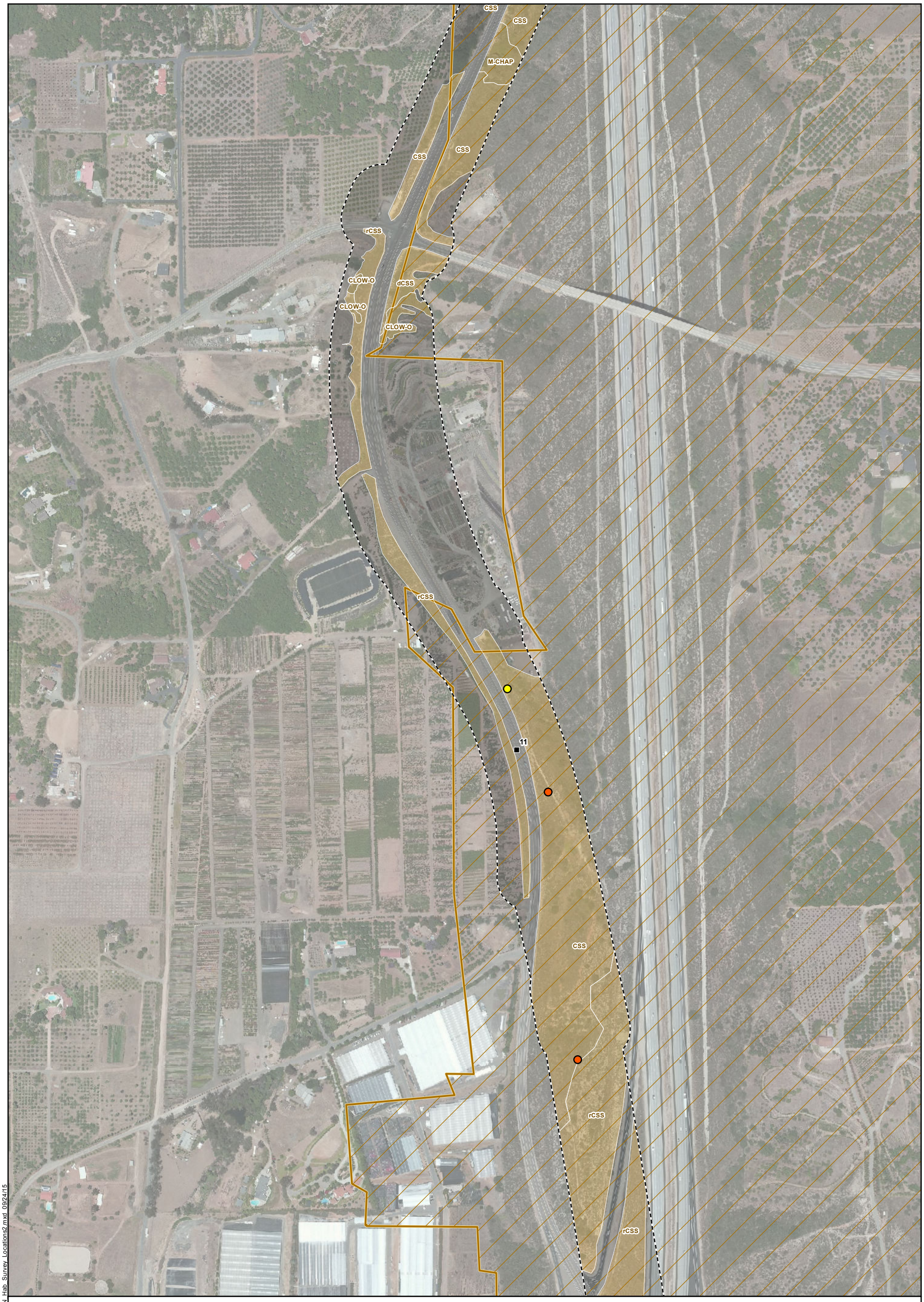

Figure 2: 2015 CAGN Survey Area and Sightings Map 10 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
M-CHAP - Southern Mixed Chaparral
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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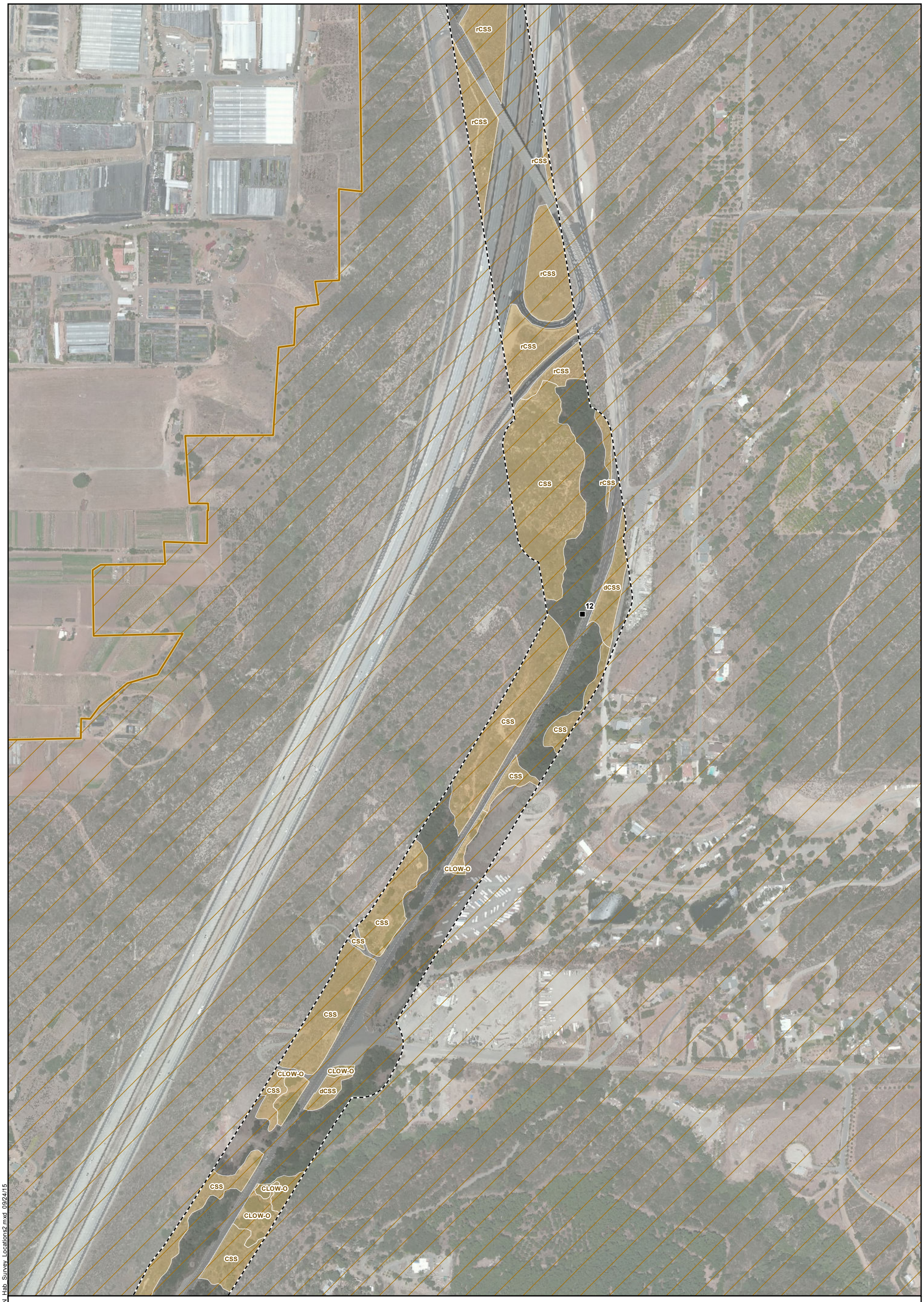

Figure 2: 2015 CAGN Survey Area and Sightings Map 11 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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SoCalGas A Sempra Energy utility
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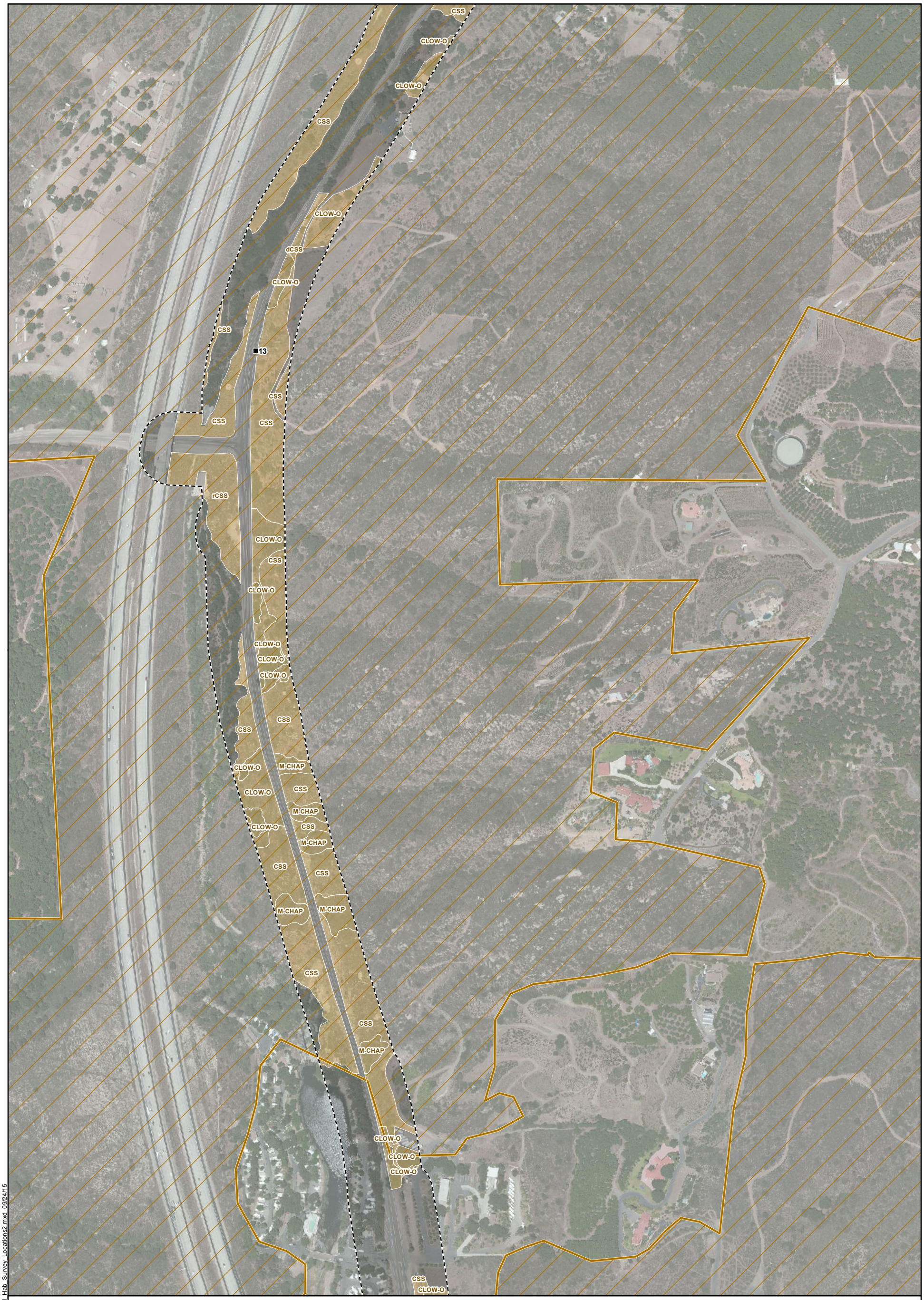

Figure 2: 2015 CAGN Survey Area and Sightings Map 12 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
M-CHAP - Southern Mixed Chaparral
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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Figure 2: 2015 CAGN Survey Area and Sightings Map 13 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
CSS-O - Diegan Coastal Sage Scrub (open)
M-CHAP - Southern Mixed Chaparral
dCSS - Diegan Coastal Sage Scrub (disturbed)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

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SoCalGas A Sempra Energy utility
SDGE A Sempra Energy utility
INSIGNIA ENVIRONMENTAL

Figure 2: 2015 CAGN Survey Area and Sightings Map 14 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

- CLOW-O - Open Coast Live Oak Woodland (<50%)
- CSS - Diegan Coastal Sage Scrub
- CSS-CHAP - Coastal Sage-Chaparral Transition
- CSS-O - Diegan Coastal Sage Scrub (open)
- M-CHAP - Southern Mixed Chaparral
- dCLOW-O - Open Coast Live Oak Woodland (<50%) (disturbed)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000

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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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Figure 2: 2015 CAGN Survey Area and Sightings Map 15 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
CSS-O - Diegan Coastal Sage Scrub (open)
M-CHAP - Southern Mixed Chaparral
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

SoCalGas A Sempra Energy utility
SDGE A Sempra Energy utility
INSIGNIA ENVIRONMENTAL

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Figure 2: 2015 CAGN Survey Area and Sightings Map 16 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
M-CHAP - Southern Mixed Chaparral
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
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SoCalGas A Sempra Energy utility
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INSIGNIA ENVIRONMENTAL

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Figure 2: 2015 CAGN Survey Area and Sightings Map 17 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
dCSS - Diegan Coastal Sage Scrub (disturbed)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

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SoCalGas A Sempra Energy utility
SDGE A Sempra Energy utility
INSIGNIA ENVIRONMENTAL

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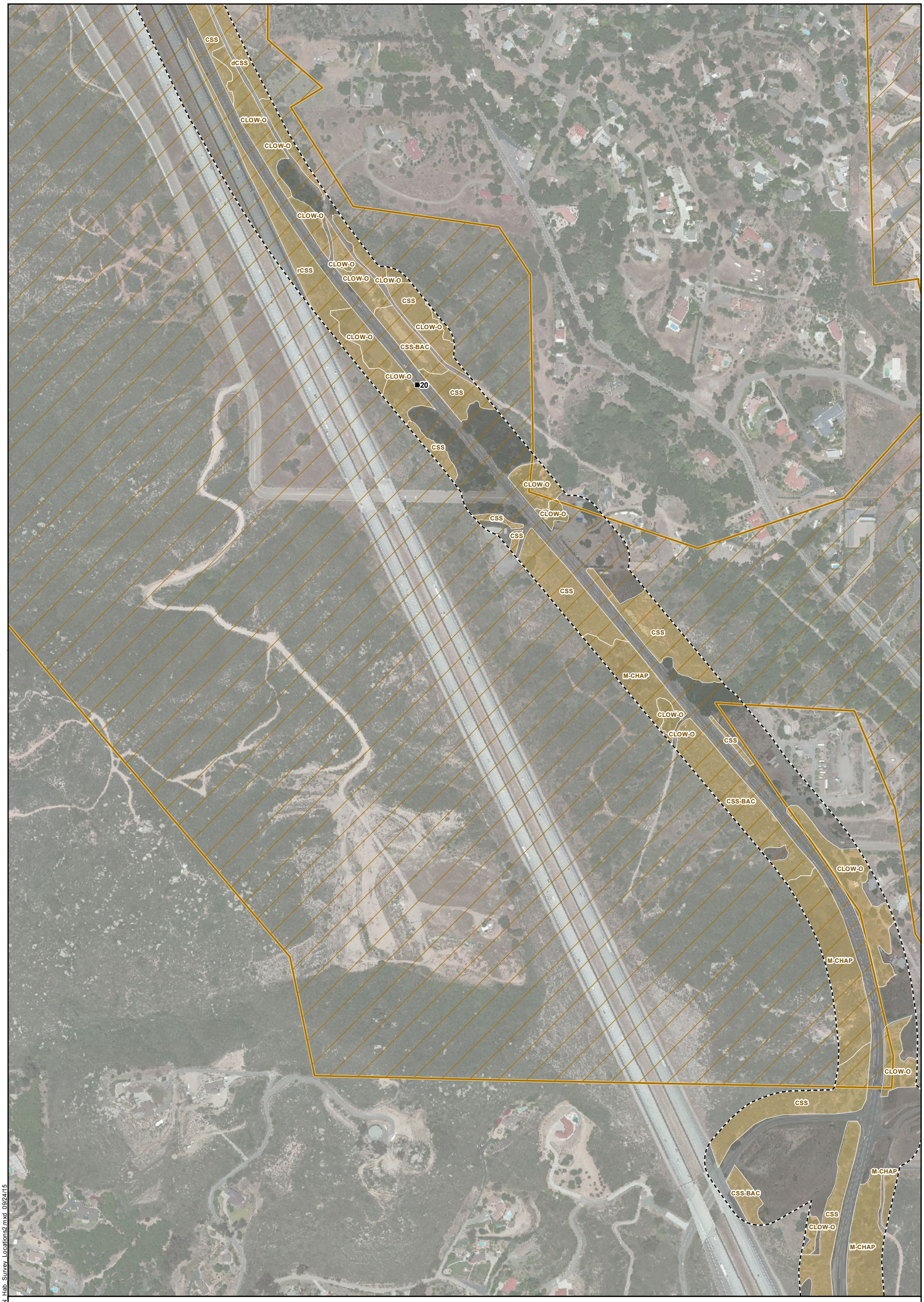

Figure 2: 2015 CAGN Survey Area and Sightings Map 18 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
M-CHAP - Southern Mixed Chaparral
dCSS - Diegan Coastal Sage Scrub (disturbed)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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Figure 2: 2015 CAGN Survey Area and Sightings Map 19 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS - Diegan Coastal Sage Scrub
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
M-CHAP - Southern Mixed Chaparral

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

SoCalGas A Sempra Energy utility
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Figure 2: 2015 CAGN Survey Area and Sightings Map 20 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS - Diegan Coastal Sage Scrub

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000

0 200 400 Feet

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SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

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Figure 2: 2015 CAGN Survey Area and Sightings Map 21 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS - Diegan Coastal Sage Scrub
CSS-ADO - Diegan Coastal Sage Scrub (Adolphia californica dominated)
CSS-O - Diegan Coastal Sage Scrub (open)
rCSS - Diegan Coastal Sage Scrub (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

SoCalGas A Sempra Energy utility
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Figure 2: 2015 CAGN Survey Area and Sightings Map 22 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS-ADO - Diegan Coastal Sage Scrub (Adolphia californica dominated)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000

0 200 400 Feet

SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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CSS

34

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Figure 2: 2015 CAGN Survey Area and Sightings Map 23 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS - Diegan Coastal Sage Scrub

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000

0 200 400 Feet

N

SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

INSIGNIA ENVIRONMENTAL

Figure 2: 2015 CAGN Survey Area and Sightings Map 24 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS - Diegan Coastal Sage Scrub
CSS-O - Diegan Coastal Sage Scrub (open)
dCLOW-O - Open Coast Live Oak Woodland (<50%) (disturbed)
dCSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated (disturbed)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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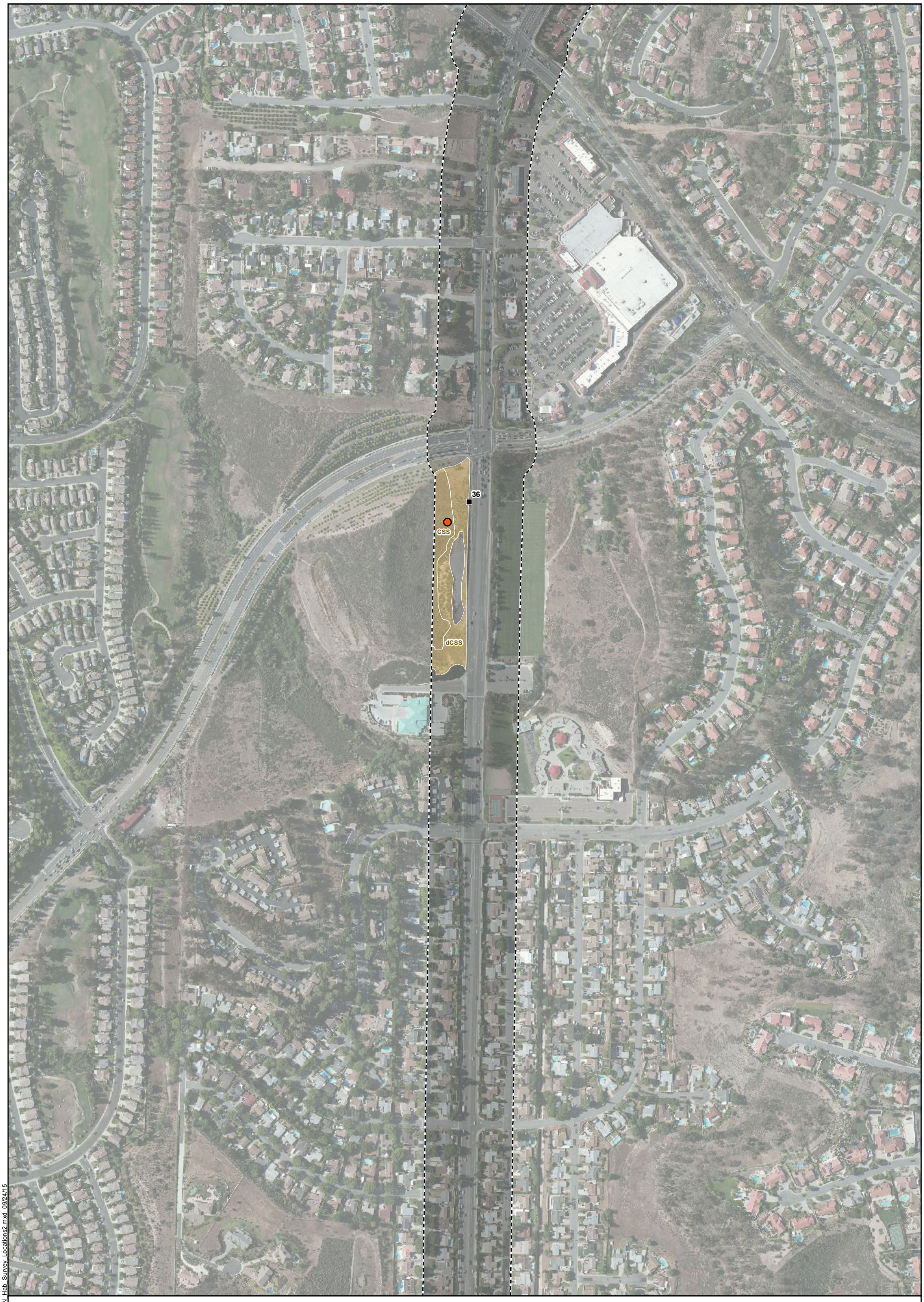

Figure 2: 2015 CAGN Survey Area and Sightings Map 25 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS - Diegan Coastal Sage Scrub

dCSS - Diegan Coastal Sage Scrub (disturbed)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000

0 200 400 Feet

SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

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Figure 2: 2015 CAGN Survey Area and Sightings Map 26 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS-O - Diegan Coastal Sage Scrub (open)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000

0 200 400 Feet

N

SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

INSIGNIA ENVIRONMENTAL

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38

CSS-BAC

CSS-BAC

CSS-O

CSS-O

CLOW-O

CSS-O

CSS-O

Figure 2: 2015 CAGN Survey Area and Sightings Map 27 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CLOW-O - Open Coast Live Oak Woodland (<50%)
CSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated
CSS-O - Diegan Coastal Sage Scrub (open)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

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SoCalGas A Sempra Energy utility
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Figure 2: 2015 CAGN Survey Area and Sightings Map 28 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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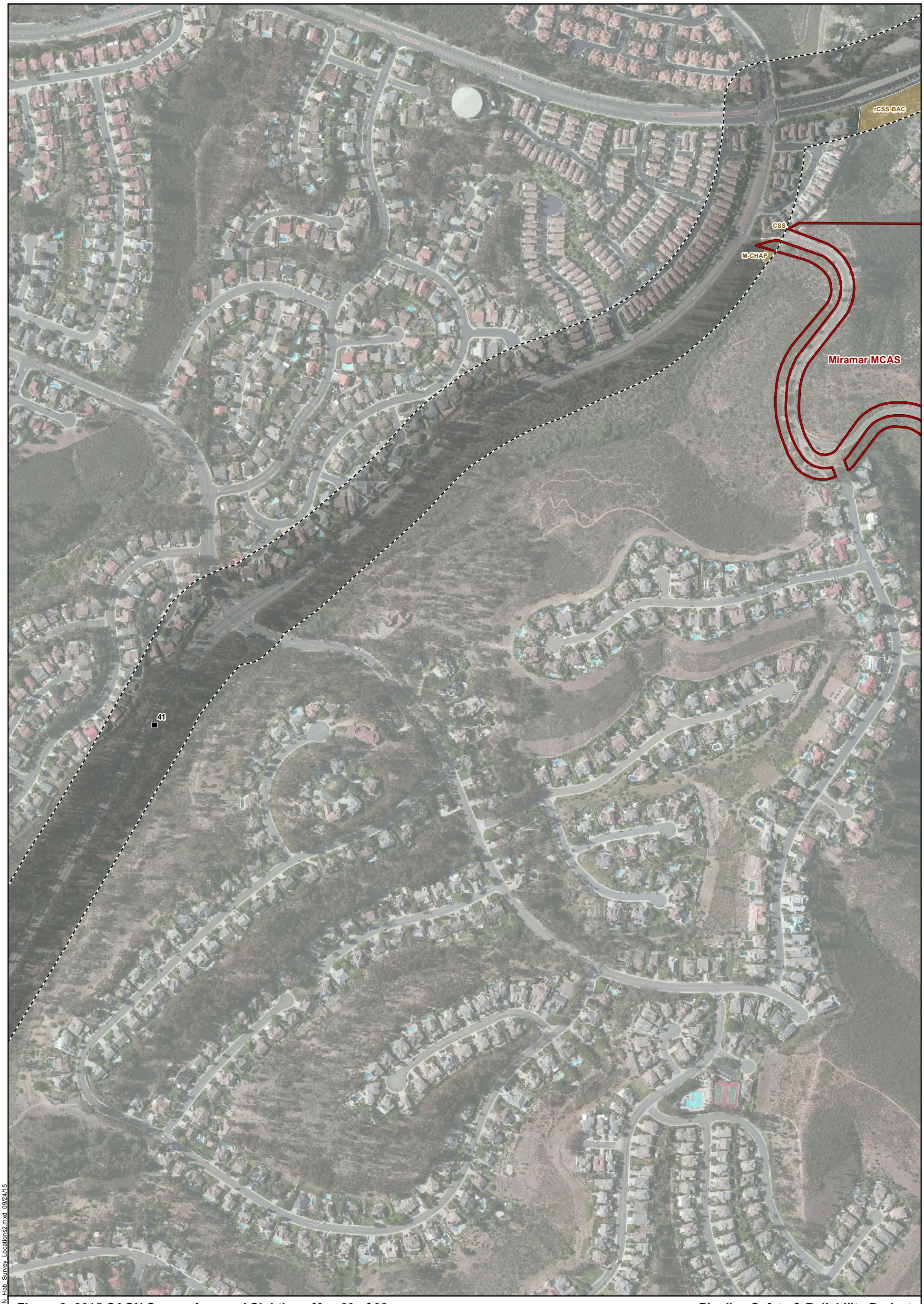

Figure 2: 2015 CAGN Survey Area and Sightings Map 29 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS - Diegan Coastal Sage Scrub
M-CHAP - Southern Mixed Chaparral
rCSS-BAC - Diegan Coastal Sage Scrub: Baccharis-dominated (restored)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

SoCalGas A Sempra Energy utility
SDGE A Sempra Energy utility
INSIGNIA ENVIRONMENTAL

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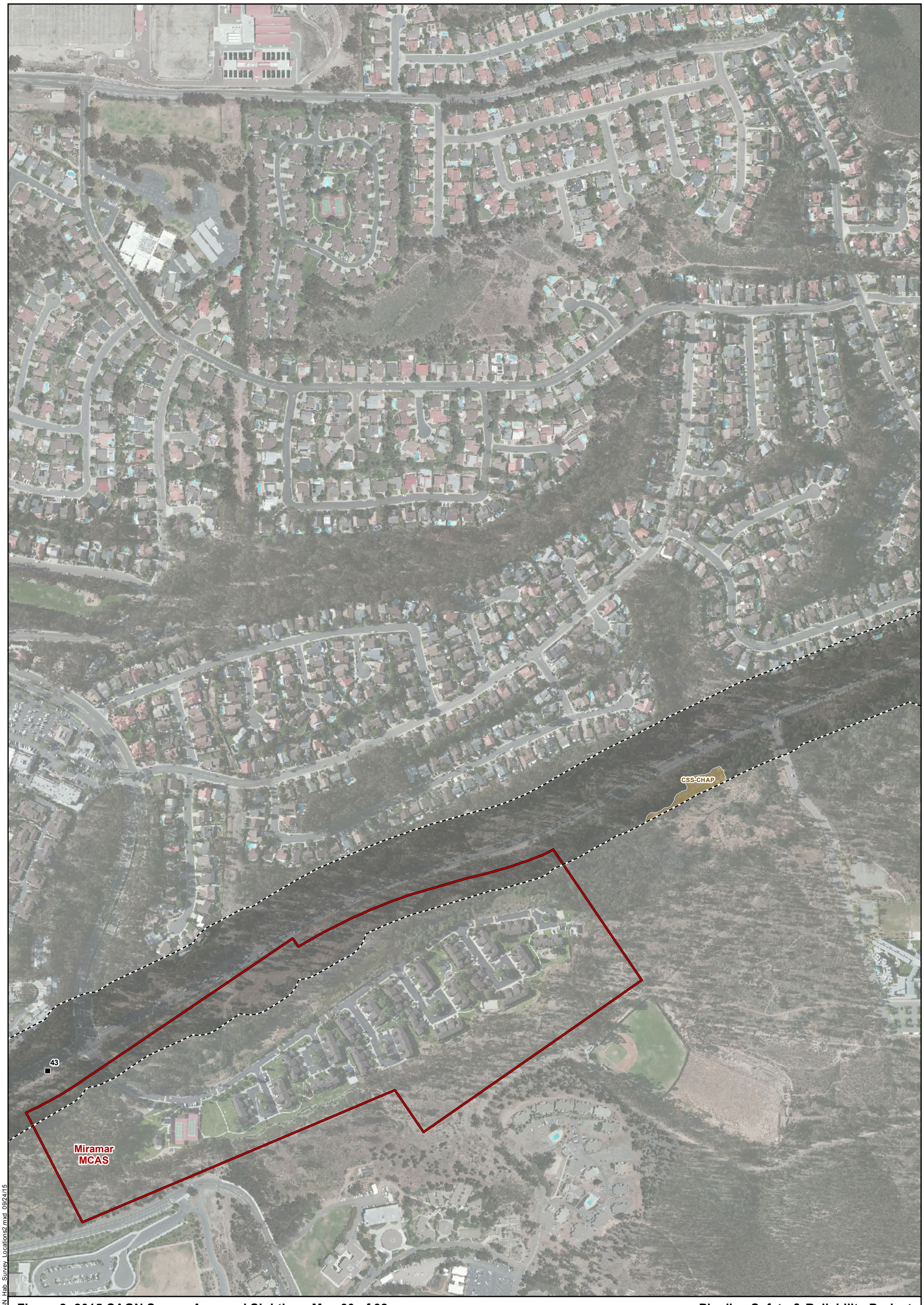

Figure 2: 2015 CAGN Survey Area and Sightings Map 30 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

CSS-CHAP - Coastal Sage-Chaparral Transition

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000

0 200 400 Feet

SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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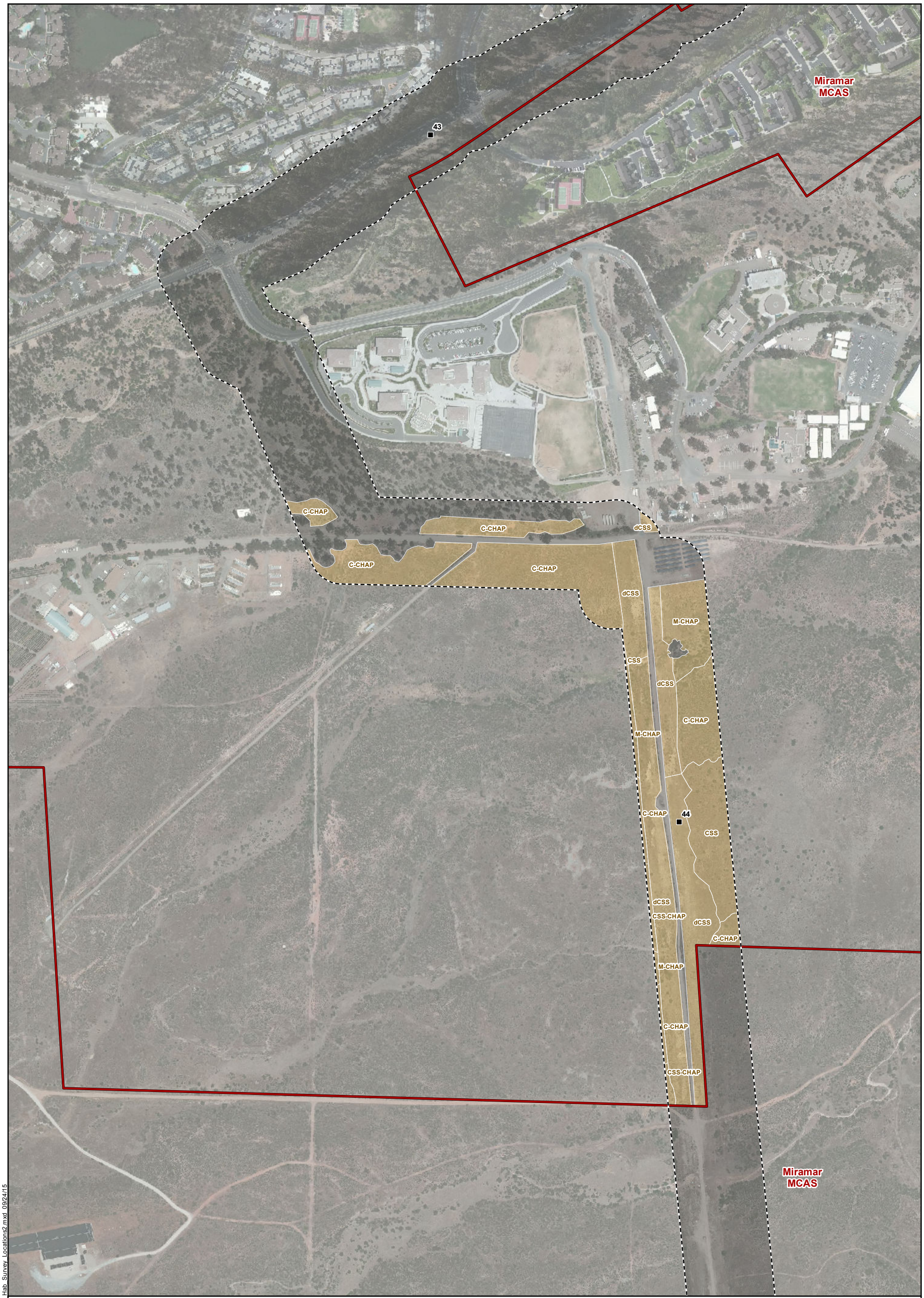

Figure 2: 2015 CAGN Survey Area and Sightings Map 31 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

C-CHAP - Chamise Chaparral
CSS - Diegan Coastal Sage Scrub
CSS-CHAP - Coastal Sage-Chaparral Transition
M-CHAP - Southern Mixed Chaparral
dCSS - Diegan Coastal Sage Scrub (disturbed)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000
0 200 400 Feet

SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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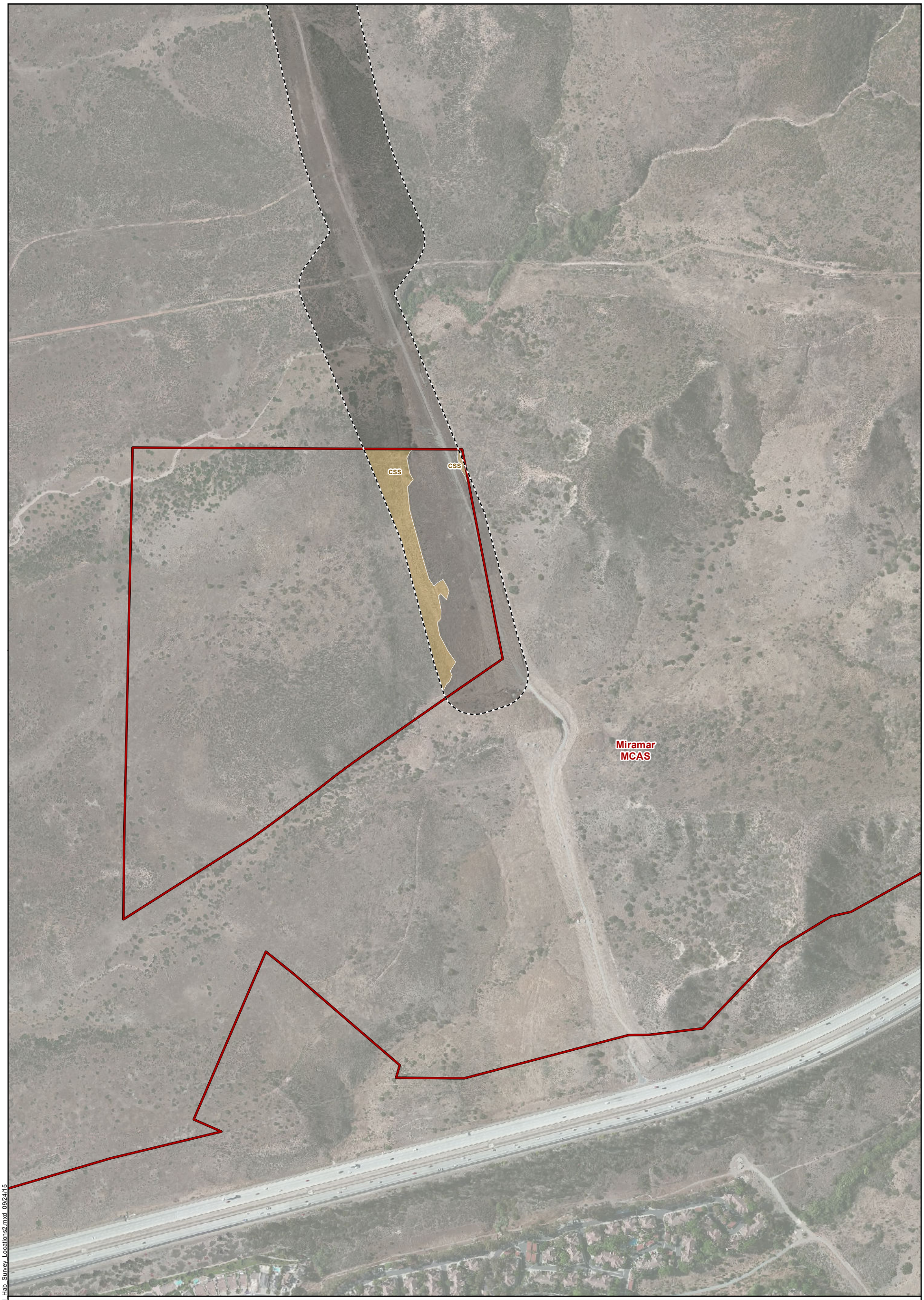

Figure 2: 2015 CAGN Survey Area and Sightings Map 32 of 32

Pipeline Safety & Reliability Project

- Milepost
- MCAS Miramar
- Biological Resource Survey Area
- CAGN Survey Area
- Excluded from CAGN Survey Area
- CAGN individual
- CAGN pair
- USFWS designated CAGN critical habitat

CAGN Suitable Vegetation Code

- C-CHAP - Chamise Chaparral
- CSS - Diegan Coastal Sage Scrub
- CSS-CHAP - Coastal Sage-Chaparral Transition
- CSS-O - Diegan Coastal Sage Scrub (open)
- M-CHAP - Southern Mixed Chaparral
- dCSS - Diegan Coastal Sage Scrub (disturbed)

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

1:5,000

0 200 400 Feet

SoCalGas A Sempra Energy utility

SDGE A Sempra Energy utility

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\MXDs\PEA\Bio\CAGN_Hab_Survey_Locations2.mxd 09/24/15

Attachment A. Bird Species Observed During Coastal California Gnatcatcher Protocol Surveys at the Pipeline Safety & Reliability Project, San Diego County, California

Common Name	Scientific Name	Status
acorn woodpecker	*Melanerpes formicivorus*	
American crow	*Corvus brachyrhynchos*	
Anna's hummingbird	*Calypte anna*	
ash-throated flycatcher	*Myiarchus cinerascens*	
Bewick's wren	*Thryomanes bewickii*	
black phoebe	*Sayornis nigricans*	
black-crowned night heron	*Nycticorax nycticorax*	
black-headed grosbeak	*Pheucticus melanocephalus*	
blue-gray gnatcatcher	*Polioptila caerulea*	
blue grosbeak	*Passerina caerulea*	
Brewer's blackbird	*Euphagus cyanocephalus*	
brown-headed cowbird*	*Molothrus ater*	
Bullock's oriole	*Icterus bullockii*	
bushtit	*Psaltriparus minimus*	
California gnatcatcher	*Polioptila californica*	FT
California quail	*Callipepla californica*	
California towhee	*Melozone crissalis*	
California thrasher	*Toxostoma redivivum*	
Cassin's kingbird	*Tyrannus vociferans*	
cedar waxwing	*Bombycilla cedrorum*	
cliff swallow	*Petrochelidon pyrrhonota*	
common raven	*Corvus corax*	
common yellowthroat	*Geothlypis trichas*	
Cooper's hawk	*Accipiter cooperii*	
Costa's hummingbird	*Calypte costae*	
Eurasian collared-dove*	*Streptopelia decaocto*	
European starling*	*Sturnus vulgaris*	
grasshopper sparrow	*Ammodramus savannarum*	
great egret	*Ardea alba*	
hooded oriole	*Icterus cucullatus*	
horned lark	*Eremophila alpestris*	
house finch	*Carpodacus mexicanus*	
house sparrow*	*Passer domesticus*	
house wren	*Troglodytes aedon*	
killdeer	*Charadrius vociferus*	
lark sparrow	*Chondestes grammacus*	

least Bell's vireo	*Vireo bellii pusillus*	FE, SE
lesser goldfinch	*Spinus psaltria*	
mallard	*Anas platyrhynchos*	
mourning dove	*Zenaida macroura*	
northern flicker	*Colaptes auratus*	
northern mockingbird	*Mimus polyglottos*	
northern rough-winged swallow	*Stelgidopteryx serripennis*	
Nuttall's woodpecker	*Picoides nuttallii*	
orange-crowned warbler	*Oreothlypis celata*	
Pacific-slope flycatcher	*Empidonax difficilis*	
phainopepla	*Phainopepla nitens*	
red-shouldered hawk	*Buteo lineatus*	
red-tailed hawk	*Buteo jamaicensis*	
red-winged blackbird	*Agelaius phoeniceus*	
rock pigeon*	*Columba livia*	
rufous-crowned sparrow	*Aimophila ruficeps*	
(Bell's) sage sparrow	*Amphispiza belli*	
Say's phoebe	*Sayornis saya*	
scaly-breasted munia (formerly nutmeg manikin)*	*Lonchura punctulata*	
song sparrow	*Melospiza melodia*	
spotted towhee	*Pipilo maculatus*	
turkey vulture	*Cathartes aura*	
violet-green swallow	*Tachycineta thalassina*	
warbling vireo	*Vireo gilvus*	
western bluebird	*Sialia mexicana*	
western kingbird	*Tyrannus verticalis*	
western meadowlark	*Sturnella neglecta*	
western scrub-jay	*Aphelocoma californica*	
western tanager	*Piranga ludoviciana*	
white-throated swift	*Aeronautes saxatalis*	
Wilson's warbler	*Cardellina pusilla*	
wrentit	*Chamaea fasciata*	
yellow warbler	*Setophaga petechia*	SSC
yellow-breasted chat	*Icteria virens*	SSC

FE: Listed as Endangered by USFWS
FT: Listed as Threatened by USFWS
SE: Listed as Endangered by California Department of Fish and Wildlife
SSC: California Department of Fish and Wildlife Species of Special Concern
*Introduced Species

Attachment B:

All Surveyor Field Notes

General Habitat Description:

COASTAL SAGE SCRUB

CAGN observations and notes:

NO CAGN OBSERVED DURING SURVEYS IN ALL SUITABLE CSS HABITAT LOCATED ON MAP SHEETS #1-6. METHODOLOGY IMPLEMENTED FROM SURVEY PROTOCOL SUGGESTIONS.

ROCKS BIOLOGICAL CONSULTING

Project Name: ~~AA~~ 3602

Surveyor Name: GARRETT HUFFMAN

Date: 4/14/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	60°	100	0
End	1200	76°	0	2-5

Wildlife Species Observed:

AVIAN SPECIES: EUST, BUSH, SOSP, EUCD, WEST, SPTO, CATO, WTSW, NRSW, BEWR, CEGO, CORA, HOFI, HOWR, WREN, KILL, RTHA, ANHU.

SIDE-BLOTCHED LIZARD

General Habitat Description:

CSS, rCSS, CLOW-O

CAGN observations and notes:

At the north east corner of Canoita Dr. & old hyw 395, while playing the call a male CAGN flew in close. I displayed by bending forward & fluttering his wings. About 5 min. later he began to call

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN surveys

Surveyor Name: Shannon Walsh

Date: 4/16/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	43°	0%	0-2
End	1200	75°	0%	0-1

Wildlife Species Observed:

MODO, CALT, BUSH, SOSP, NRWS, LEGO, NUWO, RCSP, RTHA, CORA, ANHU, SPTO, AMCR, WEBL, CAGN WREN, BEWR, WSTA, ACWO, TVVU COYE, CAKI, CAGN

General Habitat Description:

CSS, rCSS, CLOW-O

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN Surveys

Surveyor Name: Shannon Walsh

Date: 4/17/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	45°	0%	1-4
End	1040	73°	0%	0-1

CAGN observations and notes:

In the small triangle habitat patch north of Dulin Rd I observed one male CAGN moving about in the buckwheat. He did not respond vocally to call playback but popped up briefly.

Wildlife Species Observed:

CALT, AMCR, LEGO, BEWR, SOSP, BLPH, HOFI, NREN, CAKI NOMO, ANHU, COYE, SPTO, MODO, RTHA, WSJA, BUSH, EUST, NRWS, CAGN

General Habitat Description:

CSS, rCSS, CLOW-O

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN surveys

Surveyor Name: Shannon Walsh

Date: 4/18/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	55°	0%	0-3
End	1200	77°	0%	0-1

CAGN observations and notes:

In habitat 518 both male & female CAGN flew in very close in response to the tape. Both responded vocally and moved about in the adjacent sage checking out the area. After several minutes, both moved back south. and male scolded several times. As I continued south, I encountered the pair again. The male was constantly calling and carrying a large unknown food item. Male & female both seemed tied to several bushes in the area. Point in collector is at possible nest location.

Wildlife Species Observed:

RWBL, NRWS, TUVU, CALT, SPTO, BEWR, HOOR, NOMO, LEGO, SOSP, AMCR, WEGJ, CORA, WREN, CAKI, HOFI, CATH, CAGN, BUSH, CAQU, ANHU RTHA, MALL, EUST, WEBL, MODO, NUWO, WTSW

General Habitat Description:

CSS, rCSS, CLOW-O

CAGN observations and notes:

NO CAGN detected

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN surveys

Surveyor Name: Shannon Walsh

Date: 4/19/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	54°	0%	0-2
End	0830	60°	0%	0-1

Wildlife Species Observed:

MODO, BEWR, WSJA, CALT, HOFI, LEGO, AMCR, BUSH, SPTO, WEBL, SOSP, CAKI, EUST, COHA, CORA, WREN, CATH, BGGN, RWBL, RTHA, ANHV

General Habitat Description:
CSS, mixed chap, ornamental, CLOW

CAGN observations and notes:
NO CAGN observed. Surveyed map sheet 28 (lower 2/3) → 34.

Some areas indicated on maps as survey polys for CAGN not suitable habitat.

ROCKS
BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: B. Lohstroh

Date: 4/23/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	610	55	100	0-1
End	1145	57	100	3-5

Wildlife Species Observed:

CALT	BEWR	SOSP	mammals
HOFI	CEWA	AMCR	SYAU
LEGO	WREN		SPBE
MOWO	RSHA		
HOOR	ACWO		
RTHA	NOFL		
BUSH	ATFL		
HOWR	BGGN		
ANHU	WTSW		
RHCO*	map 28		
CORA	NRWS		
MODO	WIWA		
SCJA	EUST		
NOMO	GRRO		

General Habitat Description:
DISTURBED CSS, COASTAL SAGE-CHAPARRAL SCRUB

CAGN observations and notes:
NO CAGN OBSERVED

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: MELANIE DICUS

Date: 04-23-2015 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	59	100	0-2
End	1200	66	100	0-1

Wildlife Species Observed:
COTTONTAIL
BLACK PHOEBE
BEWICK'S WREN
CALIFORNIA QUAIL
COMMON YELLOWTHROAT
CALIFORNIA TOWHEE
COOPER'S HAWK
HOUSE FINCH
BLACK-HEADED GROSBEAK
WRENTIT
RUFOUS-CROWNED SPARROW
LESSER GOLDFINCH
COSTA'S HUMMINGBIRD
NORTHERN MOCKINGBIRD
MOURNING DOVE
CASSIN'S KINGBIRD
WILSON'S WARBLER
WESTERN SCRUB-JAY
AMERICAN CROW
CALIFORNIA THRASHER
ANNA'S HUMMINGBIRD
COMMON RAVEN
BLUE-GRAY GNATCATCHER
SONG SPARROW
SPOTTED TOWHEE
WESTERN KINGBIRD
BUSHTIT
YELLOW WARBLER
RED-TAILED HAWK
WESTERN BLUEBIRD
HOUSE WREN
EUROPEAN STARLING
WESTERN TANAGER
BULLOCK'S ORIOLE

General Habitat Description: Coastal Sage Scrub Adolphia-dominated CSS, CLOW, ornamental

CAGN observations and notes: occasional light Rain.

- Male CAGN responded to recorded vocalization (RV), ♀ not observed. Male not very vocal after initial detection, observed foraging. (Hillside @ Casa Arenida) Poly [redacted] 1190
- male CAGN in large habitat patch South of Ted Williams Pkwy + Poverado Rd. ♀ not observed, male using CSS up hill and along edge of Habitat Poly 1198.
- Juvenile CAGN observed @ North end of Poly 1198. Making atypical, higher-pitched call in response to RV. fully-feathered and did not associate directly with nearby male.

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: B. Lohstroh

Date: 4/24/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0610	57	100	0-1
End	1130	57	100	1-5

Wildlife Species Observed:

HOWR	CORA	NRWS	Mammals
YWAR	SAPH	KILL	SYAU
BLGR	BLPH	EUST	
BUSH	MODO	LEGO	
BHCO (MAP35)	GREG	SPTO	
HOFI	CALT	SCJA	
SOSP	BCNH	CAGN (3)	
4 BCH	NUMA	ATFL	
ANHU	MALL	COHA (pair)	
RTHA	AMCR		
OCWA	HOOR		
BHGR	WIWA		
	BEWR		

General Habitat Description:

CSS, rCSS, CLOW-O

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN surveys

Surveyor Name: Shannon Walsh

Date: 4/25/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	53°	100%	0-2
End	1130	63°	100%	2-5

CAGN observations and notes:

NO CAGN observed

Map pages 1-6

Wildlife Species Observed:

MODO, HOFI, SPTO, RTHA, CORA, HOOR [redacted], HOSP, WEBL, WSJA, SOSP, EUST, ANHU, LEGO, AMCR, NOMO, CALT, COHA, BUSH, RSHA, WTSW, NRWS, TUVU, MALL

General Habitat Description:

COASTAL SAGE SCRUB
CHAMISE CHAPARRAL

CAGN observations and notes:

NO VOCALIZATIONS OR OBSERVATIONS OF CAGN DURING PASSIVE SURVEY & PHYSICAL TRANSECT METHODOLOGY.

MAP 49 + 53.

ROCKS
BIOLOGICAL CONSULTING

Project Name: 3602 - MIRAMAR

Surveyor Name: GARRETT HUFFMAN, SHANNON WALSH

Date: 4/26/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0900	60	50	0-2
End	1130	76	30	1-3

Wildlife Species Observed:

AVIAN SPECIES: WEME, GRSP, MODO, SAGS, CAKI, SPTO, NOLA, ANHU, LEGO, HOFI, BGGN, CATO, BUSH, COOA, WREN, CAQU

SIDE-BLOTCHED LIZARD
MULE DEER

General Habitat Description: Open chamise chap w/occ. Eri. fas, Cneoridium dumosum

CAGN observations and notes:
No CAGN observed
Surveyed Elliot Reserve Area only

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: B. Lohstroh

Date: 4/29/15 Survey # 1

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0820	70	0	0-1
End	1000	82	0	0-3

Wildlife Species Observed:

ATFL
HOFI
NUWO
LEGO
MODO
ANHU
CAKI
BUSH
SAPH
BGGN
BEWR
HOWR
LASP
SAGS (Bell's)
CALT
WREN
HOOR
CORA
SPTO
EUST
WIWA

General Habitat Description:

CSS, r-CSS, CLOW-O

CAGN observations and notes:

0725 heard one CAGN calling distantly location noted in collector heard from a point where a male CAGN was observed on survey 1

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: Shannon Walsh

Date: 5/1/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	68°	10%	0-2
End	1020	81°	20%	0-2

Wildlife Species Observed:

RCSP ANHU
CALT CAGN
MODO NUWO
CAKI ATFL
NOMO RTHA
HOFI ACWO
CORA PHAI
SPTO SOSP
LEGO COYE
RSHA WSJA
~~B~~WTSW

side blotched lizard
western fence lizard
Audobon's cottontail
CA ground squirrel

General Habitat Description:

CSS, rCSS, CLOW-O, CSS(burned), CLOW (burned)

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN surveys

Surveyor Name: Shannon Walsh

Date: 5/3/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0615	61°	100%	0-1
End	1115	70°	40%	1-3

CAGN observations and notes:

① 0655 observed one male CAGN moving around silently in the buckwheat. Re-veg off the side of the road where one CAGN was observed on survey 1

② 0943 male CAGN flew in in response to call playback. Began calling & hopping around in the sage flicking his tail.

③ male flew in to playback. called then perched on a bacharis. Shortly after, female flew in. Both foraging silently.

④ 1023 heard CAGN calling near where a pair was seen on survey 1. Observed male & female & at least one fledge. Male & female both calling, fledge was begging. & male was bringing it food

Wildlife Species Observed:

SPTO BUSH LEGO PHAI
CALT ANHU WIWA HOFI
NRWS BEWR CEWA GRRO
CLSW CAGN RCSP
YEWA ATFL MODO
SOSP NOMO NUMA → scaley-breasted munia (SBMU)
COYE ROPI
WREN RTHA CATH
WSJA BHGR CORA

General Habitat Description:

COASTAL SAGE SCRUB

CAGN observations and notes:

NO CAGN DETECTED DURING SURVEY. METHODOLOGY INCLUDED PHYSICAL & PASSIVE TRANSECTS UTILIZING PLAYBACK & THE AID OF BINOCULARS.

ROCKS
BIOLOGICAL CONSULTING

Project Name: 3602

Surveyor Name: GARRETT HUFFMAN

Date: 5/3/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1130	74	40	3-7
End	1200	75	30	3-6

Wildlife Species Observed:

AVIAN SPECIES: CLSW, WEME, BUSH, MODO, GRSP, RLSP, LEGO, CORA

General Habitat Description:

CSS, rCSS, CLOW-O

CAGN observations and notes:

NO CAGN detected

ROCKS BIOLOGICAL CONSULTING

Project Name: ~~SRA~~ 3602 CAGN surveys

Surveyor Name: Shannon Walsh

Date: 5/4/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	1015	62°	100%	0-2
End	1200	75°	80%	1-3

Wildlife Species Observed:

LEGO
BUSH
CALT
ATFL
RSHA
ACWO
AMCR
MODO
SOSP
SPTO
RTHA
WSJA
BEWR
HOWR
EUST
KILL
CARI
HOFI
whiptail
skink

ROCKS
BIOLOGICAL CONSULTING

Project Name: 3602

Surveyor Name: GARRETT HUFFMAN

Date: 5/4/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	61	100	1-4
End	1200	75	80	1-3

General Habitat Description:
COASTAL SAGE SCRUB
RIPARIAN SCRUB

CAGN observations and notes:

NO CAGN OBSERVED OR DETECTING DURING SURVEYS. SURVEY METHODOLOGY INCLUDED ~~ACTIVE~~ PHYSICAL + PASSIVE SURVEYING WITH THE AID OF PLAYBACK & BINOCULARS

Wildlife Species Observed:

AVIAN SPECIES:
HOFI, EUST, LECO, ANNA, RSHA, RTHA, RODO, WEST, CASJ, SOJO, HOWR, BEWR, BUSH, BHGR, YWAR, KILL, MODO, CORA, AMCR, ATFL, PHAI, SOSP, ACWO,

CA GROUND SQUIRREL

General Habitat Description:

CSS, rCSS, CLOW-O

CAGN observations and notes:

NO CAGN detected.

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: Shannon Walsh & Garrett Hoffman

Date: 5/5/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	60°	100%	0-3
End	1200	66°	80%	1-4

Wildlife Species Observed:

California kingsnake

SPTO WSJA HOOR CLSW
LEGO CALT CORA VGSW
NUWO AMCR RSHA WEKI
BUSH NOMO RTHA ACWO
BLGR HOFI GREG
MODO ANHU COYE HOWR
WREN MALL SOSP BHGR
NRWS RCSP BHCO NOFL
BGGN PSFL

CA ground Squirrel

General Habitat Description:

CSS, rCSS, ornamental, chapperal

CAGN observations and notes:

① Male CAGN flew into call playback and started calling

② Male flew into playback. likely same indiv. as observ. #1

③ one individual called and scolded in response to playback. outside survey area but adjacent to suitable habitat in survey area.

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: Shannon Walsh

Date: 5/7/15 Survey # 2

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	64°	100%	0-1
End	1145	65°	90%	3-6

Wildlife Species Observed:

ANHU
MODO
LEGO
WSJA
AMCR
RTHA
HOLA
BGGN
CAQU
BEWR
CARI
CALT
SPTO
BUSH
NOMO
CORA
HOFI
CAGN
WEBL
NUWO
WREN
RSHA
WINA

Audobon's cottontail

coyote

CA ground squirrel

General Habitat Description:

CSS, rCSS, CLOW-O, NNG, [redacted]

CAGN observations and notes:

① observed both male and female, CAGN male calling

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: Shannon Walsh

Date: 5/13/15 Survey # 3

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	56°	100%	0-2
End	1200	80°	60%	1-3

Wildlife Species Observed:

ANHU
WTSW
LEGO
CALT
SPTO
MODO
BEWR
NRWS
HOFI
SOSP
CAKI
PHAI
WESJ
RTHA
NOMO
TUVU
WEBL
RCSP
HOOR
CAGN
ECDO
ACWO
BUSH
NUWO

Audobon's cottontail
CA groundsquirrel

General Habitat Description:

chaparral, CSS, rCSS, clow-O

CAGN observations and notes:

① Male flew in to call playback perched breifly on CA sagebrush & flew around the area. Flew south & started calling. Further south I heard a second CAGN calling other than the male. This 2nd individual was not observed.

ROCKS
BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: Shannon Walsh

Date: 5/17/15 Survey # 3

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0610	59°	100%	1-5
End	1200	70°	5%	0-2

Wildlife Species Observed:

CAQU
CALT
SPTO
HOLA
CATH
EUST
BEWR
SOSP
CORA
RCSP
WREN
CAKI
HOFI
WEME
GRSP
MODO
NUWO
LEGO
ANHU
BGGN
BUSH
AMCR
BLPH
COHA
NOMO
WESJ
CLSW
ACWO
RTHA
MALL
RSHA

General Habitat Description:
COASTAL SAGE SCRUB
RIPARIAN SCRUB

CAGN observations and notes:
ONE FAMILY UNIT OBSERVED.
A PAIR OBSERVED FEEDING
TWO FLEDGLINGS.

ROCKS
BIOLOGICAL CONSULTING

Project Name: 3602

Surveyor Name: GARRETT HUFFMAN

Date: 5/17/15 Survey # 3

MAP 11-14

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	60	100	1-3
End	1200	70	20	2-5

Wildlife Species Observed:
AVIAN SPECIES: HOFI, CATO, BUSH, NOMO, BHCO, LLSW, NRWS, SPTO, CAKI, RCSP, MODO, EUCO, RTHA, RSHA, TUVU, BEVI, HOWR, COHE, OCWA, YEWA, ANHU, PHAI, BHGR, CAGN, SOSP, WEST,
CA GROUND SQUIRREL
SIDE BLOTCHED LIZARD

ROCKS
BIOLOGICAL CONSULTING

Project Name: 3602 MAP 17-22

Surveyor Name: GARRETT HUFFMAN

Date: 5/24/15 Survey # 3

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	57	100	1-4
End	1200	66	100	2-4

General Habitat Description:
CSS, RIPARIAN SCRUB

CAGN observations and notes:
OBSERVED 4 JUVENILES FORAGING, AND PERIODICALLY CALLING, WITHIN CLOSE PROXIMITY OF EACH OTHER.

DETECTED PAIR NESTING. CURRENTLY INCUBATING WITH 3 EGGS.

Wildlife Species Observed:
AVIAN SPECIES: NOMO, HOFI, HOWR, CATO, PHAI, LEGO, BUSH, CATH, SPTO, CORA, WREN, CLSW, MODO, WESJ, ANHU, SOSP, EUCD, CAGN, BLPH, RCSP, BEWR, HOOR, RSHA, BHGR, PSFL, BRBL,
CA GROUND SQUIRREL

General Habitat Description:
CSS

CAGN observations and notes:

A COMBINATION OF PASSIVE SURVEYING & PHYSICAL TRANSECTS WITH THE AID OF BINOCULARS & PLAYBACK WAS UTILIZED. NO CAGN OBSERVED.

ROCKS
BIOLOGICAL CONSULTING

Project Name: 3602

Surveyor Name: Garrett Huffman

Date: 5/25/15 Survey # 3

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0600	55	100	1-3
End	1200	66	100	3-5

Wildlife Species Observed:

AVIAN SPECIES: RSHA, CATO, BUSH, SOSP, CLSW, RTHA, UCGO, HOWR, WEST, WIWA, CORA, BEWR, HOOR, BHGR, SPTO, ACWO, NOMO, BHCO, HOFI, OCWA, MODO, ANHU

SIDE - BLOTCHE LIZARD

General Habitat Description:

DCSS, CLOW-O, disturbed/re-veg DCSS

CAGN observations and notes:

NO CAGN detected

ROCKS BIOLOGICAL CONSULTING

Project Name: 3602 CAGN

Surveyor Name: Shannon Walsh

Date: 6/1/15 Survey # 3

	Time	Temp (°F)	Cloud Cover (%)	Wind Speed (avg. mph)
Start	0545	62°	100%	0-1
End	1200	75°	20%	2-4

Wildlife Species Observed:

HOFI ROPI NUWO
MALL AMCR SAPH
BEWR WREN BLGR
SOSP AMKE YBCH
CANI MODO LBVI
COYG BUSH
CALT SPTO NRWS
EUST BHGR COHA
WESJ WEME YWAR
RTHA HOOR BLPH
NOMO WTSW KILL
CLSW ~~GOOS~~
LEGO ANHU

Audobon's cottontail
CA ground squirrel
Western fence lizard
Granite spiny lizard
whiptail

ATTACHMENT F: RIPARIAN BIRD SURVEY REPORT

SAN DIEGO GAS & ELECTRIC COMPANY AND SOUTHERN CALIFORNIA GAS COMPANY

PIPELINE SAFETY & RELIABILITY PROJECT
RIPARIAN BIRD SURVEY REPORT

Prepared for:

SDGE
A Sempra Energy utility®

SoCalGas
A Sempra Energy utility

Prepared by:

INSIGNIA ENVIRONMENTAL

September 2015

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Attachment B: Survey Area Summary Characteristics Table
Attachment C: Willow Flycatcher Survey Form

1 – INTRODUCTION

San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company—hereinafter referred to as "the Applicants"—are proposing Pipeline Safety & Reliability Project (Proposed Project), which involves construction, operation, and maintenance of an approximately 47-mile-long, 36-inch-diameter natural gas transmission pipeline that will carry natural gas from SDG&E's existing Rainbow Metering Station to the pipeline's terminus on Marine Corps Air Station (MCAS) Miramar.

Insignia Environmental (Insignia) and Borcher Environmental Management conducted a protocol-level survey for the federally endangered least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*) for the Proposed Project in accordance with the United States (U.S.) Fish and Wildlife Service (USFWS) survey protocols for each species (USFWS 2001, Sogge et al. 2010). Insignia assessed the potential for least Bell's vireo and southwestern willow flycatcher to occur within the Biological Resources Survey Area (BRSA), which includes all Proposed Project components plus an approximately 150-foot buffer on each side of these components. In total, the BRSA covers approximately 2,264 acres.

Surveys for riparian bird species were conducted by Insignia Environmental and Borcher Environmental Management biologists with the required experience and necessary 10(a)(1)(A) recovery permit (number TE065741-3) issued pursuant to the federal Endangered Species Act (FESA). Surveys for least Bell's vireos began on April 13, 2015 and concluded on July 17, 2015. Least Bell's vireos were observed within riparian vegetation on four drainages. Surveys for the southwestern willow flycatcher began on May 14, 2015 and concluded on July 17, 2015. Southwestern willow flycatcher was detected in one drainage. This report summarizes the field methods and results of the protocol-level surveys for least Bell's vireo and southwestern willow flycatcher.

1.0 SPECIES BACKGROUND

The least Bell's vireo and southwestern willow flycatcher are both small (10 to 15 grams, or less than an ounce), migratory, insectivorous songbirds that require riparian vegetation for breeding. Both species are present in riparian breeding grounds for only the period between spring and early fall, although least Bell's vireo arrives on breeding grounds six to eight weeks earlier than southwestern willow flycatcher. Both species have experienced marked historic population declines as a result of widespread, human-caused loss and degradation of riparian vegetation in the southwest.

Although the geographic ranges in Southern California for these two species are largely coincidental, their ecologies differ in several aspects. The least Bell's vireo forages for small arthropods directly on plant foliage, whereas southwestern willow flycatcher relies primarily on aerial insects for food. Least Bell's vireo generally occurs in higher densities than southwestern willow flycatcher and has shown a greater propensity in recent decades for recolonizing riparian areas where the species had been extirpated. In contrast, southwestern willow flycatcher does not readily return to its former breeding grounds, even after habitat has recovered or been restored.

Although these species overlap somewhat in their preferences for habitat structure, least Bell's vireo tends to inhabit lower, less layered, and often more fragmented, woody riparian vegetation that is often associated with earlier successional stages. Southwestern willow flycatcher prefers riparian stands with a higher, layered canopy and requires relatively larger stands of vegetation. Both species nest relatively low (one to three meters, or one to ten feet, above the ground) in riparian vegetation, regardless of the height of available substrate, but southwestern willow flycatcher's nest placement is more variable and is generally higher than that of least Bell's vireo (Franzreb 1989, Sogge et al. 2010). Both species are vulnerable to nest parasitism by the brown-headed cowbird (*Molothrus ater*), which lays its eggs in the nests of small host species, resulting in reproductive failure of the hosts. The cowbird, which was self-introduced into California in the early 20th century, has been implicated along with habitat loss as a factor in the decline of several riparian bird species (Rothstein 1994). Least Bell's vireo was listed as endangered under the FESA in May 1986 and southwestern willow flycatcher was listed in February 1995.

2 – PROJECT DESCRIPTION

2.0 PROJECT OVERVIEW

The Proposed Project involves construction, operation, and maintenance of an approximately 47-mile-long, 36-inch-diameter natural gas transmission pipeline, as well as permanent aboveground equipment that will be appurtenant to the pipeline. The permanent aboveground equipment includes the following:

- approximately 10 new aboveground mainline valves (MLVs) spaced a maximum of five miles apart,
- one pressure-limiting station (i.e., the Rainbow Pressure-Limiting Station),
- three cross-tie facilities (i.e., Line 1600, Line 1601, and Line 2010),
- internal inspection launching and receiving equipment,
- cathodic protection system units with an estimated three rectifiers and three deep-well anode beds at three of the proposed MLVs, and
- an intrusion detection and leak monitoring system.

Construction is scheduled to begin in the first quarter of 2018 and is expected to take 12 to 18 months to complete.[1] The Applicants are required to comply with General Order 112-E in constructing a natural gas transmission pipeline and is choosing to seek a CPCN from the CPUC for the Proposed Project. In addition, because the Proposed Project route includes land under the jurisdiction of the Department of the Navy/U.S. Marine Corps, federal authorizations will be required. In addition to the CPCN and the authorization for rights-of-way (ROWs) on MCAS Miramar, the Applicants will obtain all required permits for the Proposed Project from federal, state, and local agencies prior to construction.

[1] The construction start date is based on receiving a Certificate of Public Convenience and Necessity (CPCN) from the California Public Utilities Commission (CPUC) by 2017 and issuance of other required permits by late 2017 or early 2018.

It is anticipated that the Department of the Navy will serve as the lead federal agency for the Proposed Project under the National Environmental Policy Act because the Proposed Project will require a new easement for ROWs through MCAS Miramar. Additionally, if the Department of the Navy determines that the authorization for the construction and operation of the Proposed Project "may effect" species listed under the FESA, the lead federal agency will be expected to engage in Section 7 consultation with the USFWS regarding the effects to listed species.

2.1 PROJECT LOCATION AND SETTING

The Proposed Project is located in San Diego County, California, and crosses the cities of San Diego, Escondido, and Poway; unincorporated communities of San Diego County; and federal land. As depicted in Figure 1: Project Overview Map, the potential route begins at SDG&E's existing Rainbow Metering Station in the unincorporated community of Rainbow and terminates just north of State Route 52 within MCAS Miramar. Within MCAS Miramar, the route parallels an unpaved aqueduct road for approximately 2.6 miles. The Proposed Project will tie into the existing Line 2010 at its southern terminus.

The Proposed Project will be installed primarily within existing roadways and road shoulders. Approximately 41 miles (87 percent) of the Proposed Project will be installed in urban areas within existing roadways and road shoulders, and the remaining approximately six miles (approximately 13 percent) of the Proposed Project will be installed cross-country. The pipeline will be installed approximately 42 inches below the ground surface using conventional trenching methods. The pipeline alignment will cross several major roads (e.g., Interstate [I-] 15) and a number of water features, including Rainbow Creek, the San Luis Rey River, Moosa Creek, San Dieguito River/Lake Hodges, Escondido Creek, Poway Creek, Beeler Creek, Carroll Canyon Creek, and Rose Creek. At the crossings of the San Luis Rey River and Lake Hodges, horizontal directional drilling (HDD) and horizontal boring methods will be implemented to minimize impacts to riparian habitat and water quality. Horizontal boring may be used to install the pipeline beneath other waterbodies, which would allow the pipeline to be installed without disturbing the surface of the area being crossed.

3 – REGULATORY FRAMEWORK

3.0 FEDERAL ENDANGERED SPECIES ACT OF 1973

Because the least Bell's vireo and southwestern willow flycatcher are both federally listed as endangered, the Proposed Project will need to comply with the FESA in order to address potential impacts to this species. The FESA protects plants and wildlife that are listed as endangered or threatened by the USFWS and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service. The FESA prohibits take of endangered wildlife, where "take" is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (16 U.S. Code §§ 1532(19), 1538).

Under Section 7 of the FESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed species (including plants) or its critical habitat. Through consultation and the issuance of a Biological Opinion, the USFWS may issue an incidental take statement, allowing take of the species that is incidental to

another authorized activity, provided that the action will not jeopardize the continued existence of the species. As mentioned previously, it is anticipated that the Department of the Navy will serve as the lead federal agency for the Proposed Project and will be expected to engage in Section 7 consultation with the USFWS regarding the effects to listed species.

4 – METHODS

4.0 BACKGROUND RESEARCH

Background data on the distribution and abundance of least Bell's vireo and southwestern willow flycatcher within the BRSA were obtained through a literature review of publicly available spatial data in ArcGIS, including the California Natural Diversity Database (CNDDB)—through which a search was conducted for the five miles[2] surrounding the Proposed Project. CNDDB occurrences of special-status wildlife species are mapped in Figure A-2: CNDDB Occurrences for Special-Status Wildlife Species in the Biological Resources Technical Report (Insignia 2015). Reference materials were also utilized, such as wildlife occurrence databases and local guides.

In addition, the USFWS Critical Habitat Portal was searched to determine if least Bell's vireo or southwestern willow flycatcher critical habitat was designated within the BRSA. The USFWS Critical Habitat Portal provides geographic information system data showing the location of all final designated critical habitat in San Diego County.

4.1 HABITAT ASSESSMENT

In the fall of 2014 and spring of 2015, Insignia mapped general vegetation communities within the BRSA, which includes all Proposed Project components and an approximately 150-foot buffer on each side of these components. In total, the BRSA covers approximately 2,264 acres, of which approximately 148.9 acres were determined to be either riparian or wetland vegetation, and thus have some potential to support least Bell's vireo or southwestern willow flycatcher. Vegetation mapping conforms to Oberbauer et al (2008).

On April 2 and 3, 2015, Borcher Environmental Management biologists John Lovio (10[a][1][A] recovery permit number TE065741-3) and Andrew Borcher conducted a habitat assessment within the approximately 148.9 acres of wetland and riparian habitat areas. The habitat assessment was conducted to determine the area's suitability to support least Bell's vireo or southwestern willow flycatcher. The biologists focused on riparian habitat areas within the BRSA, but also made notes regarding adjacent habitat's potential to support least Bell's vireo or southwestern willow flycatcher. Habitat was determined to be potentially

[2] The use of a five-mile buffer is intended to capture all known occurrences within the vicinity and surrounding areas of the Proposed Project. A larger buffer typically includes many species that will not actually occur within the Proposed Project area, and a smaller buffer may omit species with larger geographic ranges from the potential to occur lists.

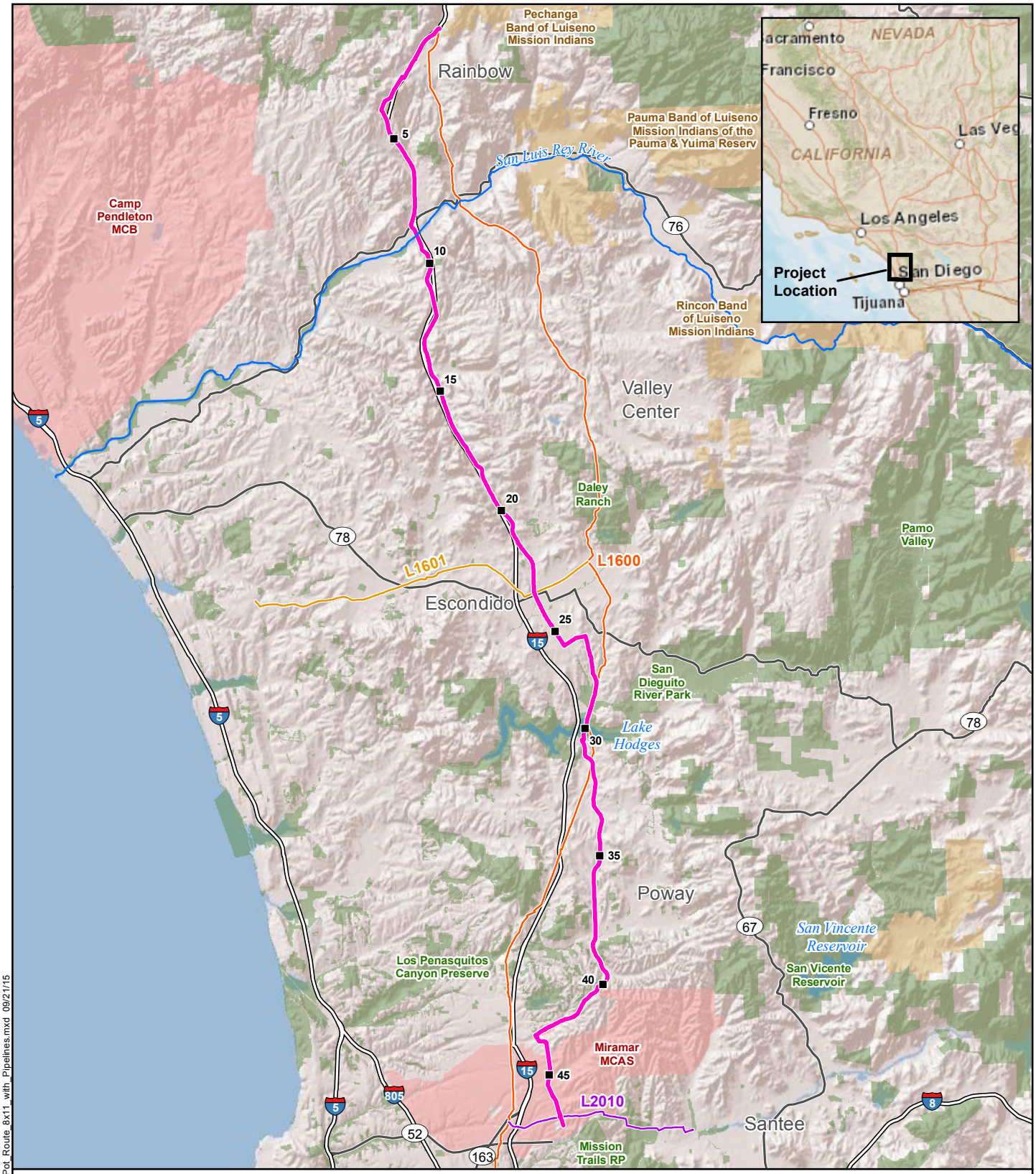

Figure 1: Project Overview Map **Pipeline Safety & Reliability Project**

- Milepost
- Proposed Project Route
- Line 1601
- Line 1600
- Line 2010
- Interstate
- Major Road/State Highway
- Parks
- Military
- Bureau of Indian Affairs

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suitable for least Bell's vireo or southwestern willow flycatcher if any of the following three criteria were met:

- Vegetation consisting completely or substantially of the following:
  - native, deciduous riparian growth composed of willows (*Salix* spp.) and/or cottonwoods (*Populus fremontii*), with or without native/non-native understory; or
  - well-developed, native woody riparian scrub (e.g., mule fat [*Baccharis salicifolia*] or blue elderberry [*Sambucus nigra* ssp. *caerulea*]); or
  - tall, gallery (i.e., high, closed canopy with variable understory) coast live oak (*Quercus agrifolia*) or a combination of coast live oak and sycamore (*Platanus racemosa*) forest.
- Sites consisting of continuous riparian vegetation or small, closely spaced patches within matrices of natural vegetation on or adjacent to watercourses.
- Sites at least 0.25-acre in size, unless the area within the BRSA is continuous with additional adjacent habitat outside of the BRSA.

Based on these species-specific habitat assessments, it was determined that approximately 61.6 acres of the approximately 148.9 acres did not provide sufficient habitat conditions for either least Bell's vireo or southwestern willow flycatcher, resulting in a total of approximately 87.3 acres of the BRSA that were included in the protocol-level surveys.

4.2 PROTOCOL SURVEYS

Surveys for the least Bell's vireo and southwestern willow flycatcher were conducted in accordance with standard protocols provided by the federal government (USFWS 2001, Sogge et al. 2010). Specifically, survey visits for least Bell's vireo were conducted as follows:

- eight times between April 10 and July 31, 2015, with each visit spaced at least 10 days apart;
- at a rate not exceeding 123.5 acres per person per day; and
- between dawn and approximately 11:00 a.m., or under a combination of weather conditions and time of season that were conducive to detecting the species.

Survey visits for the southwestern willow flycatcher were conducted as follows:

- five times between May 15 and July 17, 2015, with the following distribution:
  - one visit between May 15 and 31,
  - two visits between June 1 and 24, and
  - two visits between June 25 and July 17;
- with subsequent visits conducted at least five days apart; and

- between dawn and approximately 11:00 a.m., or under a combination of weather conditions and time of season that were conducive to detecting the species.

Based on geographic proximity and surveyor logistics, the approximately 87.3 acres of potentially suitable habitat for least Bell's vireo or southwestern willow flycatcher were grouped into 28 discrete survey areas, which are shown in Attachment A: 2015 Least Bell's Vireo/Southwestern Willow Flycatcher Survey Area and Sightings. Basic geographic, physical, and vegetation information was collected for each of the 28 survey areas, which are summarized in Attachment B: Survey Area Summary Characteristics Table. Each of the survey areas was visited at an appropriate time of day for each species on eight separate dates between April 13 and July 17, 2015, as detailed in Table 1: Riparian Bird Survey Schedule.

Between one and seven survey areas were surveyed on any given date, depending on the size of the survey area. Starting locations for the daily surveys were rotated throughout the survey period to prevent bias from time of day. The groupings of survey areas changed throughout the survey period as well. For instance, as the season progressed and the average temperatures increased, it became necessary to spread the survey effort over more days to minimize surveying during hot weather.

4.2.0 Occurrence Mapping

The biologists made repeated survey visits in accordance with survey protocols for both species. Over the course of these visits, the biologists collected multiple sets of occurrence data for least Bell's vireo within polygons persistently occupied by least Bell's vireo. This resulted in the accumulation of clusters of points representing the generalized activity areas for various pairs. The biologists did not map the entire home ranges or territories of these pairs, and focused instead on approximating short-term centers of activity. Point clusters were subsequently reduced to geographic centroids, which represent these activity areas for various pairs of birds.

5 – RESULTS AND DISCUSSION

5.0 CNDDB OCCURRENCE DATA

There are several CNDDB occurrences of least Bell's vireo documented between 0.25 and one mile from the BRSA at the following densities and locations:

- Two occurrences are associated with the San Luis Rey River; one is approximately 0.3 mile west of Milepost (MP) 8.8, and the second is located approximately 0.25 mile east of MP 7.5.

- One occurrence is associated with Moosa Creek on the east side of Old Highway 395, approximately 0.25 mile east of MP 14.1.

- One occurrence is documented along Reidy Canyon Creek north of Escondido, approximately one mile east of MP 21.0.

Table 1: Riparian Bird Survey Schedule

Biologist(s)	Target Species (Survey Number)	Dates	Weather/Visibility
John Lovio and Andrew Borcher	Least Bell's vireo and southwestern willow flycatcher (habitat assessment)	April 2 and 3, 2015	60 to 86 degrees Fahrenheit (˚F), clear, winds up to 3 miles per hour (mph)
John Lovio and Kevin Kilpatrick	Least Bell's vireo (Survey 1)	April 13 to 15, 2015	49 to 77º F, overcast to clear, winds up to 10 mph
John Lovio and Kevin Kilpatrick	Least Bell's vireo (Survey 2)	April 23, 24, 27, 30, and May 1, 2015	47 to 92º F, overcast/light rain to clear, winds up to 5 mph
John Lovio	Least Bell's vireo (Survey 3)	May 4, 6, 8, 11, 12, 13, and 14, 2015	48 to 77º F, overcast/light rain to clear, winds up to 5 mph
John Lovio	Least Bell's vireo (Survey 4) and southwestern willow flycatcher (Survey 1)	May 14, 18, 20, 21, 27, 29, and 30, 2015	50 to 80º F, overcast to clear, winds up to 5 mph
John Lovio	Least Bell's vireo (Survey 5) and southwestern willow flycatcher (Survey 2)	June 1, 4, 5, 8, 9, 13, 2015	57 to 93º F, overcast/light rain to clear, winds up to 8 mph
John Lovio	Least Bell's vireo (Survey 6) and southwestern willow flycatcher (Survey 3)	June 12, 13, 15, 16, 19, 23, and 24, 2015	56 to 89º F, overcast to clear, winds up to 5 mph
John Lovio	Least Bell's vireo (Survey 7) and southwestern willow flycatcher (Survey 4)	June 24, 25, 29, and 30, and July 1, 3, and 7, 2015	61 to 91º F, overcast to clear, winds up to 5 mph
John Lovio	Least Bell's vireo (Survey 8) and southwestern willow flycatcher (Survey 5)	July 6, 7, 9, 10, 13, 15, and 17, 2015	59 to 86º F, overcast to clear, winds up to 5 mph

- One occurrence is associated with Bernardo Creek within Kit Carson Park, approximately 0.25 mile west of MP 28.8.

- Two occurrences are documented in association with the San Dieguito River/Lake Hodges area; one is approximately 0.25 mile west of MP 29.9, and the second is located approximately 0.3 mile west of MP 31.2.

Southwestern willow flycatcher has been documented in the CNDDB at four separate locations between one and five miles from the BRSA along the San Luis Rey River; three of these occurrences are located 1.5 to 4.5 miles northeast of MP 8.8, and the fourth occurrence is located approximately four miles southwest of MP 8.8. The CNDDB has also documented southwestern willow flycatcher at one location between one and five miles upstream of the BRSA along the San Dieguito River.

CNDDB occurrences of least Bell's vireo that have been documented immediately adjacent to the riparian bird survey areas are shown on Attachment A: 2015 Least Bell's Vireo/Southwestern Willow Flycatcher Survey Area and Sightings. All CNDDB occurrences of least Bell's vireo and southwestern willow flycatcher within five miles of the BRSA are shown in Figure A-2: CNDDB Occurrences for Special-Status Wildlife Species in the Biological Resources Technical Report (Insignia 2015).

5.1 CRITICAL HABITAT

The USFWS has designated critical habitat for least Bell's vireo within 40.6 acres of the BRSA, and has designated critical habitat for southwestern willow flycatcher within 11.3 acres of the BRSA, as shown in Attachment A: 2015 Least Bell's Vireo/Southwestern Willow Flycatcher Survey Area and Sightings. Designated critical habitat for both least Bell's vireo and southwestern willow flycatcher occurs only within the San Luis Rey River corridor and associated habitats. The San Luis Rey River is also designated by the USFWS as a recovery unit for both the least Bell's vireo and southwestern willow flycatcher.

5.2 HABITAT ASSESSMENT

Based on the habitat assessment, it was determined that a total of approximately 87.3 acres distributed over 28 survey areas should be included in the protocol-level surveys. Survey areas were grouped primarily based on geographic proximity to each other and ranged from 0.1 acre to 17.9 acres. Sites selected for protocol surveys occur within the Santa Margarita River, San Luis Rey River, San Dieguito River, Escondido Creek, or Los Peñasquitos Creek watersheds. The watersheds of the Santa Margarita River, San Luis Rey River, and San Dieguito River include substantial, higher-order[3] riverine plains that are known to support populations or pairs of least Bell's vireo and southwestern willow flycatcher (CDFW 2015). Various stream orders were

[3] Higher-order stream systems refer to the Strahler stream classification system in which waterways are given an "order" according to the number of additional tributaries associated with each waterway (Strahler 1957). Higher-order streams are at lower elevations in a particular watershed than lower-order streams. Higher-order streams are often wider and move slower than lower-order streams, and they tend to include more expansive riparian habitats that are capable of supporting special-status riparian bird species, such as southwestern willow flycatcher.

represented in the 28 survey areas, ranging from narrow upland gullies to extensive bottomlands of major regional rivers.

The survey areas are shown on Attachment A: 2015 Least Bell's Vireo/Southwestern Willow Flycatcher Survey Area and Sightings. Attachment B: Survey Area Summary Characteristics Table summarizes the geographic locations of the survey areas, the names of the drainages flowing through or associated with the surveys areas, and the vegetation communities observed within the survey areas.

5.3 PROTOCOL SURVEYS: LEAST BELL'S VIREO

Ten least Bell's vireo locations were recorded within the BRSA during the course of the survey effort. Eight of these locations represent documented or presumed breeding pairs based on persistent occurrence of two birds or the observance of nests or fledged young. Two of the locations represent transient occupancy of presumably lone, singing males in mid- to late-breeding season. The numbers and distribution of least Bell's vireo locations are summarized by survey area in Table 2: Least Bell's Vireo Detections within the BRSA.

Two presumed breeding pairs (Locations 7 and 17) were documented on or immediately adjacent to the section of the San Luis Rey River between Old Highway 395 and I-15. This higher-order riparian bottomland is dominated by mature, closed-canopied, mixed willow-cottonwood forest measuring approximately 60 feet tall. The San Luis Rey River is well documented as a regional population center for the least Bell's vireo. HDD will be utilized to construct the Proposed Project under the San Luis Rey River, and no temporary or permanent impacts are proposed within habitats supporting least Bell's vireo in Locations 7 and 17. The two pairs are located approximately 1,000 feet south of the nearest temporary work area (i.e., the HDD workspace area north of the San Luis Rey River), which minimizes the potential for indirect, construction-related impacts (e.g., noise, disruption, etc.) to least Bell's vireo individuals within the San Luis Rey River.

The Moosa Creek location (Location 8) consists of a section of tall (i.e., approximately 60 feet in height on average), old-growth riparian forest located just south of the intersection of Old Highway 395 and Circle R Road. One presumed breeding pair of least Bell's vireo was found at this site, which is a somewhat anomalous location for the species because it comprises a fairly even mix of willow, cottonwood, sycamore, and coast live oak trees on a relatively lower-order drainage. An additional pair was noted 200 to 300 feet southeast of the BRSA. No temporary or permanent impacts to least Bell's vireo habitat are proposed at Location 8, which is approximately 140 feet east of the nearest Proposed Project work area.

The broad floodplain of the San Dieguito River supports several age/size classes of strongly willow-dominated forest in a mosaic with mesic, herbaceous floodplain vegetation. One location of a transient least Bell's vireo (Location 1) was mapped in an isolated willow thicket in the northern part of the floodplain on April 13, 2015 during the early portion of the breeding season. Location 1 is approximately 150 feet east of the nearest Proposed Project work area.

Table 2: Least Bell's Vireo Detections within the BRSA

Survey Area	Drainage	Mapped Location Number[4]	Least Bell's Vireo Activity at Location	Public Land Survey System Location (Township/ Range/Section)	Approximate MP	Within a Planned Impact Area?
6	San Luis Rey River	7 and 17	Two presumed breeding pairs	T10S/R3W/S11	8.8	No
12	Moosa Creek	8	One presumed breeding pair	T11S/R3W/S1	14.0	No
22	San Dieguito River/Lake Hodges	1	One transient	T13S/R2W/S2	29.5	No
23	San Dieguito River/Lake Hodges	2, 3, 5, 6, and 13	Five documented or presumed breeding pairs	T13S/R2W/S11	29.6 (Location 2) 30.0 (Locations 3, 5, 6, and 13)	No
28	Carroll Canyon	19	One transient	T15S/R2W/S5	43.3	No
Total		**10**	**Eight breeding pairs/two transient individuals**			

[4] The mapped location numbers correspond to the numbering provided in Attachment A: 2015 Least Bell's Vireo/Southwestern Willow Flycatcher Survey Area and Sightings for each individual mapped location of least Bell's vireo. These points represent a centroid of the short-term centers of activity for individual least Bell's vireos. Home ranges, territories, and use areas were not mapped as part of this protocol survey.

Five documented or presumed breeding pairs (Locations 2, 3, 5, 6, and 13) were mapped farther south within the floodplain throughout the season. Two additional presumed breeding pairs were noted outside of the BRSA during these surveys—one approximately 100 feet southwest of Location 2, and the other approximately 100 feet east of Location 5. Detections of least Bell's vireo both within and adjacent to the BRSA indicate that the wide swath of riparian habitat within the San Dieguito River floodplain is likely at or near saturation by this species.

No temporary or permanent impacts are proposed within any least Bell's vireo locations in the San Dieguito River/Lake Hodges area. Location 2 is located approximately 150 west of the nearest Proposed Project work areas on the north shore of Lake Hodges. HDD will be utilized to construct the Proposed Project under the San Dieguito River/Lake Hodges area, and as a result, no temporary or permanent impacts are proposed within habitats supporting least Bell's vireo in this area. The breeding pairs within the San Dieguito River/Lake Hodges (Locations 3, 5, 6 and 13) are located between 200 and 800 feet north of the nearest temporary work area (i.e., the HDD workspace area on the southern banks of the San Dieguito River/Lake Hodges), which minimizes the potential for indirect, construction-related impacts (e.g., noise, disruption, etc.) to affect least Bell's vireo individuals in the area.

A singing male least Bell's vireo (Location 19) was detected on June 19, 2015 in an open, low-stature (i.e., an average of approximately 20 feet in height) southern willow scrub stand that appears to have been created during the recent habitat restoration in Carroll Canyon, just east of the crossing of Avenue of Nations. The willow vegetation at this location is isolated by extensive growth of tall, non-native eucalyptus (*Eucalyptus* spp.) forests upstream and downstream. The lack of detection of least Bell's vireo at this site prior or subsequent to June 19, 2015 indicates a transient location during the late breeding season. No temporary or permanent impacts to least Bell's vireo habitat are proposed at Location 19, which is approximately 140 feet east of the nearest Proposed Project work area.

5.4 PROTOCOL SURVEYS: SOUTHWESTERN WILLOW FLYCATCHER

A single willow flycatcher, whose subspecies remains undetermined, was detected once on May 27, 2015, at one site during the survey. The willow flycatcher individual was heard singing within a well-preserved, approximately 50-foot tall, willow-dominated stand along an unnamed tributary of Poway Creek that runs southwest from the intersection of Pomerado Road and Robison Boulevard in the City of Poway (Township 14S, Range 2W, Section 14) at MP 37.6, as shown in Attachment A: 2015 Least Bell's Vireo/Southwestern Willow Flycatcher Survey Area and Sightings. The subspecies of this individual could not be determined during the survey due to the similarity in vocalizations between willow flycatcher subspecies *E. t. brewsteri*—which is a common migrant arriving typically in mid-May (Unitt 2004)—and subspecies *E. t. extimus* (i.e., the southwestern willow flycatcher).

Despite the high-quality habitat (e.g., mature willow forest), this polygon is small and highly isolated by surrounding suburban and commercial development. A summary of the survey area within which this individual willow flycatcher was heard is provided in Attachment C: Willow Flycatcher Survey Form. An occurrence of a willow flycatcher on one day in May or June is consistent with well-documented transient migratory behavior of the species. No temporary or

permanent impacts to riparian habitat are proposed within this stand of southern willow scrub, which is approximately 100 feet east of the nearest Proposed Project work area.

6 – DISCUSSION

Concurrent with the protocol-level surveys for least Bell's vireo and southwestern willow flycatcher, Insignia conducted a preliminary assessment of potentially jurisdictional wetlands and waters, and also refined the vegetation map from which the habitat assessment and survey areas were developed. The assessment of wetlands and waters and the vegetation map refinement resulted in the mapping of approximately 5.9 acres of additional riparian and/or wetland vegetation that could potentially support least Bell's vireo and/or southwestern willow flycatcher. Because riparian bird surveys had already begun by the time the wetlands and waters assessment and the vegetation mapping refinement were completed, these approximately 5.9 acres of potentially suitable least Bell's vireo and southwestern willow flycatcher habitat were not included in the 2015 riparian bird habitat assessment and protocol surveys described in this report. These areas are small, isolated, and have marginally suitable habitat for both species, and are located on minor tributaries within the BRSA. Regardless, the Applicants intend to conduct an additional habitat assessment and protocol-level surveys, if warranted, within these approximately 5.9 acres of potentially suitable least Bell's vireo and/or southwestern willow flycatcher habitat prior to construction.

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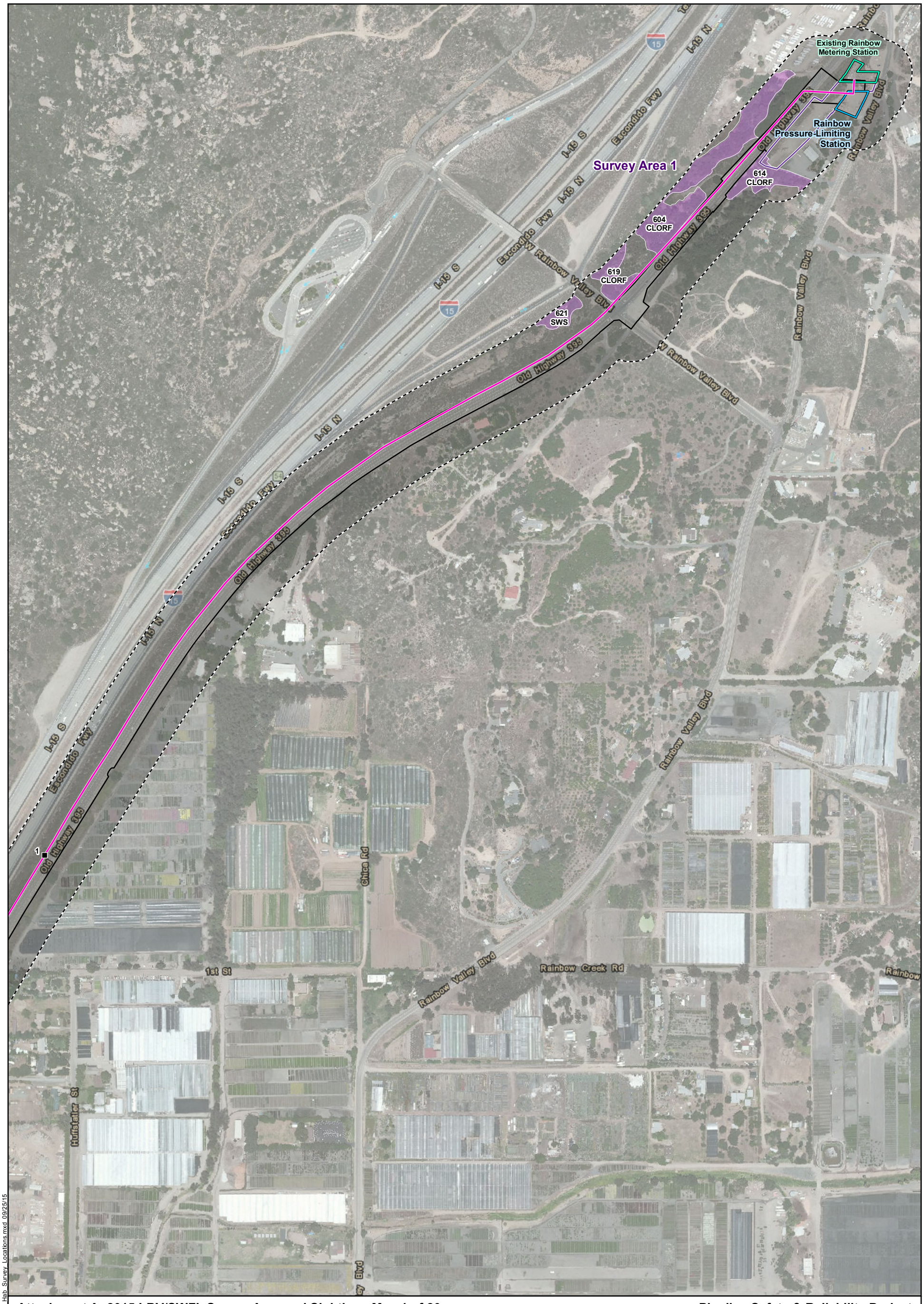
ATTACHMENT A: 2015 LEAST BELL'S VIREO/SOUTHWESTERN WILLOW FLYCATCHER SURVEY AREA AND SIGHTINGS



Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 1 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

- MCAS Miramar
- Biological Resource Survey Area
- LBV/SWFL Survey Area
- Excluded from LBV/SWFL Survey Area

- LBV Location
- Willow flycatcher (subspecies undetermined)
- LBV CNDDB Occurence
- LBV Critical Habitat
- SWFL Critical Habitat

LBV: least Bell's vireo / SWFL: southwestern willow flycatcher

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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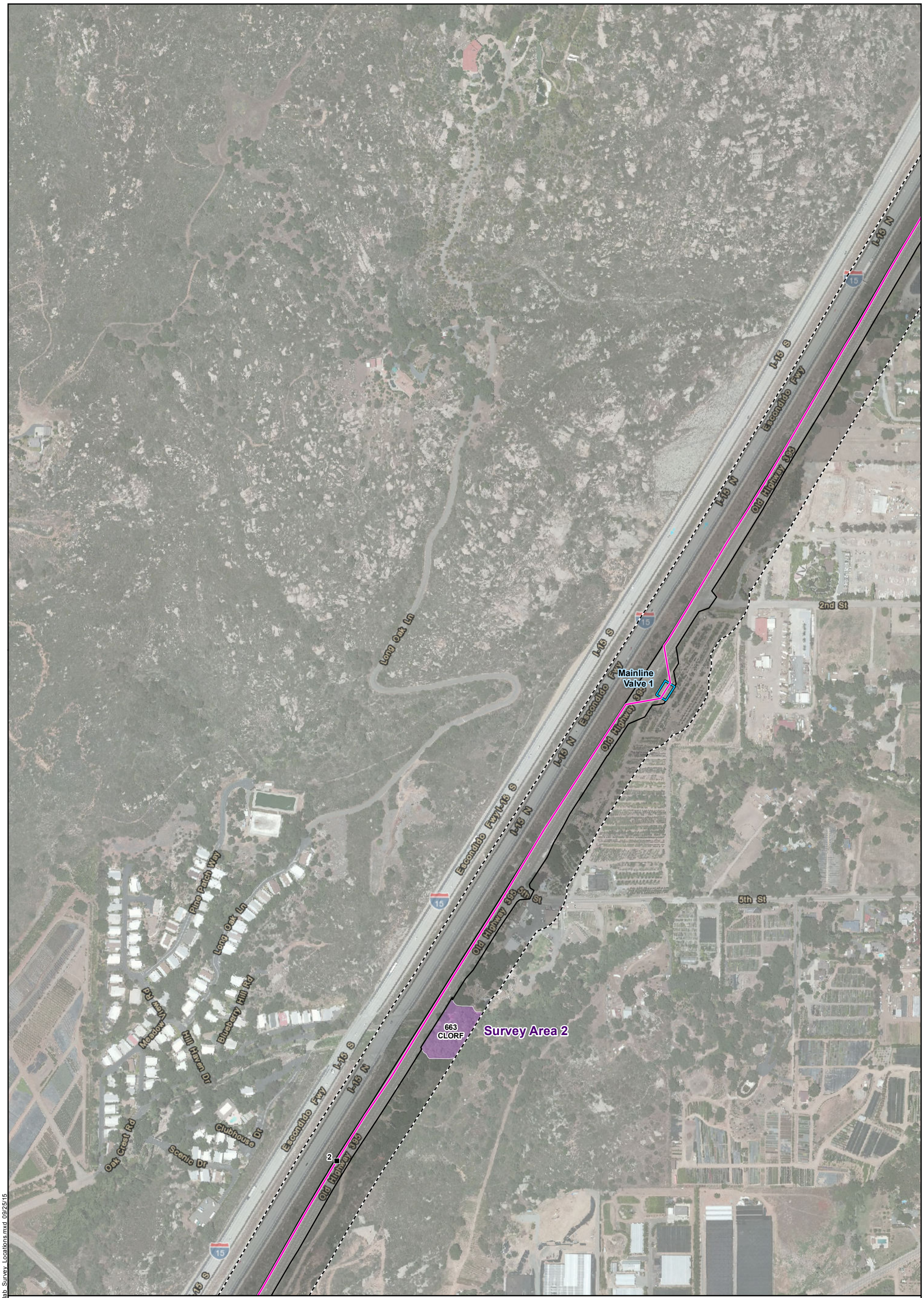

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 2 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

- MCAS Miramar
- Biological Resource Survey Area
- LBV/SWFL Survey Area
- Excluded from LBV/SWFL Survey Area

- LBV Location
- Willow flycatcher (subspecies undetermined)
- LBV CNDDB Occurence
- LBV Critical Habitat
- SWFL Critical Habitat

LBV: least Bell's vireo / SWFL: southwestern willow flycatcher

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 3 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

- MCAS Miramar
- Biological Resource Survey Area
- LBV/SWFL Survey Area
- Excluded from LBV/SWFL Survey Area

- LBV Location
- Willow flycatcher (subspecies undetermined)
- LBV CNDDB Occurence
- LBV Critical Habitat
- SWFL Critical Habitat

LBV: least Bell's vireo / SWFL: southwestern willow flycatcher

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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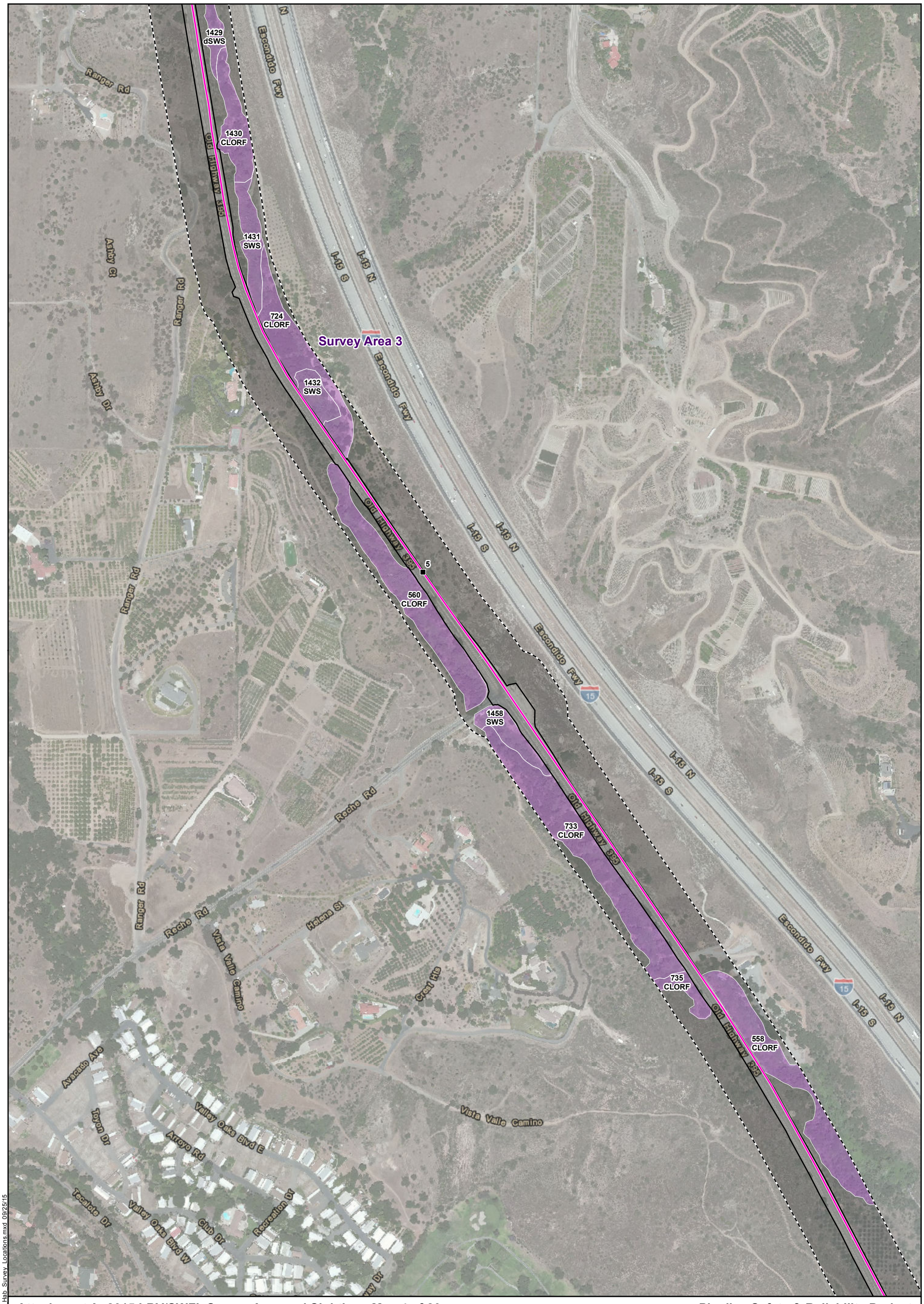

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 4 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

- MCAS Miramar
- Biological Resource Survey Area
- LBV/SWFL Survey Area
- Excluded from LBV/SWFL Survey Area

- LBV Location
- Willow flycatcher (subspecies undetermined)
- LBV CNDDB Occurence
- LBV Critical Habitat
- SWFL Critical Habitat

LBV: least Bell's vireo / SWFL: southwestern willow flycatcher

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 5 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

- MCAS Miramar
- Biological Resource Survey Area
- LBV/SWFL Survey Area
- Excluded from LBV/SWFL Survey Area

- LBV Location
- Willow flycatcher (subspecies undetermined)
- LBV CNDDB Occurence
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- SWFL Critical Habitat

LBV: least Bell's vireo / SWFL: southwestern willow flycatcher

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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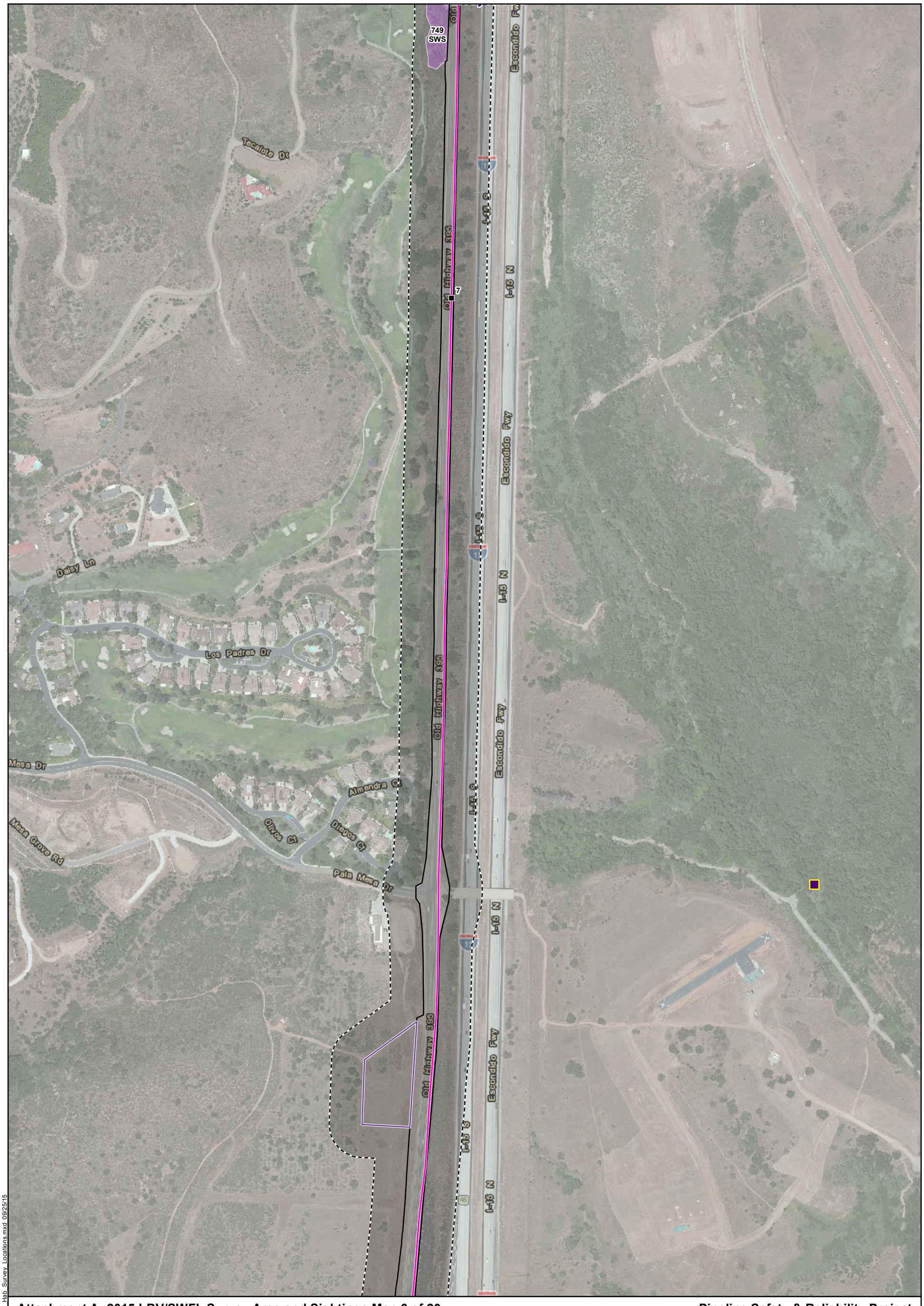

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 6 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
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- MCAS Miramar
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- LBV Location
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LBV: least Bell's vireo / SWFL: southwestern willow flycatcher

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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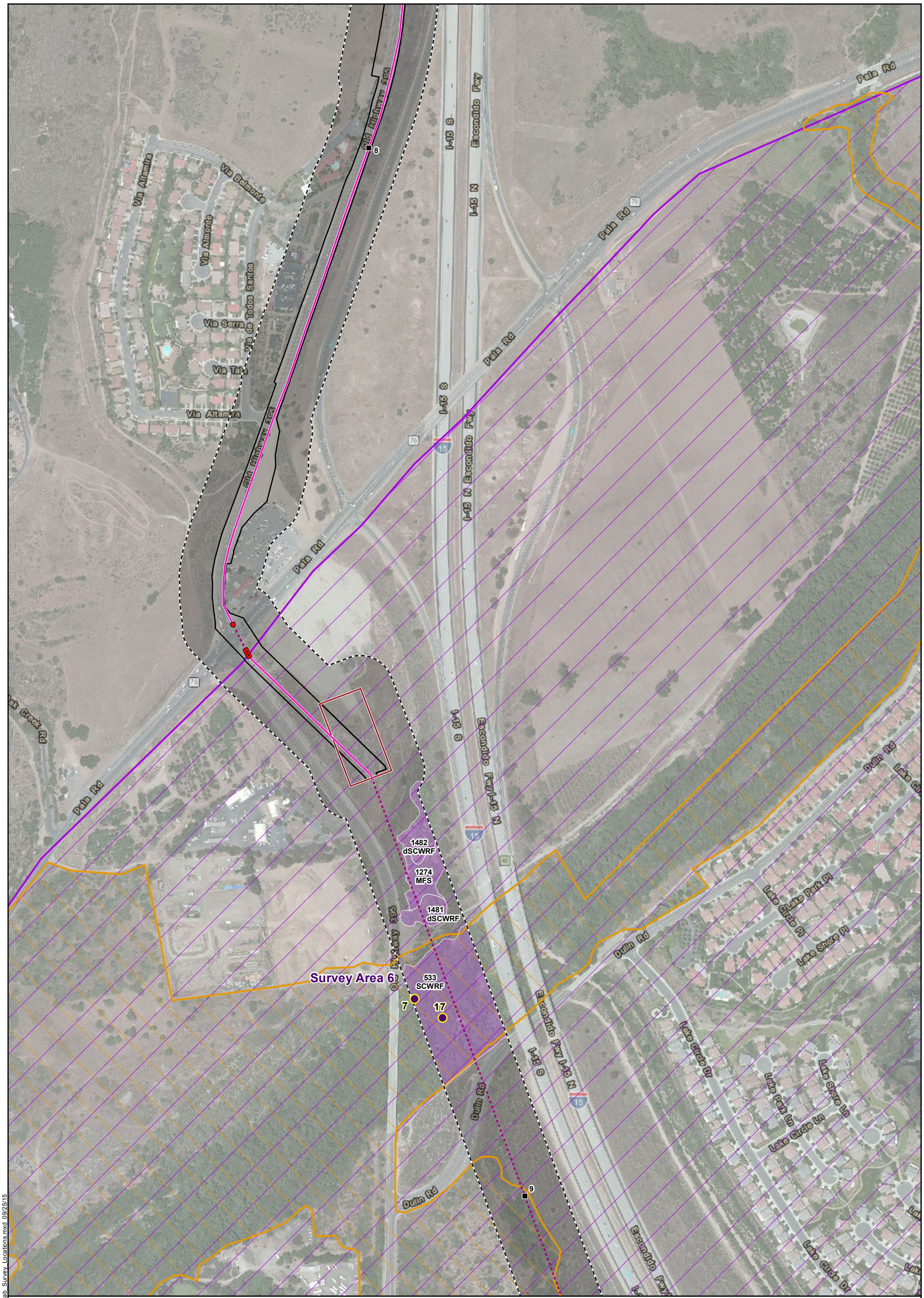

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 7 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
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- LBV Critical Habitat
- SWFL Critical Habitat

LBV: least Bell's vireo / SWFL: southwestern willow flycatcher

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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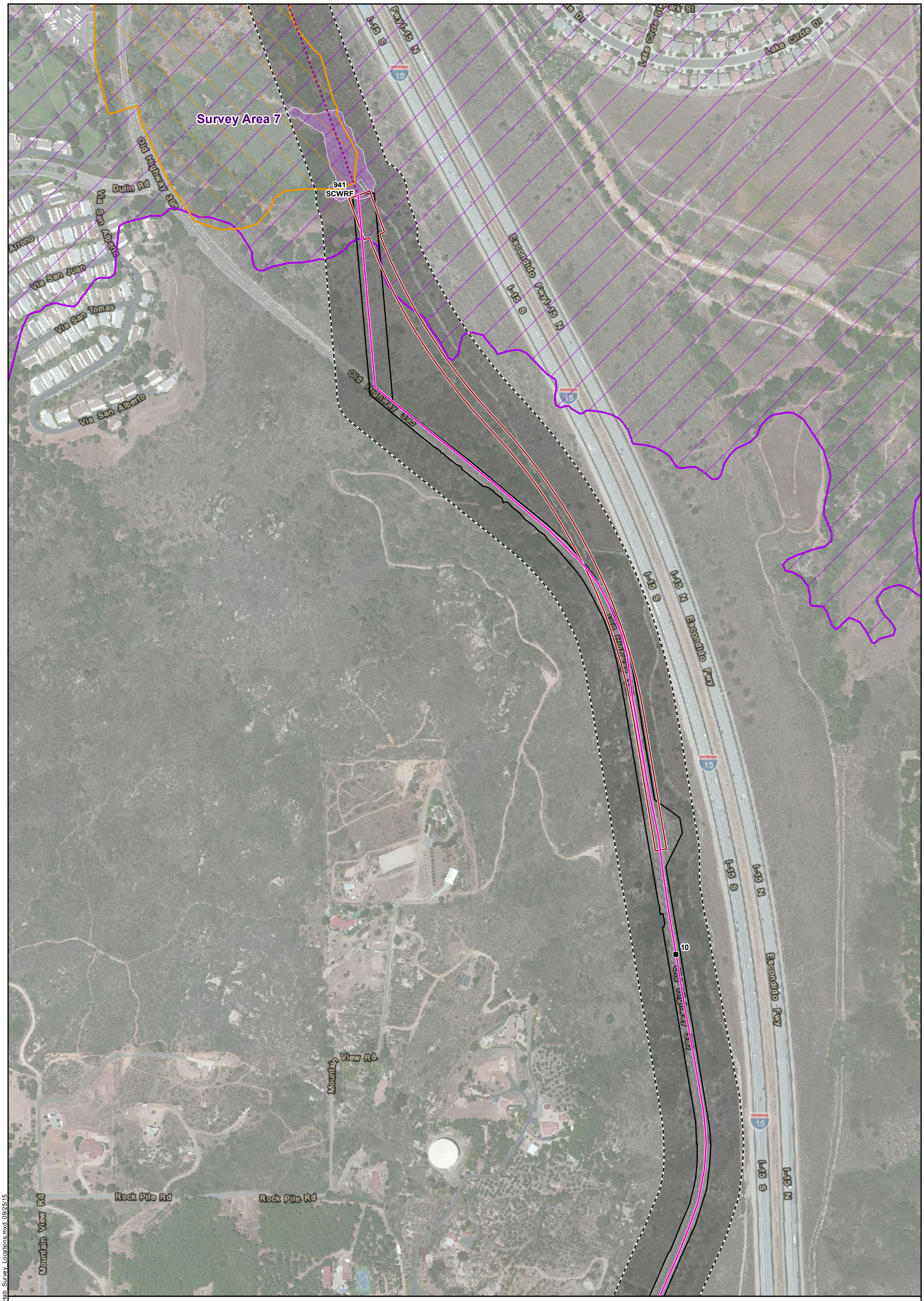

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Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 8 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

- MCAS Miramar
- Biological Resource Survey Area
- LBV/SWFL Survey Area
- Excluded from LBV/SWFL Survey Area

- LBV Location
- Willow flycatcher (subspecies undetermined)
- LBV CNDDB Occurence
- LBV Critical Habitat
- SWFL Critical Habitat

LBV: least Bell's vireo / SWFL: southwestern willow flycatcher

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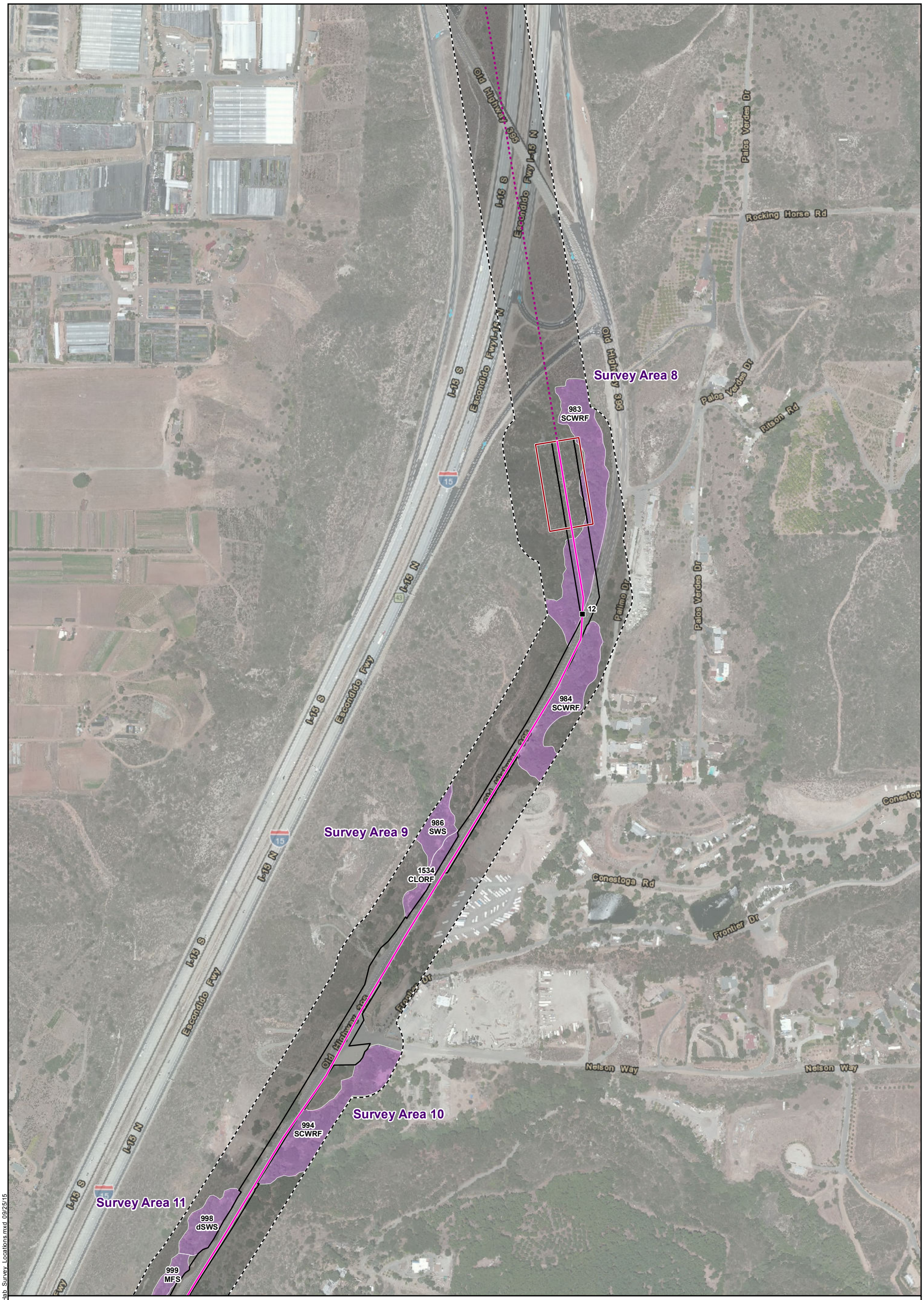

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 9 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
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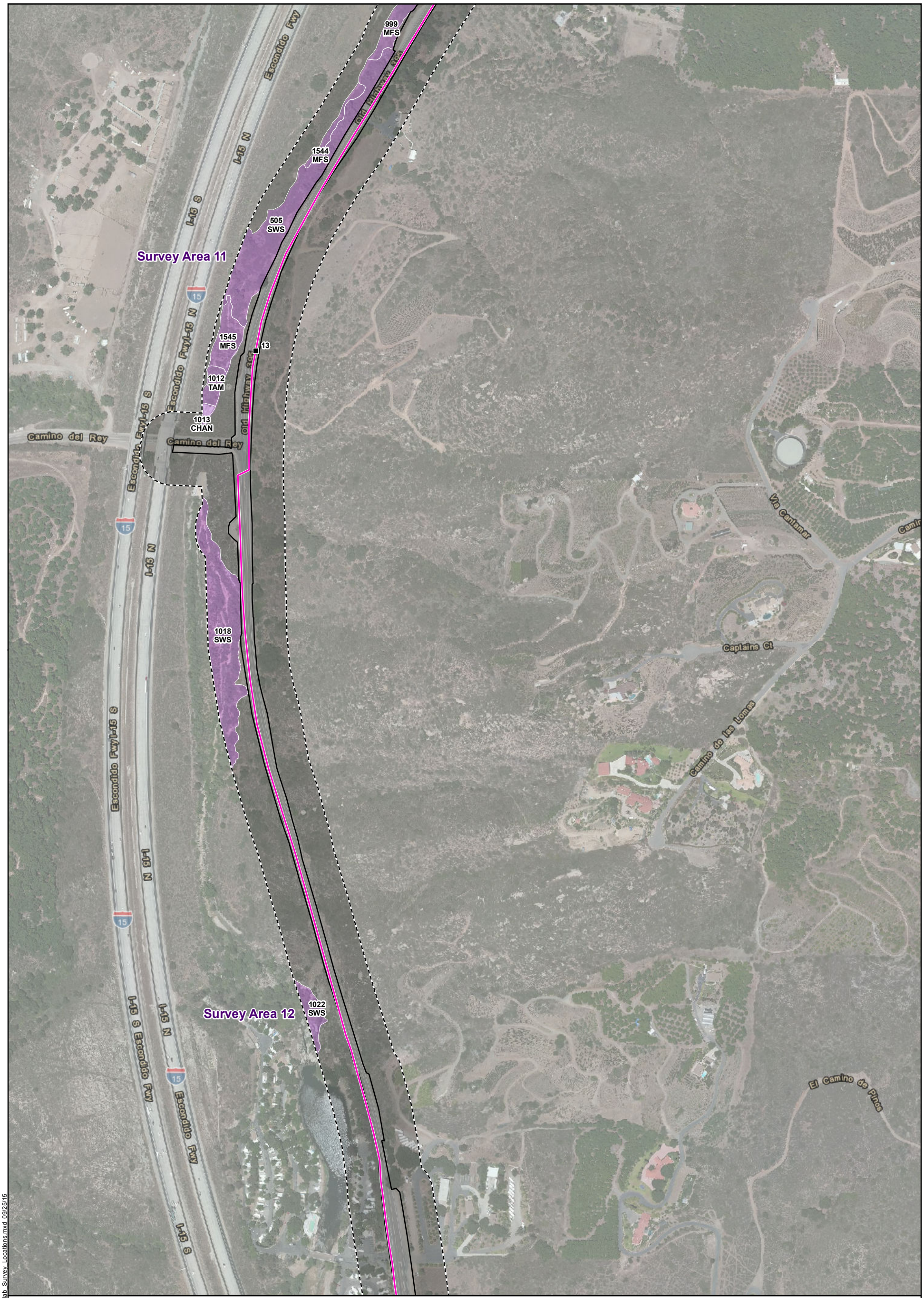

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 10 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
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Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 11 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
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Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 12 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
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Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 13 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
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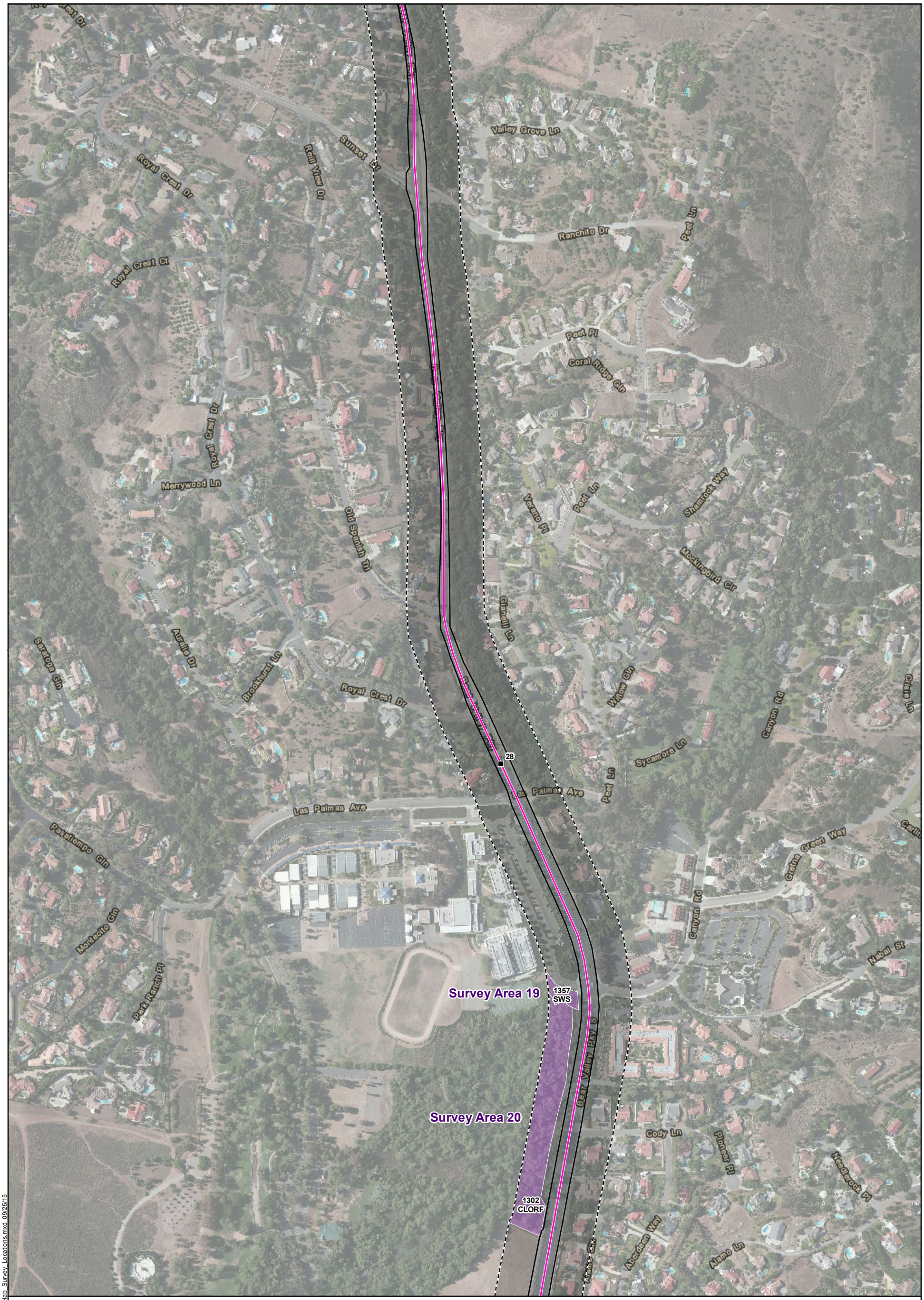

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 14 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

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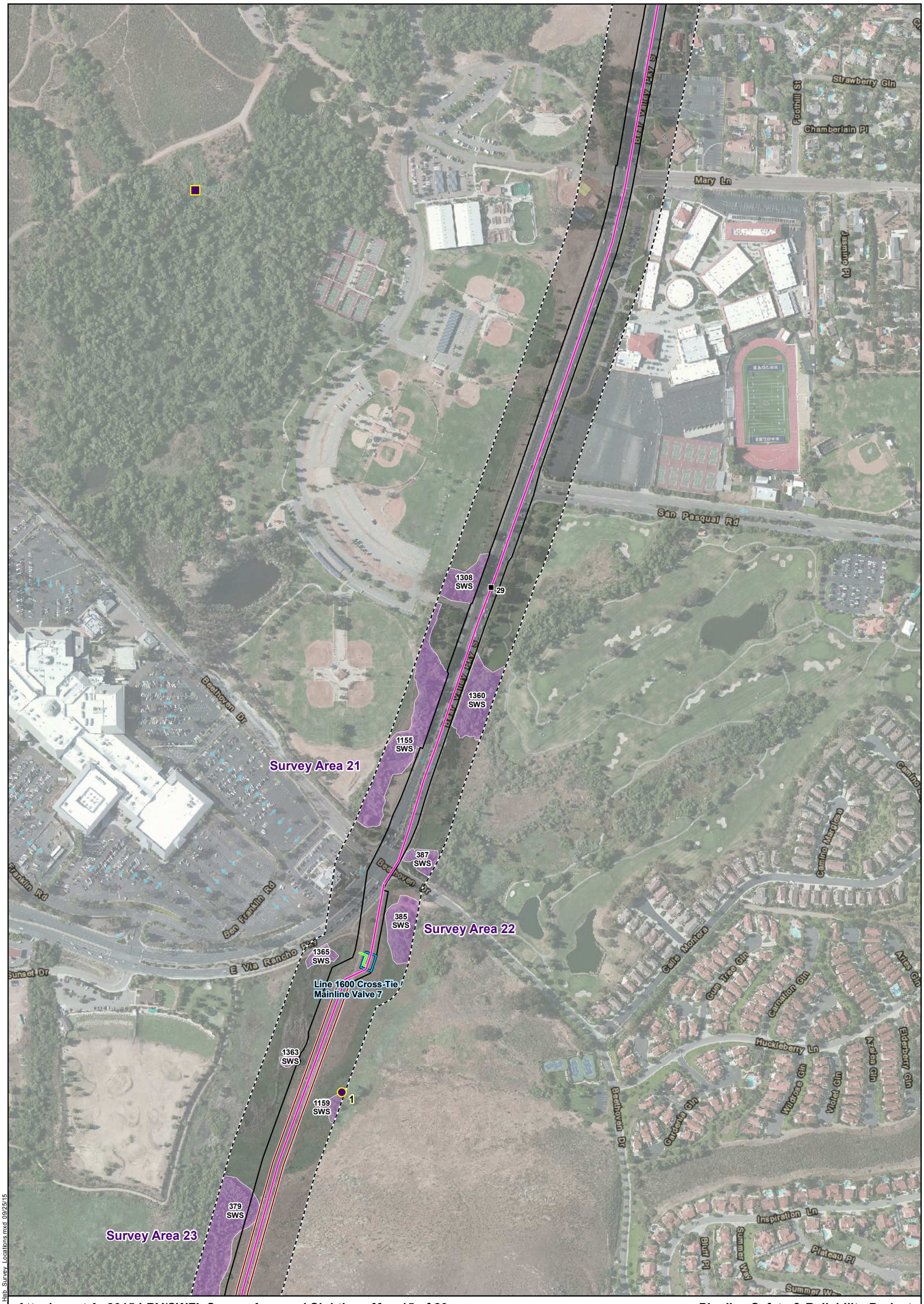

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 15 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
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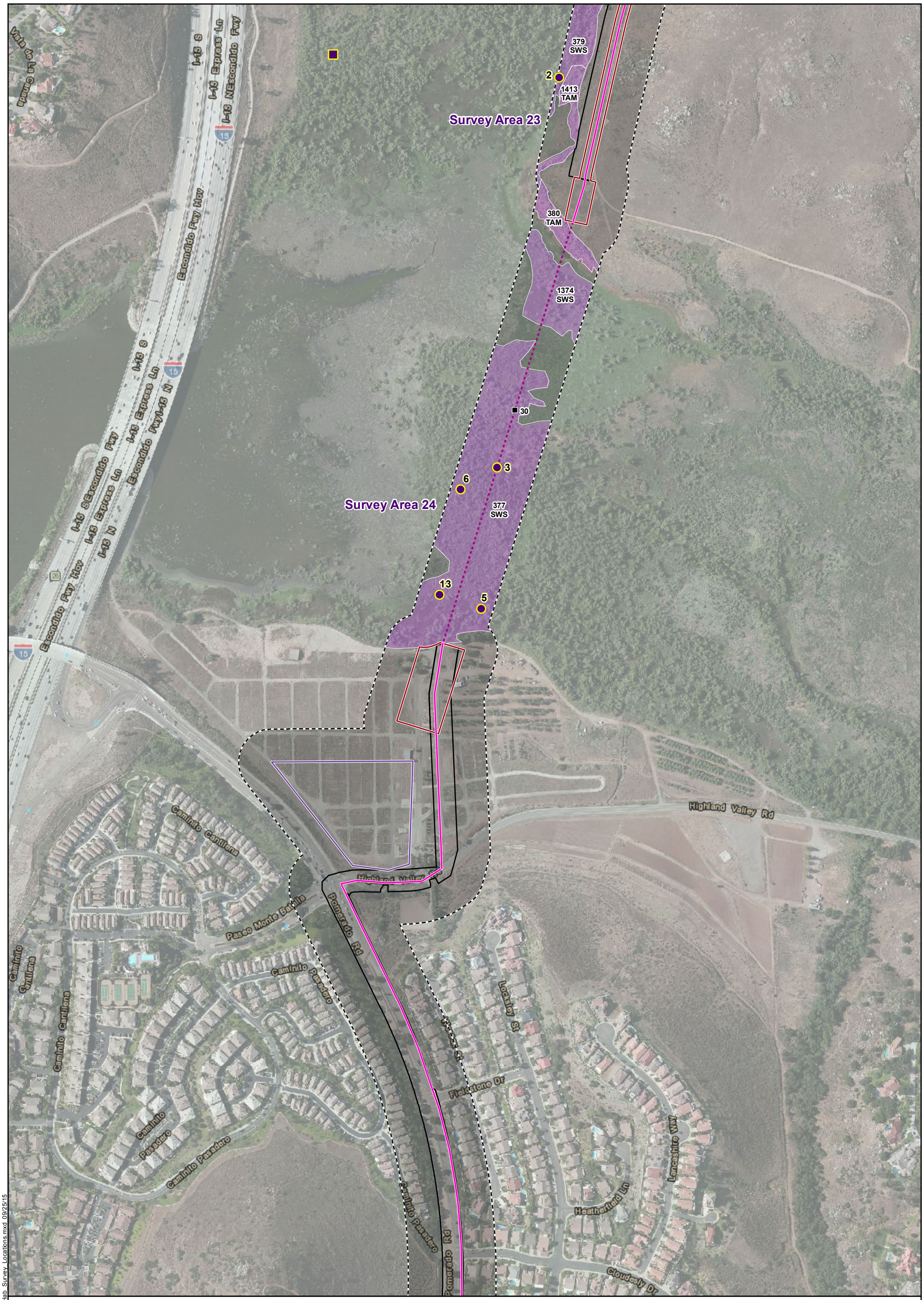

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 16 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
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- Biological Resource Survey Area
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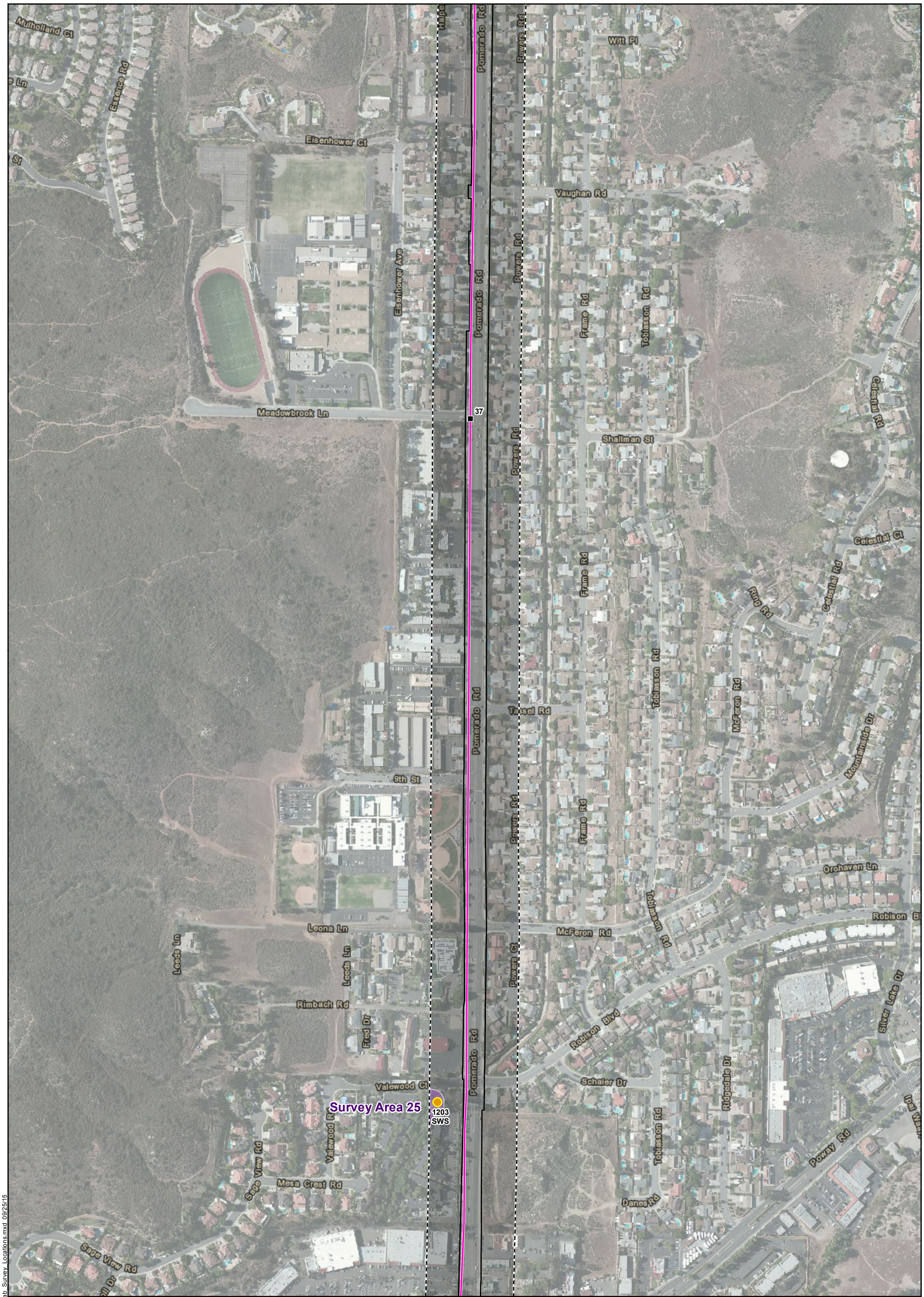

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 17 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
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- Workspace

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- LBV/SWFL Survey Area
- Excluded from LBV/SWFL Survey Area

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- LBV Critical Habitat
- SWFL Critical Habitat

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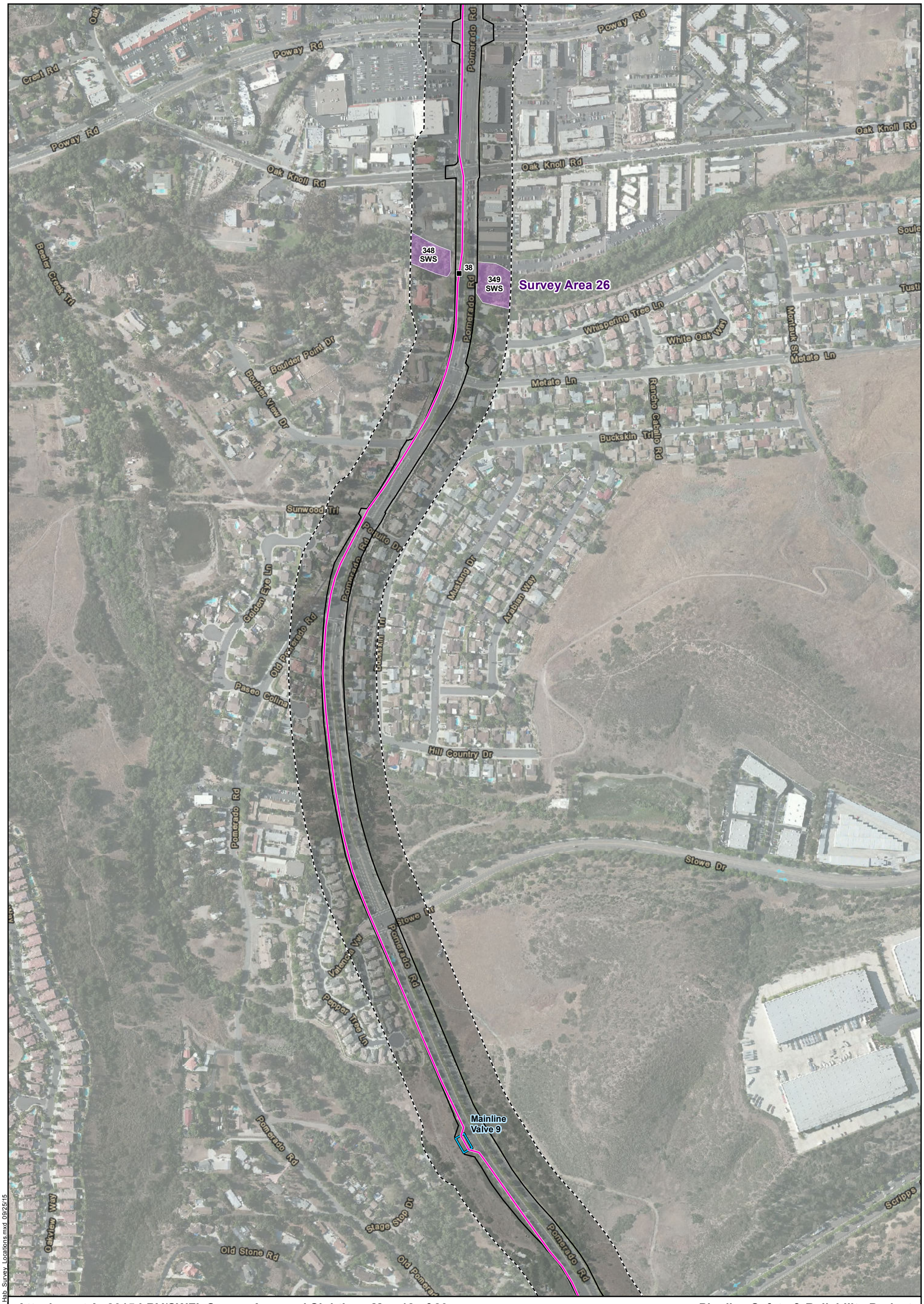

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 18 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
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Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 19 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
- Existing Facility

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
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- LBV/SWFL Survey Area
- Excluded from LBV/SWFL Survey Area

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- Willow flycatcher (subspecies undetermined)
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- LBV Critical Habitat
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SoCalGas A Sempra Energy utility | SDGE A Sempra Energy utility | INSIGNIA ENVIRONMENTAL

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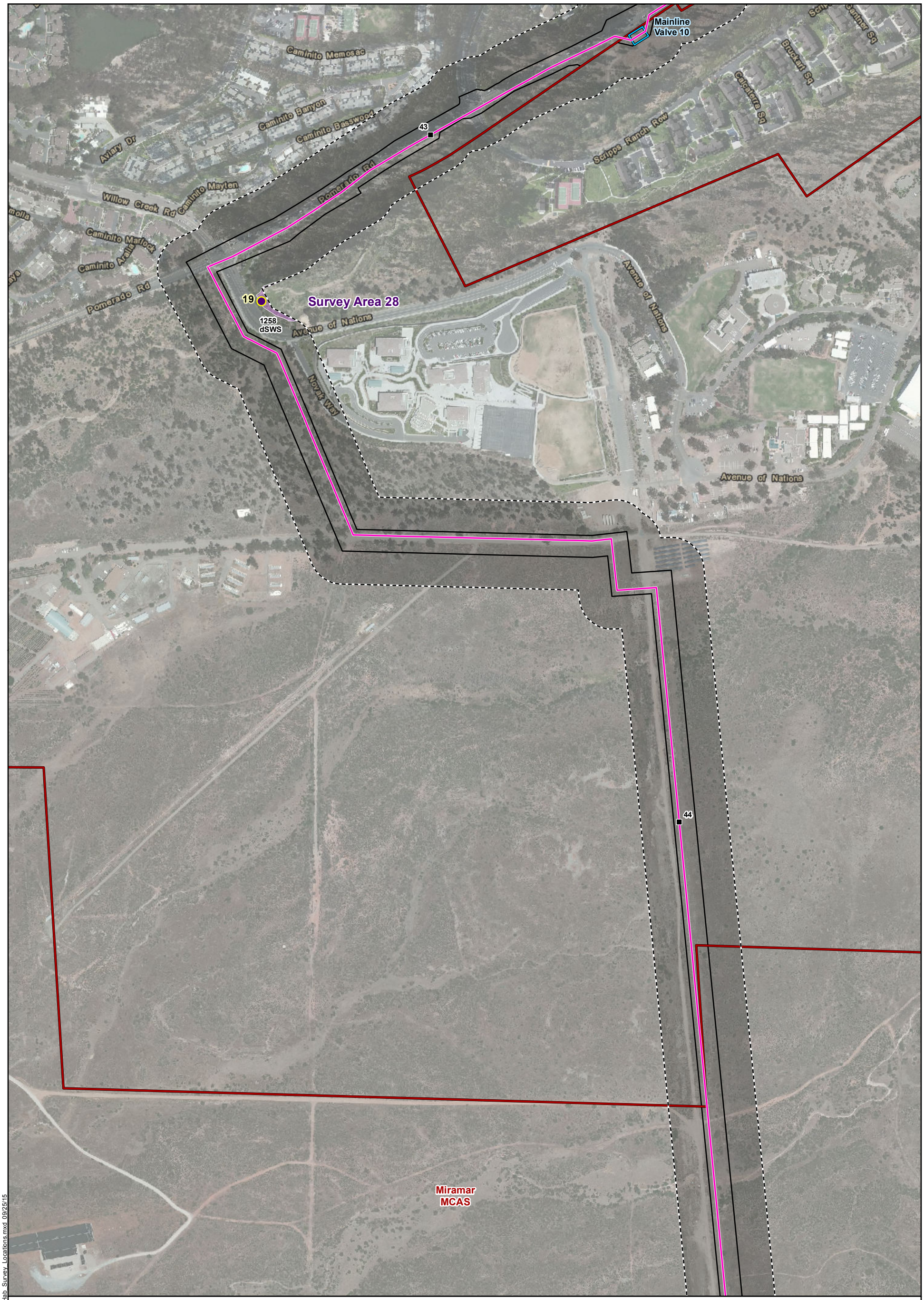

Attachment A: 2015 LBV/SWFL Survey Area and Sightings Map 20 of 20

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line
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Permanent Impact
- Aboveground Facility

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ATTACHMENT B: SURVEY AREA SUMMARY CHARACTERISTICS TABLE

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Survey Area	Unique Vegetation Polygon Identifier	Milepost Number	Drainage Name	Public Land Survey System Location (Township/Range/Section)	Vegetation Community	Riparian Bird Occurrence Summary	Approximate Area (acres)
1	604	0.2	Unnamed tributary to Rainbow Creek	T9S/R3W/S1	Southern Coast Live Oak Riparian Forest	Least Bell's vireo (LBV)/southwestern willow flycatcher (SWFL) not observed	2.3
	614	0.1	Unnamed tributary to Rainbow Creek	T9S/R3W/S1	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	0.7
	619	0.3	Unnamed tributary to Rainbow Creek	T9S/R3W/S1	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	0.5
	621	0.3	Unnamed tributary to Rainbow Creek	T9S/R3W/S1	Southern Willow Scrub	LBV/SWFL not observed	0.3
Survey Area 1 Total							*3.9*
2	663	1.9	Rainbow Creek	T9S/R3W/S11	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	1.0
Survey Area 2 Total							*1.0*
3	558	5.5	Unnamed tributary to the San Luis Rey River	T9S/R3W/S26	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	2.8
	560	4.9	Unnamed tributary to the San Luis Rey River	T9S/R3W/S23	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	3.1
	705	4.3	Unnamed tributary to the San Luis Rey River	T9S/R3W/S22	Southern Willow Scrub	LBV/SWFL not observed	0.4
	724	4.8	Unnamed tributary to the San Luis Rey River	T9S/R3W/S23	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	2.0
	733	5.4	Unnamed tributary to the San Luis Rey River	T9S/R3W/S26	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	3.7
	735	5.4	Unnamed tributary to the San Luis Rey River	T9S/R3W/S26	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	0.5
	1429	4.4	Unnamed tributary to the San Luis Rey River	T9S/R3W/S22	Southern Willow Scrub (disturbed)	LBV/SWFL not observed	1.4
	1430	4.6	Unnamed tributary to the San Luis Rey River	T9S/R3W/S23	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	1.2
	1431	4.7	Unnamed tributary to the San Luis Rey River	T9S/R3W/S23	Southern Willow Scrub	LBV/SWFL not observed	1.0
	1432	4.8	Unnamed tributary to the San Luis Rey River	T9S/R3W/S23	Southern Willow Scrub	LBV/SWFL not observed	0.6
	1450	4.3	Unnamed tributary to the San Luis Rey River	T9S/R3W/S22	Southern Willow Scrub	LBV/SWFL not observed	0.4
	1458	5.2	Unnamed tributary to the San Luis Rey River	T9S/R3W/S26	Southern Willow Scrub	LBV/SWFL not observed	0.8
Survey Area 3 Total							*17.9*
4	1427	6.3	Unnamed tributary to the San Luis Rey River	T9S/R3W/S26	Southern Willow Scrub (disturbed)	LBV/SWFL not observed	1.0
	1428	6.3	Unnamed tributary to the San Luis Rey River	T9S/R3W/S26	Southern Willow Scrub (disturbed)	LBV/SWFL not observed	0.7
Survey Area 4 Total							*1.7*
5	749	6.7	Unnamed tributary to the San Luis Rey River	T9S R3W S35	Southern Willow Scrub	LBV/SWFL not observed	2.4
Survey Area 5 Total							*2.4*

Survey Area	Unique Vegetation Polygon Identifier	Milepost Number	Drainage Name	Public Land Survey System Location (Township/Range/Section)	Vegetation Community	Riparian Bird Occurrence Summary	Approximate Area (acres)
6	533	8.8	San Luis Rey River	T10S/R3W/S11	Southern Cottonwood-Willow Riparian Forest	Two LBVs persistent, presumed breeding pairs (Locations 7 and 17)	4.4
	1274	8.7	Unnamed tributary to the San Luis Rey River	T10S/R3W/S11	Mule Fat Scrub	LBV/SWFL not observed	0.7
	1481	8.7	Unnamed tributary to the San Luis Rey River	T10S/R3W/S11	Southern Cottonwood-Willow Riparian Forest (disturbed)	LBV/SWFL not observed	0.5
	1482	8.7	Unnamed tributary to the San Luis Rey River	T10S/R3W/S11	Southern Cottonwood-Willow Riparian Forest (disturbed)	LBV/SWFL not observed	0.7
Survey Area 6 Total							*6.2*
7	941	9.2	Unnamed tributary to the San Luis Rey River	T10S/R3W/S11	Southern Cottonwood-Willow Riparian Forest	LBV/SWFL not observed	1.6
Survey Area 7 Total							*1.6*
8	983	12.0	Unnamed tributary to Moosa Creek	T10S/R3W/S25	Southern Cottonwood-Willow Riparian Forest	LBV/SWFL not observed	3.4
	984	12.1	Unnamed tributary to Moosa Creek	T10S/R3W/S25	Southern Cottonwood-Willow Riparian Forest	LBV/SWFL not observed	1.9
Survey Area 8 Total							*5.4*
9	986	12.2	Unnamed tributary to Moosa Creek	T10S/R3W/S25	Southern Willow Scrub	LBV/SWFL not observed	0.7
	1534	12.3	Unnamed tributary to Moosa Creek	T10S/R3W/S25	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	0.5
Survey Area 9 Total							*1.2*
10	994	12.5	Unnamed tributary to Moosa Creek	T10S/R3W/S25	Southern Cottonwood-Willow Riparian Forest	LBV/SWFL not observed	2.4
Survey Area 10 Total							*2.4*
11	505	12.8	Unnamed tributary to Moosa Creek	T10S/R3W/S25 and T10S/R3W/S36	Southern Willow Scrub	LBV/SWFL not observed	3.0
	998	12.6	Unnamed tributary to Moosa Creek	T10S/R3W/S25	Southern Willow Scrub (disturbed)	LBV/SWFL not observed	0.9
	999	12.7	Unnamed tributary to Moosa Creek	T10S/R3W/S25	Mule Fat Scrub	LBV/SWFL not observed	0.6
	1012	13.0	Unnamed tributary to Moosa Creek	T10S/R3W/S36	Tamarisk Scrub	LBV/SWFL not observed	0.3
	1013	13.1	Unnamed tributary to Moosa Creek	T10S/R3W/S36	Non-Vegetated Floodplain or Channel	LBV/SWFL not observed	0.1
	1018	13.3	Moosa Creek	T10S/R3W/S36	Southern Willow Scrub	LBV/SWFL not observed	2.8
	1544	12.8	Unnamed tributary to Moosa Creek	T10S/R3W/S36	Mule Fat Scrub	LBV/SWFL not observed	0.3
	1545	13.0	Unnamed tributary to Moosa Creek	T10S/R3W/S36	Mule Fat Scrub	LBV/SWFL not observed	0.6
Survey Area 11 Total							*8.6*
12	488	14.0	Moosa Creek	T11S/R3W/S1	Southern Cottonwood-Willow Riparian Forest	LBV/SWFL not observed	1.3
	1022	13.6	Moosa Creek	T10S/R3W/S36	Southern Willow Scrub	LBV/SWFL not observed	0.4
	1033	14.0	Moosa Creek	T11S/R3W/S1	Southern Coast Live Oak Riparian Forest	LBV persistent, presumed breeding pair (Location 8)	1.3
Survey Area 12 Total							*3.0*

Survey Area	Unique Vegetation Polygon Identifier	Milepost Number	Drainage Name	Public Land Survey System Location (Township/Range/Section)	Vegetation Community	Riparian Bird Occurrence Summary	Approximate Area (acres)
13	1041	14.3	Unnamed tributary to Moosa Creek	T11S/R3W/S1	Southern Willow Scrub (disturbed)	LBV/SWFL not observed	0.3
	1558	14.3	Unnamed tributary to Moosa Creek	T11S/R3W/S1	Southern Cottonwood-Willow Riparian Forest	LBV/SWFL not observed	0.2
Survey Area 13 Total							*0.4*
14	1056	14.7	Unnamed tributary to Moosa Creek	T11S/R3W/S1	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	0.3
	1567	14.7	Unnamed tributary to Moosa Creek	T11S/R3W/S1	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	0.4
	1568	14.7	Unnamed tributary to Moosa Creek	T11S/R3W/S1	Southern Willow Scrub	LBV/SWFL not observed	0.7
Survey Area 14 Total							*1.4*
15	1055	14.8	Not associated with a drainage	T11S/R3W/S1	Southern Willow Scrub	LBV/SWFL not observed	0.1
	1573	14.8	Not associated with a drainage	T11S/R3W/S1	Southern Willow Scrub (disturbed)	LBV/SWFL not observed	0.1
Survey Area 15 Total							*0.2*
16	475	15.2	Unnamed tributary to Moosa Creek	T11S/R3W/S12	Mule Fat Scrub	LBV/SWFL not observed	0.4
	1094	15.1	Unnamed tributary to Moosa Creek	T11S/R3W/S12	Southern Willow Scrub (disturbed)	LBV/SWFL not observed	0.3
Survey Area 16 Total							*0.8*
17	1107	15.3	Unnamed tributary to Moosa Creek	T11S/R3W/S12	Southern Willow Scrub	LBV/SWFL not observed	0.2
Survey Area 17 Total							*0.2*
18	412	22.3	Reidy Canyon Creek	T12S/R2W/S9	Southern Willow Scrub (disturbed)	LBV/SWFL not observed	1.0
	839	22.3	Reidy Canyon Creek	T12S/R2W/S9	Southern Willow Scrub	LBV/SWFL not observed	0.7
Survey Area 18 Total							*1.7*
19	1357	28.2	Unnamed tributary to the San Dieguito River	T12S/R2W/S35	Southern Willow Scrub	LBV/SWFL not observed	0.3
Survey Area 19 Total							*0.3*
20	1302	28.4	Unnamed tributary to the San Dieguito River	T12S/R2W/S35 and T13S/R2W/S2	Southern Coast Live Oak Riparian Forest	LBV/SWFL not observed	2.9
Survey Area 20 Total							*2.9*
21	387	29.2	Unnamed tributary to the San Dieguito River	T13S/R2W/S2	Southern Willow Scrub	LBV/SWFL not observed	0.3
	1155	29.1	Unnamed tributary to the San Dieguito River	T13S/R2W/S2	Southern Willow Scrub	LBV/SWFL not observed	2.2
	1308	29.0	Unnamed tributary to the San Dieguito River	T13S/R2W/S2	Southern Willow Scrub	LBV/SWFL not observed	0.6
	1360	29.1	Unnamed tributary to the San Dieguito River	T13S/R2W/S2	Southern Willow Scrub	LBV/SWFL not observed	1.1
Survey Area 21 Total							*4.2*

Survey Area	Unique Vegetation Polygon Identifier	Milepost Number	Drainage Name	Public Land Survey System Location (Township/Range/Section)	Vegetation Community	Riparian Bird Occurrence Summary	Approximate Area (acres)
22	385	29.3	San Dieguito River	T13S/R2W/S2	Southern Willow Scrub	LBV/SWFL not observed	0.8
	1159	29.5	San Dieguito River	T13S/R2W/S2	Southern Willow Scrub	One LBV transient (Location 1)	0.2
	1363	29.4	San Dieguito River	T13S/R2W/S2	Southern Willow Scrub	LBV/SWFL not observed	0.1
	1365	29.4	San Dieguito River	T13S/R2W/S2	Southern Willow Scrub	LBV/SWFL not observed	0.2
Survey Area 22 Total							*1.3*
23	379	29.6	San Dieguito River	T13S/R2W/S11	Southern Willow Scrub	One LBV persistent, presumed breeding pair (Location 2)	2.5
	380	29.8	San Dieguito River	T13S/R2W/S11	Tamarisk Scrub	LBV/SWFL not observed	0.8
	1413	29.7	San Dieguito River	T13S/R2W/S11	Tamarisk Scrub	LBV/SWFL not observed	0.7
Survey Area 23 Total							*3.9*
24	377	30.0	San Dieguito River	T13S/R2W/S11	Southern Willow Scrub	Four LBVs persistent, presumed breeding pairs (Locations 3, 5, 6, and 13)	10.2
	1374	29.9	San Dieguito River	T13S/R2W/S11	Southern Willow Scrub	LBV/SWFL not observed	2.1
Survey Area 24 Total							*12.3*
25	1203	37.6	Unnamed tributary to Poway Creek	T14S/R2W/S14	Southern Willow Scrub	Willow flycatcher (subspecies undetermined) transient	0.2
Survey Area 25 Total							*0.2*
26	348	38	Poway Creek	T14S/R2W/S23	Southern Willow Scrub	LBV/SWFL not observed	0.5
	349	38	Poway Creek	T14S/R2W/S23	Southern Willow Scrub	LBV/SWFL not observed	0.6
Survey Area 26 Total							*1.2*
27	338	39.1	Beeler Creek	T14S/R2W/S26	Southern Willow Scrub (disturbed)	LBV/SWFL not observed	1.1
Survey Area 27 Total							*1.1*
28	1258	43.3	Carroll Canyon Creek	T15S/R2W/S5	Southern Willow Scrub (disturbed)	One transient LBV (Location 19)	0.1
Survey Area 28 Total							*0.1*
Total							**87.3**

ATTACHMENT C: WILLOW FLYCATCHER SURVEY FORM

Appendix 1. Willow Flycatcher Survey and Detection Form

Always check the U.S. Fish and Wildlife Service Arizona Ecological Services Field Office web site (http://www.fws.gov/southwest/es/arizona/) for the most up-to-date version.

Willow Flycatcher (WIFL) Survey and Detection Form (revised April 2010)

Site Name Pomerado Rd. at Robison, Poway (B28) State CA County San Diego
USGS Quad Name _____ Elevation 144 (meters)
Creek, River, Wetland, or Lake Name Tributary of Penasquitos Creek
Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? *Yes* X *No* ___

Survey Coordinates: Start: E 494115 N 3646285 UTM Datum _____ (See instructions)
Stop: E 494074 N 3646197 UTM Zone _____
If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.
***** Fill in additional site information on back of this page *****

Survey # / Observer(s) (Full Name)	Date (m/d/y) Survey time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N / If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, *Diorhabda* spp.]). If *Diorhabda* found, contact USFWS and State WIFL coordinator	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s) JC Lovio	Date 5-27 2015 Start 1045 Stop 1130 Total hrs .75	1	ϕ	ϕ	N	Singing male.				
Survey # 2 Observer(s) JCL	Date 6-8 2015 Start 0830 Stop 0845 Total hrs .25	ϕ	ϕ	ϕ	N					
Survey # 3 Observer(s) JCL	Date 6-19 2015 Start 0930 Stop 1010 Total hrs .75	ϕ	ϕ	ϕ	N					
Survey # 4 Observer(s) JCL	Date 7-1 2015 Start 0640 Stop 0735 Total hrs 1	ϕ	ϕ	ϕ	N					
Survey # 5 Observer(s) JCL	Date 7-13 2015 Start 0900 Stop 0940 Total hrs .75	ϕ	ϕ	ϕ	N					

Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total Survey Hrs	Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any Willow Flycatchers color-banded? Yes___ No X If yes, report color combination(s) in the comments section on back of form and report to USFWS.
	ϕ	ϕ	ϕ	ϕ	

Reporting Individual John C. Lovio Date Report Completed August 2015
US Fish and Wildlife Service Permit # TE 065741-3 State Wildlife Agency Permit # SC-9745
***Submit** form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.*

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual John Lovio Phone # 619-990-6632
Affiliation Consultant E-mail jlovio@cox.net
Site Name Pomerado Rd. at Robison Blvd., Poway (B28) Date Report Completed Aug. 2015

Did you verify that this site name is consistent with that used in previous years? Yes ____ No ____ Not Applicable X
If site name is different, what name(s) was used in the past?
If site was surveyed last year, did you survey the same general area this year? Yes ____ No ____ If no, summarize below.
Did you survey the same general area during each visit to this site this year? Yes X No ____ If no, summarize below.

Management Authority for Survey Area : Federal____ Municipal/County____ State____ Tribal____ Private X
Name of Management Entity or Owner (e.g., Tonto National Forest) Brookview Retirement Home

Length of area surveyed: 100 (meters)

Vegetation Characteristics: Mark the category that best describes the predominant tree/shrub foliar layer at this site (check one):

X Native broadleaf plants (entirely or almost entirely, > 90% native, includes high-elevation willow)

____ Mixed native and exotic plants (mostly native, 50 - 90% native)

____ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)

____ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.
Salix lasiolepis, Salix gooddingii, Platanus racemosa

Average height of canopy (Do not include a range): 15 (meters)

Attach copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections.
Attach sketch or aerial photo showing site location, patch shape, survey route, location of any WIFLs or WIFL nests detected.
Attach photos of the interior of the patch, exterior of the patch, and overall site; describe any unique habitat features.

Comments (attach additional sheets if necessary)
Migratory stopover in small stretch of good habitat within urban surroundings. Well-preserved, but isolated riparian area.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM N	UTM E	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

ATTACHMENT G: ARROYO TOAD SURVEY REPORT

SAN DIEGO GAS & ELECTRIC COMPANY AND SOUTHERN CALIFORNIA GAS COMPANY'S

PIPELINE SAFETY & RELIABILITY PROJECT
ARROYO TOAD PROTOCOL SURVEY REPORT

SEPTEMBER 2015

PREPARED FOR:

SDGE
A Sempra Energy utility®

SoCalGas
A Sempra Energy utility

PREPARED BY:

INSIGNIA ENVIRONMENTAL

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1 – INTRODUCTION

San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company—herein after referred to as the Applicants—are proposing the Pipeline Safety & Reliability Project (Proposed Project), which involves construction, operation, and maintenance of an approximately 47-mile-long, 36-inch-diameter natural gas transmission pipeline that will carry natural gas from SDG&E's existing Rainbow Metering Station to the pipeline's terminus on Marine Corps Air Station (MCAS) Miramar.

Insignia Environmental (Insignia) and Borcher Environmental Management conducted a protocol-level arroyo toad (*Anaxyrus [=Bufo] californicus*) survey for the Proposed Project in accordance with the United States (U.S.) Fish and Wildlife Service (USFWS) survey protocol for arroyo toad (USFWS 1999). Insignia assessed the potential for arroyo toad to occur within the Biological Resources Survey Area (BRSA), which includes all Proposed Project components plus an approximately 150-foot buffer on each side of these components. In total, the BRSA coveres approximately 2,264 acres. Based on Insignia's initial habitat assessment and vegetation mapping within the BRSA, Borcher Environmental Management conducted arroyo toad habitat assessments within 152.7 acres of riparian and/or wetland habitat in April 2015. Borcher Environmental Management determined that approximately 105.3 acres did not provide sufficient habitat (e.g., sandy substrate, low-gradient stream flow, upland sandy or gravel terrace, or appropriate hydrological regime) for arroyo toad, resulting in a total of approximately 47.4 acres that were included in the protocol-level surveys. Six surveys were conducted in accordance with the protocol from April through June 2015. No arroyo toads (i.e., eggs, tadpoles, metamorphs, or adults) were observed.

This report summarizes the field methods and results of the protocol-level surveys for arroyo toad. Additional surveys in specific areas that had arroyo toad habitat are recommended during non-drought years prior to construction of the Proposed Project.

2 – PROJECT DESCRIPTION

2.0 PROJECT OVERVIEW

The Proposed Project involves construction, operation, and maintenance of an approximately 47-mile-long, 36-inch-diameter natural gas transmission pipeline, as well as permanent aboveground equipment that will be appurtenant to the pipeline. This permanent aboveground equipment includes the following:

- approximately 10 new aboveground mainline valves (MLV) spaced a maximum of five miles apart;
- one pressure-limiting station (i.e., the Rainbow Pressure-Limiting Station);
- three cross-tie facilities (i.e., Line 1600, Line 1601, and Line 2010);
- internal inspection launching and receiving equipment;
- cathodic protection system units with an estimated three rectifiers and three deep-well anode beds at three of the proposed MLVs; and
- an intrusion detection and leak monitoring system.

Construction is scheduled to begin in the first quarter of 2018 and is expected to take 12 to 18 months to complete.[1] The Applicants are required to comply with General Order 112-E in constructing a natural gas transmission pipeline and is choosing to seek a CPCN from the CPUC for the Proposed Project. Federal authorizations will also be required because the Proposed Project route includes land under the jurisdiction of the Department of the Navy/U.S. Marine Corps (USMC). In addition to the CPCN and the authorizations on MCAS Miramar, the Applicants will obtain all required permits for the Proposed Project from federal, state, and local agencies prior to construction.

It is anticipated that the Department of the Navy will serve as the lead federal agency for the Proposed Project under the National Environmental Policy Act because the Proposed Project will require a new easement for rights-of-way (ROWs) through MCAS Miramar. Additionally, if the Department of the Navy determines that the authorization for the construction and operation of the Proposed Project "may affect" species listed under the federal Endangered Species Act (FESA), the lead federal agency will be expected to engage in Section 7 consultation with the USFWS regarding the effects to listed species.

2.1 PROJECT LOCATION AND SETTING

The Proposed Project is located in San Diego County, California, and crosses the cities of San Diego, Escondido, and Poway; unincorporated communities of San Diego County; and federal land. As depicted in Figure 1: Project Overview Map, the potential route begins at SDG&E's existing Rainbow Metering Station in the unincorporated community of Rainbow and terminates just north of State Route (SR-) 52 within MCAS Miramar. Within MCAS Miramar, the route parallels an unpaved aqueduct road for approximately 2.6 miles. The Proposed Project will tie into the existing Line 2010 at its southern terminus.

The Proposed Project will be installed primarily within existing roadways and road shoulders. Approximately 41 miles (87 percent) of the Proposed Project will be installed in urban areas within existing roadways and road shoulders, and the remaining approximately six miles (approximately 13 percent) of the Proposed Project will be installed cross-country. The pipeline will be installed approximately 42 inches below the ground surface using conventional trenching methods. The pipeline alignment will cross several major roads, including Interstate (I-) 15, and a number of water features, including Rainbow Creek, the San Luis Rey River, Moosa Creek, San Dieguito River/Lake Hodges, Escondido Creek, Poway Creek, Beeler Creek, Carroll Canyon Creek, and Rose Creek. At the crossings of the San Luis Rey River and Lake Hodges, horizontal directional drilling and horizontal boring methods will be implemented to minimize impacts to riparian habitat and water quality. Horizontal boring may be used to install the pipeline beneath other waterbodies, which will allow the pipeline to be installed without disturbing the surface of the area being crossed.

[1] The construction start date is based on receiving a Certificate of Public Convenience and Necessity (CPCN) from the California Public Utilities Commission (CPUC) by 2017 and the issuance of other required permits by late 2017 or early 2018.

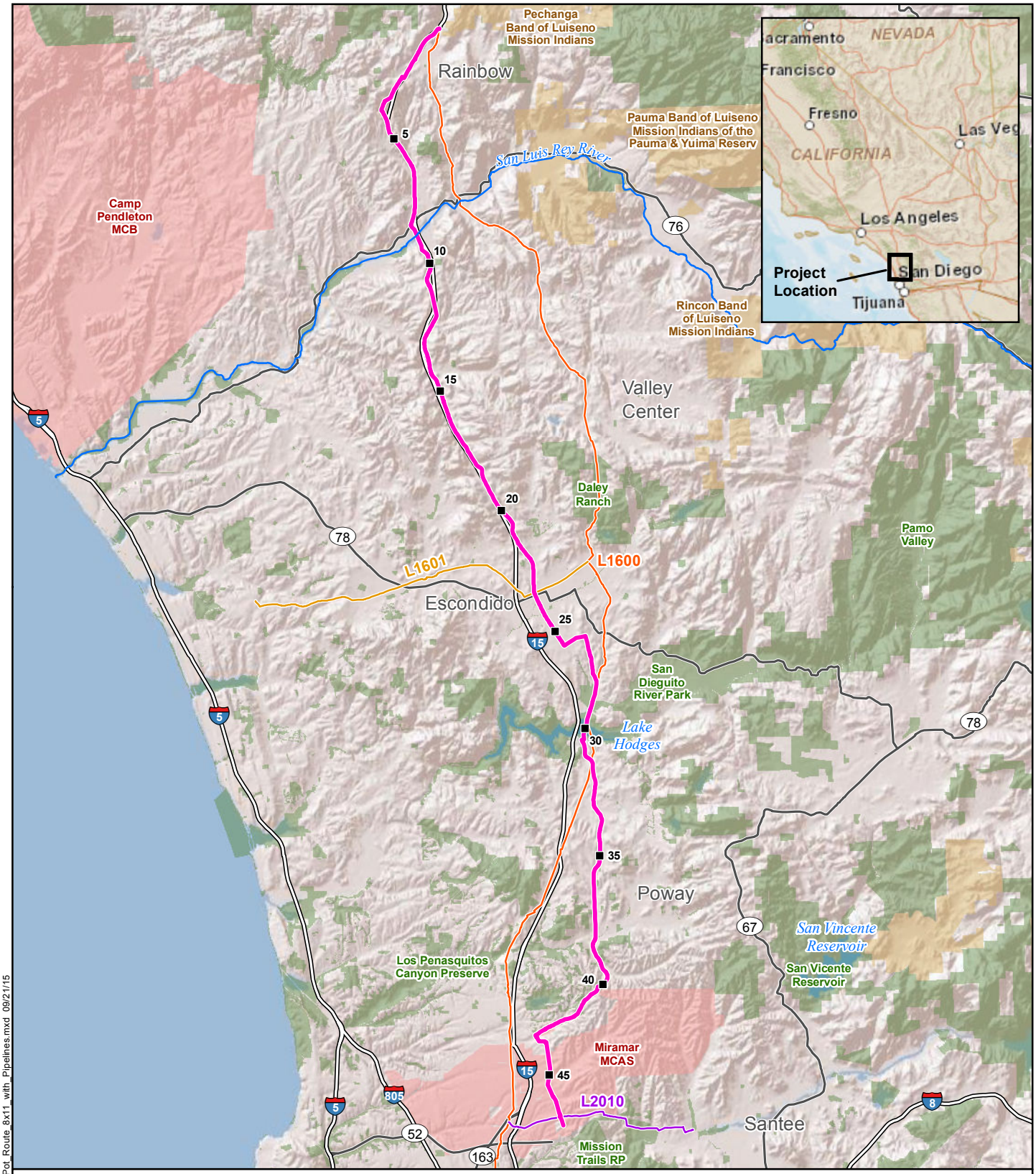

Figure 1: Project Overview Map **Pipeline Safety & Reliability Project**

- Milepost
- Proposed Project Route
- Line 1601
- Line 1600
- Line 2010
- Interstate
- Major Road/State Highway
- Parks
- Military
- Bureau of Indian Affairs

1:320,000
0 2 4 Miles

\MXDs\PEA\PD\Fig_3_1_Pot_Route_8x11_with_Pipelines.mxd 09/21/15

3 – REGULATORY FRAMEWORK

3.0 FEDERAL ENDANGERED SPECIES ACT OF 1973

Because the arroyo toad is federally listed as endangered, the Proposed Project will need to comply with the FESA in order to address any potential impacts to this species. The FESA protects plants and wildlife that are listed as endangered or threatened by the USFWS and the National Oceanic and Atmospheric Administration's (NOAA's) National Marine Fisheries Service. The FESA prohibits take of endangered wildlife without USFWS authorization, where "take" is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (16 U.S. Code §§ 1532(19), 1538).

Under Section 7 of the FESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed species (including plants) or its critical habitat. Through consultation and the issuance of a Biological Opinion, the USFWS may issue an incidental take statement, allowing take of the species that is incidental to another authorized activity, provided that the action will not jeopardize the continued existence of the species.

4 – METHODOLOGY

4.0 BACKGROUND RESEARCH

Background data on the distribution and abundance of arroyo toad within the BRSA were obtained through a literature review of publicly available spatial data in ArcGIS, including the California Natural Diversity Database (CNDDB) (CDFW 2015)—through which a search was conducted for the five miles[2] surrounding the Proposed Project, as well as special-status species listed as occurring within MCAS Miramar (USMC 2014). Reference materials were also utilized, such as wildlife occurrence databases and local guides.

In addition, the USFWS Critical Habitat Portal (USFWS 2015) was searched to determine if arroyo toad critical habitat was designated within the BRSA. The USFWS Critical Habitat Portal provides geographic information system data showing the location of all final designated critical habitat in San Diego County.

4.1 HABITAT ASSESSMENT

A Borcher Environmental Management biologist with in-depth experience with arroyo toad biology and survey techniques conducted an initial habitat assessment on approximately 152.7 acres of wetland and riparian communities within the BRSA that could support the arroyo toad.

[2] The use of a five-mile buffer is intended to capture all known occurrences within the vicinity and surrounding areas of the Proposed Project. A larger buffer typically includes many species that will not actually occur within the Proposed Project area, and a smaller buffer may omit species with larger geographic ranges from the potential to occur lists.

Habitat suitability was determined based on the presence of primary constituent elements (USFWS 2005), including the following:

- sandy or gravel substrate;
- adjacent, open, sandy, or gravel terraces;
- braided channels;
- a hydrological regime that provides extended periods of surface water to complete the breeding cycle;
- low-gradient stream flow sections;
- sparsely vegetated sand or gravel terraces;
- a flowing regime that allows for scouring and sand deposition;
- few or no non-native wildlife species (e.g. crustaceans, game fish, and bullfrogs);
- few or no dense stands of non-native plants (giant reed [*Arundo donax*]); and
- the lack of artificial barriers that prevent toad movement or flooding.

The biologist determined that approximately 105.3 acres assessed do not provide suitable habitat for the arroyo toad. Although the habitat assessment and focused surveys are intended to detect breeding habitat, areas excluded from surveys also do not likely support arroyo toad non-breeding activities (e.g., foraging or dispersal). For example, some drainages contained either a rocky, rip-rap, or concrete channel bottom; were severely incised with no terraces; were isolated in urban areas between underground storm water systems; or did not contain channels and supported only marsh habitat. These areas are shown in Photographs 1 through 4 of Attachment B: Arroyo Toad Survey Photographs.

The San Dieguito River / Lake Hodges portion of the BRSA did not exhibit a noticeable channel because this waterbody is a currently dry, completely vegetated lake bed with altered hydrology caused by the presence of a downstream dam. The San Dieguito River / Lake Hodges portion of the BRSA had no visible channel or sandy substrate, instead consisting of thick, perennial marsh vegetation, which precludes the presence of arroyo toad. A natural hydrological regime and sand deposition are essential to support arroyo toad populations. As a result of the habitat assessment, surveys for this species were conducted at 11 separate survey sites comprising approximately 47.4 acres of suitable habitat.

Sites that were selected for protocol surveys are within the Santa Margarita, San Luis Rey, San Dieguito, and Los Peñasquitos watersheds. All four of these watersheds are known to support arroyo toad populations, contain designated critical habitat, or were identified as supporting good-quality arroyo toad habitat (USFWS 2005, USGS 2005). Each of the 11 survey sites are described in detail in the following section.

4.2 PROTOCOL SURVEYS

Surveys for the arroyo toad were conducted in accordance with the USFWS protocol, and were conducted as follows:

- At least six surveys were conducted during the breeding season, which generally occurs from March through July, with at least seven days between surveys.
- At least one survey was conducted per month during April, May, and June.

- Surveys included both daytime and nighttime components conducted within the same 24-hour period.

Surveys performed in accordance with USFWS survey guidelines do not require a recovery permit under Section 10(a)(1)(A) of the FESA.

A total of 11 survey sites were surveyed on six separate occasions between April 8 and June 25, 2015, as detailed in Table 1: Arroyo Toad Protocol Survey Schedule. Survey sites were grouped by geographic location, and the surveys included a daytime and nighttime component per the survey protocol. Survey Sites 1 through 6 are situated between the community of Rainbow and Gopher Canyon Road, and are included in survey group "a." Survey Sites 7 through 11 are located between Gopher Canyon Road and the southern portion of the City of Poway, and are included in survey group "b." Table 1: Arroyo Toad Protocol Survey Schedule includes a complete schedule for each survey by geographic area. Survey areas are shown on Attachment A: 2015 Arroyo Toad Survey Sites. Photographs of each survey site are shown in Attachment B: Arroyo Toad Survey Photographs.

4.3 SURVEY LIMITATIONS

Arroyo toad surveys were conducted within the BRSA during drought conditions. Between October 1, 2014 and April 26, 2015, the area experienced approximately 66 percent of the normal rainfall, according to the San Diego Lindberg Field station (NOAA 2015), and temperatures were four to eight degrees above normal from January to April 2015 (U.S. Climate Data 2015). The USFWS (2014) identifies drought as a high threat to this species due to the possibility that it reduces foraging and breeding success and alters the processes that create and maintain suitable breeding habitat. The USFWS cautions that negative surveys during a year of severe weather, including drought, can be inconclusive. Additional surveys will be conducted within specific habitat areas, as discussed in Section 5.2 Protocol Surveys, during normal or above-normal rainfall years to conclusively determine presence/absence of arroyo toad within the BRSA.

5 – RESULTS

5.0 CNDDB OCCURRENCE DATA

Two CNDDB occurrences of arroyo toad have been documented within 0.25 mile of the BRSA and are associated with the San Luis Rey River. Within five miles of the BRSA, six occurrences of arroyo toad have been documented in the CNDDB. Of these six occurrences, three are upstream of the BRSA along the San Luis Rey River, one is in a tributary to the San Luis Rey River downstream of the BRSA, one is located along Pala Creek, east of the BRSA, and one is located along a tributary to the San Dieguito River north of Lake Hodges. All CNDDB occurrences within five miles are shown on Figure A-2: CNDDB Occurrences for Special-Status Wildlife Species in the Biological Resources Technical Report (Insignia Environmental 2015).

Table 1: Arroyo Toad Protocol Survey Schedule

Biologists	Survey Type/#	Geographic Area	Dates	Weather/Visibility
Andrew Borcher and John Lovio	Habitat Assessment	San Diego County line to SR-78	April 2, 2015	Mostly sunny, 65 to 74 degrees Fahrenheit (˚F), 1- to 4-mile-per-hour (mph) wind
Andrew Borcher and John Lovio	Habitat Assessment	SR-78 to the southern portion of the City of Poway	April 3, 2015	Mostly sunny, 60 to 72˚F, 1- to 4-mph wind
Andrew Borcher and Eric Nicholson	Survey 1a	Community of Rainbow to Gopher Canyon	April 9, 2015	Clear, 76 to 58˚F, 4- to 12-mph wind
Andrew Borcher and Eric Nicholson	Survey 1b	Gopher Canyon to the southern portion of the City of Poway	April 10, 2015	Clear, 73 to 62˚F, 4- to 12-mph wind
Andrew Borcher and K. Kilpatrick	Survey 2a	Community of Rainbow to Gopher Canyon	April 23, 2015	Overcast, 67 to 61˚F, up to 3-mph wind
Andrew Borcher, Kevin Kilpatrick, and Rachel Borcher	Survey 2b	Gopher Canyon to the southern portion of the City of Poway	April 24, 2015	Mostly clear, 67 to 61˚F, up to 2-mph wind
Andrew Borcher and Rachel Borcher	Survey 3a	Community of Rainbow to Gopher Canyon	May 8, 2015	Partly cloudy, 70 to 56˚F, up to 4-mph wind
Andrew Borcher and Rachel Borcher	Survey 3b	Gopher Canyon to the southern portion of the City of Poway	May 10, 2015	Clear, 73 to 62˚F, no wind
Andrew Borcher and Rachel Borcher	Survey 4a	Gopher Canyon to the southern portion of the City of Poway	May 18, 2015	Partly cloudy, 70 to 59˚F, up to 5-mph wind
Andrew Borcher and Rachel Borcher	Survey 4b	Community of Rainbow to Gopher Canyon	May 19, 2015	Clear, 74 to 57˚F, up to 8-mph wind
Andrew Borcher and Rachel Borcher	Survey 5a	Gopher Canyon to the southern portion of the City of Poway	June 10, 2015	Overcast, 71 to 64˚F, up to 4-mph wind
Andrew Borcher and Rachel Borcher	Survey 5b	Community of Rainbow to Gopher Canyon	June 11, 2015	Overcast, 76 to 67˚F, up to 8-mph wind

Biologists	Survey Type/#	Geographic Area	Dates	Weather/Visibility
Andrew Borcher and Rachel Borcher	Survey 6a	Community of Rainbow to Gopher Canyon	June 23, 2015	Clear, 84 to 68˚F, up to 4-mph wind
Andrew Borcher and Rachel Borcher	Survey 6b	Gopher Canyon to the southern portion of the City of Poway	June 24, 2015	Clear, 85 to 65˚F, up to 10-mph wind

5.1 CRITICAL HABITAT

The USFWS has designated critical habitat for the arroyo toad within 61.2 acres of the BRSA. All of the critical habitat for arroyo toad within the BRSA is located along the San Luis Rey River. Additional critical habitat within 0.5 mile of the BRSA has been designated east of the BRSA along the San Dieguito River/Lake Hodges. As mentioned in Section 4.1 Habitat Assessment, the portion of the San Dieguito River/Lake Hodges within the BRSA did not exhibit suitable habitat for arroyo toad due to the presence of thick, perennial vegetation, and the lack of sandy substrate associated with a stream channel. Critical habitat areas for arroyo toad are shown on Figure A-7: Designated Critical Habitat of the Biological Resources Technical Report (Insignia Environmental 2015).

5.2 PROTOCOL SURVEYS

No arroyo toad individuals or their sign (e.g., vocalizations, breeding calls, egg deposition sites etc.) were observed during protocol surveys for this species. Amphibians detected during the surveys included western toad (*Anaxyrus boreas*), American bullfrog (*Lithobates catesbeianus*), and Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*). Observations for each site are detailed in the following subsections.

5.2.0 Survey Site 1 (Rainbow Creek)

Survey Site Description

Survey Site 1 is located south of the community of Rainbow and includes a sandy channel with adjacent soft soil terraces, as show in Photographs 5 and 6 of Attachment B: Arroyo Toad Survey Photographs. This channel drains agricultural areas and nurseries, and undeveloped upland slopes to the south and east into Sandia Creek approximately five miles to the west. Sandia Creek is a direct tributary into the Santa Margarita River. Survey Site 1 consists of braided channels that supported surface flow during every survey. Water flowed from east to west underneath Old Highway 395 through large box culverts and a corrugated steel culvert. The channel margins consisted of vegetated patches of emergent wetland and mule fat (*Baccharis salicifolia*) scrub. Some riparian trees, including mature western sycamore (*Platanus racemosa*) and coast live oak (*Quercus agrifolia*), occur in the greater floodplain east of Old Highway 395.

Survey Results

Survey Site 1 sustained unnatural surface flow, and is in proximity to urban areas and nurseries, resulting in the presence of many non-native plants and wildlife. For example, mosquito fish (*Gambusia affinis*), freshwater crayfish (*Procambarus* sp.), and American bullfrog were all observed within the channel. An American bullfrog tadpole within Survey Site 1 is shown in Photograph 7 of Attachment B: Arroyo Toad Survey Photographs. The presence of certain wildlife species, such as crayfish and bullfrogs, reduces the potential for arroyo toad to be breed in this drainage because these species predate on arroyo toad eggs, larvae, and juveniles. The channel also supported Baja California treefrog tadpoles and adults, as shown in Photograph 8 of Attachment B: Arroyo Toad Survey Photographs. No other amphibians were detected.

Although the drainage had some elements required for arroyo toad breeding it is at the top of the watershed and appears to be supported by an unnatural hydrological regime. This site has no documented CNDDB occurrences of arroyo toad and no critical habitat has been designated this far upstream. No further surveys are recommended.

5.2.1 Survey Site 2 (San Luis Rey River)

Survey Site Description

Survey Site 2 is located within the San Luis Rey River between I-15 and Old Highway 395. The wide, sandy, and braided channel is densely vegetated with southern cottonwood willow riparian forest, as shown in Photograph 9 of Attachment B: Arroyo Toad Survey Photographs. With the exception of one small pond that measures less than 20 feet in circumference, no surface water was observed within Survey Site 2 during any of the surveys. The lack of surface water is likely due to the drought and the man-made impoundments east of I-15. Evidence of surface flow was observed after rain events between surveys, especially west of the survey site underneath Old Highway 395, as shown in Photograph 10 of Attachment B: Arroyo Toad Survey Photographs. The floodplain was very densely vegetated and does not to appear to have flooded in several years.

Survey Results

Two western toads were observed foraging on the gravel access road to the north and above the channel on the sixth survey, as shown in Photograph 11 of Attachment B: Arroyo Toad Survey Photographs. No other amphibians were detected.

The San Luis Rey River is known to support arroyo toad, including a population approximately 1.1 miles upstream that was observed in 2005 by Andrew Borcher during unrelated surveys. The survey site supports high-quality arroyo toad habitat and will be resurveyed during a normal or better-than-normal rainfall year to definitively determine the species' presence or absence.

5.2.2 Survey Site 3 (Champagne Lakes RV Resort)

Survey Site Description

Survey Site 3 is mostly located on and adjacent to the Champagne Lakes RV Resort and includes a small (less than six feet wide), sandy, braided channel. The drainage consisted of surface flow on and off during the six surveys. Water that flowed east to west and north to south was likely created by upstream agriculture and pond releases. Artificial fishing ponds occur upstream on the Champagne Lakes RV Resort grounds. Flow through this site eventually travels southwest into a direct tributary to the San Luis Rey River. The floodplain is somewhat contained with a gradual slope above unvegetated soft soil and sandy terraces, as shown in Photograph 12 of Attachment B: Arroyo Toad Survey Photographs. Coast live oak trees occur above the terraces on both sides of the channel. The lack of streamside vegetation and understory is likely due to mechanical removal by humans, which biologists witnessed within the resort during the surveys. Survey Site 3 also includes a small tributary on the east side of Old Highway 395 that flows underneath the highway and into the resort drainage. This drainage appeared more ephemeral in nature, but also supported some willow (*Salix* spp.) trees and mule fat.

Survey Results

Baja California treefrog tadpoles and adults were observed in the pools in the channel, especially upstream near the road culverts. No other amphibians were detected. Although the drainage had some elements required for arroyo toad breeding, it appeared to be created, maintained, and supported by an unnatural hydrological regime. This site has no documented CNDDB occurrences of arroyo toad, and no critical habitat has been designated at this location. As a result, it is not likely this site supports arroyo toad. No further surveys are recommended.

5.2.3 Survey Site 4 (Camino Del Rey North)

Survey Site Description

Survey Site 4 is located south of the Champagne Lakes RV Resort and north of Camino Del Rey. This section of the channel flows north to south, and is fed by the drainage that flows through the Champagne Lakes RV Resort to the northeast (i.e., Survey Site 3). This site consists of a sandy channel bottom that is mostly densely vegetated with mule fat scrub and scattered willow trees, as shown in Photograph 13 of Attachment B: Arroyo Toad Survey Photographs. The terraces consist of a partially gravel substrate, but are somewhat confined by I-15 to the west or Old Highway 395 to the east. The channel eventually flows into concrete box culverts under Camino Del Rey to the south. The culverts continue under I-15 and into a tributary to the San Luis Rey River. Although no surface water was observed during surveys, biologists observed evidence of recent flow caused by a rain event between surveys.

Survey Results

No amphibians were detected during the surveys. This channel is at the top of the watershed and is supported mostly by urban and agricultural runoff. The channel structure is generally too confined and controlled to be appropriate for arroyo toad. Furthermore, this site has no documented CNDDB occurrences of arroyo toad, and no critical habitat has been designated at this location. No further surveys are recommended.

5.2.4 Survey Site 5 (Camino Del Rey South)

Survey Site Description

Survey Site 5 consists of a portion of Moosa Creek located south of Camino Del Rey. As shown in Photograph 14 of Attachment B: Arroyo Toad Survey Photographs, Survey Site 5 has a sandy and sometimes rocky, braided channel. The channel margins support mule fat scrub and scattered willow trees. This channel flows south to north, and drains a relatively large area that includes Gopher Canyon, as well as residential, agricultural, and undeveloped areas to the south and east. The floodplain of Moosa Creek at Survey Site 5 is somewhat confined by I-15 to the west and Old Highway 395 to the east. There is also a man-made impoundment of Moosa Creek within the campground that occurs upstream between Survey Site 5 and Survey Site 6. Moosa Creek eventually flows north into concrete box culverts under Camino Del Rey. The culverts continue under I-15 and into a tributary to the San Luis Rey River. Although no surface water was observed during surveys, biologists observed evidence of recent flow caused by a rain event between surveys.

Survey Results

No amphibians were detected at Survey Site 5 during the surveys. Due to the confinement of the channel and the upstream impoundment, it is not likely that this drainage could support arroyo toad. This site has not been designated as critical habitat, and no CNDDB occurrences of arroyo toad have been made at this site. No further surveys are recommended.

5.2.5 Survey Site 6 (Gopher Canyon)

Survey Site Description

Survey Site 6 consists of a portion of Moosa Creek located between Gopher Canyon Road to the south and the campground impoundment to the north. Survey Site 6 eventually flows into Survey Site 5. This segment of Moosa Creek drains a relatively large area that includes Gopher Canyon, as well as residential, agricultural, and undeveloped areas to the east. This segment is characterized by braided, sandy channel with dense riparian vegetation, including willow and oak trees, as shown in Photograph 15 of Attachment B: Arroyo Toad Survey Photographs. The hydrological regime is unnatural due to upstream impoundments in the golf course, and other flood control systems associated with the residential and agricultural developments. This channel did consist of surface flow for the first three surveys, but was dry for the remaining three surveys. Soft soil and sand terraces occur east of Old Highway 395. However, the terraces are densely covered with vegetation and are unlikely to be scoured again due to the flood control systems and impoundments upstream.

Survey Results

Baja California treefrog adults and tadpoles were observed at this location. No other amphibians were detected. It is not likely this channel could support arroyo toad due to an unnatural hydrological regime and lack of an open floodplain. This site has not been designated as critical habitat, and no CNDDB occurrences of arroyo toad have been made at this site. No further surveys are recommended.

5.2.6 Survey Site 7 (Sandy Hill Road)

Survey Site Description

Survey Site 7 is located adjacent to an undeveloped field between two large ranches near Sandy Hill Road. This site is downstream from the Welk Resort and upstream from Gopher Canyon, and drains north into Survey Site 6. The drainage is characterized by a wide (up to 15 feet) sandy channel that supports patches of riparian vegetation and oak woodland, as shown in Photograph 16 of Attachment B: Arroyo Toad Survey Photographs. Although the terrace areas are mostly compacted soil, some soft soil, gravel, and sand do occur. The floodplain is much wider south of Survey Site 7 before reaching the Welk Resort. No surface water was ever observed during the surveys. This channel drains a large area that includes the Welk Resort and surrounding undeveloped hillsides to the south. Natural flooding is at least partially regulated by the impoundments on the Welk Resort golf course that are upstream of the channel. This channel has portions that are undeveloped and undisturbed, especially when compared to most of the other drainages in the area.

Survey Results

Western toads were observed on several occasions foraging on both sides of the channel in the adjacent fields and gravel roads, as shown in Photograph 17 of Attachment B: Arroyo Toad Survey Photographs. No other amphibians were detected. Although this drainage is now isolated from a larger stream system, it likely represents what the drainage may have historically looked like in the area. There is a wide channel that appears to flood on occasion, and there is evidence of sand deposition. The presence of arroyo toad cannot be ruled out completely, and as a result, there is low potential for arroyo toad to occur within Survey Site 7. Surveys will be conducted during a normal or better-than-normal rainfall year to definitively determine the species' presence or absence.

5.2.7 Survey Site 8 (Welk Resort)

Survey Site Description

Survey Site 8 is located on the Welk Resort between the golf course and Old Highway 395. This drainage is characterized by a sandy channel bottom with gradually sloping banks vegetated with mule fat, coast live oak, and eucalyptus trees (*Eucalyptus* spp.), as shown in Photograph 18 of Attachment B: Arroyo Toad Survey Photographs. This site drains portions of the Welk Resort, and residential areas and undeveloped slopes to the east and south. The drainage is confined by the Welk Resort to the east and Old Highway 395 to the west. Although no surface water was observed during surveys, biologists observed evidence of recent flow caused by a rain event between surveys. This site drains into Survey Site 7 to the north.

Survey Results

No amphibians were detected. This drainage was likely created during the construction of the Welk Resort or Old Highway 395. Due to its confinement, lack of a terraced floodplain, and controlled flow, it does not likely support arroyo toad. This site has not been designated as critical habitat, and no CNDDB occurrences of arroyo toad have been made at this site. No further surveys are recommended.

5.2.8 Survey Site 9 (Bear Valley Creek)

Survey Site Description

Survey Site 9 is located in the southern portion of the City of Escondido that is adjacent to Bear Valley Road. The drainage contains braided sandy channels and scattered pools that are highly degraded, as shown in Photographs 19 and 20 of Attachment B: Arroyo Toad Survey Photographs. The site is bound by Bear Valley Road and residential development, resulting in several flood control systems, debris and trash, and dense patches of non-native vegetation and non-native wildlife (e.g., crayfish), as shown in Photograph 21 of Attachment B: Arroyo Toad Survey Photographs. The presence of certain wildlife species, such as crayfish, reduces the potential for arroyo toad to be breed in this drainage because these species predate on arroyo toad eggs, larvae, and juveniles. Surface flow and polluted pools (i.e., those with debris, oil, or cut vegetation within them) were observed in several locations throughout the surveys. The drainage is supported entirely by urban runoff, which eventually flows downstream into Kit Carson Park, and then into the San Dieguito River floodplain to the south.

Survey Results

Baja California treefrogs were detected in several locations. No other amphibians were detected. Due to its unnatural hydrological regime, urban confinement, and highly disturbed nature, it is unlikely this site could support arroyo toad. This site has not been designated as critical habitat, and no CNDDB occurrences of arroyo toad have been made at this site. No further surveys are recommended.

5.2.9 Survey Site 10 (Kit Carson)

Survey Site Description

Survey Site 10 is located in Kit Carson Park, downstream from Survey Site 9. This drainage is characterized by a sandy and soft soil channel bottom and is surrounded by dense riparian vegetation, as shown in Photograph 22 of Attachment B: Arroyo Toad Survey Photographs. The vegetation includes dense stands of willow trees with an understory dominated by emergent wetland, poison oak (*Toxicodendron diversilobum*), and non-native plants. Surface flow and small pools were observed in several locations. Flood control systems occur both upstream and downstream. This site drains mostly urban runoff south into the San Dieguito River floodplain.

Survey Results

Baja California treefrogs were observed. No other amphibians were detected. Small pools also supported non-native crayfish and mosquito fish. The presence of certain wildlife species, such as crayfish, reduces the potential for arroyo toad to be breed in this drainage because these species predate on arroyo toad eggs, larvae, and juveniles. It is also unlikely that this site supports arroyo toad because of its unnatural hydrological regime, lack of open terraces, and highly disturbed nature. This site has not been designated as critical habitat, and no CNDDB occurrences of arroyo toad have been made at this site. No further surveys are recommended.

5.2.10 Survey Site 11 (Beeler Creek)

Survey Site Description

Survey Site 11 is within Beeler Creek, which is located in the southern portion of the City of Poway and within Beeler Canyon. The drainage is characterized as a rocky and soft soil channel with a wide floodplain that includes rocky and gravelly terraces, as shown in Photographs 23 and 24 of Attachment B: Arroyo Toad Survey Photographs. The drainage supports dense stands of freshwater marsh and southern willow scrub within and adjacent to the channel. The channel flows northwest into underground concrete box culverts at the intersection of Scripps Poway Parkway and Pomerado Road. Beeler Creek drains undeveloped, residential, and commercial areas and eventually flows into Poway Creek to the north. Poway Creek is a tributary to Peñasquitos Creek. Surface flow within Beeler Creek was present throughout all six surveys. This channel drains a large area—including Beeler Canyon—north of the survey site, making it possible that the presence of water was at least partially natural. Due to the lack of non-native vegetation and the structure of the native riparian vegetation, it appears the site was once restored and is likely still maintained.

Survey Results

The site supported a large population of Baja California treefrogs, especially in the wide vegetated area adjacent to the concrete box culverts. Photograph 25 of Attachment B: Arroyo Toad Survey Photographs shows a Baja California treefrog observed within Survey Site 11. No other amphibians were detected. Pools upstream from the survey site also supported crayfish. Historically, arroyo toads have not been documented within Beeler Creek, according to the CNDDB. Although the site supports a semi-natural hydrological regime, the area does not receive high sand deposition. In general, the channel and floodplain are very rocky, and the terraces contain rocks and hard soil lacking appropriate habitat for arroyo toad. No further surveys are recommended.

6 – DISCUSSION AND CONCLUSION

With the exception of the Survey Site 2 (San Luis Rey River) and Survey Site 11 (Beeler Creek), the survey sites occur in drainage systems that are highly affected by their urban surroundings. Most drainages consist of impoundments and other flood control systems upstream and downstream, preventing natural flooding, scouring, and sand deposition. A natural hydrological regime and sand deposition are essential to support arroyo toad populations, especially in smaller drainages higher in the watersheds. The presence of flood control systems also prevents the movement of arroyo toads upstream and downstream, making recovery of this species in areas where it historically occurred but no longer, nearly impossible.

There are two sites where additional surveys will be conducted during a year of normal or better-than-normal rainfall—Survey Site 2 (San Luis Rey River) and Survey Site 7 (Sandy Hill Road) —to verify that the negative survey results are not related to the drought conditions. Survey Site 2 occurs in the San Luis Rey River, which is known to support arroyo toad. This site has appropriate habitat and occurs approximately 1.1 miles downstream from a historically known population.

Survey Site 7 represents a much lower-quality potential habitat for arroyo toad than the San Luis Rey River. However, out of all other sites surveyed, it had the widest sandy channel bottom, the most accessible bench areas, and was one of the least disturbed. There are no historical records of arroyo toad in this drainage system, but the site does provide potential habitat.

For all other survey sites, no additional arroyo toad surveys are recommended. These sites are generally highly disturbed and/or do not support appropriate arroyo toad habitat.

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ATTACHMENT A: 2015 ARROYO TOAD SURVEY SITES

Attachment A: 2015 Arroyo Toad Survey Sites Map 1 of 9

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace
- MCAS Miramar
- Biological Resource Survey Area
- ARTO Survey Site

Note: Survey route not shown due to large map scale. Meandering transects were walked within suitable habitat during protocol surveys.

- Please note survey route not shown due to large map scale, meandering transects were walked within suitable habitat during protocol surveys

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Attachment A: 2015 Arroyo Toad Survey Sites Map 2 of 9 — **Pipeline Safety & Reliability Project**

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace
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- Biological Resource Survey Area
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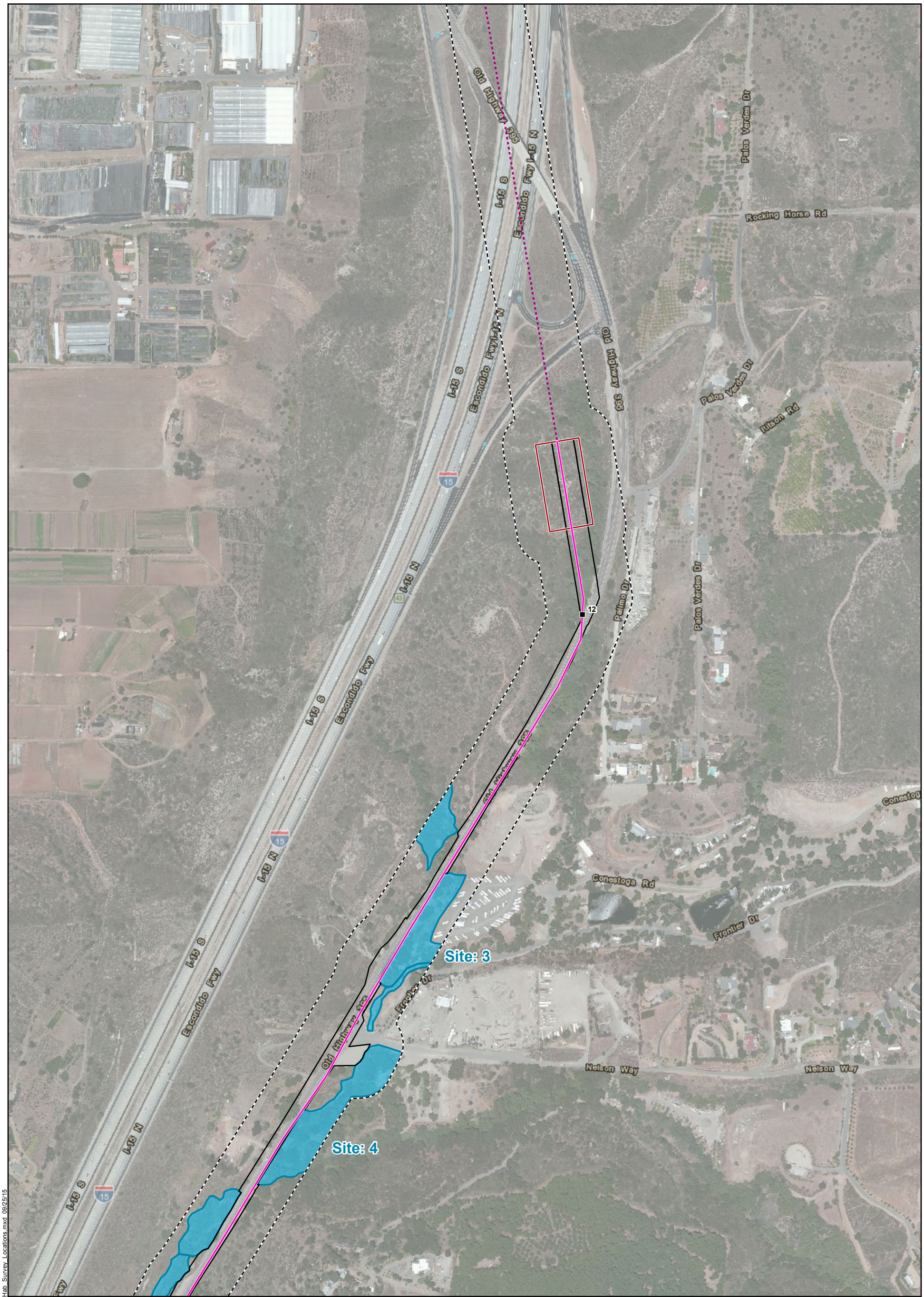

Attachment A: 2015 Arroyo Toad Survey Sites Map 3 of 9

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

- MCAS Miramar
- Biological Resource Survey Area
- ARTO Survey Site

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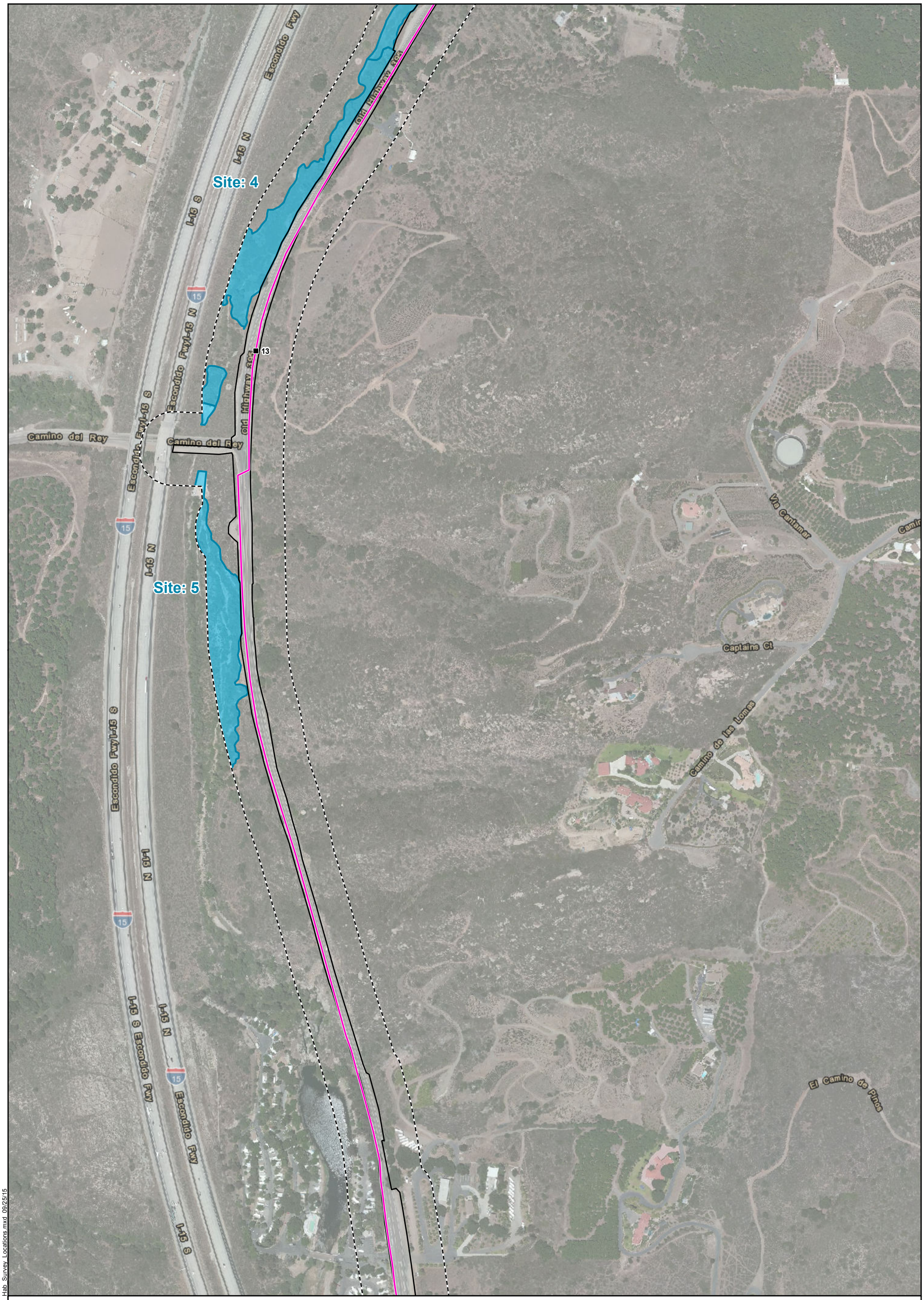

Attachment A: 2015 Arroyo Toad Survey Sites Map 4 of 9

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
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- Workspace

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Site: 6

Site: 7

Escondido Fwy I-15 N

I-15 S

I-15 N

Gopher Canyon Rd

Hollyhill Rd

Old Highway 395

Circle R Dr

Circle R Course Ln

Circle R Valley Ln

Circle R Creek Ln

Circle R Greens Dr

Circle R View Ln

Old Castle Rd

Champagne Blvd

Leisure Ln

Indian Hill Rd

Indian Hill Pl

Sandy Hill Dr

Old Castle Pl

CLORF

14

15

Attachment A: 2015 Arroyo Toad Survey Sites Map 5 of 9

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

- MCAS Miramar
- Biological Resource Survey Area
- ARTO Survey Site

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Attachment A: 2015 Arroyo Toad Survey Sites Map 6 of 9

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace

- MCAS Miramar
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- ARTO Survey Site

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Attachment A: 2015 Arroyo Toad Survey Sites Map 7 of 9

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
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- Workspace

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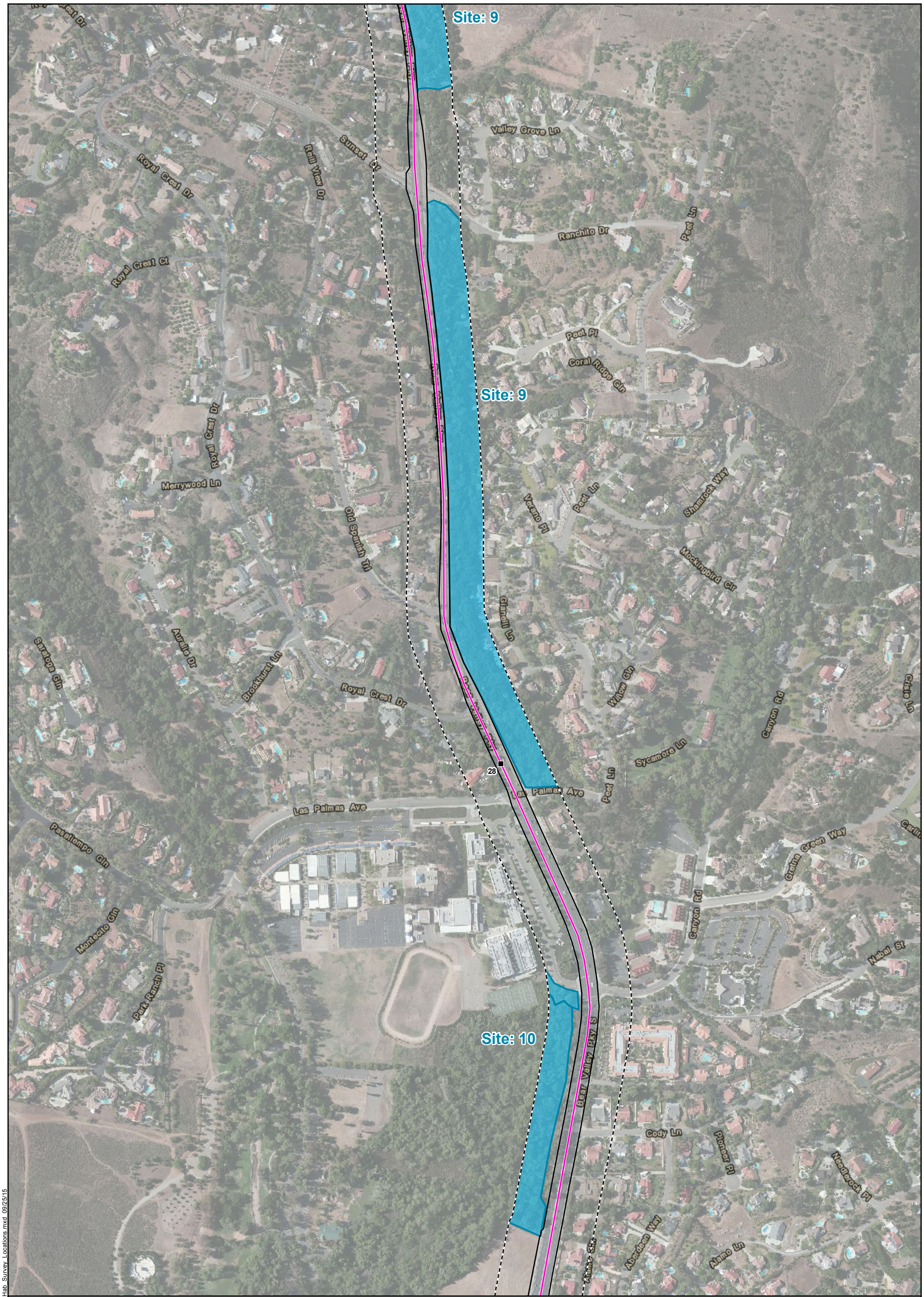

Attachment A: 2015 Arroyo Toad Survey Sites Map 8 of 9

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
- Horizontal Directional Drill Workspace
- Laydown Area
- Workspace
- MCAS Miramar
- Biological Resource Survey Area
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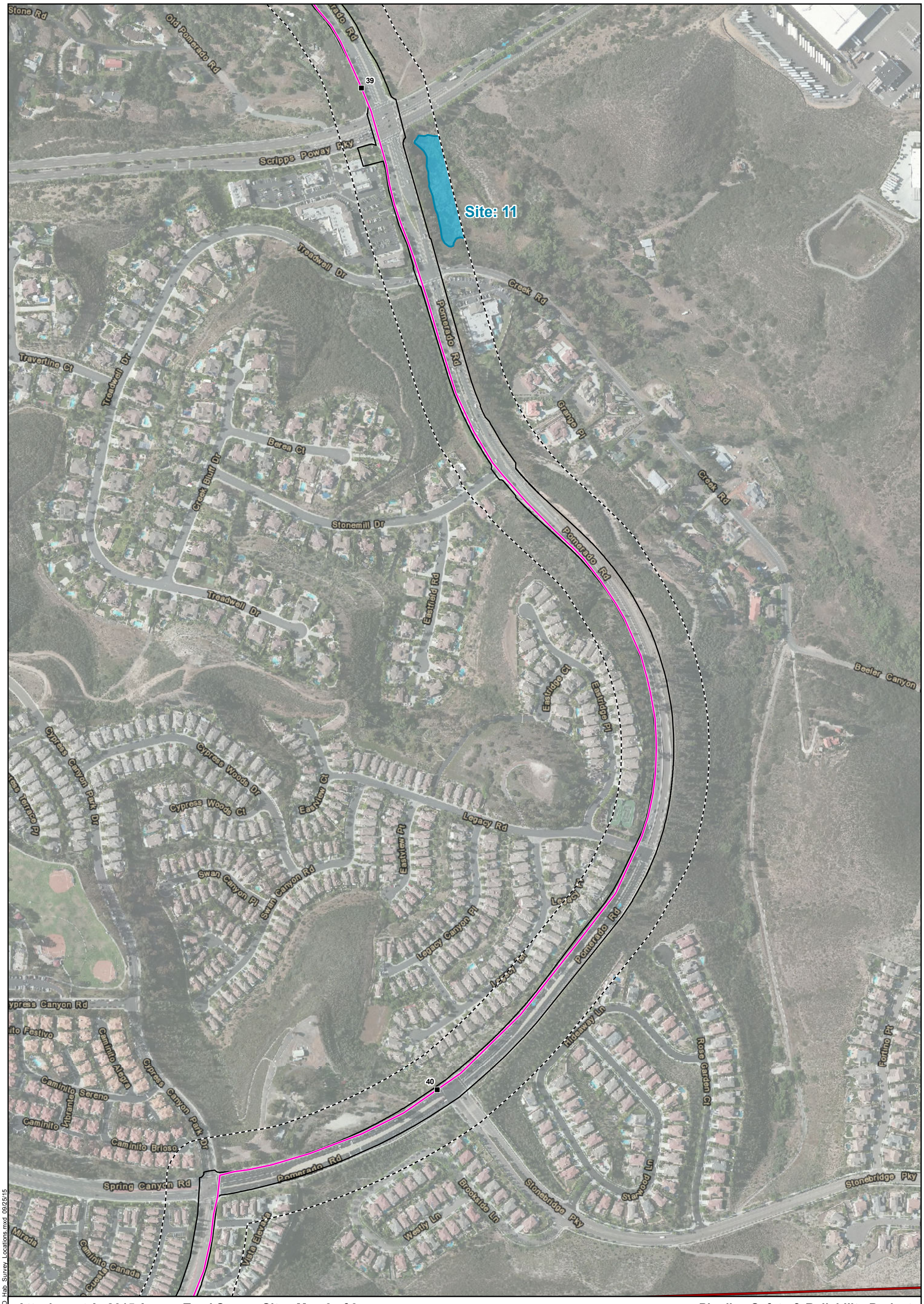

Attachment A: 2015 Arroyo Toad Survey Sites Map 9 of 9

Pipeline Safety & Reliability Project

- Milepost
- Proposed Project Route
- Proposed Trenchless Construction
- Cross-Tie Connector Line

Permanent Impact
- Aboveground Facility

Temporary Impact
- Bore Pit
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ATTACHMENT B: ARROYO TOAD SURVEY PHOTOGRAPHS

ATTACHMENT B: ARROYO TOAD SURVEY PHOTOGRAPHS

Photograph 1: Excluded channel with rip-rap channel bottom west of Interstate (I-) 15 between the community of Rainbow and the San Luis Rey River. View south.

Photograph 2: Excluded marsh with no drainage channel in the Lake Hodges area. View east.

Photograph 3:
Excluded concrete channel between the San Luis Rey River and Gopher Canyon. View east.

Photograph 4:
Excluded rocky channel between the San Luis Rey River and Gopher Canyon. View south.

Photograph 5:
Survey Site 1 east of Old Highway 395. View east.

Photograph 6:
Survey Site 1 west of Old Highway 395. View west.

Photograph 7:
American bullfrog (*Lithobates catesbeianus*) tadpole observed in Survey Site 1.

Photograph 8:
Baja California treefrog (*Pseudacris hypochondriaca hypochondriaca*) tadpole observed in Survey Site 1.

Photograph 9:
Survey Site 2 in the San Luis Rey River west of I-15. View east.

Photograph 10:
West of Survey Site 2 in the San Luis Rey River under Old Highway 395. View south.

Photograph 11: Western toad (*Anaxyrus boreas*) observed in Survey Site 2 in the San Luis Rey River.

Photograph 12: Survey Site 3 next to Champagne Lakes RV Resort east of Old Highway 395. View east.

Photograph 13:
Survey Site 4 south of Champagne Lakes RV Resort and north of Camino Del Rey. View southeast.

Photograph 14:
Survey Site 5 south of Camino Del Rey. View south.

Photograph 15:
Survey Site 6 east of Old Highway 395 near Gopher Canyon Road. View north.

Photograph 16:
Survey Site 7 west of Sandy Hill Road. View southwest.

Photograph 17:
Western toad observed in Survey Site 7.

Photograph 18:
Survey Site 8 west of the Welk Resort. View north.

Photograph 19:
Survey Site 9 in Bear Valley Creek. View south.

Photograph 20:
Survey Site 9 in Bear Valley Creek. View east.

Photograph 21:
Freshwater crayfish (*Procambarus* sp.) observed in Survey Site 9.

Photograph 22:
Survey Site 10 in Kit Carson Park. View east.

Photograph 23:
Survey Site 11 in Beeler Canyon. View south.

Photograph 24:
Survey Site 11 in Beeler Canyon. View south.

Photograph 25:
Baja California treefrog observed in Survey Site 11.

ATTACHMENT H: PLANT SPECIES OBSERVED DURING SURVEYS

Attachment H
Plants Species Observed during Surveys

Ferns and Allies

Polypodiaceae - Polypody Family

Polypodium caifornicum	California polypody

Pteridaceae - Brake Family

Cheilanthes newberryi	Newberry's lip fern
Pellaea andromedaefolia	Coffee fern
Pellaea mucronata var. *mucronata*	Bird's-foot cliff-break
Pentagramma triangularis ssp. *triangularis*	Goldback fern

Selaginellaceae - Spike-Moss Family

Selaginella asprella	Bluish spike-moss
Selaginella cinerascens	Ashy spike-moss

Gymnosperms

Cupressaceae - Cypress Family

Sequoia sempervirens	Coast redwood

Pinaceae - Pine Family

**Pinus* sp.	Pine

Angiosperms - Dicots

Adoxaceae - Muskroot Family

Sambucus nigra ssp. *caerulea*	Blue elderberry

Aizoaceae - Fig-Marigold Family

**Carpobrotus edulis*	Fig-marigold
**Mesembryanthemum crystallinum*	Crystalline iceplant

Amaranthaceae - Amaranth Family

**Amaranthus albus*	Tumble pigweed
Amaranthus californicus	California amaranth

Anacardiaceae - Cashew or Sumac Family

Malosma laurina	Laurel sumac
Rhus aromatica	Sourberry
Rhus integrifolia	Lemonadeberry
Rhus ovata	Sugar sumac
**Schinus molle*	Peruvian pepper tree
**Schinus terebinthifolius*	Brazilian pepper tree
Toxicodendron diversilobum	Western poison-oak

Apiaceae (Umbelliferae) - Carrot Family

**Anthriscus caucalis*	Bur-chervil
Apiastrum angustifolium	Wild celery
**Apium graveolens*	Celery
Bowlesia incana	Hoary bowlesia
**Conium maculatum*	Poison hemlock
**Daucus carota*	Queen Anne's lace
Daucus pusillus	Southwestern carrot
**Foeniculum vulgare*	Sweet fennel
Sanicula arguta	Sanicle

**Torilis arvensis*	Knot hedge parsley

Apocynaceae - Dogbane/Milkweed Family

Asclepias fascicularis	Narrow-leaf milkweed
Asclepias linaria	Milkweed
**Vinca major*	Periwinkle

Asteraceae (Compositae) - Sunflower Family

Achillea millefolium	Common yarrow
Acourtia microcephala	Acourtia
Agoseris retrorsa	Spear-leaf agoseris
Ambrosia acanthicarpa	Annual bur-sage
Ambrosia psilostachya	Western ragweed
**Anthemis cotula*	Mayweed
Artemisia californica	California sagebrush
Artemisia douglasiana	Douglas' mugwort
Artemisia palmeri	San Diego sagewort
Baccharis pilularis ssp. *consanguinea*	Coyote brush
Baccharis salicifolia ssp. *salicifolia*	Mulefat
Baccharis sarothroides	Broom baccharis
Bahiopsis laciniata	San Diego County viguiera
Baileya multiradiata	Desert-marigold
Bebbia juncea var. *aspera*	Rush sweetbush
Brickellia californica	California brickell bush
**Centaurea melitensis*	Tocalote
**Carduus pycnocephalus* ssp. *pycnocephalus*	Italian thistle
Chaenactis artemisiifolia	White pincushion
Chaenactis glabriuscula	Pebble pincushion
**Cirsium vulgare*	Spear thistle
Corethrogyne filaginifolia	Sand-aster
**Cotula australis*	Australian brass-buttons
**Cynara cardunculus* ssp. *cardunculus*	Artichoke
Deinandra fasciculata	Clustered moonshine-daisy
**Dittrichia graveolens*	Stinkwort
Encelia californica	California encelia
Encelia farinosa	Brittlebush
Erigeron foliosus var. *confinis*	Leafy fleabane
Eriophyllum confertiflorum	Yellow-yarrow
**Glebionis coronarium*	Garland daisy
Gutierrezia californica	California matchweed
Hazardia squarrosa	Saw-toothed hazardia
**Hedypnois cretica*	Crete weed
Helianthus annuus	Common sunflower
Helianthus californicus	California sunflower
**Helminthotheca echioides*	Bristly ox-tongue
Heterotheca grandiflora	Telegraph weed
Holocarpha virgata ssp. *elongata*	Graceful tarplant
**Hypochaeris glabra*	Smooth cat's-ear
**Hypochaeris radicata*	Rough cat’s ear
Isocoma menziesii	Goldenbush
Isocoma menziesii var. *decumbens*	Decumbent godenbush
Isocoma menziesii var. *menziesii*	San Diego goldenbush
Isocoma menziesii var. *vernonioides*	Coastal goldenbush
**Lactuca serriola*	Prickly lettuce
Laennecia coulteri	Coulter's conyza

Lasthenia californica ssp. *californica*	California goldfields
Layia platyglossa	Coastal tidy tips
Logfia depressa	Dwarf cottonrose
**Logfia gallica*	Narrowleaf cottonrose
**Matricaria discoidea*	Pineapple-weed
Microseris douglasii ssp. *douglasii*	Douglas' silverpuffs
Microseris douglasii ssp. *platycarpha*	San Diego silverpuffs
Osmadenia tenella	Osmandenia
Pentachaeta aurea ssp. *aurea*	Golden-rayed pentachaeta
Pluchea odorata	Salt marsh fleabane
Porophyllum gracile	Odora
Pseudognaphalium benolens	White everlasting
Pseudognaphalium biolettii	Bioletti's rabbit-tobacco
Pseudognaphalium californicum	California everlasting
**Pseudognaphalium luteoalbum*	Everlasting cudweed
Pseudognaphalium microcephalum	San Diego rabbit-tobacco
Pseudognaphalium stramineum	Cotton-batting plan
Psilocarphus brevissimus var. *brevissimus*	Dwarf woolly-heads
Psilocarphus tenellus	Slender woolly-marbles
**Silybum marianum*	Milk thistle
**Sonchus asper* ssp. *asper*	Prickly sow-thistle
**Sonchus oleraceus*	Common sow-thistle
Stephanomeria exigua	Stephanomeria
Stylocline gnaphaloides	Everlasting neststraw
Uropappus lindleyi	Silver puffs
Xanthium strumarium	Cocklebur

Boraginaceae - Borage Family

Amsinckia menziesii	Rancher's fireweed
Cryptantha intermedia var. *hendersonii*	Henderson's cryptantha
Cryptantha intermedia var. *intermedia*	Common cryptantha
Cryptantha micromeres	Minute-flowered cryptantha
Emmenanthe penduliflora ssp. *rosea*	Whispering bells
Eriodictyon crassifolium var. *crassifolium*	Thickleaf yerba santa
Eucrypta chrysanthemifolia var. *bininnatifida*	Eucrypta
Eucrypta chrysanthemifolia var. *chrysanthemifolia*	Common eucrypta
Heliotropium curassavicum var. *oculatum*	Salt heliotrope
Nemophila menziesii	Baby blue-eyes
Pectocarya linearis ssp. *ferocula*	Narrow-toothed pectocarya
Phacelia cicutaria var. *hispida*	Caterpillar phacelia
Phacelia distans	Common phacelia
Phacelia grandiflora	Grand phacelia
Phacelia parryi	Parry phacelia
Phacelia ramosissima	Branching phacelia
Pholistoma auritum var. *auritum*	Blue fiesta flower
Pholistoma racemosum	San Diego fiesta flower
Plagiobothrys collinus var. *californicus*	Californica popcornflower

Brassicaceae (Cruciferae) - Mustard Family

**Brassica nigra*	Black mustard
**Brassica rapa*	Field mustard
**Brassica tournefortii*	Sahara mustard
Caulanthus lasiophyllus	California mustard
**Lepidium didymum*	Wart cress
**Lepidium latifolium*	Broad-leaf pepperwort

**Nasturtium officinale*	Watercress
**Raphanus sativus*	Wild radish
**Sisymbrium altissimum*	Tumble mustard
**Sisymbrium orientale*	Indian hedge mustard

Cactaceae - Cactus Family

Cylindropuntia californica var. *parkeri*	Cane cholla
Ferocactus viridescens	San Diegio cactus
**Opuntia ficus-indica*	Indian-fig
Opuntia littoralis	Mesa prickly-pear

Caprifoliaceae - Honeysuckle Family

Lonicera subspicata	Honeysuckle

Caryophyllaceae - Pink Family

Cerastium arvense ssp. *strictum*	Field mouse-ear chickweed
**Herniaria hirsuta* var. *cinerea*	Rupturewort
**Silene gallica*	Small-flower catchfly
Silene laciniata ssp. *laciniata*	Mexican pink
**Spergula arvensis*	Stickwort
**Spergularia bocconi*	Boccone's sand-spurrey
Spergularia macrotheca	Sticky sand-spurrey

Chenopodiaceae - Goosefoot Family

Atriplex canescens var. *canescens*	Shadscale
**Atriplex prostrata*	Fat-hen
**Atriplex semibaccata*	Australian saltbush
**Atriplex suberecta*	Sprawling saltbush
**Chenopodium album*	Lamb's quarters
**Chenopodium murale*	Nettle-leaf goosefoot
**Salsola tragus*	Russian thistle

Cistaceae - Rock-Rose Family

**Cistus ladanifer*	Gum cistus
Helianthemum scoparium var. *scoparium*	Peak rush-rose

Convolvulaceae - Morning-Glory Family

Calystegia macrostegia	Morning-glory
**Convolvulus arvensis*	Bindweed
Cressa truxillensis	Alkali weed
Cuscuta californica var. *californica*	Dodder
Dichondra occidentalis	Western dichondra

Crassulaceae - Stonecrop Family

Crassula connata	Sand pygmy-weed
**Crassula ovata*	Jade plant
Crassula solieri	Smooth-seed pygmy-weed
Dudleya edulis	Lady-fingers
Dudleya lanceolata	Lance-leaved dudleya
Dudleya pulverulenta	Chalk dudleya

Cucurbitaceae - Gourd Family

Cucurbita foetidissima	Calabazilla
Marah macrocarpa	Cucamonga manroot

Dipsacaceae - Teasel Familly

**Dipsacus* sp.	

Ericaceae - Heath Family

Comarostaphylis diversifolia ssp. *diversifolia*	Summer holly
Xylococcus bicolor	Mission-manzanita

Euphorbiaceae - Spurge Family

Croton californicus	Croton
Croton setigerus	Turkey mullein
**Euphorbia maculata*	Spotted spurge
**Euphorbia pepulus*	Petty spurge
Euphorbia polycarpa	Prostrate spurge
**Ricinus communis*	Castor bean

Fabaceae (Leguminosae) - Legume Family

**Acacia cyclops*	Western coastal wattle
**Acacia melanoxylon*	Blackwood acacia
**Acacia redolens*	Vanilla-scented wattle
**Acacia retinoides*	Everblooming wattle
Acmispon americanus var. *americanus*	Spanish lotus
Acmispon glaber var. *brevialatus*	California broom
Acmispon glaber var. *glaber*	Deerweed
Acmispon micranthus	Small-flowered lotus
Acmispon strigosus	Strigose lotus
Amorpha californica var. *californica*	California indigobush
**Lathyrus latifolius*	Perennial sweetpea
**Lathyrus sativus*	Grass pea
Lathyrus vestitus var. *alefeldii*	Wild pea
Lupinus bicolor	Miniature lupine
Lupinus formosus var. *robustus*	Lupine
Lupinus hirsutissimus	Stinging lupine
Lupinus truncatus	Collar lupine
**Medicago polymorpha*	California burclover
**Melilotus albus*	White sweetcover
**Melilotus indicus*	Sourclover
**Parkinsonia aculeata*	Mexican palo verde
Senegalia greggii	Catclaw acacia
**Senna marilandica*	Maryland senna
**Spartium junceum*	Spanish broom
**Trifolium hirtum*	Rose clover
Vicia americana ssp. *americana*	American vetch
**Vicia benghalensis*	Purple vetch

Fagaceae - Oak Family

Quercus agrifolia var. *agrifolia*	Coast live oak
Quercus berberidifolia	Scrub oak
Quercus dumosa	Nuttall's scrub oak
Quercus engelmannii	Engelmann oak
Quercus x *acutidens*	California Scrub Oak

Frankeniaceae - Frankenia Family

Frankenia salina	Alkali heath

Gentianaceae - Gentian Family

Zeltnera venusta	California centaury

Geraniaceae - Geranium Family

**Erodium botrys*	Broad-leaf filaree
**Erodium cicutarium*	Red-stemmed filaree
**Erodium moschatum*	White-stem filaree
Geranium carolinianum	Carolina geranium

Grossulariaceae - Gooseberry Family

Ribes indecorum	White flowering currant

Ribes speciosum	Fuchsia-flowered gooseberry

Juglandaceae - Walnut Family

Juglans hindsii	Northern California black walnut
**Juglans nigra*	Black walnut

Lamiaceae (Labiatae) - Mint Family

**Marrubium vulgare*	White horehound
**Rosmarinus officinalis*	Rosemary
Salvia apiana	White sage
Salvia columbariae	Chia
Salvia leucophylla	Purple sage
Salvia mellifera	Black sage
**Stachys ajugoides*	Bugle hedge-nettle
Trichostema lanatum	Woolly bluecurls
Trichostema lanceolatum	Vinegar weed

Lythraceae - Loosestrife Family

**Lythrum hyssopifolia*	Hyssop loosestrife

Malvaceae - Mallow Family

Fremontodendron californicum	Fremontia
Malacothamnus densiflorus	Bush mallow
Malacothamnus fasciculatus	Chaparral mallow
**Malva nicaeensis*	Bull mallow
**Malva parviflora*	Cheeseweed
Sidalcea sparsifolia	Southern checkerbloom

Montiaceae - Miner's Lettuce Family

Calandrinia breweri	Brewer's calandrinia
Calandrinia ciliata	Red maids
Claytonia perfoliata	Common miner's lettuce

Moraceae - Mulberry Family

**Ficus carica*	Common fig

Myrsinaceae - Myrsine Family

**Lysimachia arvensis*	Scarlet pimpernel

Myrtaceae - Myrtle Family

**Eucalyptus camaldulensis*	Red gum
**Eucalyptus citriodora*	Lemon-scented gum
**Eucalyptus cladocalyx*	Sugar gum
**Eucalyptus globulus*	Blue gum

Nyctaginaceae - Four O'Clock Family

Mirabilis laevis var. *crassifolia*	Wishbone bush

Oleaceae - Olive Family

**Fraxinus udehi*	Shamel ash
Fraxinus velutina	Velvet ash
**Olea europaea*	Olive

Onagraceae - Evening Primrose Family

Camissoniopsis bistorta	California sun cup
Camissoniopsis hirtella	Suncup
Clarkia epilobioides	Clarkia
Clarkia purpurea ssp. *quadrivulnera*	Winecup clarkia
Clarkia unguiculata	Elegant clarkia
Epilobium ciliatum	Fringed willow-herb
Eulobus californicus	Camissonia
Oenothera elata ssp. *hookeri*	Hooker's evening primrose

**Oenothera speciosa*	Evening primrose
Oenothera suffrutescens	Scarlet gaura

Orobanchaceae - Broomrape Family

Castilleja densiflora ssp. *densiflora*	Owl's-clover
Castilleja exserta ssp. *exserta*	Red owl's-clover

Oxalidaceae - Oxalis Family

**Oxalis pes-caprae*	Bermuda buttercup

Paeoniaceae - Peony Family

Paeonia californica	California peony

Papaveraceae - Poppy Family

Eschscholzia californica	California poppy
Eschscholzia minutiflora	Poppy
Platystemon californicus	Cream cups

Phrymaceae - Lopseed Family

Mimulus aurantiacus var. *aurantiacus*	Orange bush monkeyflower
Mimulus aurantiacus var. *puniceus*	Sticky monkeyflower
Mimulus guttatus	Common monkeyflower

Picrodendraceae - Bitter-Tree Family

Tetracoccus dioicus	Parry's tetracoccus

Plantaginaceae - Plantain Family

Antirrhinum kelloggii	Snapdragon
Antirrhinum nuttallianum ssp. *nuttallianum*	Snapdragon
Collinsia heterophylla var. *austromantana*	Downy Chinese houses
Keckiella cordifolia	Straggly keckiella
Nuttallanthus texanus	Blue toadflax
Penstemon spectabilis var. *spectabilis*	Beardtongue
**Plantago coronopus*	Cut-leaf plantain
Plantago erecta	California plantain
**Plantago lanceolata*	English plantain

Platanaceae - Plane Tree Family

Platanus racemosa	Western sycamore

Polemoniaceae - Phlox Family

Allophyllum glutinosum	Allophyllum
Eriastrum diffusum	Miniature wool star
Eriastrum filifolium	Lavender woolly-star
Eriastrum sapphirinum	Sapphire wool star
Gilia capitata	Globe gilia
Gilia stellata	Star gilia
Navarretia hamata ssp. *leptantha*	Navarretia

Polygonaceae - Buckwheat Family

Chorizanthe fimbriata var. *fimbriata*	Fringed spineflower
Chorizanthe polygonoides var. *longispina*	Long-spined spineflower
Chorizanthe procumbens	Prostrate spineflower
**Emex spinosa*	Devil's thorn
Eriogonum fasciculatum var. *fasciculatum*	Coastal California buckwheat
Eriogonum fasciculatum var. *foliolosum*	Leafy California buckwheat
Eriogonum gracile var. *gracile*	Slender buckwheat
Lastarriaea corriacea	Leather-spineflower
Pterostegia drymarioides	Woodland threadstem
**Rumex crispus*	Curly dock
Rumex salicifolius	Willow dock

Ranunculaceae - Buttercup Family

Clematis pauciflora	Southern California clematis
Delphinium cardinale	Scarlet larkspur
Delphinium parishii ssp. *parishii*	Parish's larkspur
Delphinium parishii ssp. *subglobosum*	Desert larkspur
Thalictrum fendleri	Fendler's meadow-rue

Rhamnaceae - Buckthorn Family

Adolphia californica	California adolphia
Ceanothus crassifolius var. *crassifolius*	Hoaryleaf ceanothus
Ceanothus cuneatus var. *cuneatus*	Buck brush
Ceanothus leucodermis	Chaparral whitethorn
Ceanothus oliganthus var. *orcuttii*	Ceanothus
Ceanothus tomentosus	Woollyleaf ceanothus
Rhamnus crocea	Spiny redberrry
Rhamnus ilicifolia	Hollyleaf redberry
Rhamnus pilosa	Hairyleaf redberry

Rosaceae - Rose Family

Adenostoma fasciculatum	Chamise
Cercocarpus betuloides var. *betuloides*	Birch-leaf mountain mahogany
Cercocarpus minutiflorus	San Diego mountain mahogany
Drymocallis glandulosa	Glandular cinquefoil
Heteromeles arbutifolia	Toyon
Prunus ilicifolia ssp. *ilicifolia*	Holly-leafed cherry
Rubus ursinus	California blackberry

Rubiaceae - Madder Family

Galium angustifolium ssp. *angustifolium*	Narrow-leaved bedstraw
Galium aparine	Goose grass
Galium nuttallii ssp. *nuttallii*	San Diego bedstraw
Galium porrigens var. *porrigens*	Climbing bedstraw

Rutaceae - Rue Family

Cneoridium dumosum	Bushrue

Salicaceae - Willow Family

Populus fremontii ssp. *fremontii*	Fremont cottonwood
Salix exigua	Narrow-leaved willow
Salix gooddingii	Goodding's black willow
Salix laevigata	Red willow
Salix lasiolepis	Arroyo willow

Saururaceae - Lizard's-Tail Family

Anemopsis californica	Yerba mansa

Scrophulariaceae - Figwort Family

Scrophularia californica	California figwort

Simaroubaceae - Quassia Family

**Ailanthus altissima*	Tree of heaven

Solanaceae - Nightshade Family

Datura wrightii	Thornapple
**Nicotiana glauca*	Tree tobacco
**Solanum elaeagnifolium*	White horse-nettle
Solanum parishii	Parish's purple nightshade
Solanum xanti	Purple nightshade

Tamaricaceae - Tamarisk Family

**Tamarix ramosissima*	Salt cedar

Urticaceae - Nettle Family

Hesperocnide tenella	Western nettle
Parietaria hespera	Western pellitory
Urtica dioica ssp. *holosericea*	Hoary nettle
**Urtica urens*	Dwarf nettle

Verbenaceae - Vervain Family

Phyla lanceolata	Lance-leaf frog-fruit
Verbena lasiostachys var. *lasiostachys*	Western verbena

Violaceae - Violet Family

Viola pedunculata	Johnny-jump-up

Vitaceae - Grape Family

**Parthenocissus vitacea*	Woodbine
Vitis girdiana	Desert wild grape

Zygophyllaceae - Caltrop Family

**Tribulus terrestris*	Puncture vine

Angiosperms -Monocots

Agavaceae – Agave Family

Chlorogalum parviflorum	Small-flowered amole
Chlorogalum pomeridianum var. *divaricatum*	Soaproot
Hesperoyucca whipplei	Our Lord's candle
Yucca schidigera	Mohave yucca

Alliaceae - Onion Family

Allium haematochiton	Red-skinned onion
Allium peninsulare var. *peninsulare*	Peninsular onion
Allium praecox	Onion

Arecaceae (Palmae) - Palm Family

**Washingtonia robusta*	Mexican fan palm

Asparagaceae - Asparagus Family

**Asparagus asparagoides*	Asparagas

Asphodelaceae - Asphodel Family

**Asphodelus fistulosus*	Asphodel

Cyperaceae - Sedge Family

Cyperus eragrostis	Tall flatsedge
Eleocharis macrostachya	Creeping spikerush
Schoenoplectus acutus var. *occidentalis*	Common tule
Schoenoplectus americanus	Olney's bulrush
Schoenoplectus californicus	California bulrush

Iridaceae - Iris Family

Sisyrinchium bellum	Western blue-eyed grass

Juncaceae - Rush Family

Juncus acutus ssp. *leopoldii*	Southwestern spiny rush
Juncus bufonius	Toad rush
Juncus mexicanus	Mexican rush

Juncaginaceae - Arrow-Grass Family

Triglochin scilloides	Flowering quillwort

Liliaceae - Lily Family

Calochortus splendens	Lilac mariposa lily
Calochortus weedii var. *weedii*	Mariposa lily

Melanthiaceae - Death Camas Family

Toxicoscordion fremontii	Star zygadene

Poaceae (Gramineae) - Grass Family

**Arundo donax*	Giant reed
**Avena barbata*	Slender wild oat
**Avena fatua*	Wild oat
**Brachypodium distachyon*	Purple falsebrome
**Bromus catharticus* var. *catharticus*	Rescue grass
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Bromus madritensis* ssp. *madritensis*	Foxtail chess
**Bromus madritensis* ssp. *rubens*	Red brome
**Cortaderia selloana*	Selloa pampas grass
**Digitaria sanguinalis*	Hairy crabgrass
Distichlis spicata	Saltgrass
**Ehrharta erecta*	Panic veldt grass
Elymus condensatus	Giant wildrye
Elymus triticoides ssp. *triticoides*	Creeping wildrye
Festuca microstachys	Small fescue
**Festuca myuros*	Rattail sixweeks grass
**Festuca perennis*	Italian ryegrass
**Gastridium phleoides*	Nit grass
**Hordeum murinum*	Foxtail barley
**Lamarckia aurea*	Goldentop
Melica imperfecta	Small-flowered melic
Melinis repens	Natal grass
Muhlenbergia microsperma	Littleseed muhly
Muhlenbergia rigens	Deer grass
**Parapholis incurva*	Curved sickle grass
**Paspalum dilatatum*	Dallis grass
**Pennisetum setaceum*	Crimson fountain grass
**Phalaris aquatica*	Harding grass
**Polypogon monspeliensis*	Rabbit's-foot grass
**Schismus barbatus*	Mediterranean grass
Stipa lepida	Foothill needlegrass
Stipa pulchra	Purple needlegrass

Themidaceae - Brodiaea Family

Bloomeria clevelandii	San Diego goldenstar
Brodiaea orcuttii	Orcutt's brodiaea
Dichelostemma capitatum ssp. *capitatum*	Blue dicks
Muilla maritima	Common muilla

Typhaceae - Cattail Family

Typha domingensis	Southern cattail

ATTACHMENT I: WILDLIFE SPECIES OBSERVED DURING SURVEYS

Attachment I
Wildlife Species Observed during Surveys

Invertebrates	
Tarantula	*Aphonopelma spp.*
Behr's metalmark	*Apodemia virgulti*
Insects	
Harvester ant	*Pogonomyrmex spp.*
Reptiles	
Slider	*Pseudemys scripta*
Coast horned lizard	*Phrynosoma coronatum*
Western skink	*Eumeces skiltonianus*
Belding's orange-throated whiptail	*Aspidoscelis hyperythrus beldingi*
Southern alligator lizard	*Elgaria multicarinata*
Birds	
Eared grebe	*Podiceps nigricollis*
Western grebe	*Aechmophorus occidentalis*
Great blue heron	*Ardea herodias*
Great egret	*Ardea alba*
Snowy egret	*Egretta thula*
White-faced ibis	*Plegadis chihi*
Turkey vulture	*Cathartes aura*
Mallard	*Anas platyrhynchos*
Cinnamon teal	*Anas cyanoptera*
Northern shoveler	*Anas clypeata*
Northern pintail	*Anas acuta*
Bufflehead	*Bucephala albeola*
White-tailed kite	*Elanus leucurus*
Northern harrier	*Circus cyaneus*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
Common moorhen	*Gallinula chloropus*
American coot	*Fulica americana*
Killdeer	*Charadrius vociferus*
Black-necked stilt	*Himantopus mexicanus*
Mourning dove	*Zenaida macroura*
Greater roadrunner	*Geococcyx californianus*
White-throated swift	*Aeronautes saxatalis*
Anna's hummingbird	*Calypte anna*
Belted kingfisher	*Ceryle alcyon*
Nuttall's woodpecker	*Picoides nuttallii*
Downy woodpecker	*Picoides pubescens*
Northern flicker	*Colaptes auratus*
Black phoebe	*Sayornis nigricans*

Say's phoebe	*Sayornis saya*
Cassin's kingbird	*Tyrannus vociferans*
Least Bell's vireo	*Vireo bellii pusillus*
Western scrub-jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
Common raven	*Corvus corax*
Horned lark	*Eremophila alpestris*
Violet-green swallow	*Tachycineta thalassina*
Barn swallow	*Hirundo rustica*
Bushtit	*Psaltriparus minimus*
Bewick's wren	*Thryomanes bewickii*
House wren	*Troglodytes aedon*
Ruby-crowned kinglet	*Regulus calendula*
Blue-gray gnatcatcher	*Polioptila caerulea*
coastal California gnatcatcher	*Polioptila californica californica*
Wrentit	*Chamaea fasciata*
Northern mockingbird	*Mimus polyglottos*
European starling	*Sturnus vulgaris*
Yellow warbler	*Dendroica petechia*
Yellow-rumped warbler	*Dendroica coronata*
Common yellowthroat	*Geothlypis trichas*
Yellow-breasted chat	*Icteria virens*
California towhee	*Pipilo crissalis*
Song sparrow	*Melospiza melodia*
Dark-eyed junco	*Junco hyemalis*
Western meadowlark	*Sturnella neglecta*
Red-winged blackbird	*Agelaius phoeniceus*
Great-tailed grackle	*Quiscalus mexicanus*
House finch	*Carpodacus mexicanus*
Lesser goldfinch	*Carduelis psaltria*
American goldfinch	*Carduelis tristis*
House sparrow	*Passer domesticus*

Mammals

Brush rabbit	*Sylvilagus bachmani*
San Diego black-tailed jackrabbit	*Lepus californicus bennettii*
California ground squirrel	*Spermophilus beecheyi*
Coyote (scat)	*Canis latrans*
Raccoon (scat)	*Procyon lotor*
Mule deer (scat)	*Odocoileus hemionus*

ATTACHMENT J: MCAS MIRAMAR CALIFORNIA GNATCATCHER 2013 BREEDING SEASON SURVEY AREAS

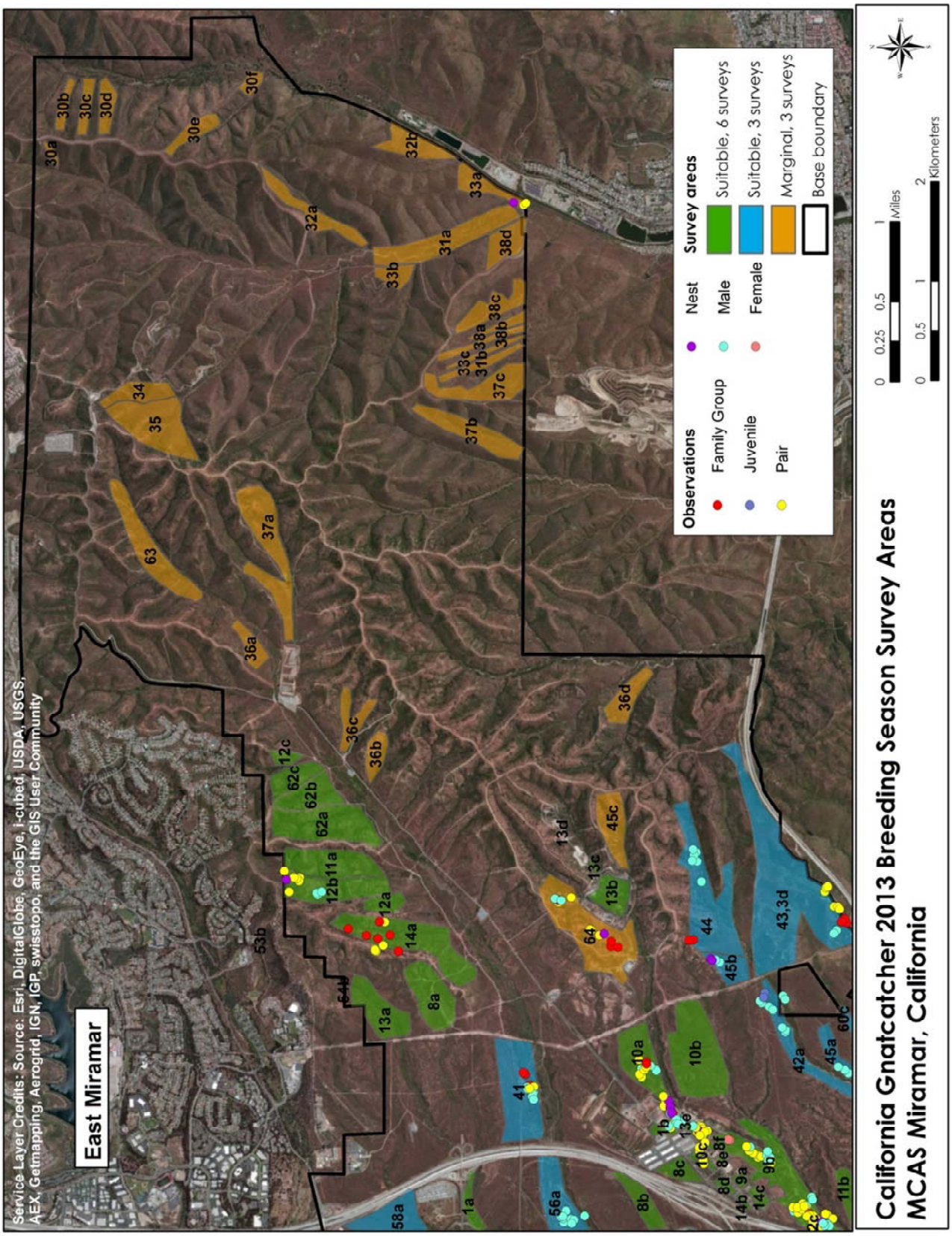

Figure 4. Final survey areas and California gnatcatcher observations on east Miramar.

ATTACHMENT K: LEAST BELL'S VIREO (*VIREO BELLII PUSILLUS*) AND SOUTHWESTERN WILLOW FLYCATCHER (*EMPIDONAX TRAILLII EXTIMUS*) SURVEYS AT MARINE CORPS AIR STATION MIRAMAR 2011 REPORT

Least Bell's Vireo (*Vireo bellii pusillus*) and Southwestern Willow Flycatcher (*Empidonax traillii extimus*) Surveys at Marine Corps Air Station Miramar

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Tierra Data Inc.

Contract Number: N62473-06-D-2402
Final Report
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1.0 Introduction

The purpose of this Task Order was to conduct station-wide surveys at Marine Corps Air Station (MCAS) Miramar (Station) for the federal and state endangered least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher *(Empidonax traillii extimus*). This report details work performed to accomplish the objective of this contract. Previous surveys have found least Bell's vireos breeding on the far eastern boundary of the Station in Sycamore Canyon. Earlier studies also noted the presence of willow flycatchers in lower San Clemente Canyon and a small unnamed drainage north of the upper San Clement drainage on East Miramar. The willow flycatchers were not believed to be the endangered southwestern subspecies and no breeding was recorded (Varanus Biological Services, Inc. 2003; AmDyne Corporation 2008). Results of this effort include a map of suitable habitat for these species within the Station, and locations and use areas for individual birds based on presence/absence surveys conducted by a section 10(a)(1)(A) permitted biologist for each species under protocols established by the US Fish and Wildlife Service (USFWS).

2.0 Background

2.1 MCAS Miramar

Historically, the property at the Station was used for farming and ranching homesteads, including use for cattle and citrus. The land was acquired by the U.S. Army in 1914 for infantry training. After World War I, the area became an auxiliary field for the U.S. Navy and an air station for the U.S. Marine Corps. With the outbreak of World War II, operations at Miramar quickly expanded. At the end of that war, the U.S. Marines moved to El Toro, California and the land became a Naval Air Station. In 1997, the property became a U.S. Marine Corps Air Station once again, and it maintains that status today. The Station is located in central San Diego City (Map 1). The facility consists of approximately 23,000 acres. Elevations range from approximately 220 to over 1,200 feet above mean sea level.

The Station is largely divided by the I-15 highway corridor into a more developed western portion and an undeveloped eastern portion (Map 1). Much of West Miramar has been further divided by the county of San Diego landfill, the airfield, and smaller developments.

The vegetation of the Station is a combination of coastal sage scrub, chaparral, grassland, riparian scrubs and woodlands, vernal pools, and small patches of other vegetation types. Fires in recent

years, especially across the eastern half of the Station, resulted in a scrubby and pre-climax condition of vegetation. Many of the natural habitats on the installation burned during the Cedar Fire in 2003 and are in various stages of vegetative recovery.

Several large drainages cross the installation, generally running from east to west; however, eastern Miramar also contains a few south-draining canyons. Many of the canyons at the Station do not retain water year-round; and, thus, are too dry to support willows (*Salix* sp.), cottonwoods (*Populus* sp.), and other riparian vegetation that is important for the presence of the target species for this project.

Map 1. Location of Marine Corps Air Station Miramar in San Diego County.

2.2 Least Bell's Vireo

Listed as endangered in 1986, the least Bell's vireo is currently restricted to riparian areas in southwestern California and northwestern Baja California, Mexico. Historically, the species ranged throughout the Central Valley of California, found as far north as Tehama County; however, it had disappeared from all but the extreme southwestern portion of California by the 1980s. At the time of listing as endangered, only around 300 pairs remained in the State, with the majority in San Diego County (USFWS 1998). The most recent review of the species noted a major increase in the population in southern California. This is likely due to habitat protection and intensive management of limiting factors, particularly trapping of the brown-headed cowbird (*Molothrus ater*), an obligate nest parasite (USFWS 2006). However, the species' range has not expanded significantly back into the Central Valley, the former heart of its range.

2.3 Southwestern Willow Flycatcher

The southwestern subspecies of the willow flycatcher was listed as endangered by the federal government in 1995. The state of California lists the entire species as endangered, which includes not only the southwestern subspecies, but also the ranges of two additional subspecies (*E. t. brewsteri* and *E. t. adastus*). The southwestern subspecies is found in the southern one-third of California, as well as suitable portions of five other states (Nevada, Arizona, New Mexico, Colorado, and Utah) and northwestern Mexico. As with the least Bell's vireo, this species is a riparian specialist, and has been affected by the extensive modification of these areas throughout the southwest, as well as by impacts from nest parasitism (USFWS 2002).

3.0 Methods

3.1 Permit Requirements

The requirements for surveying populations of least Bell's vireo and southwestern willow flycatcher differ slightly in the personnel required to conduct the surveys and in the intensity of the surveys. For the least Bell's vireo, a section 10(a)(1)(A) permit is not required to conduct presence/absence surveys, as long as taped playback is not used to elicit a response (USFWS 2001); however, more intensive nesting studies require a permit. Presence/absence surveys for the southwestern willow flycatcher require a section 10(a)(1)(A) permitted biologist and are conducted primarily with taped playback (USFWS 2000).

3.2 Field Surveys

3.2.1 Habitat Assessment

In order to focus the protocol survey effort, a habitat assessment was conducted in October 2010. The assessment involved the project manager and the section 10(a)(1)(A) permitted biologist; the entire Station was surveyed for suitable least Bell's vireo and/or southwestern willow flycatcher habitat. As these species are both obligate riparian species, they are typically closely associated with the presence of willows. Willows are predominately found in areas with water available either on the surface or within reach of the root system. Thus, the habitat assessment primarily focused on locations most likely to support these conditions, such as drainages and standing water. Due to the overlap in habitat between these species and the need to visit each site eight times for the more adaptable least Bell's vireo, suitable habitat for both species was assumed to be congruent and surveys were performed for both species at all locations. All areas considered by previous surveys were investigated to confirm appropriate habitat was present (AmDyne Corporation 2008).

Suitable habitat was determined by the permitted biologist based on previous experience with the two species and their life history requirements (Map 2 & 3). All suitable habitats on the Station included the presence of medium-to-large willows that form a core of dense foliage. Other key species associated with these areas included mulefat (*Baccharis salicifolia*) and Fremont cottonwood (*Populus fremontii*).

3.2.2 Protocol Surveys

As per the protocol established by the USFWS (2001), surveys for the least Bell's vireo took place between April 10, 2011 and July 31, 2011. During this time period, eight visits were made to areas identified during the habitat assessment as containing suitable habitat, with each visit to a particular site taking place at least 10 days from the previous visit. Surveys were conducted in the morning hours, and were not performed during inclement weather.

Presence/absence surveys for the southwestern willow flycatcher were conducted between May 15, 2011 and July 17, 2011. Five protocol surveys were performed during this time period: one between May 15, 2011 and May 31, 2011; a second between June 1, 2011 and June 21, 2011; and three surveys between June 22, 2011 and July 17, 2011 (Sogge et al. 1997 updated by USFWS 2000). All surveys occurred at least five days apart. As with the least Bell's vireo, surveys were performed during the morning hours and did not occur during periods of inclement weather. Unlike the least Bell's vireo

surveys, southwestern willow flycatcher surveys required the use of playback to determine presence/absence due to the less conspicuous nature of this species.

The presence of brown-headed cowbirds (*Molothrus ater*) within riparian areas was also noted given the species' nest parasitism nature that can affect both focus species.

3.2.3 Use Area Determination

For all individuals of each target species, the age and sex, as well as whether the bird was an individual or a member of a pair were recorded. The location of the initial observation point for each individual during each site visit (up to eight initial locations for least Bell's vireo and five for southwestern willow flycatcher) was also recorded. When birds were actively foraging, the movements of the species were observed and a Global Positioning Systems (GPS) point was recorded at the limits of its foraging activity. When the birds were not actively foraging, only the initial location was recorded. Observations of aggressive behavior between adjacent individuals were also recorded.

3.2.4 Geographic Information Systems

Geographic Information Systems (GIS) data was submitted in a format consistent with the standards used by the Station to ensure successful integration into existing GIS databases. In addition, all submitted GIS files included complete metadata as stated in the Task Order. This data was submitted on a CD-ROM independent of any other deliverable.

GIS data submitted included: 1) a multi-polygon shapefile of the total surveyed area (i.e. potential habitat), 2) a point file containing the locations of all sightings of target species. All data was submitted in North American Datum 1983/World Geodetic System 1984 and projected into California State Plane, Zone VI, FIPS 0406.

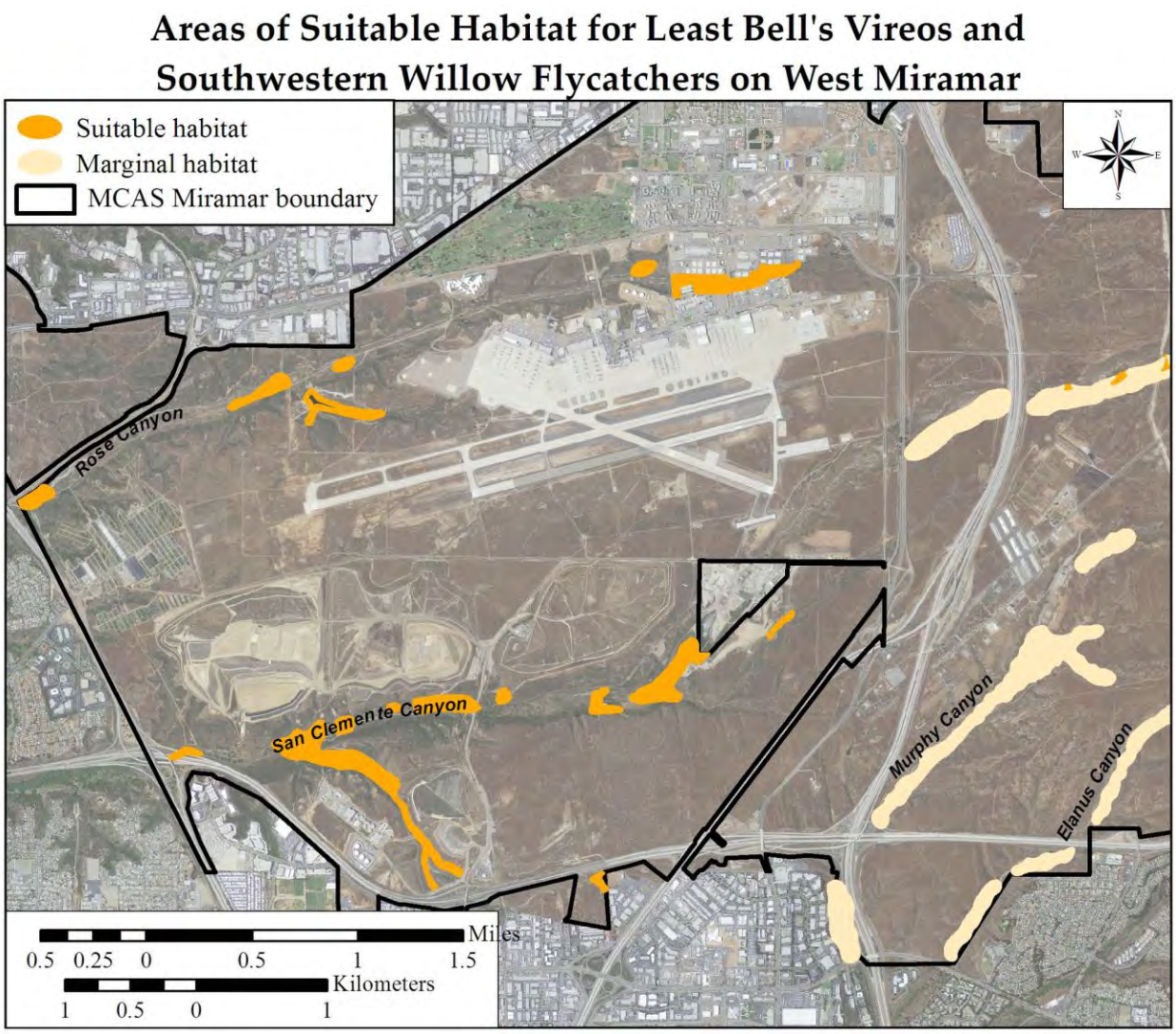
Fields in the surveyed area shapefile included: USGS Quadrangle name, year and month of survey, company name, surveyor name, total area in acres and hectares for each area surveyed, species surveyed for and protocol used, and report name in which the results are presented. For the sightings of the target species, genus, species, subspecies, common name, date of observation, surveyor, company, report name, USGS Quadrangle, and a comment field was included.

4.0 Results

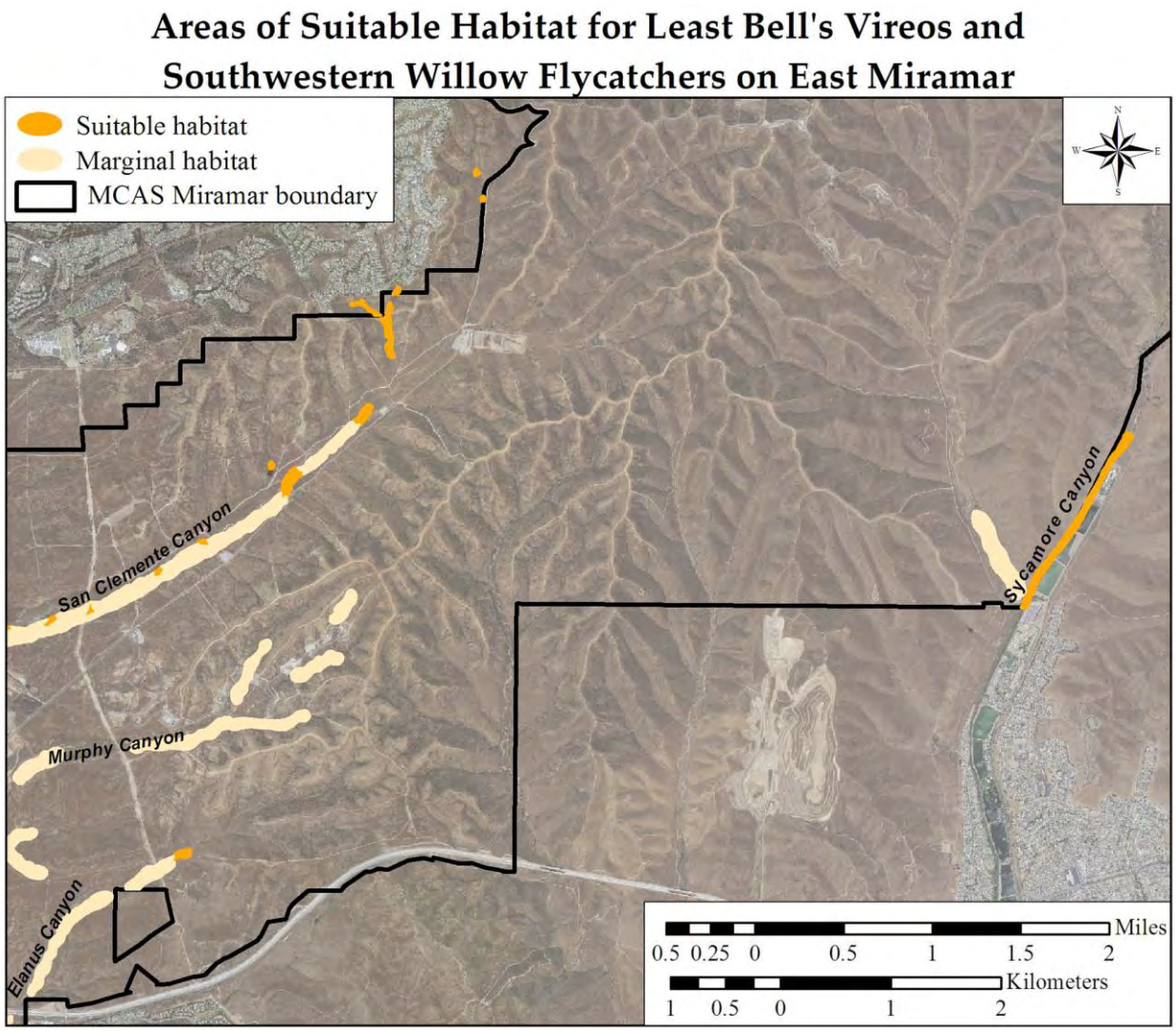
Thirty-three separate locations were considered suitable for either least Bell's vireo or southwestern willow flycatcher based on the habitat assessment, totaling 198.5 acres (80.3 hectares). The majority of suitable habitat occurs in San Clemente, Sycamore, and Rose Canyons, with a few isolated patches in side drainages. Not all areas considered suitable by previous surveys were retained as suitable habitat in this project, particularly in lower Rose Canyon. These areas contained either no willow trees or one or two willow trees surrounded by large patches of unsuitable open chaparral or scrub. These areas lacked the dense cover required by these species for nesting and foraging. A few areas in San Clemente Canyon near the landfill and West Sycamore canyon consist of open stands of California sycamore (*Plantanus racemosa*) that were mapped as habitat by previous surveyors, but the lack of a mid- or understory layer makes them unsuitable for the target species and they were not surveyed as part of this effort.

Suitable habitat was determined by the permitted biologist based on previous experience with the two species and their life history requirements (Map 2 and Map 3). Surveys were initially focused only within the areas deemed suitable habitat, but a number of least Bell's vireos were observed outside of their typical habitat (such as in thick chaparral, particularly laurel sumac (*Malosma laurina*); the survey area was expanded to accommodate this finding.

A total of 93 avian species were detected during these surveys (see Appendix A).



Map 2. Suitable habitat for least Bell's vireo and southwestern willow flycatcher on West Miramar.



Map 3. Suitable habitat for least Bell's vireo and southwestern willow flycatcher on East Miramar.

Surveys on May 19-21, June 1, 3, and 4, June 15-17, June 29-July 1, and July 13, 14, and 16 consisted of joint Southwestern Willow Flycatcher and Least Bell's Vireo surveys, in which taped flycatcher songs and calls were played during the survey as per the established protocol (Sogge et al. 2010)(Table 1). An additional visit occurred on June 10, 2011 when a previously banded male vireo was color banded. An additional visit also occurred on May 24, 2011 to find the nest for pair A.

One willow flycatcher was detected on June 4, 2011 in mature riparian woodland adjacent to lower San Clemente Canyon, south of Miramar Landfill. This individual responded to taped playbacks and "fitz-bewed" for several minutes as it foraged in the riparian habitat. The "fitz-bew" call was noted to be faster than the more slurred call typical of the *extimus* subspecies. It was not banded.

Table 1. Summary of protocol survey dates for the field effort.

Survey Date	Survey Time	Start Weather	End Weather
Survey One			
April 12	0645 - 1215	clear, calm, 47°F	clear, calm, 65°F
April 13	0600 - 1200	overcast, calm, 54°F	partly cloudy, w. breeze 5 mph, 60°F
April 14	0830 - 1230	clear, calm, 60°F	clear, w. breeze 5 mph, 71°F
Survey Two			
April 26	0600 - 1245	overcast, calm, 58°F	clear, w. breeze 5 mph, 70°F
April 27	0600 - 1215	clear, calm, 51°F	w. breeze 5 mph, 78°F
Survey Three			
May 6	0600 - 1230	overcast, calm, 56°F	w. breeze 5 mph, 74°F
May 7	0530 - 1130	clear, calm, 53°F	w. breeze 5 mph, 69°F
Survey Four			
May 19	0530 - 1130	partly cloudy, calm, 53°F	partly cloudy, calm, 64°F
May 20	0545 - 1130	partly cloudy, calm, 54°F	clear, w. breeze 5 mph, 67°F
May 21	0530 - 1115	overcast, calm, 57°F	overcast, calm, 62°F
Survey Five			
June 1	0600 - 1130	clear, w. breeze 3 mph, 49°F	clear, w. breeze 5 mph, 69°F
June 3	0600 - 1200	clear, calm, 50°F	clear, w. breeze 5 mph, 75°F
June 4	0530 - 1045	clear, calm, 56°F	clear, calm, 67°F
Survey Six			
June 15	0600 - 1115	overcast, drizzle, 58°F	partly cloudy, w. breeze 5 mph, 68°F
June 16	0615 - 1115	overcast, drizzle, 58°F	overcast, w. breeze 5 mph, 65°F
June 17	0600 - 1030	overcast, calm, 58°F	overcast, calm, 63°F
Survey Seven			
June 29	0600 - 1030	overcast, calm, 62°F	clear, w. breeze 5 mph, 68°F
June 30	0600 - 1100	overcast, calm, 56°F	clear, w. breeze 10 mph, 74°F
July 1	0600 - 1030	foggy, calm, 54°F	clear, w. breeze 5 mph, 75°F
Survey Eight			
July 13	0600 - 1015	overcast, calm, 63°F	partly cloudy, calm, 68°F
July 14	0600 - 1130	overcast, calm, 65°F	partly cloudy, calm, 69°F
July 16	0600 - 1130	overcast, calm, 63°F	partly cloudy, calm, 68°F

A total of 18 pairs or territorial males and 5 transient male least Bell's Vireos were documented during the surveys (Table 2, Table 3, Map 4). In general, vireos were found along the major drainages at the Station; however, the vireos were not evenly spaced according to available habitat. No vireos were detected west of I-15, despite extensive available habitat in Rose Canyon and San Clemente Canyon. In contrast, vireos east of I-15 were often found in seemingly sub-optimal habitat, such as chaparral slopes. Some riparian habitats east of I-15 appeared to support fewer vireos than the habitat could support, including Sycamore Canyon, and upper portions of San Clemente Canyon. It appears that the population of vireos on the installation is in a period of expansion, likely emanating from the large San Diego River population at Mission Trails Regional Park, and has yet to reach much of the suitable habitat on the base.

As mentioned previously, many pairs were found in territories predominately or entirely composed of chaparral vegetation. These pairs, such as pair L and pair N, were still located in large drainages, but predominately foraged on adjacent north facing slopes composed of dense shrubs; typically laurel sumac, toyon, chaparral mallow, and lemonadeberry.

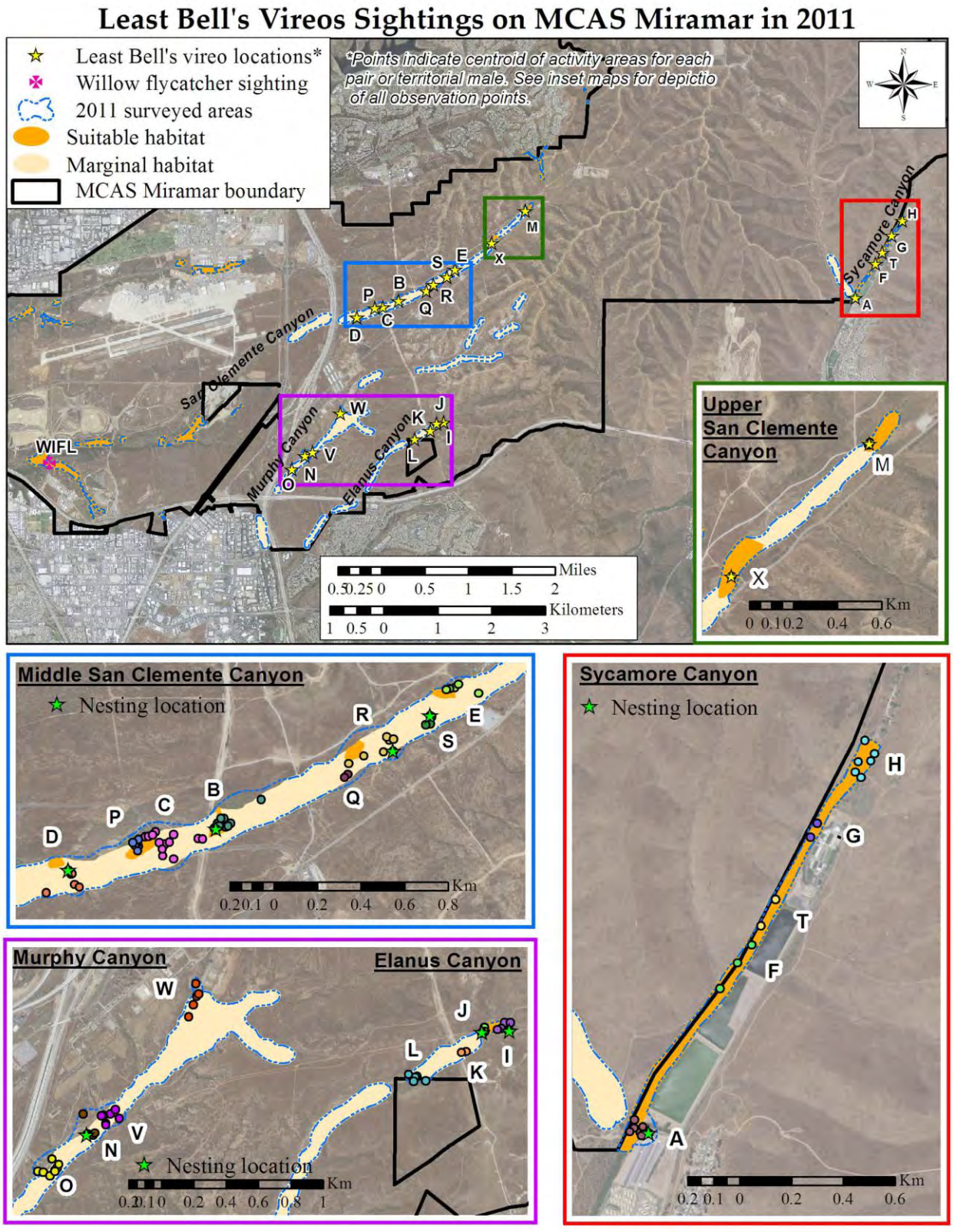
Table 2. Summary data for 2011 least Bell's vireo surveys on the Station Marine Corps Air Station Miramar.

Territorial single male (> 30 days) [A]	Territorial male of nesting pair [B]	Territorial male of unknown breeding status (single or paired?) [C]	Transient males (< 30 days) [D]	TOTAL Males [A+B+C+D]	Total # Territories (single &/or paired) Males [A+B+C]
1	17	0	5	23	18

Table 3. Summary of least Bell's vireo observations from 2011 surveys.

Pair/territory #	Pair status	Reproduction	Comments
A	Pair	Nest found 24 May. Pair fledged 4 young.	Nest in *Baccharis sarathroides*/*Brassica* patch.
B	Pair	Nest found 19 May: 4 eggs. Nest failed.	Nest in *Malosma laurina*. Nest knocked over by deer June 1.
C	Pair	Seen carrying nest material 12 April	Pair feeding BH Cowbird fledge 1 June.
D	Pair	Nest found 6 May: 4 eggs. Nest failed.	Nest in *Malosma laurina*. Nest depredated June 1
E	Transient Male		Detected April 26 – May 19.
F	Pair		Detected May 6 – May 20.
G	Transient Male		Detected only May 6.
H	Transient Male		Detected May 6 – May 20.
I	Pair	Nest found 3 June. 10 June: 3 eggs. Nest failed.	Nest in *Malosma laurina*. Nest depredated on 17 June. Male color banded on June 10. Banded originally as chick in San Luis Rey River in 2006.
J	Pair	Nest found 20 May: 4 eggs, 1 BHCO egg. 3 June: 3 chicks. Nest failed.	Nest in *Baccharis salicifolia* patch in riparian. Chicks dead in nest.
K	Transient Male		Detected only May 6.
L	Pair		Territory entirely chaparral.
M	Pair		Detected May 6 – May 19.
N	Pair	Nest found 6 May. Nest fledged 4 young.	Territory mostly in chaparral. Nest in *Prunus illicifolia* on chaparral slope.
O	Pair	Pair tending at least 2 fledges	Family group regularly observed foraging together in June and July.
P	Pair	Male with 2 fledges 30 June	
Q	Pair		Detected only May 19.

Pair/territory #	Pair status	Reproduction	Comments
R	Pair	Nest being built 1 June. Nest failed.	Territory mostly chaparral. Nest in *Malosma laurina.* Nest found torn, empty June 15.
S	Pair	Nest being built 1 June. Nest failed.	Territory mostly chaparral. Nest in *Malosma.laurina.* Nest found torn, empty June 15.
T	Transient Male		Detected only May 20.
V	Unpaired Male		Territorial throughout the season, but never observed paired.
W	Pair		Pair used both small patch of willows and adjacent chaparral slopes.
X	Pair		Found foraging July 13 in willow patch in upper San Clemente. Likely moved from another territory downstream.



Map 4. Locations of least Bell's vireos and willow flycatcher observations on MCAS Miramar in 2011.

5.0 Discussion

While both species use similar habitat, they do differ slightly in their ideal habitat. Least Bell's vireos are often found in early successional habitat within riparian areas, and prefer dense, thick willow cover, especially within 1-2 meters of the ground. The least Bell's vireo will use areas outside of the riparian zone, particularly for foraging and in dispersal late in the breeding season more so than the southwestern willow flycatcher, (USFWS 1998). This habit allows them to use small pockets of willows that otherwise may not be able to support a willow flycatcher. The southwestern willow flycatcher is often found in more mature areas, especially in California, with an overstory of cottonwoods and a mixed understory (though they do occur in an oak-dominated riparian area in San Diego county) (Unitt 2004). They do require a dense interior understory, usually of willows or non-native saltcedar (*Tamarix* sp.), but prefer areas that contain a mosaic of habitats including openings for foraging. Southwestern willow flycatchers are found almost exclusively in areas that contain standing water, or at least saturated soils, and unlike the vireo, they tend to need wider riparian strips (at least 10 meters wide) (Sogge et al. 1997).

Habitats are highly variable on the Station. In the wetter locales in drainages, dense riparian woodland occurs dominated by arroyo willow (*Salix lasiolepis*), black willow (*Salix gooddingii*), and western sycamore (*Platanus racemosa*). Many drainages are drier and support more limited or patchy riparian vegetation dominated by mule fat (*Baccharis salicifolia*) with occasional pockets of arroyo willow and coyote willow (*Salix exigua*). Exotic species such as arundo (*Arundo donax*), castor bean (*Ricinus communis*), and tamarisk (*Tamarix* sp.) are also present at low densities in many of the drainages surveyed. Though the vireos typically used habitats in the base of the drainages, many pairs also utilized adjacent slopes consisting of dense chaparral or coastal sage scrub vegetation, including laurel sumac (*Malosma laurina*), toyon (*Heteromeles arbutifolia*), chaparral mallow (*Malacothamnus fasciculatus*), and lemonadeberry (*Rhus integrifolia*). Many vireo nests were placed in laurel sumacs.

The surveys followed established protocols (USFWS 2001, Sogge et al. 2010). During each visit that an individual was detected, its location was recorded. If it moved a significant distance during the observation period, additional locations were recorded, resulting in more mapped locations than the number of days it was detected in some instances. In order to maximize species detections in the various drainages within the survey area, the starting location on each survey day was varied so that no single drainage received the majority of the early morning survey time, when songbird detections are often highest. All avian species detected during the surveys were recorded. A complete list of avian species detected during surveys is in Table 4.

In early May, a few pairs of vireos were discovered singing territorially in chaparral and coastal sage scrub vegetation, typically on the north facing slopes of drainages. The survey effort was subsequently significantly expanded, and sustained efforts were made to survey all similar habitat areas on the Station. In the course of these expanded surveys, many additional pairs were found in drainages with very limited riparian vegetation and where vireos had not been detected previously.

During the course of the surveys, eight vireo nests were found. Though nest monitoring was not a component of the survey effort, these nests were monitored on subsequent visits to provide information on nesting success and parasitism rates in the area. A total of eleven vireo nesting events were documented during the surveys. These three additional nesting events were determined by detecting vireo or Brown-headed cowbird (*Molothrus ater*) fledglings attended by adult vireos, though the nests were not found.

Of the eight nests located, only two successfully fledged young. Though this sample size is small, it implies a poor reproductive year. Further evidence of a poor reproductive year is that of the seventeen pairs on the Station, only four were determined to have successfully fledged young vireos. Many pairs that lost a nest did not re-nest in their territory as would happen in a more typical year. Vireos arrived on their breeding grounds late this year, and territory defense, pair formation, and nest initiations all seemed to be delayed. This implies that the birds arrived in poor physiological condition.

Due to ongoing efforts to band Least Bell's vireos throughout southern California, an attempt was made to visually observe the legs of every adult vireo to determine if it had been previously banded. Most vireos' legs were observed at least once during the surveys. The pair I male was observed to have a blue anodized metal band on his left leg on June 3. On June 10, this male was captured in a mist-net by Dr. Barbara Kus of the U.S. Geological Survey, and fitted with color bands. A white/dark blue split band was placed above the metal band on the left, and a white/black striped band was placed on the right. The metal band number was determined to be 2320-28268, and was found to be a bird banded as a nestling in the San Luis Rey River in Oceanside, CA on May 25, 2006. No other banded vireos were observed.

There was only willow flycatcher observation recorded on one occasion during the performance of this survey effort. It was not detected subsequently and is assumed to be a migrant bird. Based on the date of observation, the song pattern heard, and relative abundance of the various subspecies, it likely belongs to the subspecies *brewsteri*, which breeds in northern California and points north (Unitt 1987). However, the subspecies of migrant willow flycatchers is impossible to determine with certainty in the field.

Brown-headed cowbirds (*Molothrus ater*) were common to abundant throughout the various drainages on the Station. Areas with particularly high concentrations included Sycamore Canyon, San

Clemente Canyon, and Rose Canyon. Brown-headed cowbird parasitism was observed on two occasions. One in upper San Clemente Canyon where pair C was observed feeding a cowbird fledge, and one in a small drainage south of the Sheriff's Range where the nest for pair J was found to have a cowbird egg. While this appears to be a small number, only four successful vireo reproduction events were noted, and this would have been five had not pair C raised a cowbird chick. Numerous other species are subject to lowered reproductive rates due to cowbird parasitism, including two California State Species of Special Concern that are breeding on the base, Yellow Warbler (*Dendroica petechia*), and Yellow-breasted Chat (*Icteria virens*; Shuford and Gardali 2008). Within areas of Sycamore canyon that previously supported multiple pairs of least Bell's vireo, only one resident pair has been found. This area does seem to support a large population of cowbirds as well.

The area in the upper San Clemente drainage was not known to support a population of least Bell's vireo. Previous surveys did not identify any of these areas as suitable habitat. While each pair or individual least Bell's vireo range is near willow patches identified as habitat, the birds have been observed ranging around these patches into chaparral, particularly into areas containing laurel sumac (*Malosma laurina*).

It is interesting that six of the eight nests observed were located in chaparral shrub species, five in laurel sumac (*Malosma laurina*) and one in holly-leaved cherry (*Prunus illicifolia*). With the exception of the nest in the cherry, all of these pairs had at least some willow shrubs available to them within their territories, but chose to nest in chaparral shrub species instead. Due to the limited time available for nest searching and monitoring, it is not possible to compare the reproductive success of pairs in various habitats. However, it was observed that at least some of the chaparral inhabiting pairs were successful in raising offspring, including pair N which fledged four young. This question would be an interesting topic for future investigation.

6.0 References

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USFWS. 2001. Least Bell's Vireo Survey Guidelines. Memo from USFWS Carlsbad, CA dated January 19, 2001.

USFWS. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix + 210 pp., Appendices A-O.

USFWS. 2006. Least Bell's Vireo 5-year Review Summary and Evaluation. US Fish and Wildlife Service, Carlsbad, CA. September 2006.

Varanus Biological Services, Inc. 2003. Final Report: Southwestern Willow Flycatcher and Least Bell's Vireo Surveys on Marine Air Corps Station Miramar, San Diego County, California, 2002 Season. Unpublished report prepared for Marine Air Corps Base Miramar and Naval Facilities Engineering Command Southwest.

7.0 Photos

Figure 1. Dense riparian woodland in lower San Clemente Canyon where the migrant willow flycatcher was observed. Photo taken June 29, 2011 by Kevin B. Clark.

Figure 2. Multi-story riparian forest in Sycamore Canyon occupied by pair A. Photo taken July 14, 2011 by Kevin B. Clark.

Figure 3. Chaparral slope inhabited by pair L. Note sparse mule fat in bottom of drainage. Photo taken July 16, 2011 by Kevin B. Clark.

Figure 4. Nest for pair L in holly-leaved cherry on chaparral slope. This nest fledged four young. Photo taken July 1, 2011 by Kevin B. Clark.

Figure 5. Male of pair I color banded by Dr. Barbara Kus of USGS. This bird had been banded as a nestling on May 25, 2006 in the San Luis Rey River in Oceanside, CA. Photo taken June 10, 2011 by Kevin B. Clark.

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8.0 Copy of US Fish and Wildlife Service Permit

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DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE

3-201
(1/97)

FEDERAL FISH AND WILDLIFE PERMIT

1. PERMITTEE

KEVIN B. CLARK
7558 NORTHRUP DR
CLARK BIOLOGICAL SERVICES
SAN DIEGO, CA 92126-5115
U.S.A.

2. AUTHORITY-STATUTES
16 USC 1539(a)
16 USC 1533(d)
16 USC 703-712

REGULATIONS
50 CFR 17.22
50 CFR 17.32
50 CFR 21.23 & 21.27
50 CFR 13

3. NUMBER
TE117947-3 AMENDMENT

4. RENEWABLE
☒ YES
☐ NO

5. MAY COPY
☒ YES
☐ NO

6. EFFECTIVE
11/27/2009

7. EXPIRES
06/30/2013

8. NAME AND TITLE OF PRINCIPAL OFFICER *(If #1 is a business)*

9. TYPE OF PERMIT
THREATENED AND ENDANGERED SPECIES

10. LOCATION WHERE AUTHORIZED ACTIVITY MAY BE CONDUCTED
ON LANDS SPECIFIED WITHIN THE ATTACHED SPECIAL TERMS AND CONDITIONS

11. CONDITIONS AND AUTHORIZATIONS:

A. GENERAL CONDITIONS SET OUT IN SUBPART D OF 50 CFR 13, AND SPECIFIC CONDITIONS CONTAINED IN FEDERAL REGULATIONS CITED IN BLOCK #2 ABOVE, ARE HEREBY MADE A PART OF THIS PERMIT. ALL ACTIVITIES AUTHORIZED HEREIN MUST BE CARRIED OUT IN ACCORD WITH AND FOR THE PURPOSES DESCRIBED IN THE APPLICATION SUBMITTED. CONTINUED VALIDITY, OR RENEWAL, OF THIS PERMIT IS SUBJECT TO COMPLETE AND TIMELY COMPLIANCE WITH ALL APPLICABLE CONDITIONS, INCLUDING THE FILING OF ALL REQUIRED INFORMATION AND REPORTS.

B. THE VALIDITY OF THIS PERMIT IS ALSO CONDITIONED UPON STRICT OBSERVANCE OF ALL APPLICABLE FOREIGN, STATE, LOCAL OR OTHER FEDERAL LAW.

C. VALID FOR USE BY PERMITTEE NAMED ABOVE.

D. Further conditions of authorization are contained in the attached Special Terms and Conditions.

☒ ADDITIONAL CONDITIONS AND AUTHORIZATIONS ALSO APPLY

12. REPORTING REQUIREMENTS:
ANNUAL REPORTS DUE: 1/31
See permit conditions for further reporting requirements.

ISSUED BY	TITLE	DATE
Michael M. Long	ENDANGERED SPECIES DIVISION CHIEF	11/27/2009

SPECIAL TERMS AND CONDITIONS
Kevin B. Clark

1. This permit was previously issued on July 1, 2009. The terms and conditions set forth in that permit are hereby superseded by this amendment.

2. Acceptance of this permit serves as evidence that the permittee understands and agrees to abide by the "General Conditions for Native Endangered and Threatened Wildlife Species Permits," 50 CFR Part 13, 50 CFR 17.22 (endangered wildlife) and/or 50 CFR 17.32 (threatened wildlife), as applicable (copies attached). In addition, the permittee must have any other applicable State and Federal permits prior to the commencement of activities authorized by this permit.

3. The permittee is authorized to take (harass by survey and locate and monitor nests) the coastal California gnatcatcher (*Polioptila californica californica*), the southwestern willow flycatcher (*Empidonax traillii extimus*), the California least tern (*Sterna antillarum browni*), and the western snowy plover (*Charadrius alexandrinus nivosus*); take (locate and monitor nests; play taped vocalizations; handle, band, color-band, release) the least Bell's vireo (*Vireo belli pusillus*); take (harass by survey and collect and sacrifice) the Conservancy fairy shrimp (*Branchinecta conservatio*), the longhorn fairy shrimp (*Branchinecta longiantenna*), the Riverside fairy shrimp (*Streptocephalus woottoni*), the San Diego fairy shrimp (*Branchinecta sandiegonensis*), the vernal pool fairy shrimp (*Branchinecta lynchi*), and the vernal pool tadpole shrimp (*Lepidurus packardi*), (hereafter collectively referred to as vernal pool branchiopods); and take (survey by pursuit) the Quino checkerspot butterfly (*Euphydryas editha quino*); in conjunction with surveys and population monitoring for the purpose of enhancing their survival, as specified in the permittee's August 13, 2009, permit request in accordance with the conditions stated below.

4. Permitted activities are restricted to the following geographic areas in California:

   a. For the gnatcatcher, southwestern willow flycatcher, California least tern, western snowy plover, vernal pool branchiopods, and Quino checkerspot butterfly:

      Throughout the range of each species.

   b. For least Bell's vireo nest monitoring activities:

      Throughout the range of the species.

   c. For playing taped vocalizations and conducting banding activities for the least Bell's vireo:

      Santa Margarita river drainage on Fallbrook Naval Weapons Station and Camp Pendleton Marine Base and the San Luis Rey river drainage in Northern San Diego County.

Proposals to conduct activities pursuant to this permit at specific locations within the above referenced areas must be submitted in writing to the appropriate Fish and Wildlife Office (FWO) of the U.S. Fish and Wildlife Service (Service) 10 days prior to conducting such activities. The appropriate FWO is determined as follows:

> For Del Norte, Humboldt, and Mendocino Counties, contact the Arcata Fish and Wildlife Office (AFWO), 1655 Heindon Road, Arcata, California 95521 (telephone: 707-822-7201; fax: 702-822-8411). For the Central Valley hydrographic basin and the coast ranges north of the Santa Cruz County line, contact the Sacramento Fish and Wildlife Office (SFWO), Ecological Services, 2800 Cottage Way, W-2605, Sacramento, California 95825 (telephone: 916-414-6600; fax: 916-414-6710). For areas from Santa Cruz County south to Malibu Creek in Los Angeles County north of the Angeles National Forest, contact the Ventura Fish and Wildlife Office (VFWO), 2493 Portola Road, Suite B, Ventura, California 93003 (telephone: 805-644-1766; fax: 805-644-3958). For areas from Los Angeles County including and south of the Angeles National Forest to San Diego County, contact the Carlsbad Fish and Wildlife Office (CFWO), 6010 Hidden Valley Road, Suite 101, Carlsbad, California 92011 (telephone: 760-431-9440; fax: 760-431-9624).

Proposals shall include, as appropriate: (i) an explanation of the purpose of the study and a clear description of methods, including the names of field personnel and the number and dates of surveys; (ii) a map (at a minimum, a 1:24,000 scale U.S. Geological Survey (USGS) topographic map) depicting the location of the survey site(s); (iii) the assessor's parcel number (APN) for the site (if possible); and (iv) geographic information system (GIS) data depicting the survey site or global positioning system (GPS) coordinates (if possible). Information may be submitted electronically if pre-arranged with the Recovery Permit Coordinator.

The permittee shall not commence activities authorized by this permit in a new area or at a previously authorized site at a new time until permission is received from the appropriate FWO. If the permittee is denied authorization to conduct activities at the requested location(s), including previously authorized sites, a request for reconsideration may be submitted to the Endangered Species Division Chief at the Service's Regional Office for the Pacific Southwest Region (Region 8), 2800 Cottage Way, Room W-2606, Sacramento California 95825-1846, as provided in 50 CFR 13.29. The procedures specified in 50 CFR 13.29(b) must be followed.

5. Authorized individuals:

Only individuals on the attached List of Authorized Individuals (List) are authorized to conduct activities pursuant to this permit. The List, printed on Service letterhead, may identify special conditions or circumstances under which individuals are authorized to conduct permitted activities and must be retained with these Special Terms and Conditions. Each named individual shall be responsible for compliance with the terms and conditions of this permit.

To request changes to the List, the permittee shall submit a written request to the CFWO. The request shall be submitted at least 30 days prior to the requested effective date. The request shall be signed and dated by the permittee and include:

a. The name of each individual to be appended to the List;

b. The resume/qualifications statement of each person to be appended to the List, detailing their experience with each species and type of activity for which authorization is requested;

c. The names and phone numbers of a minimum of two references; and

d. The names of the individuals to be deleted from the List.

Note: This procedure is for personnel changes only. For requests to renew/amend this permit, a complete application must be submitted to the Endangered Species Division Chief, at the Region 8 office.

6. Taking of the least Bell's vireo (vireo):

The permittee is authorized to conduct survey and nest-monitoring activities using taped vocalizations, capture, handle, band, color-band, and release vireo adults and nestlings; and to remove brown-headed cowbird eggs and nestlings from parasitized vireo nests within the geographic boundaries specified above, and the time limitation specified in the permit, provided that:

a. Prior to conducting vireo activities, the permittee shall coordinate with monitors and managers of vireo working groups (if any) within the specified geographic areas for each population.

b. Surveys shall be conducted in accordance with the approved Service protocol for vireo surveys unless authorized in advance by the Service.

c. Nests shall not be visited more than once per day and three times per nesting season.

d. Activities shall not be conducted during inclement weather conditions that would significantly reduce the detectability of the species or expose nest contents to the elements (e.g., rain, strong wind, fog).

e. Nests shall not be visited if western scrub jays (*Aphelocoma californica*) or brown-headed cowbirds are detected in the immediate vicinity.

f. All banding and color-banding shall be conducted under a valid Federal Migratory Bird Banding Permit with auxiliary marking authorization.

g. Color-banding schemes shall be coordinated with the vireo working group.

h. The permittee is authorized to apply up to three bands (including a Service band) per adult and up to two bands (including a Service band) per nestling. Authorized band combinations are as follows:

   i. One Service and one metal band per adult; OR one Service band and one color band per adult; OR one Service and two half-sized color bands per adult; with no more than one full-sized band or two half-sized bands per leg.

   ii. One Service and one metal band per nestling; OR one Service band and one full-sized color band per nestling; OR one Service and one half-sized color bands per nestling; with no more than one band per leg.

i. Within 45 days following completion of the field season, a report shall be submitted to the appropriate FWO that presents observational data on vireos with more than two leg-bands, and discusses the effects of applying more than one band per leg.

j. Nestlings shall be banded between 7 and 12 days of age.

k. All plastic bands shall be sealed with acetone.

l. The removal of brown-headed cowbird nestlings and eggs shall be accomplished in a manner that minimizes disturbance to any vireo eggs, nestlings, or nesting adults. Replacement of cowbird eggs with dummy eggs (to preclude the abandonment of small clutches) may be done at the discretion of the permittee.

m. The permittee shall report any incidental detections and locations of potentially breeding vireos to the appropriate FWO.

n. The permittee shall report, within 24 hours, any incidental detections and locations of potentially breeding southwestern willow flycatchers to the appropriate FWO.

o. For playing vireo taped vocalizations:

   i. Taped vocalizations shall be used to survey, nest monitor, or attract adult vireos to mist nets for banding purposes only when other methods fail, and shall be used as little as possible in order to minimize impacts to the vireo.

   ii. Tapes may be used to attract adult vireos to mist nets when capturing for banding.

iii. Tapes may be used to elicit responses of territorial vireos during surveys when spontaneous vocalizations are absent, and shall be used only until individuals have been initially located and not to elicit further behavior.

iv. Tapes may be used to attract male vireos close enough to view bands and determine the color combinations of bands.

7. Taking of the coastal California gnatcatcher (gnatcatcher):

The permittee is authorized to survey for gnatcatchers using taped vocalizations, locate and monitor nests, and remove brown-headed cowbird eggs and chicks from parasitized gnatcatcher nests within the geographic boundaries specified above, and the time limitation specified in the permit, provided that:

a. Tapes are used only until individuals have been initially located and not to elicit further behavior.

b. Activities are not conducted during inclement weather conditions that would significantly reduce the ability to detect the species or expose nest contents to the elements (e.g., rain, strong wind, fog).

c. Surveys shall be conducted in accordance with the approved Service protocol (attached) unless authorized in advance by the appropriate FWO.

d. Nests are visited no more than once per day and no more than three times during the nesting season.

e. Nests are not visited if western scrub jays or brown-headed cowbirds are detected in the immediate vicinity.

f. The removal of brown-headed cowbird chicks and eggs is accomplished with minimal disturbance to gnatcatcher eggs, chicks, or nesting adults. Replacement of cowbird eggs with dummy eggs (to preclude the abandonment of small clutches) shall be done at the discretion of the permittee.

8. Taking of the southwestern willow flycatcher (flycatcher):

The permittee is authorized to survey for flycatchers using taped vocalizations, locate and monitor nests, and remove brown-headed cowbird eggs and chicks from parasitized flycatcher nests within the geographic boundaries specified above, and the time limitation specified in the permit, provided that:

a. The permittee attends the required formal training sessions before conducting activities pursuant to this permit. The training sessions shall be conducted by the Service, the Biological Resources Division of the USGS, or their designated agents, and shall include updated curricula pertaining to flycatcher detection

techniques, habitat assessments, nest monitoring, bird banding and marking, and bird handling. The permittee must be rated as qualified by the course instructors before initiation of permitted activities. The permittee should contact the CFWO to find out when and where the next flycatcher training session will be conducted.

b. The permittee conducts all presence/absence surveys and nest monitoring activities in accordance with the Southwestern Willow Flycatcher Protocol Revision 2000 and protocols prescribed by the appropriate FWO or in current or revised versions of:

   i. Sogge, M.K., R.M. Marshall, S.J. Sferra, and T.J. Tibbitts. 1997. A Southwestern Willow Flycatcher Natural History Summary and Survey Protocol. Technical Report NPS/NAUCPRS/NRTR-97/12.

   ii. Ralph, C.J., G.R. Geupel, P. Pyle, T.E. Martin, and D.A. DeSante. 1993. Handbook of Field Methods for Monitoring Landbirds. U.S. Forest Service General Technical Report PSW-GTR-144.

c. Tapes are used only until individuals have been initially located and not to elicit further behavior.

d. Activities are not conducted during inclement weather conditions that would significantly reduce the ability to detect the species or expose nest contents to the elements (e.g., rain, strong wind, fog).

e. The permittee shall report, within 24 hours, all detections and locations of potentially breeding flycatchers to the appropriate FWO.

f. The permittee shall report any incidental detections and locations of potentially breeding vireos to the appropriate FWO.

g. The removal of brown-headed cowbird eggs and chicks is accomplished with minimal disturbance to any flycatcher eggs, chicks, or nesting adults. Replacement of cowbird eggs with dummy eggs (to preclude the abandonment of small clutches) shall be done at the discretion of the permittee.

h. For nest locating and monitoring:

   i. Nests are not visited more than once per day and three times per nesting season. The permittee may use following time periods to help determine developmental stage of the nestlings:

      Nest construction - 3 to 8 days;
      Egg laying - 3 to 5 days after nest construction;
      Incubation - 12 to 13 days after egg laying; and
      Fledging - 12 to 15 days after hatching.

ii. Nests are not visited if scrub jays or brown-headed cowbirds are detected in the immediate vicinity.

iii. Nest locating and monitoring shall only be conducted by one or two individuals during any visit.

iv. Flycatcher nest trees, nests, and eggs shall not be touched or handled. The permittee shall use an extension pole with a mirror to check nest contents only when necessary.

v. The permittee shall use behavioral clues as a guide to the nesting area and nest, rather than random searching.

vi. Once a nest is located, the permittee shall observe the behavior of the adult flycatcher(s) to ascertain the reproductive stage occurring (nest building, egg-laying, incubation, nesting, or fledging). This can be done with binoculars or a scope from a distance. If necessary, the nest may be inspected with great care and the minimal amount of time needed to determine status.

9. Taking of the California least tern (least tern):

The permittee is authorized to harass by survey, and locate and monitor nests within the geographic boundaries specified above, and the time limitation specified in the permit, provided that:

a. Disturbance to nesting and brooding terns shall be avoided during climatic conditions such as high wind, extreme cold, or extreme heat (e.g., the ambient temperature, measured 3 inches above the surface, exceeds 85 degrees Fahrenheit). Attempts shall be made to minimize the amount of time spent in least tern nesting areas.

b. When monitoring of least terns is to occur at western snowy plover nesting sites, the permittee shall contact the appropriate FWO to coordinate activities with the plover monitor(s) to minimize disturbance to the plovers.

c. Capture, banding, marking, and handling of least tern adults and chicks are not authorized under this permit.

10. Taking of the western snowy plover (plover):

The permittee is authorized to harass by survey and locate and monitor nests within the geographic boundaries specified above, and the time limitation specified in the permit, provided that:

a. Disturbance to nesting and brooding plovers should be avoided during certain climatic conditions, such as high wind and extreme cold or heat (e.g., the ambient temperature, measured 3 inches above the surface, exceeds 85 degrees Fahrenheit). Attempts should be made to minimize the amount of time spent in plover nesting areas.

b. Activities shall be conducted using methods and techniques that will not compromise the safety of individual plovers, and their nests, eggs, and young.

c. Capture, banding, marking, and handling of plover adults and chicks are not authorized under this permit.

11. Taking of the Quino checkerspot butterfly (Quino):

The permittee is authorized to survey by pursuit, handle, and live-capture Quino for the purpose of identification by the Service or its representatives within the geographic boundaries specified above, and the time limitation specified in the permit, provided that:

a. Survey, handling, and capture activities shall be conducted in accordance with the most recent Service approved protocol (attached) for the Quino unless authorized in advance by the CFWO. Larva or adult live captures shall only occur in areas designated in the approved protocol.

b. Handling and capture is limited to one individual Quino larva, pupa, or adult per site.

c. The permittee shall successfully pass the most recent version of the Service's practical examination for the Quino prior to initiating focused surveys unless authorized in advance by a letter from the Service.

d. Host and nectar plants are not to be removed from the field.

12. Taking of the vernal pool branchiopods

The permittee is authorized to sample and collect voucher specimens of the vernal pool branchiopods (both hatched individuals and eggs) within the geographic boundaries specified above, and the time limitation specified in the permit, provided that:

a. The permittee must implement all of the actions included in the attached *Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods* (Guidelines), dated April 19, 1996. The Guidelines will be updated periodically and the permittee must follow the most recent Guidelines after receipt of such. Any deviation from these Guidelines shall first be approved verbally or in writing by the SFWO.

b. As specified in the Guidelines, sampling/collecting of hatched individuals or eggs is not authorized at any specific location until the permittee obtains approval from the appropriate FWO.

Note: The sampling and preservation of voucher specimens from locations that have been previously surveyed will not be authorized, except in cases where the adequacy of the earlier survey work is in doubt or otherwise should be repeated as determined by the Service.

c. The number of voucher specimens authorized to be collected and preserved is limited to no more than 20 hatched individuals of each species from each vernal pool (or swale) per sampling visit or less than 10 percent of the subpopulation in the vernal pool (or swale) during the sampling visit, whichever is the lesser amount.

d. The permittee is authorized to collect an unquantifiable number of vernal pool branchiopod eggs contained within soil samples taken following the most recent Guidelines. The total amount of soil samples each calendar year should not exceed a ratio of 1 liter per each 10 square meters (approximately 1 percent at 1 centimeter deep) of estimated vernal pool surface area surveyed.

e. The permittee shall disinfect sampling and field gear as follows:

i. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each survey site.

ii. Boots, nets, traps, etc. must be scrubbed with 70 percent alcohol (i.e., isopropyl or ethanol) or 3 to 6 percent sodium hypochlorite and thoroughly rinsed with clean tap water between survey sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland.

iii. In remote locations, clean all equipment as described above upon return to the lab or base camp. Elsewhere, when washing machine facilities are available, remove nets from poles and wash with bleach on the delicates cycle, within in a protective mesh laundry bag.

iv. Used cleaning materials (liquids, etc.) shall be disposed of safely at the lab. Used disposable gloves shall be retained for safe disposal in sealed bags.

f. Incidental take of California tiger salamander (*Ambystoma californiense*) larvae and adults (capture with dip net and immediately release where captured) while conducting vernal pool branchiopod surveys is authorized. If the permittee

observes California tiger salamanders during the course of field surveys, the locations shall be listed as UTM coordinates in the 90-day report referenced below.

g. Within 90 days following completion of the last field visit at each project site, a report shall be submitted to the SFWO following the general reporting format specified below. The report shall include all reporting criteria specified in the current Guidelines unless otherwise specified below:

i. Each survey report submitted to the Service shall include the following:

A. An introduction section addressing reasons and objectives for taking the species;

B. Methodology section addressing data collection and analysis procedures, the names of personnel, and the number and dates of surveys;

C. Results section that includes data collected (including reporting criteria specified in the Guidelines) and summarizes the data collected;

D. Conclusion section that specifically provides recommendations for recovery of the species and any other pertinent observations made during survey efforts.

ii. All vernal pool data sheets should be included as attachments to the final 90-day report. Vernal pool datasheets shall not solely be submitted as a final report for any one project site;

iii. The location of the project site and survey area shall be delineated on a USGS topographic map (1:24,000 scale), and the location of the listed vernal pool branchiopods (i.e., pools, swales, ponds) delineated on a USGS topographic map in as precise a manner as possible (e.g., UTM coordinates or location within a section);

iv. Reports submitted to the Service shall provide accurate and complete reporting of activities. Each report shall include the following certification statement and be signed by each surveyor(s) performing activities pursuant to this permit: "I certify that the information in this survey report and attached exhibits fully and accurately represents my work." The date of signature and the surveyor's permit number shall be included.

13. Within 45 days following completion of a survey and/or nest monitoring activity for the flycatcher, gnatcatcher, vireo and Quino, a report shall be submitted to the Recovery

Permit Coordinator at the appropriate FWO that includes: (a) the location of the survey area delineated on a USGS topographic map (1:24,000 scale); (b) a qualitative description of the plant communities (including dominant species and habitat quality) on and adjacent to the survey area; (c) a complete description of survey methods including the names of personnel, the number of acres surveyed per biologist per survey-day, the number and dates of surveys, survey routes, the temperature and weather conditions at the beginning and end of each survey, and how frequently taped vocalizations were used, if at all; (d) the number, age (adult, juvenile, nestling, unknown), and sex of all flycatchers, gnatcatchers, vireos, and brown-headed cowbirds detected; these data shall also be plotted on 1:24,000 scale map(s) of the survey area to the extent possible; (e) the APN for the site (if possible); (f) GIS data or GPS coordinates (if possible); (g) a conclusion section that specifically provides recommendations for recovery of the species; and (h) other pertinent observations made during survey efforts. Information may be submitted electronically if pre-arranged with the Recovery Permit Coordinator.

14. The number of individuals allowed to be incidentally injured or killed during the performance of permitted activities is zero gnatcatchers, zero vireos, zero flycatchers, zero least terns, zero plovers, 10 individuals of each vernal pool branchiopod species (and an unquantifiable number of eggs), zero Quino, and zero California tiger salamanders (larvae or adults) in any calendar year. In the event that the number of individuals allowed to be incidentally injured or killed is exceeded during the performance of permitted activities, the permittee must:

    a. Immediately cease the activity resulting in injury or death until reauthorized by the Region 8 office, which may, after analysis of the circumstances of mortality or injury, revoke or amend this permit.

    b. Immediately notify the Region 8 Recovery Permit Coordinator (telephone: 760-431-9440; fax: 760-930-0846) and the appropriate FWO. The permittee must follow-up such verbal notification in writing to each office.

       With the written notification, the permittee is to provide a report of the circumstances that led to the injury or mortality. A description of the changes in protocols that will be implemented to reduce the likelihood of such injury or mortality from happening again should be included, if appropriate. The incident shall also be discussed in the annual report that is subsequently submitted. A copy of this report shall also be sent to the California Department of Fish and Game (CDFG), Attention: Permit Biologist, Wildlife Branch, 1812 Ninth Street, Sacramento, California 95811 (telephone: 916-445-3764).

    c. The appropriate parts of any dead specimen shall be preserved in accordance with standard museum practices. Before expiration of the permit, all preserved specimens shall be properly labeled and deposited with one of the designated depositories. The permittee shall supply the depository with a copy of this permit to validate that the specimens supplied to the museum were taken pursuant to a permit.

15. The permittee is authorized to salvage all gnatcatcher, vireo, flycatcher, least tern, and plover carcasses to be provided to one of the designated depositories.

16. Designated depositories:

    a. For the gnatcatcher, southwestern willow flycatcher, California least tern, western snowy plover, least Bell's vireo, and the vernal pool branchiopods:

       The California Academy of Sciences, Golden Gate Park, San Francisco, California; the Museum of Vertebrate Zoology, University of California, Berkeley, California; the San Diego Museum of Natural History, San Diego, California; or the Los Angeles County Museum of Natural History, Los Angeles, California. Other depositories may be authorized by an appropriate FWO.

    b. For the Quino:

       The Entomological Museum, University of California, Riverside, California.

17. California Natural Diversity Database forms shall be completed, as appropriate, for each listed species addressed herein and submitted to the Biogeographic Data Branch, CDFG, 1807 13th Street, Suite 202, Sacramento, California 95811 (also accessible online at: http://www.dfg.ca.gov/biogeodata/cnddb), with copies submitted to the appropriate FWO. Copies of the form can be obtained from the CDFG at the above address (telephone: 916-324-3812).

    All reports or other documents that include information gathered under the authority of this permit (e.g., reports prepared by consulting firms for their clients) shall reference this permit. Copies of such documents shall be provided to the appropriate FWO immediately upon their completion. Draft documents and other information resulting from work conducted under the authority of this permit shall be submitted to the Service upon request.

18. Annual reports:

    Annual reports shall be submitted to the Recovery Permit Coordinator at each appropriate FWO by January 31, following each year this permit is in effect. Specifically, part 17(a) below is required as applicable and part 17(b) below is required as specified:

    a. As applicable, for any research or monitoring activity authorized pursuant to this recovery permit and/or for any activity conducted for each species authorized pursuant to this permit that does not have a previously required reporting obligation as stated in survey protocols, survey guidelines, or previously specified in this permit, the permittee shall submit an annual report in the following format: (i) an introduction section addressing reasons and objectives for taking the species; (ii) a methodology section addressing data collection and analysis procedures; (iii) a results section that summarizes the data collected including any

information on any other federally listed species detected while conducting activities authorized under this permit; and (iv) a conclusion section that specifically provides recommendations for recovery of the species. If no activities occurred over the course of a year, indication of such shall be submitted as an annual report. Information may be submitted electronically if pre-arranged with the Recovery Permit Coordinator.

The annual report shall include, but not be limited to:

i.. Summary presentations and brief discussions of research and/or monitoring results;
ii. Locations sampled or survey/monitoring area delineated on a 7.5 minute U.S. Geological Survey topographic map at 1:2400 scale. The name of the USGS map identified;
iii. The names of all personnel conducting the activity and associated permit numbers;
iv. The results of all sampling efforts, including estimates of population sizes and genetic analyses (if applicable);
v. For least terns and plovers, the results section shall also include: (i) the total number of least terns and plovers seen per survey; (ii) the number of nesting adults; (iii) the number of nest initiations; (iv) total eggs laid; (v) an estimate of hatching success (e.g., hatched, abandoned, predated, weather or human impact); (vi) determination of chick outcome (e.g., survival, other outcomes); (vii) the number of fledglings produced per adult; (viii) a listing of all Service/color-band combinations observed; and (ix) a list of observed and suspected predators.
v. Reports or other documents that include information gathered under the authority of this permit;
vi. Numbers of individuals incidentally killed, including dates, locations, circumstances of take, and depository receiving the preserved specimen(s);
vii. Other pertinent observations made during sampling efforts regarding the status or ecology of the species; and
viii. Planned future activities if authorized under this permit.

b. Required for all species authorized pursuant to this permit:

i. An annual report of activities shall be submitted to the Recovery Permit Coordinator at each FWO as specified in term and condition number 4 above by January 31, following each year this permit is in effect. The report should provide a summary for each focused survey and/or permitted activity conducted during the previous calendar year for all species authorized pursuant to this permit. This annual report shall include, but not be limited to: (a) the title of the project (preferably the same title as was used in any survey, research, monitoring or other required report previously or concurrently being submitted to the Service), (b) the specific

location of the project site, including the County, (c) the common and scientific names of the listed species for which the permitted activity was conducted, (d) the numbers of each species observed and the dates of observation, (e) the date and name of the Service office where the survey, research, or monitoring report was or will be submitted, and (f) include the permittees name, permit number, and date of permit expiration. This information can be in tabular format and should provide a summary for each species authorized in this permit.

ii. If no activities were conducted with any or all species authorized under the permit during the previous year, please state this in writing in your annual report.

19. Failure to comply with reporting requirements may result in non-renewal or suspension/revocation of this permit.

12/8/09
Date

Endangered Species Division Chief

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Southwest Office
2800 Cottage Way, Suite W-2606
Sacramento, California 95825-1846

LIST OF AUTHORIZED INDIVIDUALS
TE-117947-3

1. Individual authorized to independently conduct activities pursuant to this permit:

Kevin B. Clark.

For the Quino, supervised individuals must first be added to this List, and may conduct activities pursuant to this permit only under the direct, on-site supervision of Mr. Clark. For all other species and/or activities, supervised individuals may conduct activities pursuant to this permit only under the direct, on-site supervision of Mr. Clark, but do not need to be named on this list. "On-site supervision" is defined as a supervised individual conducting activities within 3 meters (9.8 feet) of an independently authorized individual.

12/8/09
Date

Endangered Species Division Chief

This List is only valid if it is dated on or after the permit issuance date.

Appendix A. Avian species detected during Marin Corps Air Station Miramar surveys April 12 - July 16, 2011.

Common Name	**Scientific Name**
American Coot	*Fulica americana*
American Crow	*Corvus brachyrhyncos*
American Kestrel	*Falco sparverius*
Anna's Hummingbird	*Calypte anna*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Barn Owl	*Tyto alba*
Bell's Vireo	*Vireo bellii*
Belted Kingfisher	*Ceryle alcyon*
Bewick's Wren	*Thryomanes bewickii*
Black Phoebe	*Sayornis nigricans*
Black-chinned Hummingbird	*Archilochus alexandri*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Blue Grosbeak	*Passerina caerulea*
Blue-gray Gnatcatcher	*Polioptila caerulea*
Brown-headed Cowbird	*Molothrus ater*
Bullock's Oriole	*Icterus bullockii*
Bushtit	*Psaltriparus minimus*
California Gnatcatcher	*Polioptila californica*
California Quail	*Callipepla californica*
California Thrasher	*Toxostoma redivivum*
California Towhee	*Pipilo crissalis*
Caspian Tern	*Sterna maxima*
Cassins Kingbird	*Tyrannus vociferans*
Cliff Swallow	*Petrochelidon pyrrhonota*
Common Moorhen	*Gallinula chloropus*
Common Raven	*Corvus corax*
Common Yellowthroat	*Geothlypis trichas*
Cooper's Hawk	*Accipiter cooperii*
Costa's Hummingbird	*Calypte costae*
Double-crested cormorant	*Phalacrocorax auritus*
European Starling	*Sturnus vulgaris*
Forster's Tern	*Sterna forsteri*
Gadwall	*Anas strepera*
Grasshopper Sparrow	*Ammodramus savannarum*
Great Egret	*Ardea alba*
Great-Blue Heron	*Ardea herodias*
Great-tailed Grackle	*Quiscalus mexicanus*
Green Heron	*Butorides virescens*
Hermit Warlber	*Dendroica occidentalis*
Hooded Oriole	*Icterus cucullatus*
Horned Lark	*Eremophila alpestris*
House Finch	*Carpodacus mexicanus*
House Wren	*Troglodytes aedon*
Killdeer	*Charardrius vociferus*
Lark Sparrow	*Chondestes grammacus*
Lazuli Bunting	*Passerina amoena*

Lesser Goldfinch	*Spinus psaltria*
Lesser Nighthawk	*Chordeiles acutipennis*
Loggerhead Shrike	*Lanius ludovicianus*
Mallard	*Anas platyrhynchos*
Mourning Dove	*Zenaida macroura*
Northern Flicker	*Colaptes auratus*
Northern Mockingbird	*Mimus polyglottos*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Northern Shoveler	*Anas clypeata*
Nuttall's Woodpecker	*Picoides nuttallii*
Olive-sided Flycatcher	*Contopus cooperi*
Orange-crowned Warbler	*Vermivora celata*
Pacific-slope Flycatcher	*Empidonax difficilis*
Peregrine Falcon	*Falco peregrinus*
Phainopepla	*Phainopepla nitens*
Pied-billed Grebe	*Podilymbus podiceps*
Red-shouldered Hawk	*Buteo lineatus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Ruddy Duck	*Oxyura jamaicensis*
Rufous-crowned Sparrow	*Aimophila ruficeps*
Sage Sparrow	*Amphispiza belli*
Snowy Egret	*Egretta thula*
Song Sparrow	*Melospiza melodia*
Sora	*Porzana Carolina*
Spotted Towhee	*Pipilo maculates*
Swainson's Hawk	*Buteo swainsoni*
Swainson's Thrush	*Catharus ustulatus*
Townsend's Warbler	*Dendroica townsendi*
Tree Swallow	*Tachycineta bicolor*
Tricolored Blackbird	*Agelaius tricolor*
Virginia Rail	*Rallus limicola*
Warbling Vireo	*Vireo gilvus*
Western Bluebird	*Sialia Mexicana*
Western Grebe	*Aechmophorus occidentalis*
Western Kingbird	*Tyrannus verticalis*
Western Meadowlark	*Sturnella neglecta*
Western Scrub-Jay	*Aphelocoma californica*
Western Tanager	*Piranga ludoviciana*
White-crowned Sparrow	*Zonotrichia leucophrys*
White-tailed Kite	*Elanus leucurus*
White-throated swift	*Aeronautes saxatalis*
Wilson's Warbler	*Wilsonia pusilla*
Wrentit	*Chamaea fasciata*
Yellow Warbler	*Dendroica petechia*
Yellow-breasted Chat	*Icteria virens*
Yellow-rumped Warbler	*Dendroica coronata*