

Pipeline Workpaper Title	Project Scope (miles, rounded)			Utility
	Hydrotest	Replace	Abandon	
2003 Section 2 Hydrotest Project	0.085	0.009		SoCalGas
36-9-09 North Section 5A Hydrotest and Replacement Project	0.572	0.914	0.007	SoCalGas
49-13 Replacement and Hydrotest Project	1.936	1.239		SDG&E
404 Sections 1, 2, 2A, 3, 3A, 4&5, 8A and 9 Replacement and Hydrotest Projects	12.000	0.356	0.298	SoCalGas
1004 Hydrotest and Replacement Projects	8.574	0.395	0.063	SoCalGas
36-9-09 JJ Abandonment Project		0.009	0.453	SoCalGas
36-9-09 South Abandonment Project		0.005	1.235	SoCalGas
Kern Wildlife Bundle Abandonment Project			15.225	SoCalGas

I. BACKGROUND AND SUMMARY:

Included in this section of each project Workpaper is *Table 1: General Project Information*, which provides overall project details such as mileage, pipe diameter (confidential), construction start/stop, project costs, etc. The pipe vintage listed reflects the vintage of the Category 4 Criteria mileage³. In addition, maps and satellite images are included to provide a perspective of the project in relation to the community it impacts and demonstrate the reasonable inclusion of accelerated and incidental pipe when remediating the Category 4 Criteria pipe segments.

II. ENGINEERING, DESIGN, AND PLANNING:

A. Project Scope:

Included in this section is *Table 2: Mileage Information*. Project scope is depicted by mileage type, Criteria, Accelerated, Incidental, New, and Total, depicted in both miles and feet. In some instances, an alignment offset, or rerouted pipeline results in “New” mileage that is greater than or less than the original route.

A high-level summary of the progression of the project chronicles the project evolution. The summary starts with the mileage as proposed in the 2011 PSEP filing and then describes scope validation, where existing pipeline documentation is evaluated. Mileage originally included for remediation may be decreased due to scope validation efforts or if a reduction in Maximum Allowable Operating Pressure (MAOP) is determined to be appropriate from a gas operating

³ Add description of Category 4 and Criteria here (use from glossary)Category 4 Criteria mileage consists of segments that lack sufficient documentation of a post-construction strength test to at least 1.25 times the MAOP and are located in the Class 3 & 4 location and Class 1 & 2 High Consequence Area (HCA).

all the costlier design options that were briefly considered and rejected. More notable cost avoidance decisions and actions are described in the project workpapers. Some typical areas of cost avoidance and cost savings are derived from planning and design choices that include reduction of project scope, choice of materials or bulk purchasing of materials, project designs that eliminate or reduce features that would complicate routine maintenance activities to reduce future maintenance costs, and planning and coordination of the PSEP project schedule to incorporate other projects to share resources or avoid duplicative or wasted effort. Prudent negotiation of terms with land owners and permit terms, as well as shared land use, are ~~additional~~ additional means of avoiding costs. Finally, costs are avoided through prudent engineering and design decisions made in the field to address and mitigate unanticipated conditions identified during construction.

B. Cost Estimate:

Estimation activity is initiated in Stage 1 with approval of the Phase 1 WOA, which reflects the estimated costs for preliminary design, mapping and survey activities. Subsequently, based on 60% design drawings, a TIC estimate is prepared using the most current version of the PSEP Estimating Tool available. The TIC is presented to PSEP leadership at a Stage 3 gate review and approval is required to move forward. The TIC costs reflect direct costs only, which are typically used to prepare the Phase 2 WOA. The Phase 2 WOA includes indirect costs, and therefore, provides a total loaded project cost estimate. Approval of the Phase 2 WOA is required to proceed with execution of the project. Any significant project activity and costs subsequently added to the project scope after execution of the TIC would not be reflected in the estimated costs presented in Tables 4 and 5 in the project workpapers. These additional costs and activities are authorized and documented through the scope change process discussed above.

C. Actual Direct and Indirect Costs:

The estimated and actual direct cost elements that are shown in *Table 4: Estimated and Actual Direct Costs and Variances* in workpapers are defined as follows:

Company Labor: Labor costs for SoCalGas and SDG&E employees who charge their time directly to the project, such as project managers, engineers, land services personnel, environmental services personnel, construction managers, and field support personnel.

Materials: Costs for materials purchased by SoCalGas and SDG&E to complete the project, such as valves, fittings, and other miscellaneous materials. Materials planned to be purchased by the construction contractor may be included in the construction contractor costs.

Pipeline Safety Enhancement Plan Final Report
Supply Line 30-18 Section 1 and 3 Replacement Project

Table 1: General Project Information

Project Name		Supply Line 30-18 Section 1		
Project Type		Replacement		
Length		2.003 miles		
Location		City of Carson		
Class		3		
MAOP (confidential)		[REDACTED]		
Pipe Vintage		1943		
Construction Start		07/14/2014		
Construction Finish		02/12/2016		
Original Pipe Diameter (confidential)		[REDACTED]		
New Diameter (confidential)		[REDACTED]		
Original SMYS ¹ (confidential)		[REDACTED]		
New SMYS (confidential)		[REDACTED]		
Project Name		Supply Line 30-18 Section 3		
Project Type		Replacement		
Length		0.008 miles		
Location		City of Los Angeles and Los Angeles County		
Class		3		
MAOP (confidential)		[REDACTED]		
Pipe Vintage		1943		
Construction Start		10/31/2016		
Construction Finish		12/20/2016		
Original Pipe Diameter (confidential)		[REDACTED]		
New Diameter (confidential)		[REDACTED]		
Original SMYS ² (confidential)		[REDACTED]		
New SMYS (confidential)		[REDACTED]		
Project Costs (\$)		Capital	O&M	Total
Loaded Project Costs		28,281,200	-	28,281,200
Disallowed Costs		59,150	-	59,150

¹ Highest percentage of Specified Minimum Yield Strength (SMYS) of Category 4 Criteria pipe.

² Ibid.

Pipeline Safety Enhancement Plan Final Report Supply Line 30-18 Section 1 and 3 Replacement Project



Pipeline Safety Enhancement Plan Final Report
Supply Line 30-18 Section 1 and 3 Replacement Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated ³	Incidental	New	Total ⁴
Final Mileage ⁵	1,690 <u>1,669</u> mi.	0 <u>0.024</u> mi.	0.281 <u>0.278</u> mi.	0.040 mi.	2.011 mi.
	8,924 <u>8,812</u> ft.	0 <u>128</u> ft.	1,486 <u>1,470</u> ft.	209 ft.	10,619 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing.⁶ Prior to initiating execution of the Project in 2014, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. This progression of project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Supply Line 30-18 as a Phase 1A Replacement Project comprised of 2.139 miles Category 4 Criteria pipe and 0.445 miles of Accelerated pipe.
2. Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E successfully

³ Accelerated mileage includes Phase 2B pipe. Phase 2B includes pipelines without record of a pressure test to modern-Subpart J-standards (Phase 2B). The Accelerated mileage was included to realize efficiencies and to enhance project constructability.

⁴ Values may not add to total due to rounding.

⁵ Includes Criteria and New pipe installed on Supply Line 37-18-F.

⁶ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Safety Enhancement Plan Final Report
Supply Line 30-18 Section 1 and 3 Replacement Project

reduced the scope of the Supply Line 30-18 Project by 0.449 miles of Category 4
Criteria pipe.

Pipeline Safety Enhancement Plan Final Report Supply Line 30-18 Section 1 and 3 Replacement Project

D. Disallowance

~~For this replacement project, SoCalGas and SDG&E identified pipe as being installed after 1955 and lacking records that provide the minimum information necessary to demonstrate compliance with then applicable industry standards or regulatory strength testing and recordkeeping requirements. Of the pipeline that was replaced, 128 feet of Phase 1A pipe are disallowed. Therefore, a \$59,150 reduction to ratebase was calculated by multiplying 0.024 miles of pipe by \$2,439,956 per mile, which was SoCalGas and SDG&E's system average cost of pressure testing at the time the pipeline was returned to service. There was no disallowance for Supply Line 30-18 Sections 1 and 3 as there were no post-1955 segments included in the Project without records that provide the minimum information to demonstrate compliance with then applicable industry standards or regulatory strength testing and recordkeeping requirements.~~

Pipeline Safety Enhancement Plan Final Report
Supply Line 36-9-09 North Section 3 Replacement Project

Table 1: General Project Information

Project Name	Supply Line 36-9-09 North Section 3		
Project Type	Replacement		
Length	2.956 miles		
Location	San Luis Obispo		
Class	3		
MAOP (<i>confidential</i>)	[REDACTED]		
Pipe Vintage	1927		
Construction Start	12/03/2014		
Construction Finish	11/13/2015		
Original Pipe Diameter (<i>confidential</i>)	[REDACTED]		
New Diameter (<i>confidential</i>)	[REDACTED]		
Original SMYS ² (<i>confidential</i>)	[REDACTED]		
New SMYS (<i>confidential</i>)	[REDACTED]		
Project Costs (\$)	Capital	O&M	Total
Loaded Project Costs	27,243,845	3,732	27,247,577
Disallowed Costs	480,994,265,2 29	-	480,994,265,2 29

² Highest percentage of Specified Minimum Yield Strength (SMYS) of Category 4 Criteria pipe.

Pipeline Safety Enhancement Plan Final Report
Supply Line 36-9-09 North Section 3 Replacement Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated ³	Incidental	New	Total ⁴
Final Mileage	1,322-1,217 mi.	1,031-1,057 mi.	0,480-0,560 mi.	0.122 mi.	2.956 mi.
	6,980-6,426 ft.	5,446-5,578 ft.	2,537-2,959 ft.	644 ft.	15,607 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing. Prior to initiating execution of the Project in 2014, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design and Planning phase, SoCalGas and SDG&E further refined the scope. This progression of the project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Supply Line 36-9-09 North as a Phase 1A replacement project comprised of 9.662 miles of Category 4 Criteria pipe and 6.354 miles of Accelerated pipe. Supply Line 36-9-09 North Section 3 is a section within that project.
2. Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E successfully reduced the scope of the Project by 8.340 miles of Category 4 Criteria pipe.

³ Accelerated mileage includes Phase 1B, Phase 2A, and Phase 2B pipe. Phase 2 includes pipelines without sufficient record of a pressure test in less populated areas (Phase 2A) or pipelines with record of a pressure test, but without record of a pressure test to modern – Subpart J – standards (Phase 2B). The Accelerated mileage was included to realize efficiencies and to enhance project constructability.

⁴ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Final Report
Supply Line 36-9-09 North Section 3 Replacement Project

3. Engineering, Design, and Constructability:

- a. The Project included a reroute along South Higuera Street within city and county franchise to improve accessibility for routine maintenance and emergency response. The existing alignment was no longer easily accessible due to the development of homes, businesses, and Highway 101 since the original installation.
- b. Accelerated mileage was included due to the location being between Category 4 Criteria segments along the northern end of the selected route. The Accelerated mileage at the southern end of the project was included to prevent future community disruption and avoid costs of a future construction remobilization.
- c. Incidental mileage was included to facilitate the abandonment of the existing line. Some sections were also located between Category 4 Criteria segments, requiring the Incidental mileage to be included in the design.

4. Final Project Scope: The final project scope consists of a 2.956 mile Replacement. The Accelerated mileage consists of 0.381 miles of Phase 1B pipe, ~~0.256~~0.126 miles of Phase 2A pipe, ~~0.394~~0.549 miles of Phase 2B pipe, and ~~0.480~~0.560 miles of Incidental pipe.

B. Decision Tree Analysis

SoCalGas and SDG&E performed a PSEP Decision Tree analysis of Supply Line 36-9-09 North Section 3 and confirmed the project design should commence as a Replacement Project.

Pipeline Safety Enhancement Plan Final Report
Supply Line 36-9-09 North Section 3 Replacement Project

D. Disallowances

For this replacement project, SoCalGas and SDG&E identified ~~0.206~~0.126 miles of pipe installed after 1955 and lacking records that provide the minimum information necessary to demonstrate compliance with then-applicable industry standards or regulatory strength testing and recordkeeping requirements. Of the pipeline that was replaced, ~~0.206~~0.126 miles of Phase 1A pipe are disallowed. Therefore, a ~~\$480,994~~265,229 reduction to ratebase was calculated by multiplying ~~0.206~~0.126 miles of pipe by ~~\$2,439,9562,105,878~~ per mile, which was SoCalGas and SDG&E's system average cost of pressure testing at the time the pipeline was returned to service.

Pipeline Safety Enhancement Plan Final Report
Supply Line 38-501 Replacement Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated ³	Incidental	New	Total ⁴
Final Mileage	1.784 <u>1.793</u> mi.	0.574 mi.	0.058 <u>0.050</u> mi.	0.025 mi.	2.441 mi.
	9,4189,46 <u>5</u> ft.	3,028 ft.	308 <u>262</u> ft.	134 ft.	12,889 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing.⁵ Prior to initiating execution of the Project in 2015, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. The progression of project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Supply Line 38-501 as a Phase 1A Replacement Project comprised of 1.147 miles of Category 4 Criteria pipe and 0.838 miles of Accelerated pipe.

³ Accelerated mileage includes Phase 1B, Phase 2A, and Phase 2B pipe. Phase 2 includes pipelines without sufficient record of a pressure test in less populated areas (Phase 2A) or pipelines with record of a pressure test, but without record of a pressure test to modern – Subpart J – standards (Phase 2B). The Accelerated mileage was included to realize efficiencies and to enhance project constructability.

⁴ Values may not add to total due to rounding.

⁵ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Safety Enhancement Plan Final Report
Supply Line 38-501 Replacement Project

2. Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E increased the scope of the Project by 0.637 miles of Category 4 Criteria pipe.

Pipeline Safety Enhancement Plan Final Report
Supply Line 38-512 Replacement Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated ³	Incidental	New	Total ⁴
Final Mileage	4.322 mi.	0.3200 .322 mi.	0.2500 .248 mi.	0.068 mi.	4.960 mi.
	22,822 ft.	1,692 1,700 ft.	1,319 1,311 ft.	358 ft.	26,191 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing⁵. Prior to initiating execution of the Project in 2015, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. This progression of the project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Supply Line 38-512 as a Phase 1A Replacement Project comprised of 2.238 miles of Category 4 Criteria pipe and 2.546 miles of Accelerated pipe.
2. Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E increased the scope of the Project by 2.096 miles of Category 4 Criteria pipe.
3. Engineering, Design, and Constructability:

³ Accelerated mileage includes Phase 1B and Phase 2A pipe. Phase 2A includes pipelines without sufficient record of a pressure test in less populated areas. The Accelerated mileage was included to realize efficiencies and to enhance project constructability.

⁴ Values may not add to total due to rounding.

⁵ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Safety Enhancement Plan Final Report
Supply Line 38-512 Replacement Project

- a. The Project Team initially planned and designed this project as a single project. The Project was subsequently split into two separate sections to schedule construction activity around a roadway repaving moratorium in Kings County. Section 1, in Kings County, included approximately 2.46 miles of replacement pipe and Section 2, in the City of Lemoore, included approximately 2.46 miles of replacement pipe.
 - b. Due to delays encountered during negotiations for a licensing agreement to a railroad property, the Project Team excluded a short 23-foot section, Section 3, out of Section 1 to complete construction and restore the site before the moratorium.
 - c. Two years after tie-in of Sections 1 and 2, the Project Team obtained the railroad license agreement and Section 3 was executed.
4. Final Project Scope: The final project scope consists of a 4.96-mile Replacement comprised of 0.320 miles of Accelerated Phase 1B pipe, 8 feet of Phase 2A pipe, 0.25 miles of Incidental pipe, and 358 feet of New pipe.

B. Decision Tree Analysis

SoCalGas and SDG&E performed a PSEP Decision Tree analysis of Supply Line 38-512 and confirmed the project design should commence as a Replacement Project.

Pipeline segments installed prior to 1946 that are not capable of being assessed using in-line inspection technology are identified for replacement under the approved PSEP Decision Tree. As explained in the testimony supporting the approved PSEP, as part of the work previously completed during implementation of federal gas transmission pipeline integrity management regulations (49 CFR 192, Subpart O), SoCalGas and SDG&E previously identified, retrofitted and in-line inspected pre-1946 transmission pipelines that were constructed using acceptable welding techniques and are

Pipeline Safety Enhancement Plan Final Report for
Supply Line 41-6000-2 Replacement Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated ⁵	Incidental	New	Total ⁶
Final Mileage	0 mi.	0.01 <u>180.063</u> mi.	0.01 <u>70.021</u> mi.	41.70 <u>611.657</u> mi.	11.741 mi.
	0 ft.	94 <u>332</u> ft.	94 <u>113</u> ft.	61,808 <u>61,547</u> ft.	61,993 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing⁷ for Line 41-6000-2. Prior to initiating execution of the Project in 2015, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the project. During the Engineering, Design and Planning phase, SoCalGas and SDG&E further refined the scope. The progression of the project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Line 41-6000-2 as a Phase 1A replacement project comprised of 11.373 Category 4 Criteria miles and 24.577 Accelerated miles, for a total of 35.950 miles. The cost estimate included the extension of existing Line 6914 in conjunction with the abandonment of Line 41-6000-2 to mitigate detrimental impacts to system capacity.

⁵ Accelerated mileage includes Phase 2B pipe. Phase 2B includes pipelines without record of a pressure test to modern – Subpart J – standards (Phase 2B). The Accelerated mileage was included to realize efficiencies and to enhance project constructability.

⁶ Values may not add to total due to rounding.

⁷ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Safety Enhancement Plan Final Report
Supply Line 44-137 Replacement Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated	Incidental	New	Total ²
Final Mileage	0.943 <u>1.003</u> mi.	0 mi.	0.080 <u>0.020</u> mi.	0.016 mi.	1.039 mi.
	4,981 <u>5,298</u> ft.	0 ft.	422 <u>105</u> ft.	84 ft.	5,486 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing.³ Prior to initiating execution of the Project in 2014, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. This progression of the project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Supply Line 44-137 as a Phase 1A Replacement Project comprised of 0.996 miles of Category 4 Criteria pipe and 0.007 miles of Accelerated pipe.
2. Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E successfully reduced the project scope by 0.053 miles of Category 4 Criteria pipe and 0.007 miles of Accelerated pipe.

² Values may not add to total due to rounding.

³ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Safety Enhancement Plan Final Report
Supply Line 44-137 Replacement Project

3. Engineering, Design, and Constructability: SoCalGas and SDG&E routed the pipeline alignment around existing utilities and substructures, adding 84 feet of New pipe to the project scope.

Pipeline Safety Enhancement Plan Final Report
Supply Line 49-15 Replacement Project

I. SUPPLY LINE 49-15 REPLACEMENT PROJECT

A. Background and Summary

Supply Line 49-15 is a [REDACTED] diameter transmission line that runs approximately 7.4 miles from the City of El Cajon to the City of La Mesa. The pipeline is primarily routed across a Class 3 location. This report describes the activities associated with the Supply Line 49-15 Replacement Project, which consists of the replacement and reroute of 1.013 miles (Section 1)¹, the replacement of 1.777 miles for Section 2 and Section 3, and the addition of a new regulator station. The specific attributes of this Project are detailed in Table 1 below. The total loaded cost of the Project is \$43,488,794.

Table 1: General Project Information

Project Name	Section 1
Project Type	Replacement
Length	1.013 miles
Location	City of La Mesa
Class	3
MAOP (<i>confidential</i>)	[REDACTED]
Pipe Vintage	1950
Construction Start	11/09/2015
Construction Finish	10/25/2016
Original Pipe Diameter (<i>confidential</i>)	[REDACTED]
New Diameter (<i>confidential</i>)	[REDACTED]
Original SMYS (<i>confidential</i>)	[REDACTED]
New SMYS (<i>confidential</i>) ²	[REDACTED]

¹ The rerouted portion of Section 1 interconnects with Line 3600 and has been renamed Line 1033. Abandonment of replaced pipeline segment is scheduled for late November 2018.

² Highest percentage of Specified Minimum Yield Strength (SMYS) of Category 4 Criteria pipe.

Pipeline Safety Enhancement Plan Final Report
Final Report for Supply Line 49-28 Replacement Project

Table 1: General Project Information

Project Name	Supply Line 49-28		
Project Type	Replacement		
Length	2,600 miles		
Location	San Diego		
Class	3		
MAOP (<i>confidential</i>)	[REDACTED]		
Predominant Pipe Vintage	1932		
Construction Start	09/08/2014		
Construction Finish	09/30/2016		
Original Pipe Diameter (<i>confidential</i>)	[REDACTED]		
New Diameter (<i>confidential</i>)	[REDACTED]		
Original SMYS ¹ (<i>confidential</i>)	[REDACTED]		
New SMYS (<i>confidential</i>)	[REDACTED]		
Project Costs (\$)	Capital	O&M	Total
Loaded Project Costs	46,990,042	0	46,990,042
Disallowed Costs	0	0	0

¹ Highest percentage of Specified Minimum Yield Strength (SMYS) of Category 4 Criteria pipe.

Pipeline Enhancement Safety Final Report
Line 85 South Newhall Avenue Replacement Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated	Incidental	New	Total ³
Final Mileage	0.080-0.087 mi.	0 mi.	0.034-0.027 mi.	0.060 mi.	0.174 mi.
	423-457 ft.	0 ft.	178-144 ft.	319 ft.	920 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing.⁴ Prior to initiating execution of the Project in 2014, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. The progression of project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E did not identify Line 85 South as a Phase 1A Project containing Category 4 Criteria mileage.
2. Scope Validation: Through scope validation activities for the Line 85 South Phase 1B Replacement Project, after the 2011 filing, SoCalGas and SDG&E identified 0.076 miles of Category 4 Criteria pipe. Research conducted on Line 85 South revealed 1931 vintage pipe segments with no test records in service on laterals, crossovers, and interconnect piping within Newhall Station within a Class 3 location.

³ Values may not add to total due to rounding.

⁴ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Enhancement Safety Final Report
Line 85 South Newhall Avenue Replacement Project

3. Engineering, Design, and Constructability:
 - a. Based on the existing station configuration, Incidental mileage was included to remove the existing scrubbers that were no longer required and enhance piggability. New pipe was added to the replacement to design a station that better accommodated piggability and operability.
4. Final Project Scope: The final project scope consists of a 0.174 mile replacement of station piping that includes ~~178~~144 feet of Incidental pipe.

B. Decision Tree Analysis

SoCalGas and SDG&E performed a PSEP Decision Tree analysis of Line 85 South Newhall Avenue and confirmed the project design should commence as a Replacement project.

Pipeline segments installed prior to 1946 that are not capable of being assessed using in-line inspection technology are identified for replacement under the approved PSEP Decision Tree. As explained in the testimony supporting the approved PSEP, as part of the work previously completed during implementation federal gas transmission pipeline integrity management regulations (49 CFR 192, Subpart O), SoCalGas and SDG&E have already identified, retrofitted and in-line inspected pre-1946 transmission pipelines that were constructed using acceptable welding techniques and are operationally suited to in-line inspection. The remaining pre-1946 segments in the SoCalGas/SDG&E system are not suited for in-line inspection, likely have non-state-of-the-art welds, and would require significant investment for retrofitting to accommodate in-line inspection tools.

Pipeline Safety Enhancement Plan Final Report
Line 2000-West Santa Fe Springs Station Replacement Project

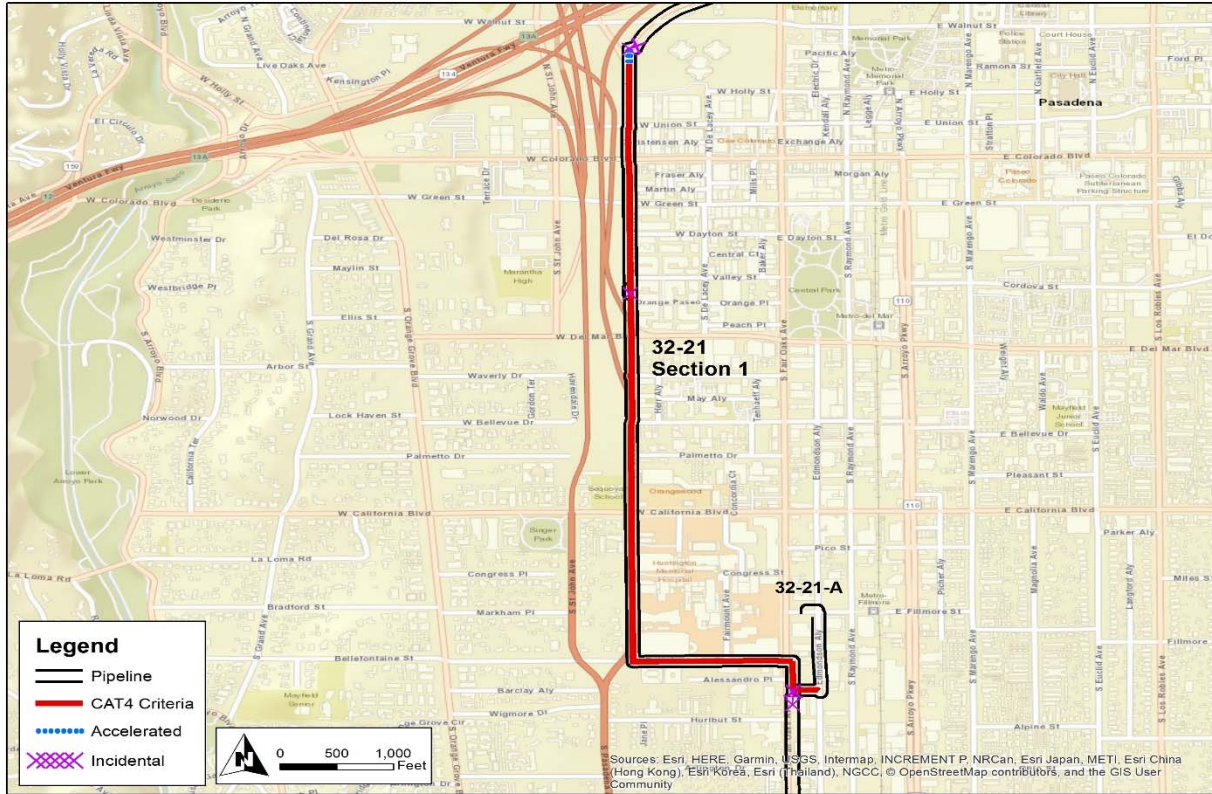
Table 1: General Project Information

Project Name	Line 2000-West Santa Fe Springs Station		
Project Type	Replacement		
Length	0.200 miles		
Location	Santa Fe Springs, Pico Rivera		
Class	3		
MAOP (<i>confidential</i>)	[REDACTED]		
Pipe Vintage	1947		
Construction Start	10/24/2016		
Construction Finish	04/05/2017		
Original Pipe Diameter (<i>confidential</i>)	[REDACTED]		
New Diameter (<i>confidential</i>)	[REDACTED]		
Original SMYS ³ (<i>confidential</i>)	[REDACTED]		
New SMYS (<i>confidential</i>)	[REDACTED]		
Project Costs (\$)	Capital	O&M	Total
Loaded Project Costs	9,416,150	-	9,416,150
Disallowed Costs	-	-	-

³ Highest percentage of Specified Minimum Yield Strength (SMYS) of Category 4 Criteria pipe.

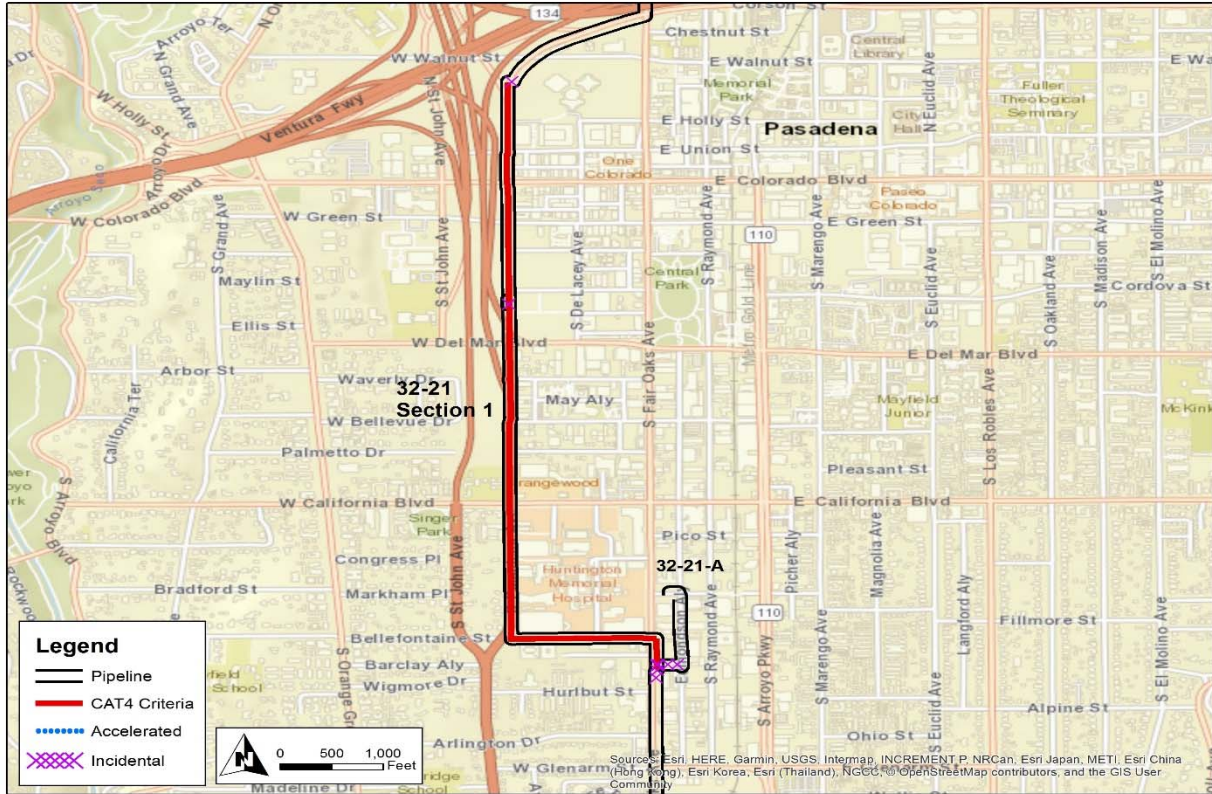
Pipeline Safety Enhancement Plan Final Report
Supply Line 32-21 Section 1 Hydrotest Project

Figure 4: Overview Map of Supply Line 32-21 Section 1 Hydrotest Project



ine 32-21 Section 1 Hydrotest Project

Pipeline Safety Enhancement Plan Final Report Supply Line 32-21 Section 1 Hydrotest Project



Pipeline Safety Enhancement Plan Final Report
Supply Line 32-21 Section 1 Hydrotest Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated ³	Incidental	New	Total ⁴
Final Mileage	1,473 1,486 mi.	0 0.028 mi.	0.084 0.043 mi.	0.004 mi.	1.561 mi.
	7,776 7,847 ft.	1460 ft.	444 227 ft.	20 ft.	8,241 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing.⁵ Prior to initiating execution of the Project in 2015, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. This progression of the project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Supply Line 32-21 as a Phase 1A Replacement Project comprised of 8.590 miles of Category 4 Criteria pipe and 1.641 miles of Accelerated pipe.
2. Scope Validation:
 - a. Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E successfully reduced the scope of the Project by 3.431 miles of Category 4 Criteria pipe for all Project sections.

³ Accelerated mileage includes Phase 2B pipe. Phase 2B includes pipelines without record of a pressure test to modern-Subpart J-Standards (Phase 2B). The Accelerated mileage was included to realize efficiencies and to enhance project constructability.

⁴ -Values may not add to total due to rounding.

⁵ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Safety Enhancement Plan Final Report
Supply Line 32-21 Section 1 Hydrotest Project

- b. SoCalGas and SDG&E reviewed the MAOP of the pipeline and determined that a derate of the pipeline MAOP would not negatively impact the system. As a result, this pipeline was derated, thus reducing Category 4 Criteria mileage.

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Supply Line 32-21 Section 1 Hydrotest Project

3. Engineering, Design, and Constructability:
 - a. Based on the PSEP Decision Tree and Test versus Replace (TVR) analysis, detailed below, SoCalGas and SDG&E confirmed the project scope for Section 1 as a replacement. SoCalGas applied for the necessary permits, but due to the risk associated with permitting terms presented by the City of Pasadena, it was determined that the risk to company employees and the community was unacceptable. After additional thorough research, hydrotesting was deemed as the safest and most viable option for this project. The engineering and design process restarted as a hydrotest project.
 - b. A new bridle was installed to reconnect Lateral 32-21-A.
 - c. New mileage is a result of alignment offset.
4. Final Project Scope: The final project scope consists of a 1.561 mile hydrotest, replacement of one MLV and bridle, and the replacement of two lateral valves for Supply Line 32-21-F and Supply Line 32-21-A. There ~~are 146 feet of~~ Accelerated ~~Phase 2B miles~~ and ~~0.084-227 feet miles~~ of Incidental pipe.

B. Decision Tree Analysis

SoCalGas and SDG&E performed a PSEP Decision Tree analysis of Supply Line 32-21 Section 1 and initially confirmed the project design should commence as a Replacement Project.

For pipeline segments longer than 1,000 feet in length, under the approved PSEP Decision Tree, SoCalGas and SDG&E complete a preliminary review to determine whether SoCalGas and SDG&E can manage customer service impacts if the pipeline segment is taken out of service for a period of two to six weeks to complete pressure testing.

Pipeline Safety Enhancement Plan Final Report
Supply Line 49-11 Hydrotest Project

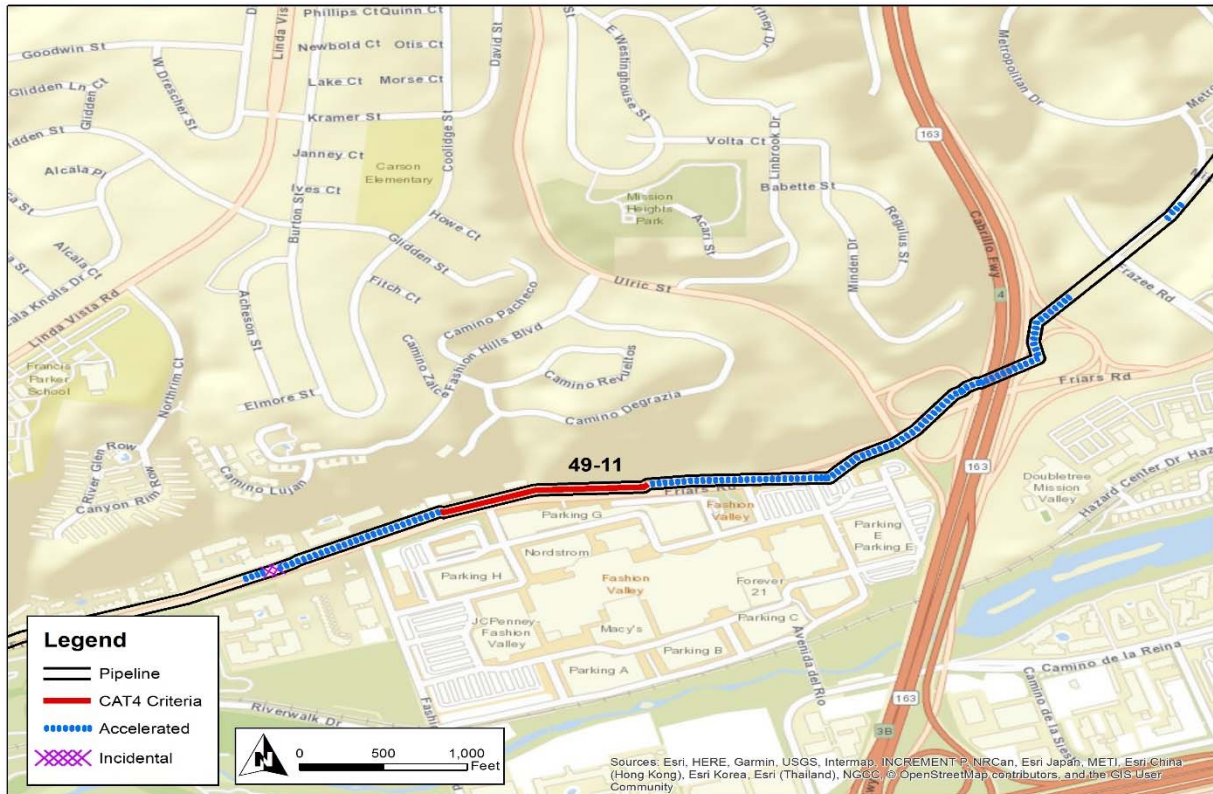
Table 1: General Project Information

Project Name		Supply Line 49-11		
Project Type	Hydrotest			
Length	0.960 miles			
Location	City of San Diego			
Class	3			
MAOP (<i>confidential</i>)	[REDACTED]			
Pipe Vintage	1969			
Construction Start	06/01/2015			
Construction Finish	04/08/2016			
Original Pipe Diameter (<i>confidential</i>)	[REDACTED]			
New Diameter (<i>confidential</i>)	N/A			
Original SMYS ¹ (<i>confidential</i>)	[REDACTED]			
New SMYS (<i>confidential</i>)	N/A			
Project Costs (\$)	Capital	O&M	Total	
Loaded Project Costs	4,761,550	2,612,726	7,374,276	
Disallowed Costs	-11,956-	556,341 490,530	568,297 490,530	

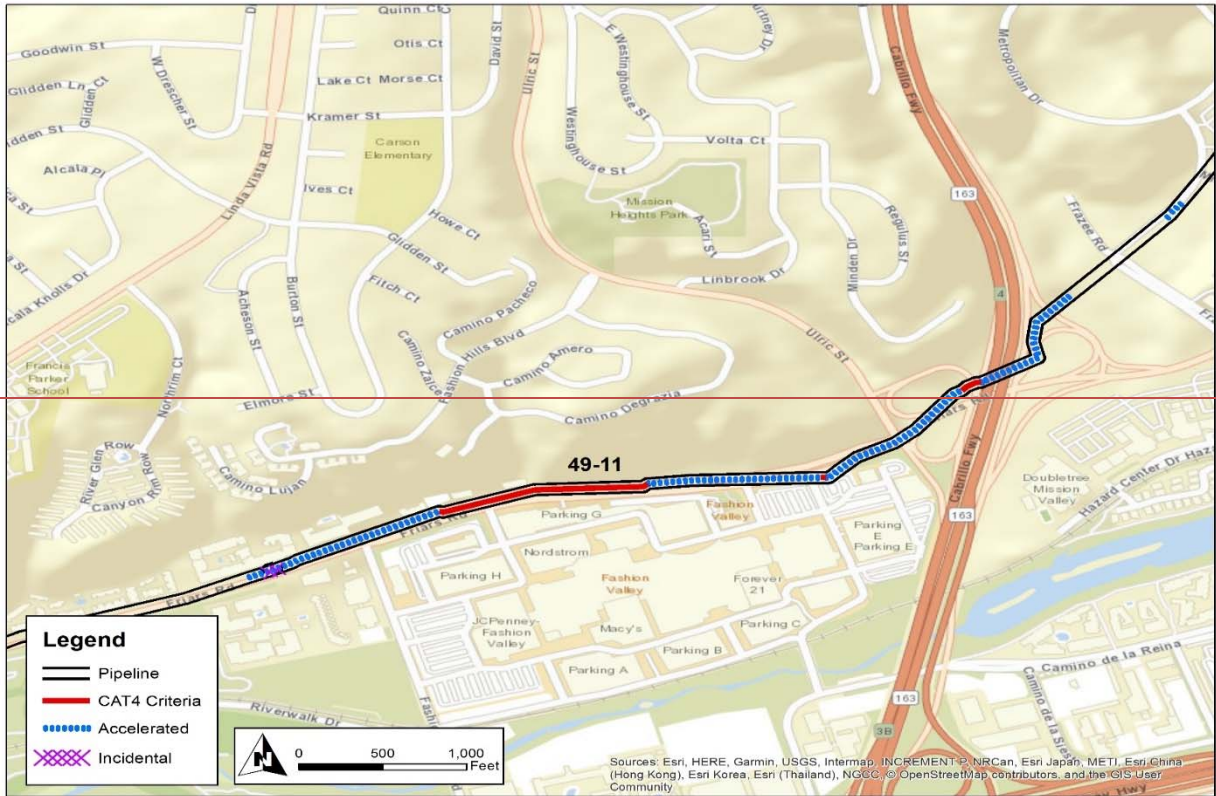
¹ Highest percentage of Specified Minimum Yield Strength (SMYS) of Category 4 Criteria pipe.

Pipeline Safety Enhancement Plan Final Report Supply Line 49-11 Hydrotest Project

Figure 2: Overview Map of Supply Line 49-11 Hydrotest Project



Pipeline Safety Enhancement Plan Final Report Supply Line 49-11 Hydrotest Project



Pipeline Safety Enhancement Plan Final Report
Supply Line 49-11 Hydrotest Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated ²	Incidental	New	Total ³
Final Mileage	0.1920.165 mi.	0.7450.773 mi.	0.002 mi.	0.021 mi	0.960 mi.
	1,013871 ft.	3,9364079 ft.	10 ft.	109 ft.	5,068 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing.⁴ Prior to initiating execution of the Project in 2015, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. This progression of the project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Supply Line 49-11 as a Phase 1A Replacement Project comprised of 0.344 miles of Category 4 Criteria pipe.
2. Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E successfully reduced the scope of the Project by 0.152 miles of Category 4 Criteria pipe.
3. Engineering, Design, and Constructability: During the design phase, the Project Team initiated the Project as a hydrotest recommending two separate tests.

² Accelerated mileage includes Phase 2B pipe. Phase 2B includes pipelines with record of a pressure test, but without record of a pressure test to modern – Subpart J – standards (Phase 2B). The Accelerated mileage was included to realize efficiencies and to enhance project constructability.

³ Values may not add to total due to rounding.

⁴ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Safety Enhancement Plan Final Report
Supply Line 49-11 Hydrotest Project

Subsequently, during the design efforts the Project Team changed the recommendation to replacement based on information provided by Pipeline Integrity, which limited options for hydrotesting and to meet the planned schedule of a future highway improvement project. However, after additional inspection of the pipeline, the Project Team ultimately determined that the Project could proceed as a Hydrotest. The Project Team revised the project scope to a Hydrotest Project with a single test and a short relocation to mitigate a conflict with a highway widening project.

- a. Accelerated mileage was added to the Hydrotest scope to extend the test end to the east to test through the Criteria segment that was located beneath Highway 163. Additional footage between segments allowed for a single hydrotest. The Project Team extended the test to the west to replace a non-piggable plug valve.
 - b. The Project Team replaced and relocated the alignment of a 266 foot segment of pipe to address a 27 foot Category 4 segment and replaced an unknown radius elbow. The new alignment addressed the conflict with a future city project.
4. Final Project Scope: The final project scope consists of a 0.960 mile Hydrotest. The Accelerated mileage consists of ~~0.745~~0.773 miles of Phase 2B pipe and 10 feet of Incidental pipe.

B. Decision Tree Analysis

SoCalGas and SDG&E performed a PSEP Decision Tree analysis of Supply Line 49-11 and confirmed the project design should commence as a Hydrotest Project.

Pipeline Safety Enhancement Plan Final Report
Supply Line 49-11 Hydrotest Project

Table 4: Estimated and Actual Direct Costs and Variances

Direct Costs (\$)	Estimate	Actuals	Delta Over/(Under)
Company Labor	378,978	250,831	(128,147)
Materials	713,121	185,089	(528,032)
Construction Contractor	1,868,083	2,162,923	294,840
Construction Management & Support	273,826	688,902	415,076
Environmental	375,100	244,782	(130,318)
Engineering & Design	926,849	1,583,517	656,668
Project Management & Services	646,460	565,277	(81,183)
ROW & Permits	274,991	286,678	11,687
GMA	496,128	424,008	(72,120)
Total Direct Costs	5,953,536	6,392,007	438,471

Table 5: Estimated and Actual Indirect Costs, Total Costs, and Variances

Indirect Costs/Total Costs (\$)	Estimate	Actuals	Delta Over/(Under)
Overheads	2,853,717	645,636	(2,208,081)
AFUDC	797,324	296,634	(500,690)
Property Taxes	-	39,999	39,999
Total Indirect Costs	3,651,041	982,269	(2,668,772)
Total Direct Costs	5,953,536	6,392,007	438,471
Total Loaded Costs	9,604,577	7,374,276	(2,230,301)

D. Disallowance

For this hydrotest project, SoCalGas and SDG&E identified a total of 1,013,871 feet of pipe as being installed post-1955 and lacking pressure test records that provide the minimum information to demonstrate compliance with industry standards or then-applicable strength testing and recordkeeping requirements. Of the 0.878 miles of pipeline that were pressure tested, 987,871 feet (21.2918.77%) of tested mileage are disallowed, therefore \$556,341,490,530 of total project O&M costs are disallowed from recovery.

Pipeline Safety Enhancement Plan Final Report Supply Line 49-11 Hydrotest Project

~~In addition, of the pipeline that was replaced, 26 feet of Phase 1A pipe are disallowed. Therefore, a \$11,956 reduction was made to ratebase calculated by determining the replacement mileage and multiplying the amount by \$2,439,956 per mile, that was SoCalGas' and SDG&E's system average cost of pressure testing.~~

Pipeline Safety Enhancement Plan Final Report
Line 2000-C Desert Hydrotest Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information³

	Criteria	Accelerated ⁴	Incidental	New	Total ⁵
Final Mileage	0.947 mi.	6.624 <u>6.638</u> mi.	0.019 <u>0.006</u> mi.	0 mi	7.585 mi.
	4,999 ft.	34,975 <u>35,051</u> ft.	101 <u>32</u> ft.	0 ft.	40,047 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing.⁶ Prior to initiating execution of the Project in 2017, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. The progression of project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Line 2000 as a Phase 1A Hydrotest Project comprised of 55.027 miles of Category 4 Criteria pipe and 62.574 miles of Accelerated pipe.
2. Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Line 2000 Project, SoCalGas and SDG&E

³ Total mileage of the completed project differs from the mileage of the pipe addressed due to realignment of the pipeline route.
⁴ Accelerated mileage includes Phase 2A and Phase 2B pipe. Phase 2 includes pipelines without sufficient record of a pressure test in less populated areas (Phase 2A) or pipelines with record of a pressure test, but without record of a pressure test to modern – Subpart J – standards (Phase 2B). The Accelerated mileage was included to realize efficiencies and to enhance project constructability.
⁵ Values may not add to total due to rounding.
⁶ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Safety Enhancement Plan Final Report
Line 2000-C Desert Hydrotest Project

successfully reduced the scope of the Project by 32.408 miles of Category 4 Criteria pipe.

Pipeline Safety Enhancement Plan Final Report
Line 2000-C Desert Hydrotest Project

3. Engineering, Design, and Constructability:

- a. For constructability and project management purposes, SoCalGas and SDG&E divided the 32.408 miles of Category 4 Criteria pipe into four separate projects: Line 2000-A Hydrotest Project, Line 2000-B Hydrotest Project, Line 2000-C Desert Hydrotest Project, Line 2000-West Hydrotest Project. This report describes the activities associated with the Line 2000-C Desert Hydrotest Project.
- b. The Project Team identified the sections of Line 2000 between the cities of Indio and Banning that required testing or replacement. The Project Team would split the replacement, Line 2000-C Desert Hydrotest Project into additional sections east of the Whitewater Pressure Limiting Station because of a change in MAOP. All sections west of the station will be addressed in a future project⁷.
- c. The Line 2000-C Desert Hydrotest Project was planned and designed to include Phase 1A and Phase 2 mileage to determine the entire project scope including the hydrotest section start and stop locations.
- d. SoCalGas and SDG&E decided to proceed with the Phase 1A sections while awaiting Commission approval to begin Phase 2A projects.

4. Final Project Scope: The final project scope consists of four separate hydrotests that total 7.585 miles, a wrinkle bend removal, and repairs associated with a hydrotest failure. The Accelerated mileage consists of ~~6.221~~ 6.236 miles of Phase 2A pipe, 0.403 miles of Phase 2B pipe, and ~~40432~~ 40432 feet of Incidental pipe.

⁷ PSEP Line 2000-D Hydrotest Project will be submitted for reasonableness review in a future filing.

Pipeline Safety Enhancement Plan Final Report
Supply Line 49-13 Replacement and Hydrotest Project

Table 1: General Project Information

Project Name		Supply Line 49-13 Section 1 and Section 2		
Project Type	Replacement			
Length	1.200 miles			
Location	Santee			
Class	3			
MAOP (<i>confidential</i>)	[REDACTED]			
Pipe Vintage	1959			
Construction Start	09/08/2015			
Construction Finish	07/28/2017			
Original Pipe Diameter (<i>confidential</i>)	[REDACTED]			
New Diameter (<i>confidential</i>)	[REDACTED]			
Original SMYS ¹ (<i>confidential</i>)	[REDACTED]			
New SMYS (<i>confidential</i>)	[REDACTED]			
Project Name		Supply Line 49-13 Section 3		
Project Type	Hydrotest			
Length	1.975 miles			
Location	El Cajon			
Class	3			
MAOP (<i>confidential</i>)	[REDACTED]			
Pipe Vintage	1959			
Construction Start	07/28/2015			
Construction Finish	11/23/2015			
Original Pipe Diameter (<i>confidential</i>)	[REDACTED]			
New Diameter (<i>confidential</i>)	N/A			
Original SMYS ¹ (<i>confidential</i>)	[REDACTED]			
New SMYS (<i>confidential</i>)	N/A			
Project Costs (\$)		Capital	O&M	Total
Loaded Project Costs		19,009,868	4,569,189	23,579,057
Disallowed Costs		5,612 ₋	40,008 ₋	45,620 ₋

¹ Highest percentage of Specified Minimum Yield Strength (SMYS) of Category 4 Criteria pipe.

Pipeline Safety Enhancement Plan Final Report
Supply Line 49-13 Replacement and Hydrotest Project

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated ²	Incidental	New	Total ³
Sec 1 & 2 Replacement	1.148 <u>1.14</u> 6 mi.	0 mi.	0.019 <u>0.021</u> mi.	0.032 mi.	1.200 mi.
	6,064 <u>6,05</u> 2 ft.	0 ft.	100 <u>112</u> ft.	171 ft.	6,335 ft.
Section 3 Hydrotest	1.809 <u>1.79</u> 2 mi.	0.003 mi.	0.160 <u>0.177</u> mi.	0.002 mi.	1.975 mi.
	9,553 <u>9,46</u> 2 ft.	17 ft.	846 <u>937</u> ft.	11 ft.	10,426 ft.
Total Final Mileage	2.958 2,938 mi.	0.003 mi.	0.179 <u>0.199</u> mi.	0.034 mi.	3.175 mi.
	15,617 15,514 ft.	17 ft.	946 <u>1049</u> ft.	181 ft.	16,761 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing.⁴ Prior to initiating execution of the Project in 2015, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. The progression of project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Supply Line 49-13 as a Phase 1A Replacement Project comprised of 3.464 miles of Category 4 Criteria pipe.

² Accelerated mileage includes Phase 2B pipe. Phase 2B includes pipelines with record of a pressure test, but without record of a pressure test to modern – Subpart J – standards (Phase 2B). The Accelerated mileage was included to realize efficiencies and to enhance project constructability.

³ Values may not add to total due to rounding.

⁴ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Safety Enhancement Plan Final Report
Supply Line 49-13 Replacement and Hydrotest Project

2. Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E successfully reduced the scope of the Project by 0.506 miles of Category 4 Criteria pipe. Validation efforts identified several segments of pipe operating under 20% SMYS removing them from the PSEP scope.
3. Engineering, Design, and Constructability:
 - a. Based on the Decision Tree, the Project Team determined that this project should be executed as two replacement sections, and one hydrotest section.
 - b. SoCalGas and SDG&E identified Supply Line 49-13-C, a [REDACTED] lateral on Supply Line 49-13 as the sole feed to the Santee area. As a result, a new bridled connection with 152 feet of new pipe and two new bridle valves is required to maintain service.
 - c. A portion of the replacement consisted of an approximately 836 foot HDD under the San Diego River.
 - d. The scope also includes the replacement of five [REDACTED] mainline valves (MLVs), and the removal of one [REDACTED] valve. The installation of new pipe included two new bridle valves.
 - e. Incidental mileage was included to configure the hydrotests and facilitate tie-ins to the existing pipe.
4. Final Project Scope: The final project scope consists of a 1.200 mile Replacement and 1.975 mile Hydrotest. The Accelerated mileage includes 17 feet of Phase 2B pipe, 946-1,049 feet of Incidental pipe.

Pipeline Safety Enhancement Plan Final Report
Supply Line 49-13 Replacement and Hydrotest Project

D. Disallowance

~~For this hydrotest project, SoCalGas and SDG&E identified a total of 103 feet of pipe as being installed post-1955 and lacking pressure test records that provide the minimum information to demonstrate compliance with industry standards or then applicable strength testing and recordkeeping requirements. Of the 1.936 miles of pipeline that were pressure tested, 91 feet (0.88%) of tested mileage are disallowed, therefore \$40,008 \ of total project O&M costs are disallowed from recovery. In addition, of the pipeline that was replaced, 12 feet of Phase 1A are disallowed. Therefore, a \$5,612 reduction was made to ratebase calculated by determining the replacement mileage and multiplying the amount by \$2,439,956 per mile, which was SoCalGas and SDG&E's system average cost of pressure testing. There was no disallowance for Supply Line 49-13 as there were no post-1955 segments included in the Project without records that provide the minimum information to demonstrate compliance with then applicable industry standards or regulatory strength testing and recordkeeping requirements.~~

Pipeline Enhancement Plan Final Report
Line 404 Hydrotest and Replacement Projects

Table 1: General Project Information (Continued)

Project Name		Section 8A		
Project Type		Replacement		
Length		0.009 miles		
Location		Moorpark		
Class		3		
MAOP (<i>confidential</i>)		[REDACTED]		
Pipe Vintage		1944		
Construction Start		02/13/2014		
Construction Finish		04/29/2014		
Original Pipe Diameter (<i>confidential</i>)		[REDACTED]		
New Diameter (<i>confidential</i>)		[REDACTED]		
Original SMYS ⁷ (<i>confidential</i>)		[REDACTED]		
New SMYS (<i>confidential</i>)		[REDACTED]		
Project Name		Section 9		
Project Type		Hydrotest		
Length		0.409 miles		
Location		Woodland Hills		
Class		3		
MAOP (<i>confidential</i>)		[REDACTED]		
Pipe Vintage		1944		
Construction Start		06/13/2016		
Construction Finish		08/12/2016		
Original Pipe Diameter (<i>confidential</i>)		[REDACTED]		
New Diameter (<i>confidential</i>)		N/A		
Original SMYS ⁸ (<i>confidential</i>)		[REDACTED]		
New SMYS (<i>confidential</i>)		N/A		
Project Costs (\$)		Capital	O&M	Total
Loaded Project Costs		13,847,661	12,484,239	26,331,900
Disallowed Costs		8,0526,949	2,561	10,6139,511

⁷ Ibid

⁸ Ibid

Pipeline Enhancement Plan Final Report
Line 404 Hydrotest and Replacement Projects

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

Replacement	Criteria	Accelerated	Incidental	New	Total
Section 1	0.026 mi.	0.002 mi.	0.000 mi.	0 mi.	0.028 mi.
	140 ft.	8 ft.	1 ft.	0 ft.	149 ft.
Section 3A	0 mi.	0.546 <u>0.548</u> mi.	0.0050.00 <u>3</u> mi.	0.012 mi.	0.563 mi. ⁹
	0 ft.	2,884 <u>2,892</u> ft.	25-17 ft.	63 ft.	2,972 ft.
Section 8A	0.006 mi.	0.002 mi.	0.001 mi.	0 mi.	0.009 mi.
	30 ft.	14 ft.	5 ft.	0 ft.	49 ft.
Subtotal	0.032 mi.	0.550 mi.	0.006 mi.	0.012 mi.	0.600 mi.
	170 ft.	2,906 ft.	31 ft.	63 ft.	3,170 ft.
Hydrotest	Criteria	Accelerated	Incidental	New	Total
Section 2	0.126 mi.	2.182 mi.	0.669 mi.	0 mi.	2.977 mi.
	662 ft.	11,520 ft.	3,531 ft.	1 ft.	15,714 ft.
Section 2A	0.116 mi.	0.698 mi.	0.003 mi.	0 mi.	0.817 mi.
	616 ft.	3,684 ft.	15 ft.	0 ft.	4,314 ft.
Section 3	0.223 mi.	0.314 mi.	0.001 mi.	0 mi.	0.538 mi.
	1,176 ft.	1,658 ft.	7 ft.	0 ft.	2,841 ft.
Section 4 & 5	0.937 mi.	6.108 mi.	0.265 mi.	0.006 mi.	7.315 mi.
	4,947 ft.	32,249 ft.	1,397 ft.	31 ft.	38,624 ft.
Section 9	0.177 mi.	0.232 mi.	0 mi.	0 mi.	0.409 mi.
	932 ft.	1,224 ft.	0 ft.	0 ft.	2,157 ft.
Subtotal	1.579 mi.	9.534 mi.	0.938 mi.	0.006 mi.	12.055 mi.
	8,333 ft.	50,335 ft.	4,950 ft.	32 ft.	63,650 ft.

⁹ Total Mileage for Section 3A includes both replacement and abandonment mileage of the dual piping.

Pipeline Enhancement Plan Final Report
Line 404 Hydrotest and Replacement Projects

Table 2: Mileage Information (Continued)

	Criteria	Accelerated ¹⁰	Incidental	New	Total ¹¹
Total Final Mileage	1.611 mi.	10.085 10.084 mi.	0.944 0.942 mi.	0.018 mi.	12.655 mi.
	8,504 ft.	53,241 53,249 ft.	4,981 4,973 ft.	95 ft.	66,820 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing¹². Prior to initiating execution of the Project in 2014, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. This progression of the project scope is summarized as follows:

- 2011 PSEP Filing: SoCalGas and SDG&E identified Line 404 as a Phase 1A Hydrotest Project comprised of 24.450 miles of Category 4 Criteria pipe and 13.350 miles of Accelerated pipe.
- Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E successfully reduced the scope of the Line 404 Project by 22.616 miles of Category 4 Criteria pipe.

¹⁰ Accelerated mileage includes Phase 1B, Phase ~~1B~~-2A, and Phase 2B pipe. Phase 2 includes pipelines without sufficient record of a pressure test in less populated areas (Phase 2A) or pipelines with record of a pressure test, but without record of a pressure test to modern – Subpart J – standards (Phase 2B). The Accelerated mileage was included to realize efficiencies and to enhance project constructability.

¹¹ Values may not add to total due to rounding.

¹² See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

Pipeline Enhancement Plan Final Report
Line 404 Hydrotest and Replacement Projects

- c. Section 2A: Consists of a 0.817 mile hydrotest and was separated from the Section 2 Hydrotest during construction. The Accelerated mileage consists of 0.698 miles of Phase 2B pipe and 15 feet of Incidental pipe.
- d. Section 3: Consists of a 0.538 mile hydrotest. The Accelerated mileage consists of 0.225 miles of Phase 2A pipe, 0.089 miles of Phase 2B pipe and 13 feet of Incidental pipe.
- e. Section 3A: Consists of a 0.563 mile replacement of dual run [REDACTED] pipe with a single run [REDACTED] diameter line for piggability. The Accelerated mileage consists of 0.530 miles of Phase 1B pipe, ~~26-34~~ feet of Phase 2A pipe, 57 feet of Phase 2B pipe, and ~~25-17~~ feet of Incidental pipe.
- f. Section 4 and 5: Consists of a 7.315 mile hydrotest, along with the replacement of two non-piggable features (non-barred tee and [REDACTED] plug valve). The Accelerated mileage consists of 6.108 miles of Phase 1B pipe, and 0.265 miles of Incidental pipe.
- g. Section 8A: Consists of a 49-foot replacement. The Accelerated mileage consists of 9 feet of Phase 1B pipe, 5 feet of Phase 2B pipe, and 5 feet of Incidental pipe.
- h. Section 9: Consists of a 0.409 mile hydrotest. The Accelerated mileage consists of 0.232 miles of Phase 2B pipe, and there was no Incidental pipe.

Pipeline Enhancement Plan Final Report
Line 404 Hydrotest and Replacement Projects

D. Disallowance

For this hydrotest project, SoCalGas and SDG&E identified a total of 31 feet of pipe as installed post-1955 and lacking pressure test records that provide the minimum information to demonstrate compliance with industry standards or then-applicable strength testing and recordkeeping requirements. Of the 12 miles of pipeline that were pressure tested, 13 feet (0.02%) of test mileage are disallowed, therefore \$2,561 of total project O&M costs are disallowed from recovery. In addition, of the pipeline that was replaced, ~~18~~17.5 feet of Phase 1A pipe are disallowed. Therefore, a ~~\$8,052~~6,949 reduction was made to ratebase calculated by determining the replacement mileage and multiplying the amount by ~~\$2,439,956~~2,105,878 per mile, which was SoCalGas' and SDG&E's system average cost of pressure testing.

IV. PROJECT COSTS

A. Cost Avoidance Actions

SoCalGas and SDG&E exercised due diligence in the planning, design, and construction activities for this project to minimize or avoid costs when prudent to do so. As discussed above, the Project Team conducted a site visit to identify and incorporate discernible site conditions into the engineering, design, and planning of the Project.

Specific examples of cost avoidance actions taken on this project are:

1. Engineering and Design: The Project Team extended the project scope approximately 600 feet downstream to utilize a new MLV and pig receiver installed by Pipeline Integrity. It reduced the number of test sections required in future PSEP Phases, minimizing customer and community impacts, and avoided the costs associated with replacement of a third section of pipe.
2. Planning and Coordination:
 - a. SoCalGas and SDG&E planned the Project to coordinate with another project so as to share the main staging area. This achieved avoidance of additional mobilization/demobilization costs, as well as costs to set up and restore the second area.
 - b. By coordinating the abandonment of existing crossover Line 1215 and Line 1216 (Section 1) with the shutdowns of Line 1005⁶ and Line 1004 (Section 1), the Project Team further minimized customer impacts by avoiding a third shutdown.

⁶ Line 1005 Hydrotest was submitted for cost recovery in workpaper in A.16-09-007.

Pipeline Safety Enhancement Plan Final Report
Supply Line 36-9-09 JJ Abandonment Project

Table 1: General Project Information

Project Name	Supply Line 36-9-09 JJ		
Project Type	Abandonment		
Length	0.462 miles		
Location	Atascadero		
Class	3		
MAOP (<i>confidential</i>)	[REDACTED]		
Pipe Vintage	1920		
Construction Start	06/22/2016		
Construction Finish	08/22/2016		
Original Pipe Diameter (<i>confidential</i>)	[REDACTED]		
New Diameter (<i>confidential</i>)	N/A		
Original SMYS ² (<i>confidential</i>)	[REDACTED]		
New SMYS (<i>confidential</i>)	N/A		
Project Costs (\$)	Capital	O&M	Total
Loaded Project Costs	1,904,606	2,186	1,906,792
Disallowed Costs	-	-	-

² Highest percentage of Specified Minimum Yield Strength (SMYS) of Category 4 Criteria pipe.

II. ENGINEERING, DESIGN, AND PLANNING

A. Project Scope

Table 2: Mileage Information

	Criteria	Accelerated	Incidental	Total ²
Final Mileage	1.216 <u>1.218</u> mi.	0 mi.	0.0213 mi.	1.239 mi.
	6,4216 <u>6,432</u> -ft.	0 ft.	112123 ft.	6,544 ft.

SoCalGas and SDG&E presented a conceptual project scope in workpapers supporting the 2011 PSEP filing.³ Subsequently, SoCalGas and SDG&E identified that 1.216 miles of this line lacked sufficient test records and met the PSEP Phase 1A Criteria. Prior to initiating execution of the Project in 2016, SoCalGas and SDG&E reviewed existing pipeline records to validate the scope of the Project. During the Engineering, Design, and Planning phase, SoCalGas and SDG&E further refined the scope. This progression of the project scope is summarized as follows:

1. 2011 PSEP Filing: SoCalGas and SDG&E identified Supply Line 36-9-09 South as a Phase 1B Project comprised of approximately 2.03 miles of pipe.
2. Scope Validation: Through scope validation activities, after the 2011 filing and before initiating execution of the Project, SoCalGas and SDG&E reclassified this project as a Phase 1A project made up of 1.216 miles of Category 4 Criteria pipe, successfully decreasing the scope of the Project by 0.814 miles.

² Values may not add to total due to rounding.

³ See Amended PSEP of SoCalGas and SDG&E, submitted December 2, 2011, in R.11-02-019 and subsequently transferred to A.11-11-002.

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3. Engineering, Design, and Constructability:

- a. SoCalGas and SDG&E determined that Supply Line 36-9-09 South could be abandoned and still maintain system reliability without any customer impacts. Therefore, it was prudent to abandon the line rather than replace it.
- b. The Abandonment of this line consists of the following:
 - i. Removal of three mainline valves (MLV's).
 - ii. Removal of one seven foot by nine foot concrete vault and one seven foot by five foot concrete vault that housed MLV's that were to be abandoned.
 - iii. Cutting the two end points, capping them and removing the line from service. The abandoned pipe would be slurry filled to conform with the requirements set forth by the railroad to eliminate void space. This required intermittently cutting out sections of pipe and welding on a cap and pipe nipple as a slurry mud injection point.
- c. SoCalGas and SDG&E included Incidental mileage in order to fully abandon Supply Line 36-9-09 South.

4. Final Project Scope: The final project scope consists of a 1.239-mile Abandonment. The Incidental mileage consists of ~~423~~112 feet of pipe.

B. Decision Tree Analysis

SoCalGas and SDG&E performed a PSEP Decision Tree analysis of Supply Line 36-9-09 South and confirmed the project design should commence as an Abandonment Project.