ATTACHMENT A: MINOR DESIGN REFINEMENTS

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INTRODUCTION

Since the submission of their Proponent's Environmental Assessment (PEA) on September 30, 2015 and PEA Supplement on March 21, 2016, San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas) (together, Applicants) have further refined and analyzed the design for the Pipeline Safety & Reliability Project (Proposed Project). The information in the subsections that follow and the corresponding exhibits are provided to inform the California Public Utilities Commission (Commission) of ongoing design refinements to facilitate the review of the Proposed Project and for inclusion in the Commission's environmental review and regulatory approval process.

MINOR DESIGN REFINEMENTS OVERVIEW

The Applicants have further analyzed and refined the design for the Proposed Project based on ongoing engineering, construction planning, and operation and maintenance (O&M) design specifications. These design refinements include the addition of laydown areas and minor adjustments to the alignment, route, workspaces, and appurtenant facilities, including the following:

- The alignment of the pipeline was adjusted within the roadway in several locations based on a review of newly available substructure data, as well as the results from recent potholing.

- The Rainbow Station Yard (formerly Laydown Yard #1)[1] decreased in size to avoid vegetation and to minimize impacts to southern coast live oak riparian forest.

- Boulder Knolls Road Yard (formerly Laydown Yard #4) was reconfigured and decreased in size to take advantage of disturbed ground and to avoid impacts to Diegan coastal sage scrub and southern willow scrub.

- Eight new laydown yards were identified for the following reasons: to replace a yard listed in the PEA that is no longer available, to locate additional staging areas necessary for construction, and to provide flexibility in the event any of the laydown yards that were presented in the PEA are not available at the time of construction.

- Five feet of additional permanent easement were added around the perimeter of each mainline valve (MLV), the new Rainbow Pressure-Limiting Station, the Line 1601 Cross-Tie, and the Line 2010 Cross-Tie to provide a small buffer around the enclosure and to facilitate maintenance during the O&M phase of the Proposed Project.

- MLVs 1, 2, 3, 4, 5, 6, 8, and 9 were shifted and/or reconfigured either within the original temporary workspace, or completely or partially out of the original temporary workspace

[1] To avoid revision errors associated with laydown yard numbering, each yard was assigned a unique name so that the addition or removal of a yard does not result in an incongruent numbering system.

to reduce the angle of inflection between the pipeline alignment in the roadway and the MLV situated off of the road shoulder, in order to better facilitate the internal passage of pipeline inspection gauge (PIG) tools. The Line 1601 Cross-Tie was shifted and reconfigured within the original temporary workspace to avoid existing overhead utilities, and a blow-off vault was added to facilitate O&M activities.

- Temporary workspace was reconfigured in multiple locations along the alignment. Temporary workspace is limited along the entire alignment due to its urban nature, so additional workspace was identified at several locations that will facilitate construction without resulting in any impacts to sensitive resources.

- The alignment was shifted slightly within an inactive avocado orchard at Milepost (MP) 3.3.[2,3] The refinement reduces the length of the pipeline that will be constructed on a side-slope.

- The State Route 76 (Highway 76) crossing and the San Luis Rey horizontal directional drilling (HDD) site were shifted, resulting in a refinement at this location. The alignment was shifted based on consultation with the California Department of Transportation (Caltrans).

- The Interstate 15 (I-15) crossing was refined based on input from Caltrans to replace the original alignment, which was a diagonal crossing.[4]

- MLV 7 was relocated to the west side of Mule Hill Trail to avoid utilities and utility crossings in Bear Valley Parkway and along Mule Hill Trail.

- At MP 30.7, the alignment was shifted north of Highland Valley Road. The refinement avoids a section of Highland Valley Road, which will reduce traffic impacts and provide a more constructible crossing of the Pomerado Road and Highland Valley Road intersection. The refinement is partially within the Lake Hodges West Yard (formerly Laydown Yard #6).

- MLV 10 was relocated from Pomerado Road to south of Thurgood Marshall Middle School to minimize conflicts in a congested section of Pomerado Road and avoid potential conflicts with the undergrounding of SDG&E's recently approved Sycamore to Peñasquitos 230 Kilovolt (kV) Transmission Line Project.

- A permanent patrol road was added from Pomerado Road to the University of California Regents property adjacent to Marine Corps Air Station Miramar to allow SDG&E to conduct line patrols and truck-mounted leak detection inspections along this segment of the pipeline during the O&M phase of the Proposed Project. Additionally, an existing

[2] The orchard is currently not being maintained or irrigated, and all of the trees are dead.
[3] Due to some of the minor design refinements, the alignment has changed, resulting in new mileposts designations that have shifted slightly from those provided in the PEA. Unless specifically stated, the mileposts referenced in this document refer to the new milepost designations from the revised alignment.
[4] A diagonal crossing is considered a longitudinal encroachment, which is prohibited without an exception from Caltrans.

agricultural road, between Rainbow Hills Road and Avo Drive in the community of Fallbrook, was identified for use during construction and O&M activities.

The minor design refinements are described in more detail under the Minor Design Refinements Details section below and are summarized in Exhibit A: Summary of Minor Design Refinements.

MINOR DESIGN REFINEMENTS DETAILS

The minor design refinements result in a slight change from what was presented in Chapter 3 – Project Description in the PEA. To better evaluate these changes and compare them to the PEA, the changes were grouped into the following categories and are described in detail in the following subsections:

- pipeline alignment refinements within the existing roadway,
- laydown yards,
- MLV and other appurtenant facilities refinements,
- temporary workspace refinements,
- route refinements, and
- permanent patrol roads.

Pipeline Alignment Refinements within the Roadway

The centerline of the pipe that was depicted in the PEA was slightly realigned within the roadway in several locations based on a review of newly available substructure data, as well as the results from recent potholing. As these refinements occur within the roadway, no additional impacts will occur.

Laydown Yards

Two of the laydown yards that were depicted in the PEA have been reconfigured, and additional laydown yards have been identified for utilization during construction, as discussed in the following subsections. Exhibit B: Laydown Yard Crosswalk provides a cross-walk between the new naming nomenclature and the numbers for the laydown yards identified in the PEA. Attachment B: Detailed Route Map (Confidential) depicts all of the changes discussed in the following subsections.

Laydown Yard Adjustments

To decrease temporary impacts to native vegetation, the Rainbow Station and Boulder Knolls Road yards were reduced in size and/or reconfigured from what was described in Chapter 3 – Project Description of the PEA. The Rainbow Station Yard was reduced from approximately 1.18 acres to approximately 1.12 acres in the southern portion of the site to minimize impacts and avoid southern coast live oak riparian forest. The PEA identified approximately 0.03 acre of impacts to southern coast live oak riparian forest as a result of using this laydown yard. By reconfiguring the laydown yard, no southern coast live oak riparian forest will be impacted and impacts to urban/developed will decrease by approximately 0.03 acre.

The Boulder Knolls Road Yard was reconfigured and reduced from approximately five acres to approximately 4.69 acres to avoid impacts to Diegan coastal sage scrub and southern willow

scrub in the northern portion of the original site, as well as to take advantage of disturbed ground east of the original site. The PEA identified approximately 1.02 acres of impacts to Diegan coastal sage scrub (also including open) and approximately 0.13 acre of impacts to southern willow scrub as a result of using this laydown yard. By reconfiguring the laydown yard, approximately 0.02 acre of Diegan coastal sage scrub and no southern willow scrub will be impacted; however, impacts to dense coast live oak woodland (>50%), disturbed habitat, and non-native grassland (annual grassland) will increase by approximately 0.02 acre, 0.35 acre, and 0.46 acre, respectively. The eastern portion of the revised site occurs outside of the Biological Resources Study Area (BRSA) for biological resources and outside of the area of potential effect (APE) for cultural resources. Additional surveys were conducted on November 18, December 1, December 6, and December 20, 2016 for biological resources; and on November 18, December 6, and December 20, 2016 for cultural resources. No previously unidentified biological or cultural resources were observed. The results of the surveys and estimated impacts are further discussed in Attachment C: Biological Resources Technical Report (BRTR) Addendum and Attachment D: Cultural Resources Letter Report (Confidential).

In addition to the habitat assessment that was conducted at each laydown yard, a Stephens' kangaroo rat (*Dipodomys stephensi*) expert re-evaluated habitat at the Rainbow Hills Road Yard, the Boulder Knolls Road Yard, and the Nutmeg Street Yard for signs of the species. The resulting Habitat Suitability Survey for Stephens' kangaroo rat is included in Attachment C: BRTR Addendum. These laydown yards were described in Section 4.4 Biological Resources of the PEA, which concluded that they could potentially support Stephens' kangaroo rat.[5] This potential was based on the general habitat assessment and available literature. Because the Applicants do not intend to utilize a laydown yard if Stephens' kangaroo rat is present, in accordance with Applicant-Proposed Measure (APM) BIO-13, the Applicants deemed it prudent to conduct the surveys in 2016 to determine if any of the laydown yards were infeasible. Based on the results of the species-specific habitat evaluation and surveys, none of the laydown yards have the potential for Stephens' kangaroo rat. Therefore, no further Stephens' kangaroo rat surveys will be necessary, and APM BIO-13 can be removed from the list of APMs.

Additional Laydown Yards

Establishing laydown yards in close proximity to the Proposed Project will be critical to construction of the pipeline. Identifying laydown yards more than one year in advance of construction can be challenging due to land use or landowner changes and development projects that could utilize the land in the near future. However, adding laydown yards after the Commission's California Environmental Quality Act (CEQA) review is complete typically requires additional studies and review that can cause construction delays. Therefore, the Applicants have identified additional laydown yards prior to the completion of the Commission's CEQA review to increase the probability that sufficient yards will be available at the start of construction.

The PEA identified six laydown yards, as shown in Table 3-5: Approximate Staging Area Locations and Descriptions in Chapter 3 – Project Description and Attachment 3-A: Detailed

[5] The Pala Mesa Yard also had the potential to support Stephens' kangaroo rat, but was not re-evaluated because it is no longer available for use in the Proposed Project.

Route Maps of the PEA. The six laydown yards were identified to facilitate construction activities and provide locations to store equipment, house office trailers, and park and maintain equipment. The Pala Mesa Yard is no longer available; therefore, the Applicants have identified a replacement yard, which is listed as the 395 Stewart Canyon Yard in Exhibit C: Additional Staging Area Locations and Descriptions. In addition, the Applicants propose to add seven more laydown yards to facilitate construction of the Proposed Project, and these yards are listed in Exhibit C: Additional Staging Area Locations and Descriptions. Given the length of time before construction of the Proposed Project may begin, it is anticipated that some laydown yards will become unavailable. The additional laydown yards will provide some flexibility and staging options during construction. Similar to the original laydown yards, the additional laydown yards will be located primarily in previously disturbed and urban/developed areas (except for the Montego Yard, which will be primarily in non-native grassland), will measure one to five acres, and will be accessible from existing roads. Site preparation may include fencing and grading, as well as installation of site security (i.e., cameras, locked gates, etc.).

Exhibit C: Additional Staging Area Locations and Descriptions provides the same information for each of the laydown yards as Table 3-5: Approximate Staging Area Locations and Descriptions in Chapter 3 – Project Description of the PEA, as well as their current land use and zoning designations, vegetation communities, and potential uses. Three of the yards have land use and/or zoning designations that were not included in Section 4.10 Land Use and Planning of the PEA; the Montego and Emmanuel Church Lot yards are designated as Planned Development (PD-C) and Residential Estates (R-E-20), respectively, in the City of Escondido, and the Montiel Yard is designated as Specific Plan Area (SPA) for both land use and zoning in the City of San Marcos. The City of Escondido was included in the analysis in Section 4.10 Land Use and Planning, but the City of San Marcos was not.[6] Additionally, three laydown yards (Rainbow Creek Road Yard, 395 Stewart Canyon Yard, and Lake Hodges East Yard) are located in areas with agricultural land use and/or zoning designations; however, temporary impacts due to the use of laydown yards will not result in a permanent conversion of farmland to non-agricultural use.

Because the laydown yards are located outside of the BRSA for biological resources and outside of the APE for cultural resources, additional surveys were conducted on November 18, December 1, December 6, and December 20, 2016 for biological resources; and on November 18, December 6, and December 20, 2016 for cultural resources. No previously unidentified biological or cultural resources were observed. The results of the surveys and estimated impacts are further discussed in Attachment C: BRTR Addendum and Attachment D: Cultural Resources Letter Report (Confidential).

As a result of the removal of the Pala Mesa Yard (approximately two acres) and the addition of the replacement laydown yard and the seven additional primary laydown yards, there will be up to approximately 21.6 acres of additional temporary impacts to vegetation than the amount reported in the PEA. However, the eight laydown yards were all sited in primarily urban/developed, previously disturbed areas, or areas dominated by non-native grassland in order to avoid temporary impacts to native vegetation and sensitive resources. Approximately 10.21 acres of disturbed habitat, 7.73 acres of urban/developed, 4.79 acres of non-native grassland

[6] The City of San Marcos was not included in the PEA because none of the Proposed Project components occur within the City of San Marcos city limits.

(annual grassland), 0.35 acre of Diegan coastal sage scrub (also including disturbed), 0.22 acre of eucalyptus woodland, 0.17 acre of intensive agriculture, 0.13 acre of ornamental, and 0.01 acre of southern willow scrub will be impacted. Exhibit D: Laydown Yard Impact details the temporary impacts by vegetation community for each laydown yard. Exhibit E: Temporary and Permanent Impacts to Vegetation Communities for All Minor Design Refinements lists the total temporary impacts from the minor design refinements by each vegetation and habitat type, and provides a comparison to the impacts listed in Table 4.4-5: Impacts to Vegetation Communities in Section 4.4 Biological Resources of the PEA. Though the temporary impacts associated with laydown yards will slightly increase, potential impacts associated with utilizing additional workspace will be consistent with the impacts presented in the PEA and will not increase the level of significance of any of the resource areas.

Mainline Valve and Other Appurtenant Facilities Refinements

Mainline Valve and Other Appurtenant Facilities Easements

The Applicants propose to obtain and maintain an additional five feet of easement around each MLV, the new Rainbow Pressure-Limiting Station, the Line 1601 Cross-Tie, and the Line 2010 Cross-Tie, which will slightly increase the permanent impact at each facility from what was reported in the PEA. These refinements to the O&M procedures are intended to reduce potential encroachment at each facility. The five feet of additional easement around each facility will prevent future development from abutting the facility, and enhance the ability to prevent unauthorized access and/or vandalism.

As described in Chapter 3 – Project Description of the PEA, 10 MLVs will be installed at a maximum of five miles apart along the proposed pipeline to shut down the flow of gas during O&M activities or emergencies. Each MLV will be installed within a permanent easement, with additional temporary workspace as required to construct the MLV and enclosure. The permanent easement for each MLV was identified as measuring approximately 50 feet by 75 feet (approximately 0.09 acre) in the PEA.[7] The minor design refinements will add five feet of permanent easement around the perimeter of each MLV site, increasing the dimensions of the easement to approximately 60 feet by 85 feet (approximately 0.12 acre), as shown in Exhibit F: Total Permanent Impacts from MLV and Other Appurtenant Facilities.

Chapter 3 – Project Description of the PEA also described the construction of the Rainbow Pressure-Limiting Station, the Line 1601 Cross-Tie, and the Line 2010 Cross-Tie. The Rainbow Pressure-Limiting Station will prevent over-pressurizing of interconnected pipelines that operate at different pressures, and the Line 1601 and Line 2010 cross-ties will interconnect the alignment with existing pipelines. The permanent footprints for the Rainbow Pressure-Limiting Station, the Line 1601 Cross-Tie, and the Line 2010 Cross-Tie were identified as approximately 0.24 acre, 0.15 acre, and 0.34 acre, respectively, in the PEA.[8] The minor design refinements will add five feet of permanent easement around each facility, thereby increasing the permanent impacts by

[7] Figure 3-7: Typical Mainline Valve in Chapter 3 – Project Description of the PEA depicts the plan and design for a typical MLV.

[8] Figure 3-8: Rainbow Pressure-Limiting Station Site Plan, Figure 3-9: Line 1601 Cross-Tie Site Plan, and Figure 3-11: Line 2010 Cross-Tie Site Plan in Chapter 3 – Project Description of the PEA depict the site plans and designs.

approximately 0.05 acre, 0.03 acre, and 0.06 acre, respectively. The new footprints for each facility will total approximately 0.29 acre, 0.11 acre, and 0.40 acre, respectively, as shown Exhibit F: Total Permanent Impacts from MLV and Other Appurtenant Facilities.[9]

Adding five feet of permanent easement to each MLV and the Rainbow Pressure-Limiting Station will result in a total of approximately 0.37 acre of additional permanent impacts to vegetation when compared to the PEA, as shown in Exhibit F: Total Permanent Impacts from MLV and Other Appurtenant Facilities. The easements now impact approximately 0.10 acre of urban/developed, 0.09 acre of Diegan coastal sage scrub (also including open and *Baccharis*-dominated), 0.09 acre of non-native grassland (annual grassland, broadleaf-dominated), 0.06 acre of disturbed habitat, 0.03 acre of chamise chaparral, 0.02 acre of orchards/vineyards, 0.01 acre of ornamental, 0.01 acre of non-native woodland, <0.01 acre of valley needlegrass grassland, and <0.01 acre of cismontane alkali marsh. Exhibit E: Temporary and Permanent Impacts to Vegetation Communities for All Minor Design Refinements lists the total permanent impacts to each vegetation and habitat type from the minor design refinements and provides a comparison to the impacts listed in the PEA. While the permanent impacts associated with MLVs and the Rainbow Pressure-Limiting Station slightly increase, potential impacts associated with the easements will be consistent with those presented in the PEA and will not increase the level of significance of any of the resource areas.

Reconfiguration and Shifts to Mainline Valves and Other Appurtenant Facilities

The Applicants propose shifting MLVs 1, 2, 3, 4, 5, 6, 8, and 9 either within the original temporary workspace or completely or partially out of the original temporary workspace to reduce the angle of inflection between the pipeline alignment in the roadway and the MLV that is off of the road shoulder. This is necessary to better facilitate the internal passage of PIG tools. Additionally, the Line 1601 Cross-Tie was shifted and reconfigured within the original temporary workspace to avoid existing overhead power lines, and a blow-off vault was added near MLV 6 to facilitate O&M activities. The refinements are described as follows:

- MLV 1 was shifted approximately 50 feet southwest, and the southeast corner will occur slightly outside of the original temporary workspace.

- MLV 2 was shifted and slightly rotated approximately 90 feet southeast, and it will occur completely outside of the original temporary workspace.

- MLV 3 was shifted approximately 40 feet southeast, and the southeast corner will occur outside of the original temporary workspace. Additionally, the acreage increased slightly from approximately 0.08 acre in the PEA to approximately 0.09 acre.

- MLV 4 was shifted approximately 40 feet southeast, but remains in the original temporary workspace.

[9] The Line 1601 Cross-Tie was reconfigured from 0.15 acre to 0.08 acre, which accounts for the decrease in acreage despite the additional permanent easement. The reconfiguration is discussed further in the Reconfiguration and Shifts to Mainline Valves and Other Appurtenant Facilities section.

- MLV 5 was shifted less than five feet north, but remains in the original temporary workspace (not including the five feet of additional easement discussed in the Mainline Valve and Other Appurtenant Facilities Easements section).

- MLV 6 was shifted slightly south, but remains in the original temporary workspace. Additionally, the acreage decreased slightly from approximately 0.07 acre in the PEA to approximately 0.05 acre. Further, a 10-inch pipe and a four-foot by four-foot blow-off vault was added across the road from MLV 6 in order to avoid overhead powerlines.

- MLV 8 was shifted approximately 100 feet south, and the eastern portion will occur outside of the original temporary workspace.

- MLV 9 was shifted less than 10 feet southwest, and the western edge will occur outside of the original temporary workspace. Additionally, the acreage increased slightly from approximately 0.08 acre in the PEA to approximately 0.09 acre.

- The Line 1601 Cross-Tie facility was shifted approximately 80 feet south and reconfigured from approximately 0.15 acre to approximately 0.08 acre (excluding the additional permanent easement discussed in the Mainline Valve and Other Appurtenant Facilities Easements section). Exhibit G: Line 1601 Cross-Tie Site Plan displays the revised site plan and design.

Due to the shifts described previously, these facilities now impact one additional vegetation community, approximately 0.18 acre of ornamental. Exhibit H: MLV and Other Appurtenant Facilities Impacts to Vegetation details the permanent impacts to vegetation communities from each MLV and Cross-Tie facility. Exhibit E: Temporary and Permanent Impacts to Vegetation Communities for All Minor Design Refinements lists the total permanent impacts to each vegetation and habitat type from the minor design refinements and provides a comparison to the impacts listed in the PEA. Temporary workspace refinements associated with MLV and cross-tie facility construction are described in the Temporary Workspace Refinements section. Vegetation impacts from these refinements differ slightly from the PEA, but still remain less than significant for the all of the reasons described in the PEA.

Relocation of Mainline Valve 7

The Applicants propose to relocate MLV 7, which is one of 10 MLVs previously described in the Mainline Valve and Other Appurtenant Facilities Easements section. As discussed in Table 3-2: Mainline Valve Locations in Chapter 3 – Project Description of the PEA, MLV 7 was proposed to be located at MP 29.3 (or MP 29.6 of the revised alignment) within an undeveloped area south and east of Bear Valley Parkway and adjacent to Mule Hill Trail. MLV 7 will be collocated with the Line 1600 Cross-Tie facility, which will connect the existing Line 1600 to the Proposed Project.[10] The minor design refinement will relocate MLV 7 and the Line 1600 Cross-Tie facility approximately 170 feet southwest to the west side of Mule Hill Trail. Exhibit

[10] Figure 3-10: Line 1600 Cross-Tie Site Plan in Chapter 3 – Project Description of the PEA depicts the proposed site plan.

I: Line 1600 Cross-Tie Site Plan displays the revised site plan and design. The new location will avoid utilities and utility crossings in Bear Valley Parkway and along Mule Hill Trail.

The dimensions and configuration of the facility will not change and the permanent impacts will not increase as a result of this refinement. Additionally, the walled limits of the relocated facility occur within non-native grassland, which is the same vegetation community that is identified in the PEA for this MLV. Any additional vegetation communities affected by the five feet of permanent easement surrounding each MLV are discussed in the Mainline Valve and Other Appurtenant Facilities Easements section.

When compared to the PEA, implementation of this refinement will slightly alter the vantage point shown in the before-and-after view of the Line 1600 Cross-Tie in Figure 4.1-1: Visual Simulation – Line 1600 Cross-Tie in Section 4.1 Aesthetics of the PEA. A revised before-and-after view of the facility is depicted in Exhibit J: Line 1600 Cross-Tie Visual Simulation. Potential impacts associated with MLV 7 will be less than significant for all of the reasons described in the PEA, and particularly in Section 4.1 Aesthetics, which analyzed potential visual impacts at this location.

Relocation of Mainline Valve 10

The Applicants propose to relocate MLV 10, which is one of the 10 MLVs previously described in the Mainline Valve and Other Appurtenant Facilities Easements section. As discussed in Table 3-2: Mainline Valve Locations in Chapter 3 – Project Description of the PEA, MLV 10 was proposed to be located at MP 42.8 (or MP 43.1 of the revised alignment), within an undeveloped area south of Pomerado Road and east of its intersection with Scripps Ranch Row. The minor design refinement will relocate MLV 10 from Pomerado Road to an undeveloped area along a dirt road south of Thurgood Marshall Middle School at approximate MP 43.7 of the Proposed Project (or MP 44 on the revised alignment). The new location will minimize impacts along this congested section of Pomerado Road and avoid potential conflicts with the undergrounding of the SDG&E Sycamore to Peñasquitos 230 kV Transmission Line Project along Pomerado Road.

The dimensions and configuration of the facility will not change and the permanent impacts will not increase as a result of this refinement. However, the permanent impacts will shift from approximately 0.09 acre of eucalyptus woodland to approximately 0.09 acre of chamise chaparral, which is reflected in Exhibit E: Temporary and Permanent Impacts to Vegetation Communities for All Minor Design Refinements. Despite the relocation, land use and zoning designations for the facility will remain the same as described in the PEA, which are Recreation and Residential Single Unit (RS-1-8). Potential impacts associated with this refinement will be consistent with those presented in the PEA and will not increase the level of significance of any of the resource areas.

Temporary Workspace Refinements

Additional temporary workspace or modification of temporary workspace has been identified since the PEA was submitted to the Commission. As discussed in Chapter 3 – Project Description of the PEA, the temporary workspace required for construction will occur in the road and road shoulders in urban areas, and will be up to 100 feet wide in cross-country areas.

Additional temporary workspace will also be required at HDD and horizontal boring sites. Exhibit K: Temporary Workspace Refinements lists all of the locations where refinements associated with temporary workspace occur along the route. All of the temporary workspace refinements are located within the BRSA and the APE, and are shown in Attachment B: Detailed Route Map (Confidential).

The temporary workspace changes will increase temporary impacts by approximately 18.24 acres. Exhibit L: Temporary Workspace Impacts lists the temporary impacts to each vegetation and habitat type due to the changes in temporary workspace. Exhibit E: Temporary and Permanent Impacts to Vegetation Communities for All Minor Design Refinements lists the total temporary impacts to each vegetation and habitat type from the minor design refinements and provides a comparison to the impacts listed in the PEA. While the temporary impacts associated with construction of the Proposed Project will slightly increase, potential impacts associated with utilizing additional workspace will be consistent with the PEA and will not increase the level of significance of any of the resource areas.

Route Refinements

Four route refinements have been developed as a result of robust consultation with Caltrans and to improve constructability. Due in part to these route refinements and slight changes to the alignment, the overall revised alignment increases by approximately 0.35 mile when compared to the alignment described in the PEA. The current alignment design totals approximately 48.07 miles, whereas the alignment in the PEA totaled approximately 47.72 miles. All four route refinements are discussed in more detail in the following subsections.

Caltrans Route Refinements

Highway 76 Route Refinement (Milepost 8.3)

The Highway 76 crossing has been slightly adjusted based on input from Caltrans in order to minimize conflicts with transportation infrastructure and operations. This consequently resulted in a realignment of the HDD for the San Luis Rey River. The route refinement moves the crossing approximately 680 feet northeast and adjacent to the Highway 76 and I-15 on-/off-ramp intersection. As depicted in Attachment B: Detailed Route Map (Confidential), the route refinement will occur along Old Highway 395 for a longer distance than what was shown in the PEA. Additionally, the route refinement will increase the length of this segment by approximately 0.08 mile when compared to the corresponding segment in the PEA. Due to the route refinement, this segment of the route now impacts five additional vegetation communities, approximately 0.29 acre of coastal sage-chaparral transition, 0.43 acre of mulefat scrub, 0.20 acre of southern coast live oak riparian forest, 3.18 acres of southern cottonwood-willow riparian forest (disturbed), and 0.11 acre of southern willow scrub (disturbed). Exhibit M: Route Refinement Impacts details the impacts to vegetation communities from each route refinement. Exhibit E: Temporary and Permanent Impacts to Vegetation Communities for All Minor Design Refinements lists the total temporary impacts to each vegetation and habitat type from the minor design refinements and provides a comparison to the impacts listed in the PEA.

Portions of the route refinement occur outside of the BRSA and APE, so additional biological and cultural surveys were conducted. No previously unidentified biological or cultural resources were observed. The results of the surveys and estimated impacts are further discussed in

Attachment C: BRTR Addendum and Attachment D: Cultural Resources Letter Report (Confidential). The potential impacts associated with this route refinement are consistent with the conclusions in the PEA and will not change the level of significance for any of the resource areas.

I-15 Route Refinement (Milepost 11.2)

The I-15 crossing has been adjusted based on input from Caltrans to avoid a diagonal crossing of the freeway. The route refinement will result in the alignment remaining west of I-15 for a longer distance in order to accommodate crossing I-15 approximately one mile south of the original location, as depicted in Attachment B: Detailed Route Map (Confidential). The revised alignment will cross I-15 at a 90-degree angle, which will eliminate longitudinal encroachment within the Caltrans right-of-way (ROW). The route refinement will increase the length of this segment by approximately 0.17 mile when compared to the corresponding segment in the PEA. Due to the route refinement, this segment of the route now impacts four additional vegetation communities, approximately 0.30 acre of coastal sage-chaparral transition, 15.86 acres of intensive agriculture, 0.34 acre of orchards/vineyards, and 0.26 acre of southern willow scrub (disturbed). Exhibit M: Route Refinement Impacts details the impacts to vegetation communities from each route refinement. Exhibit E: Temporary and Permanent Impacts to Vegetation Communities for All Minor Design Refinements lists the total temporary impacts to each vegetation and habitat type from the minor design refinements and provides a comparison to the impacts listed in the PEA.

Portions of the revised alignment will require cross-country construction, as described in Chapter 3 – Project Description of the PEA. Additionally, because most of the route refinement occurs on the opposite side of the freeway from the alignment in the PEA, it is not within the BRSA or APE. Additional biological and cultural surveys were conducted, and no previously unidentified biological or cultural resources were observed. The results from additional surveys and estimated impacts are further discussed in Attachment C: BRTR Addendum and Attachment D: Cultural Resources Letter Report (Confidential). Potential impacts associated with cross-country construction will be consistent with the impacts described in the PEA, and the level of significance for each resource area will remain unchanged.

Milepost 3.3 Route Refinement

The alignment was adjusted slightly southeast across an inactive avocado orchard to reduce the length of the pipeline that will be constructed, operated, and maintained on a side-slope, as shown in Attachment B: Detailed Route Map (Confidential). Construction of this segment of the revised alignment will be cross-country, as described in Chapter 3 – Project Description of the PEA.[11] The route refinement will increase the length of this segment by approximately 0.01 mile when compared to the corresponding segment in the PEA. By adjusting the alignment, there will be a reduction in impacts to orchards/vineyards and southern willow scrub (disturbed) by

[11] A typical trench cross-sectional drawing is provided in Figure 3-4: Typical Trench Cross-Section – Cross-Country, and a typical ROW cross-section in cross-country areas is provided in Figure 3-6: Typical Cross-Country ROW Cross-Section in the PEA.

approximately 0.13 acre and 0.03 acre, respectively. Exhibit M: Route Refinement Impacts details the impacts to vegetation communities from each route refinement.

Approximately 0.60 acre of the route refinement occurs outside of the BRSA. Therefore, additional surveys were conducted for biological resources, and no new biological were recorded within the revised alignment. The results of the surveys and estimated impacts are further discussed in Attachment C: BRTR Addendum. The route refinement does not cross any new vegetation types; therefore, potential impacts described in the PEA will remain unchanged as a result of this route refinement.

Milepost 30.7 Route Refinement

The alignment was adjusted slightly north from Highland Valley Road to an existing nursery, which is proposed as the Lake Hodges West Yard. The route refinement avoids Highland Valley Road and additional traffic impacts, and utilizes the Lake Hodges West Yard for temporary workspace. Additionally, the route refinement improves the constructability of the Pomerado Road and Highland Valley Road intersection crossing. The route refinement is within the original BRSA and APE, and will decrease the length of this segment by approximately 0.03 mile when compared to the corresponding segment in the PEA. By adjusting the alignment, there will be a slight increase in temporary impacts to orchards/vineyards by approximately 0.45 acre. Exhibit M: Route Refinement Impacts details the impacts to vegetation communities from each route refinement. Potential impacts described in the PEA will remain unchanged as a result of this route refinement.

Permanent Patrol Roads

Milepost 3.3 Patrol Road

The Applicants have determined that routine O&M activities will benefit from the use of an existing dirt road in the community of Fallbrook. This dirt road was previously used for agricultural operations and is located between Rainbow Hills Road at approximate MP 3.3 and Avo Drive at approximate MP 3.7 along the alignment in the PEA (or between MP 3.3 and MP 3.7 of the revised alignment). The existing road will be converted to a permanent patrol road that will be maintained after construction to allow O&M crews to patrol the pipeline and use vehicle-mounted leak detection equipment along this pipeline segment, which otherwise would not be possible without vehicular access.

The patrol road will be approximately 2.1 miles long and 12 feet wide. However, in some cases, the width may slightly exceed 12 feet to accommodate turnarounds and/or sharp curves.

Milepost 43.5 Patrol Road

The Applicants have determined that routine O&M activities will benefit from another patrol road that will travel from Pomerado Road to an existing asphalt road (i.e., approximate MP 43.2 to MP 43.5 of the of the alignment in the PEA, or between MP 43.5 and MP 43.8 of the revised alignment). Following backfill and during final cleanup activities, the ROW will be decompacted and prepared for seeding. A patrol road measuring approximately 12 feet wide and approximately 1,450 feet long will be established by backblading a route over or immediately

adjacent to the pipeline. This area will not be seeded and will remain without vegetation so that it serves as a patrol route during routine O&M activities.

Compared to the PEA, which identified approximately 0.1 acre of permanent impacts to eucalyptus woodlands, the road will result in approximately 0.39 additional acre of permanent impacts to eucalyptus woodland, as shown in Exhibit E: Temporary and Permanent Impacts to Vegetation Communities for All Minor Design Refinements. Additionally, implementation of this refinement will slightly change the three to five year post-construction view of the Avenue of Nations visual simulation that was submitted to the Commission in response to the Third Application Completeness Review Letter received on April 29, 2016 and Deficiency Item 1.4.1-3. A revised visual simulation of the Avenue of Nations is depicted in Exhibit N: Avenue of Nations Visual Simulation.

OVERALL IMPACTS

Although these minor design refinements as discussed above will increase the permanent and temporary impacts by approximately one acre and 38.7 acres, respectively, the potential impacts associated with these refinements are consistent with the analysis in the PEA. As such, these refinements will not change the level of significance for any of the resource areas discussed in the PEA.

EXHIBIT A: SUMMARY OF MINOR DESIGN REFINEMENTS

Proponent's Environmental Assessment (PEA) Mileposts (MPs)	New MPs[1]	Within PEA Study Corridor[2] (Y/N)	Refinement	Refinement Description
Various	Various	Y	The alignment of the pipeline was adjusted within the roadway in several places.	The alignment was adjusted based on a review of available substructure data, as well as the results from recent potholing.
0.0	0.0	Y	The Rainbow Station Yard decreased in size.	The yard dimensions were reduced to avoid vegetation and to minimize impacts to southern coast live oak riparian forest.
14.7	15.0	Partially	The Boulder Knolls Road Yard was reconfigured and decreased in size.	The yard was reconfigured to take advantage of disturbed ground and will avoid impacts to Diegan coastal sage scrub and southern willow scrub.
Various	Various	N	Eight new laydown yards were identified.	The laydown yards were included to replace a yard listed in the PEA that is no longer available, identify additional staging areas necessary for construction, and provide flexibility in case any of the laydown yards presented in the PEA are not available at the time of construction.
1.5, 6.2, 10.9, 15.4, 19.9, 23.4, 24.6, 29.3, 34.0, 38.8, 43.7, and 47	1.5, 6.2, 11.0, 15.7, 20.2, 23.7, 24.9, 29.6, 34.3, 39.1, 44.0, and 47.3	Y	An additional five feet of permanent easement was added around the perimeter of each mainline valve (MLV), the new Rainbow Pressure-Limiting Station, the Line 1601 Cross-Tie, and the Line 2010 Cross-Tie.	Five feet of permanent easement was added around each MLV and appurtenant facility to provide a small buffer around the enclosure and to facilitate maintenance during the operation and maintenance (O&M) phase of the Pipeline Safety & Reliability Project (Proposed Project).

[1] Due to some of the minor design refinements, the alignment has changed, resulting in new milepost designations compared to those previously provided in the PEA. Additionally, please note all mileposts are approximations.

[2] The PEA Study Corridor refers to the Biological Resources Study Area, which was established in the Biological Resources Technical Report included in the PEA.

Proponent's Environmental Assessment (PEA) Mileposts (MPs)	New MPs[1]	Within PEA Study Corridor[2] (Y/N)	Refinement	Refinement Description
1.5, 6.2, 10.9, 15.4, 19.9, 23.4, 24.6, 34.0, 38.8, and 43.7	1.5, 6.2, 11.0, 15.7, 20.2, 23.7, 24.9, 34.3, 39.1, and 44.0	Y	MLVs 1, 2, 3, 4, 5, 6, 8, and 9 were shifted and/or reconfigured either within the original temporary workspace or completely or partially out of the original temporary workspace. The Line 1601 Cross-Tie was shifted and reconfigured within the original temporary workspace, and a blow-off vault was added.	The MLVs were shifted and/or reconfigured to reduce the angle of inflection between the pipeline alignment in the roadway and the MLV situated off of the road shoulder in order to better facility the internal passage of pipeline inspection gauge tools. The Line 1601 Cross-Tie was shifted and reconfigured to avoid existing overhead utilities, and the blow-off was added to facilitate O&M activities.
29.3	29.6	Y	MLV 7 was relocated to the west side of Mule Hill Trail.	MLV 7 was relocated to avoid utilities and utility crossings in Bear Valley Parkway and along Mule Hill Trail.
43.7[3]	44	Y	MLV 10 was relocated from Pomerado Road to south of Thurgood Marshall Middle School.	MLV 10 was relocated to minimize conflicts in a congested section of Pomerado Road and avoid potential conflicts with the undergrounding of San Diego Gas & Electric Company's (SDG&E's) Sycamore to Peñasquitos 230 Kilovolt Transmission Line Project.
Various	Various	Y	Temporary workspace was reconfigured in multiple locations along the alignment.	Temporary workspace is limited along the entire Proposed Project due to the urban nature of the alignment. Additional workspace was identified at several locations that will facilitate construction without resulting in any impacts to sensitive resources.

[3] MLV 10 was relocated from Pomerado Road to south of Thurgood Marshall. Both the PEA milepost and new milepost referenced in this table refer to the new location of MLV 10 (south of Thurgood Marshall Middle School) as opposed to the original location in the PEA (Pomerado Road).

Proponent's Environmental Assessment (PEA) Mileposts (MPs)	New MPs[1]	Within PEA Study Corridor[2] (Y/N)	Refinement	Refinement Description
8.3	8.3	Partially	The State Route 76 (Highway 76) crossing and the San Luis Rey horizontal directional drilling site were realigned, resulting in a minor route realignment at this location.	The alignment was shifted based on consultation with the California Department of Transportation (Caltrans).
11.1	11.2	N	The Interstate 15 (I-15) crossing was adjusted.	The I-15 crossing was adjusted based on input from Caltrans to avoid the original alignment, which was a diagonal crossing.
3.3	3.3	Partially	The alignment was adjusted slightly across an inactive avocado orchard.	The reroute reduces the length of the pipeline that will be constructed on a side-slope.
30.4	30.7	Y	The alignment was moved north of Highland Valley Road.	The route realignment avoids more of Highland Valley Road, which will reduce traffic impacts and provide a more constructible crossing of the Pomerado Road and Highland Valley Road intersection. The route alignment is also within the Lake Hodges West Yard.
3.3	3.3	N	Between Rainbow Hills Road and Avo Drive in the community of Fallbrook, an existing road was added as a permanent patrol road.	The patrol road will allow SDG&E to patrol the pipeline and conduct truck-mounted leak detection inspections along this segment of the pipeline during the O&M phase of the Proposed Project.
43.2	43.5	Y	A permanent patrol road was added from Pomerado Road to the University of California Regents property adjacent to Marine Corps Air Station Miramar.	The patrol road will allow SDG&E to patrol the pipeline and conduct truck-mounted leak detection inspections along this segment of the pipeline during the O&M phase of the Proposed Project.[4]

[4] The leak detection equipment that SDG&E uses is mounted on a pickup truck, and the truck is required to drive within close proximity of the pipeline to detect methane gas. The patrol road will facilitate truck access to this segment of the pipeline and allow SDG&E to properly conduct leak inspections.

EXHIBIT B: LAYDOWN YARD CROSSWALK

PEA Reference	Current Reference
Laydown Yard #1	Rainbow Station Yard
Laydown Yard #2	Rainbow Hills Road Yard
Laydown Yard #3	Pala Mesa Yard[1]
Laydown Yard #4	Boulder Knolls Road Yard
Laydown Yard #5	Nutmeg Street Yard
Laydown Yard #6	Lake Hodges West Yard
Not Applicable (N/A)	Rainbow Creek Road Yard
N/A	395 Stewart Canyon Yard
N/A	Montego Yard
N/A	Emmanuel Church Lot Yard
N/A	Lake Hodges East Yard
N/A	Arbolitos Field Yard
N/A	Alliant Yard
N/A	Montiel Yard

[1] The Pala Mesa Yard is currently under development and no longer available.

EXHIBIT C: ADDITIONAL STAGING AREA LOCATIONS AND DESCRIPTIONS

Laydown Yard	Approximate New Milepost	Location	Approximate Area (acres)	Description of Site	Improvements Required	Potential Uses	Vegetation Community	Current Land Use	Land Use Designation	Zoning Designation
Rainbow Creek Road Yard	0.7	Rainbow Valley Boulevard and Rainbow Creek Road	3.26	Laydown Yard	Mowing/grubbing, minor grading, fencing, lighting, and installation of gravel for driveway.	Office, restrooms, parking, refueling, laydown, and equipment maintenance.	Disturbed Habitat	This site is a completely disturbed lot that is being used for storage by a nursery facility.	Agriculture	Agriculture (A70)
395 Stewart Canyon Yard[1]	6.0	Old Highway 395 and Stewart Canyon Drive	4.15	Laydown Yard	Mowing/grubbing, minor grading, fencing, lighting, and installation of gravel for driveway.	Restrooms, parking, refueling, laydown, and equipment maintenance.	Disturbed Habitat	This site is a completely disturbed vacant lot that has evidence of being recently graded.	Recreation	Agriculture (A70)
Montego Yard	21.8	Old Highway 395 and West Country Club Lane	5.17	Laydown Yard	Mowing/grubbing, minor grading, fencing, lighting, and installation of gravel for driveway.	Restrooms, parking, refueling, laydown, and equipment maintenance.	Eucalyptus Woodland; Non-Native Grassland; Ornamental	The majority of this site is a disturbed vacant lot.	Recreation	Planned Development (PD-C)
Emmanuel Church Lot Yard	26.6	East 17th Avenue and Encino Drive	3.85	Laydown Yard	No improvements needed.	Office, restrooms, parking, and laydown.	Developed/ Urban	This site is a private, paved parking lot used by Emmanuel Faith Community Church.	Commercial	Residential Estates (R-E-20)
Lake Hodges East Yard	30.7	Highland Valley Road	1.76	Laydown Yard	Mowing/grubbing, minor grading, fencing, lighting, and installation of gravel for driveway.	Office, restrooms, parking, refueling, laydown, and equipment maintenance.	Disturbed Habitat; Intensive Agriculture	This site is a disturbed lot that is used for storage by an agricultural operation.	Recreation/Agriculture	Agriculture (AG-1-1)
Arbolitos Field Yard	36.4	Pomerado Road and Ted Williams Parkway	0.64	Laydown Yard	Mowing/grubbing, minor grading, fencing, lighting, and installation of gravel for driveway.	Parking, refueling, laydown, and equipment maintenance.	Developed/ Urban	The majority of this site is a disturbed vacant lot that is used as a construction staging yard.	Recreation	Rural Residential (RR-C)
Alliant Yard	43.0	Alliant University	1.44	Laydown Yard	Mowing/grubbing, minor grading, and installation of gravel for driveway.	Parking.	Disturbed Habitat	This site is a disturbed lot that is used for storage.	Public/Quasi-Public	Residential Single Use (RS-1-8)
Montiel Yard[2]	23.7	Montiel Road and Kaylyn Way	3.33	Laydown Yard	No improvements needed.	Parking, refueling, laydown, and equipment maintenance.	Developed/ Urban	The Montiel Yard is an existing SDG&E facility that is used for operation and maintenance activities, including storing materials and equipment.	Specific Plan Area (SPA)	SPA

[1] The Pala Mesa Yard, which was identified in the Proponent's Environmental Assessment (PEA), is currently under development. San Diego Gas & Electric Company and Southern California Gas Company propose to replace the yard identified in the PEA with this newly identified yard.
[2] The Montiel Yard is in the City of San Marcos, which was not included in the PEA.

EXHIBIT D: LAYDOWN YARD IMPACTS

Laydown Yard	Vegetation Community[1]	Temporary Impacts[2] (acres)
Rainbow Creek Road	Disturbed Habitat	3.24
	Urban/Developed	0.02
395 Steward Canyon	Diegan Coastal Sage Scrub (disturbed)*	0.07
	Disturbed Habitat	4.08
Montego	Diegan Coastal Sage Scrub*	0.05
	Eucalyptus Woodland	0.21
	Non-Native Grassland (Annual Grassland)	4.79
	Ornamental	0.13
Emmanuel Church Lot	Urban/Developed	3.85
Lake Hodges East	Disturbed Habitat	1.58
	Intensive Agriculture – Dairies, Nurseries, Chicken Ranches	0.17
	Southern Willow Scrub*	0.01
	Urban/Developed	<0.01
Arbolitos Field	Diegan Coastal Sage Scrub (disturbed)*	0.20
	Urban/Developed	0.44
Alliant	Diegan Coastal Sage Scrub (disturbed)*	0.03
	Disturbed Habitat	1.30
	Eucalyptus Woodland	0.01
	Ornamental	<0.01
	Urban/Developed	0.10
Montiel	Urban/Developed	3.33
Total		**23.6**

[1] Asterisks denote sensitive natural communities.
[2] Total temporary impacts for each laydown yard might not exactly match the acreages listed in Exhibit C: Additional Staging Area Locations and Descriptions due to rounding.

EXHIBIT E: TEMPORARY AND PERMANENT IMPACTS TO VEGETATION COMMUNITIES FOR ALL MINOR DESIGN REFINEMENTS

General Habitat Type	Vegetation Community[1]	Approximate Permanent Impacts (acres)		Change in Permanent Impacts (acres)	Approximate Temporary Impacts (acres)		Change in Temporary Impacts (acres)
		Proponent's Environmental Assessment (PEA)	Minor Design Refinements		PEA	Minor Design Refinements	
Disturbed or Developed Habitat	Disturbed Habitat	0.1	0.2	0.1	7.9	21.3	13.4
	Developed/Urban	0.5	0.6	0.1	356.1	364.6	8.5
	Ornamental	0	<0.1	Negligible increase	1.1	1.1	—
	Orchard/Vineyard	0.1	0.1	No change (—)	13	13	—
	Intensive Agriculture – Dairies, Nurseries, Chicken Ranches	0	0	—	1.8	16.3	14.5
	Row Crops	0	0	—	0	0	—
Scrub and Chaparral	Diegan Coastal Sage Scrub*	0.1	0.2	0.1	18.3	13.1	-5.2
	Diegan Coastal Sage Scrub (open, disturbed)*	0	0	—	0.1	0.1	—
	Diegan Coastal Sage Scrub (*Adolphia californica*-dominated)*	0	0	—	<0.1	<0.1	—
	Diegan Coastal Sage Scrub (burned)*	0	0	—	0.9	0.6	-0.3
	Diegan Coastal Sage Scrub (disturbed)*	<0.1	0.0	Negligible decrease	14.4	14.8	0.4
	Diegan Coastal Sage Scrub (open)*	0	<0.1	Negligible increase	3.1	2.4	-0.7
	Diegan Coastal Sage Scrub (restored)*	0	0	—	6.3	6	-0.3
	Diegan Coastal Sage Scrub: *Baccharis*-Dominated*	0.1	0.1	—	2	2	—
	Diegan Coastal Sage Scrub: *Baccharis*-Dominated (disturbed)*	0	0	—	0	0	—
	Southern Mixed Chaparral*	0	0	—	5.3	5.3	—
	Southern Mixed Chaparral (burned)*	0	0	—	2.2	2.2	—
	Chamise Chaparral	0	0.1	0.1	8.7	9.9	1.2
	Coastal Sage-Chaparral Transition*	0	0	—	0.8	1.4	0.6
Grasslands, Vernal Pools, Meadows, and Other Herb Communities	Valley Needlegrass Grassland*	<0.1	<0.1	—	0	0.1	0.1
	Non-Native Grassland: Broadleaf-Dominated	0.1	<0.1	-0.1	13.9	12.8	-1.1
	Non-Native Grassland (Annual Grassland)	0.5	0.6	0.1	15.1	21	5.9
	Vernal Pool*	0	0	—	0	<0.1	Negligible increase
	Freshwater Seep*	0	0	—	0.3	0.3	—
	Freshwater Seep (disturbed)*	0	0	—	0	0	—

[1] Asterisks denote sensitive natural communities.

General Habitat Type	Vegetation Community[1]	Approximate Permanent Impacts (acres)		Change in Permanent Impacts (acres)	Approximate Temporary Impacts (acres)		Change in Temporary Impacts (acres)
		Proponent's Environmental Assessment (PEA)	Minor Design Refinements		PEA	Minor Design Refinements	
Bog and Marsh	Cismontane Alkali Marsh*	0	<0.1	Negligible increase	1.3	1.3	—
	Coastal and Valley Freshwater Marsh*	0	0	—	<0.1	<0.1	—
	Emergent Wetland*	0	0	—	0	0	—
	Herbaceous Wetland*	0	0	—	<0.1	0	Negligible decrease
	Herbaceous Wetland (disturbed)*	0	0	—	0	0	—
Riparian and Bottomland Habitat	Southern Coast Live Oak Riparian Forest*	0	0	—	0.1	0.3	0.2
	Southern Coast Live Oak Riparian Forest (disturbed)*	0	0	—	0	0	—
	Southern Cottonwood-Willow Riparian Forest*	0	0	—	0.9	0	-0.9
	Southern Cottonwood-Willow Riparian Forest (disturbed)*	0	0	—	0	3.2	3.2
	Southern Willow Scrub*	0	0	—	0.1	0.2	0.1
	Southern Willow Scrub (disturbed)*	0	0	—	<0.1	0.4	0.4
	Mule Fat Scrub*	0	0	—	0.1	0.6	0.5
	Tamarisk Scrub*	0	0	—	0	<0.1	Negligible increase
	Fresh Water (Open Water)*	0	0	—	0	0	—
	Non-Vegetated Floodplain or Channel*	0	0	—	0.9	0.8	-0.1
	Non-Native Riparian*	0	0	—	<0.1	0	Negligible decrease
	Arundo-Dominated Riparian*	0	0	—	0	0	—
Woodland	Open Coast Live Oak Woodland (<50%)*	0	0	—	4	2.2	-1.8
	Open Coast Live Oak Woodland (<50%) (burned)*	0	0	—	0.3	0.1	-0.2
	Open Coast Live Oak Woodland (<50%) (disturbed)*	0	0	—	0.2	0.2	—
	Dense Coast Live Oak Woodland (>50%)*	0	0	—	0.4	0.4	—
	Dense Coast Live Oak Woodland (>50%) (disturbed)*	0	0	—	0.1	0.1	—
	Undifferentiated Open Woodland	0	0	—	0.1	0.1	—
	Non-Native Woodland	0	0.1	0.1	2.4	2.4	—
	Non-Native Woodland (burned)	0	0	—	0.1	0	-0.1
	Eucalyptus Woodland	0.1	0.4	0.3	14.1	14.4	0.3
Total[2]		**1.5**	**2.5**	**1.0**	**496.3**	**535.0**	**38.7**

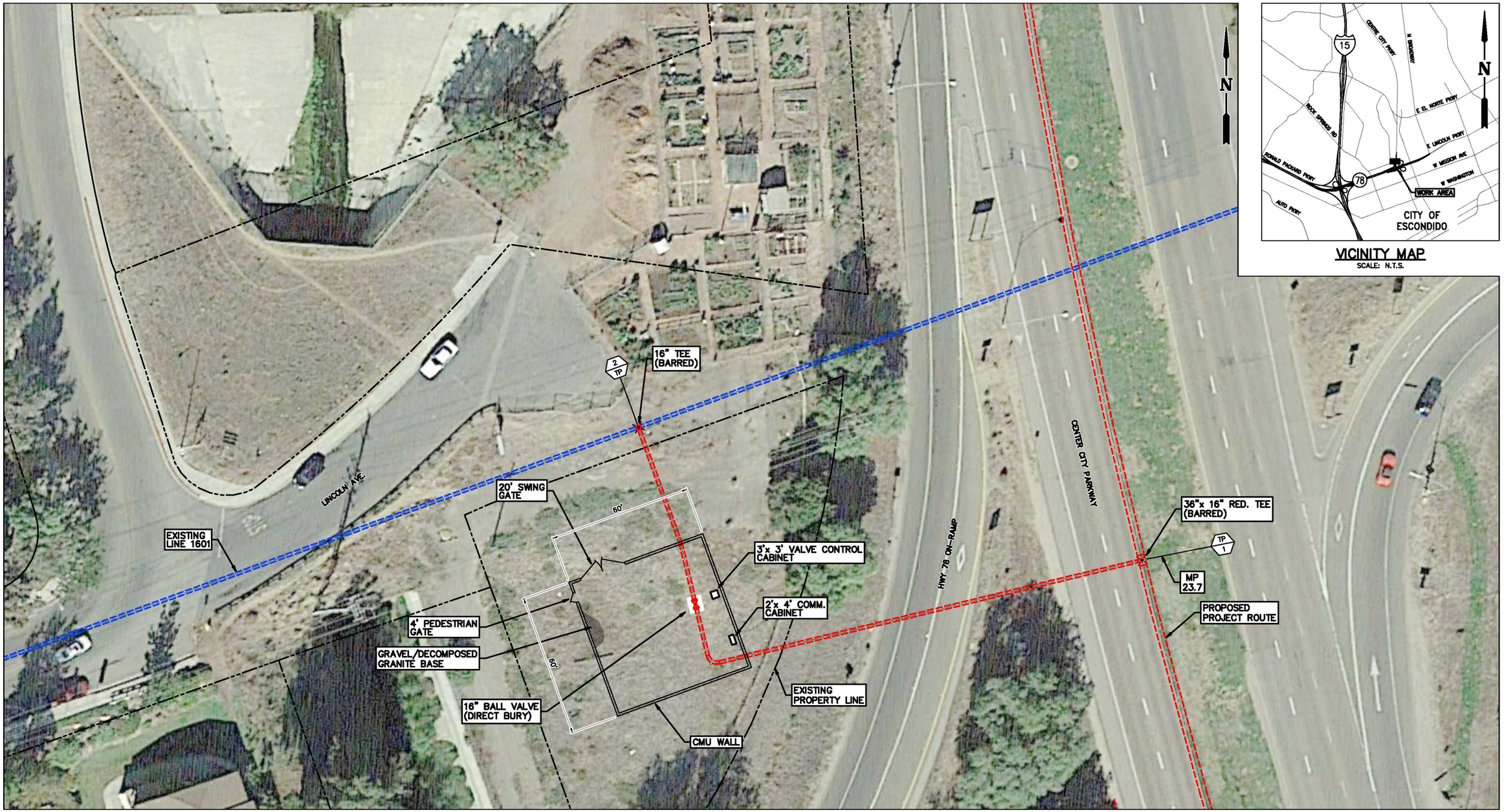
[2] Totals may not add up exactly due to rounding.

EXHIBIT F: TOTAL PERMANENT IMPACTS FROM MLV AND OTHER APPURTENANT FACILITIES

Facility	Approximate Permanent Impacts[1] (acres)	
	Proponent's Environmental Assessment	**Minor Design Refinements**
Mainline Valve	0.09	0.12
Rainbow Pressure-Limiting Station	0.24	0.29
Line 1601 Cross-Tie	0.15	0.11
Line 2010 Cross-Tie	0.34	0.40
Total	**1.63**	**2.00**

[1] The numbers in this table are based off of the rounded numbers and dimensions listed in the PEA and may differ from numbers generated by the geographic information system analysis for the minor design refinements.

EXHIBIT G: LINE 1601 CROSS-TIE SITE PLAN



VICINITY MAP
SCALE: N.T.S.

SDGE A Sempra Energy utility™ SoCalGas A Sempra Energy utility SPEC SERVICES®

Exhibit G: Line 1601 Cross-Tie Site Plan

EXHIBIT H: MLV AND OTHER APPURTENANT FACILITIES IMPACTS TO VEGETATION

Facility	Vegetation Community[1]	Approximate Permanent Impacts[2,3] (acres)		Change in Permanent Impacts (acres)
		Proponent's Environmental Assessment	Minor Design Refinements	
Line 1601 Cross-Tie	Eucalyptus Woodland	0.06	<0.01	-0.06
	Non-Native Grassland (Annual Grassland)	0.09	0.08	-0.01
	Urban/Developed	<0.01	0	Negligible decrease
Line 2010 Cross-Tie	Non-Native Grassland (Annual Grassland)	0.33	0.34	0.01
	Non-Native Grassland: Broadleaf-dominated	0.01	<0.01	Negligible decrease
	Valley Needlegrass Grassland*	<0.01	<0.01	No change (—)
Mainline Valve (MLV) 1	Orchards/Vineyards	0.09	0.07	-0.02
	Ornamental	0	0.02	0.02
MLV 2	Diegan Coastal Sage Scrub (disturbed)*	<0.01	0	Negligible decrease
	Disturbed Habitat	0.08	0.09	0.01
MLV 3	Diegan Coastal Sage Scrub*	0.01	0.06	0.05
	Urban/Developed	0.07	0.03	-0.04
MLV 4	Diegan Coastal Sage Scrub	0.09	0.09	—
MLV 5	Diegan Coastal Sage Scrub: *Baccharis*-dominated*	0.09	0.09	—
MLV 6	Urban/Developed	0.07	0.05	-0.02
MLV 7/Line 1600 Cross-Tie	Non-Native Grassland (Annual Grassland)	0.09	0.09	—

[1] Asterisks denote sensitive natural communities.
[2] The permanent impacts in this table only include the walled portions of each facility, and do not include the additional permanent easement discussed in the Mainline Valve and Other Appurtenant Facilities Easements section.
[3] The numbers in this table are based on a geographic information system analysis and may differ from the rounded numbers and dimensions listed in the PEA.

Facility	Vegetation Community[1]	Approximate Permanent Impacts[2,3] (acres)		Change in Permanent Impacts (acres)
		Proponent's Environmental Assessment	Minor Design Refinements	
MLV 8	Disturbed Habitat	0.07	0.07	—
MLV 9	Diegan Coastal Sage Scrub (open)*	0.01	0.02	0.01
	Non-Native Grassland (Annual Grassland)	0	<0.01	Negligible increase
	Non-Native Woodland	0.06	0.06	—
	Urban/Developed	<0.01	<0.01	—
MLV 10	Chamise Chaparral	0	0.09	0.09
	Eucalyptus Woodland	0.09	0	-0.09
Rainbow Pressure-Limiting Station	Urban/Developed	0.24	0.24	—
Total[4]		**1.55**	**1.48**	**-0.07**

[4] Totals may not add up exactly due to rounding.

EXHIBIT I: LINE 1600 CROSS-TIE SITE PLAN

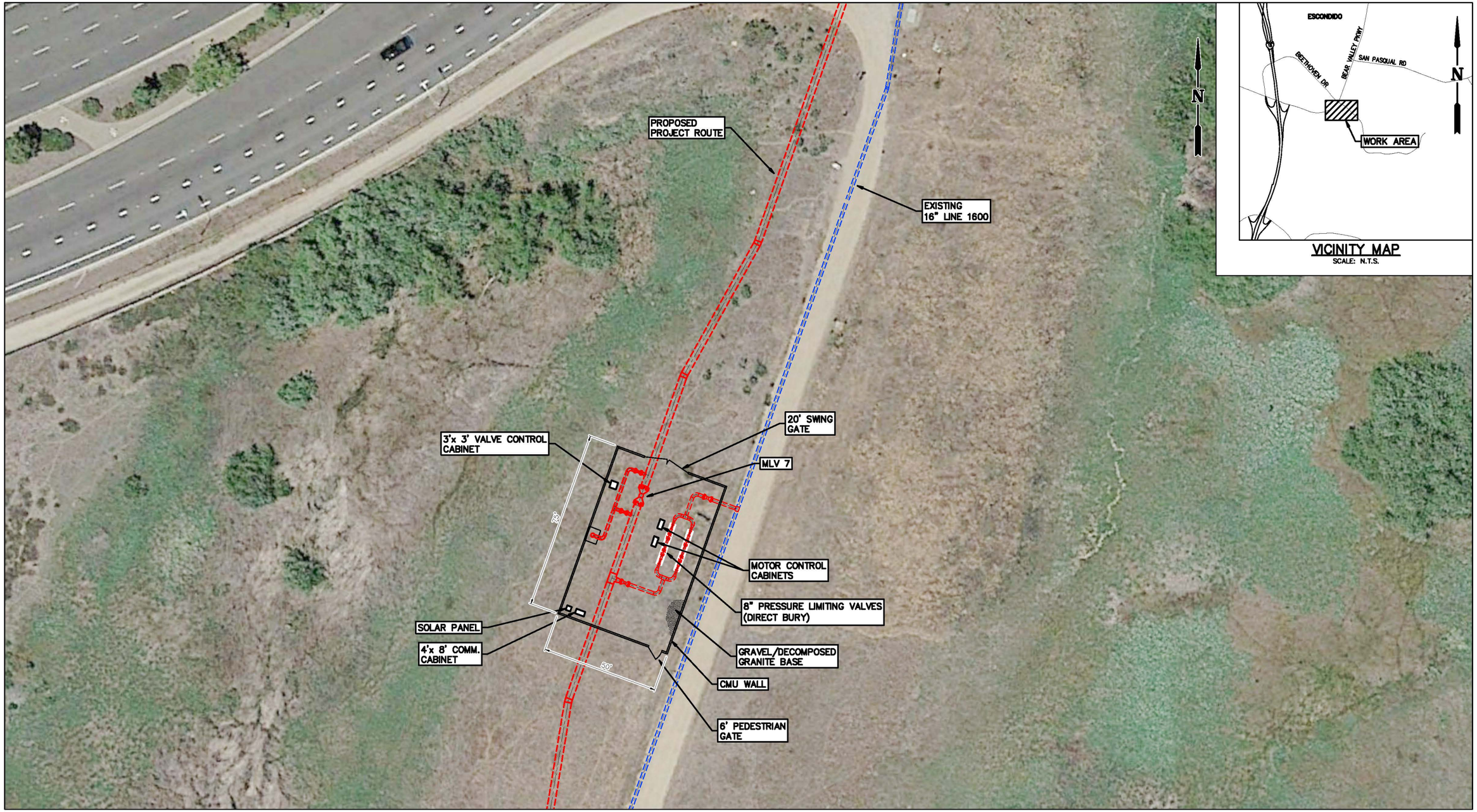


Exhibit I: Line 1600 Cross-Tie Site Plan

EXHIBIT J: LINE 1600 CROSS-TIE VISUAL SIMULATION

Existing view looking north along Mule Hill Trail near approximate MP 29.4, where the proposed MLV 7 will be located.

Visual simulation of the Proposed Project right-of-way as seen approximately one year after the completion of construction.

Visual simulation of the Proposed Project right-of-way as seen approximately three to five years after the completion of construction.

Visual Simulation
Mainline Valve 7

Pipeline Safety &
Reliability Project

Direction of View: NNE
Viewpoint Elevation: 338 feet
Easting Position: 6313044.69 feet
Northing Position: 1969050.30 feet
Date of Photograph: 02/02/2016
Time of Phoptograph: 1:05 p.m.

INSIGNIA ENVIRONMENTAL

SDGE A Sempra Energy utility

SoCalGas A Sempra Energy utility

EXHIBIT K: TEMPORARY WORKSPACE REFINEMENTS

Proponent's Environmental Assessment Mileposts (MPs)	New MPs	Refinement Description
0.0	0.0	Temporary workspace was reconfigured at the existing Rainbow Metering Station and the new Rainbow Pressure-Limiting Station.
1.5	1.5	Temporary workspace was reconfigured at Mainline Valve (MLV) 1.
6.2	6.2	Additional temporary workspace was added at MLV 2.
10.9	11.0	Additional temporary workspace was added at MLV 3.
15.4	15.7	Temporary workspace was reconfigured at MLV 4.
19.9	20.2	Temporary workspace was reconfigured at MLV 5.
21.7-22.4	21.9-22.6	Temporary workspace limits were increased slightly near MP 22.
23.4	23.6	Temporary workspace was removed near MP 23.6.
24.6	24.9	Additional temporary workspace was added at MLV 6.
29.3-29.8	29.5-30.1	Temporary workspace limits were reconfigured starting just north of MLV 7 to the horizontal directional drilling work area north of Lake Hodges.
34.0	34.3	Additional temporary workspace was added at MLV 8, as well as south of MLV 8.
36.0-36.1	36.3-36.4	Temporary workspace limits increased slightly on the other side of Pomerado Road near the Arbolitos Field Yard.
38.8	39.1	Additional temporary workspace was added at MLV 9.
39.0	39.3	Temporary workspace was removed south of Scripps Poway Parkway and west of Pomerado Road.
42.8	43.1	Temporary workspace was removed from the original MLV 10 site.
43.2-43.5	43.5-43.8	Some temporary workspace was shifted west and some temporary workspace was shifted east and south of Pomerado Road near Avenue of the Nations and Novak Way.
43.5-43.8	43.8-44.1	Additional temporary workspace was added, and temporary workspace was shifted south at the revised MLV 10 site.
43.8-46.6	44.1-46.9	Some temporary workspace was shifted west and some temporary workspace was shifted east from near MP 44 to MP 47.
47.0	47.3	Temporary workspace was added around the Line 2010 Cross-Tie facility.

EXHIBIT L: TEMPORARY WORKSPACE IMPACTS

Vegetation Community[1]	Temporary Workspace[2] (acres)		Change in Temporary Impacts (acres)
	Added	Removed	
Chamise Chaparral*	1.74	0.46	1.28
Cismontane Alkali Marsh*	0.09	0.03	0.06
Coastal and Valley Freshwater Marsh*	<0.01	<0.01	No change (—)
Coastal Sage-Chaparral Transition*	0.59	<0.01	0.59
Diegan Coastal Sage Scrub*	2.36	7.35	-4.99
Diegan Coastal Sage Scrub (open, disturbed)*	<0.01	0	Negligible increase
Diegan Coastal Sage Scrub (burned)*	0.05	0.30	-0.25
Diegan Coastal Sage Scrub (disturbed)*	1.58	1.43	0.15
Diegan Coastal Sage Scrub (open)*	0.32	0.01	0.31
Diegan Coastal Sage Scrub (restored)*	0.08	0.41	-0.33
Diegan Coastal Sage Scrub: *Baccharis*-dominated*	0.13	0.06	0.07
Disturbed Habitat	6.49	3.07	3.42
Eucalyptus Woodland	1.57	1.10	0.47
Freshwater Seep*	<0.01	<0.01	—
Intensive Agriculture – Dairies, Nurseries, Chicken Ranches	15.86	1.49	14.37
Mule Fat Scrub*	0.43	0	0.43
Non-native Grassland (Annual Grassland)	0.97	0.68	0.29
Non-native Grassland: Broadleaf-dominated	0.78	0.20	0.58
Non-Native Woodland	0.10	0.09	0.01

[1] Asterisks denote sensitive natural communities.
[2] The temporary workspace included in this table does not include laydown yards.

Vegetation Community[1]	Temporary Workspace[2] (acres)		Change in Temporary Impacts (acres)
	Added	Removed	
Non-Native Woodland (burned)	0	0.11	-0.11
Non-Vegetated Floodplain or Channel*	0	0.17	-0.17
Open Coast Live Oak Woodland (<50%)*	0.10	1.79	-1.69
Open Coast Live Oak Woodland (<50%) (burned)*	0	0.14	-0.14
Orchards/Vineyards	3.60	2.86	0.74
Ornamental	0	0.10	-0.10
Southern Coast Live Oak Riparian Forest*	0.20	0	0.20
Southern Cottonwood-Willow Riparian Forest*	0	0.86	-0.86
Southern Cottonwood-Willow Riparian Forest (disturbed)*	3.18	0	3.18
Southern Mixed Chaparral*	0.07	0.12	-0.05
Southern Mixed Chaparral (burned)*	0.03	<0.01	0.03
Southern Willow Scrub*	0.01	0	0.01
Southern Willow Scrub (disturbed)*	0.37	0.03	0.33
Tamarisk Scrub*	<0.01	0	Negligible increase
Urban/Developed	7.30	7.03	0.27
Valley Needlegrass Grassland*	0.11	<0.01	0.11
Total[3]	**48.11**	**29.87**	**18.24**

[3] Totals may not add up exactly due to rounding.

EXHIBIT M: ROUTE REFINEMENT IMPACTS

Route Refinement	Vegetation Community[1]	Approximate Temporary Impacts (acres)		Change in Temporary Impacts (acres)
		Proponent's Environmental Assessment	Minor Design Refinements	
Highway 76 (Milepost 8.3)	Coastal Sage-Chaparral Transition*	0	0.29	0.29
	Diegan Coastal Sage Scrub*	1.81	0.73	-1.08
	Diegan Coastal Sage Scrub (burned)*	0.30	0.05	-0.25
	Diegan Coastal Sage Scrub (disturbed)*	0.21	0.68	0.47
	Diegan Coastal Sage Scrub (restored)*	0.14	<0.01	-0.14
	Disturbed Habitat	2.87	3.94	1.07
	Eucalyptus Woodland	0.01	0.28	0.27
	Mule Fat Scrub*	0	0.43	0.43
	Non-native Grassland (Annual Grassland)	0.10	0.16	0.06
	Non-Native Woodland (burned)	0.11	0	-0.11
	Non-Vegetated Floodplain or Channel*	0.17	0	-0.17
	Open Coast Live Oak Woodland (<50%)*	1.57	0.01	-1.56
	Open Coast Live Oak Woodland (<50%) (burned)*	0.14	0	-0.14
	Southern Coast Live Oak Riparian Forest*	0	0.20	0.20
	Southern Cottonwood-Willow Riparian Forest*	0.03	0	-0.03
	Southern Cottonwood-Willow Riparian Forest (disturbed)*	0	3.18	3.18
	Southern Mixed Chaparral*	0.11	0	-0.11
	Southern Willow Scrub (disturbed)*	0	0.11	0.11
	Urban/Developed	2.42	2.28	-0.14

[1] Asterisks denote sensitive natural communities.

Route Refinement	Vegetation Community[1]	Approximate Temporary Impacts (acres)		Change in Temporary Impacts (acres)
		Proponent's Environmental Assessment	Minor Design Refinements	
Total[2]		**9.98**	**12.33**	**2.35**
Interstate 15 (Milepost 11.2)	Coastal Sage-Chaparral Transition*	0	0.30	0.30
	Diegan Coastal Sage Scrub*	4.89	0.66	-4.23
	Diegan Coastal Sage Scrub (disturbed)*	0.03	0.62	0.59
	Diegan Coastal Sage Scrub (restored)*	0.01	<0.01	-0.01
	Disturbed Habitat	0.04	2.07	2.03
	Intensive Agriculture – Dairies, Nurseries, Chicken Ranches	0	15.86	15.86
	Non-Native Woodland	0.02	0.07	0.05
	Open Coast Live Oak Woodland (<50%)*	0.15	0	-0.15
	Orchards/Vineyards	0	0.34	0.34
	Southern Cottonwood-Willow Riparian Forest*	0.83	0	-0.83
	Southern Willow Scrub (disturbed)*	0	0.26	0.26
	Urban/Developed	3.19	3.51	0.32
Total		**9.16**	**23.68**	**14.52**
Milepost 3.3	Diegan Coastal Sage Scrub*	1.12	1.12	No change (—)
	Orchards/Vineyards	2.07	1.94	-0.13
	Southern Willow Scrub (disturbed)*	0.03	0	-0.03
Total		**3.22**	**3.06**	**-0.16**

[2] Totals in this table may not add up exactly due to rounding.

Route Refinement	Vegetation Community[1]	Approximate Temporary Impacts (acres)		Change in Temporary Impacts (acres)
		Proponent's Environmental Assessment	Minor Design Refinements	
Milepost 30.7	Diegan Coastal Sage Scrub*	0.02	0	-0.02
	Diegan Coastal Sage Scrub (restored)*	0.28	0.10	-0.18
	Disturbed Habitat	0.05	0	-0.05
	Non-Native Woodland	<0.01	<0.01	—
	Orchards/Vineyards	3.34	3.79	0.45
	Southern Coast Live Oak Riparian Forest*	0.08	0.08	—
	Urban/Developed	0.80	0.40	-0.40
Total		**4.56**	**4.37**	**-0.19**

EXHIBIT N: AVENUE OF NATIONS VISUAL SIMULATION

Existing view looking southwest from Willow Creek Road near approximate MP 43.2, where the Proposed Project will turn south onto Avenue of Nations

Visual simulation of the Proposed Project right-of-way as seen approximately one year after the completion of construction.

Visual simulation of the Proposed Project right-of-way as seen approximately three to five years after the completion of construction.

Visual Simulation
Vegetation Removal
near Avenue of Nations

Pipeline Safety &
Reliability Project

Direction of View: SSE
Viewpoint Elevation: 553.60 feet
Easting Position: 6299867.26 feet
Northing Position: 1907551.93 feet
Date of Photograph: 02/03/2016
Time of Phoptograph: 12:01 p.m.

INSIGNIA ENVIRONMENTAL

SDGE A Sempra Energy utility

SoCalGas A Sempra Energy utility