

Company: Southern California Gas Company (U 904 G)
Proceeding: 2024 General Rate Case
Application: A.22-05-XXX
Exhibit: (SCG-08-WP-S)

PUBLIC

SUPPLEMENTAL WORKPAPERS TO

PREPARED DIRECT TESTIMONY

OF BILL KOSTELNIK

ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY

(PIPELINE SAFETY ENHANCEMENT PLAN)

VOLUME I OF VIII

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

MAY 2022



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VOLUME I

WP-1 – 24

Introduction to Workpapers Supporting the Testimony of Bill Kostelnik

WP-25 – 370

SCG Forecast Project Workpapers

I. INTRODUCTION

In D.14-06-007, the California Public Utility Commission (CPUC) approved SoCalGas and SDG&E's plan to execute hundreds of unique and discrete in-service pressure test, replacement, abandonment, and valve enhancement projects as soon as practicable as part of the Pipeline Safety Enhancement Plan (PSEP)¹. This Decision also adopted a process for reviewing and approving PSEP implementation costs after-the-fact and established balancing accounts to record PSEP expenditures². To recover PSEP costs, SoCalGas was ordered to "file an application with testimony and work papers to demonstrate the reasonableness of the costs incurred which would justify rate recovery."³ In D.16-08-003, the CPUC modified this decision and directed SoCalGas to submit two standalone reasonableness review applications for PSEP⁴ and, among other things, stated that future GRC applications should include additional PSEP costs until implementation of the plan is complete⁵.

The workpapers that follow describe SoCalGas' approach to both completed and forecasted pipeline and valve enhancement projects which are managed according to the following objectives:

- 1) Enhance public safety.
- 2) Comply with the directives of the Commission as set forth in Decision (D.)11-06-017.
- 3) Minimize customer and community impacts; and
- 4) Maximize the cost effectiveness of safety enhancement investments for the benefit of our customers.

As described in testimony, SoCalGas PSEP Projects are managed according to the Stage Gate Review Process⁶ which sequences and schedules PSEP project workflow deliverables. Key design, management and execution actions and activities occur within and across the various stages. Depending on the timing of the project, the Stage Gate Review Process for PSEP projects included in this Application

¹ D.14-06-007 at 2-3

² *Id.*, Ordering Paragraph 2 at 59. The balancing accounts that were subsequently created for capital and O&M are known as the Safety Enhancement Capital Cost Balancing Account (SECCBA) and Safety Enhancement Expense Balancing Account (SEEBBA), respectively.

³ *Id.* at 39.

⁴ SoCalGas has previously submitted A.16-09-005 (approved in D.19-02-004), and A.18-11-010 (approved in D.20-08-034).

⁵ D.16-08-003, OP 5 at 16.

⁶ Refer to SoCalGas Direct Testimony of Bill Kostelnik Pipeline Safety Enhancement Plan, Section VI.C.2, 2024 General Rate Case

consisted of either five or seven stages⁷ with specific objectives for each stage, and an evaluation gate at the end of each stage to verify that those objectives have been met prior to proceeding to the next stage.

These workpapers are presented in the five sections that follow:

- Section II comprises SoCalGas's **Forecast Project Workpaper Structure**. This section provides a description of the workpaper format followed by the workpapers for five (5) Phase 1B and 28 Phase 2A pipeline projects.
- Section III comprises SoCalGas's **Reasonableness Review Pipeline Project Workpaper Structure**. This section provides a description of the workpaper format followed by the workpapers for the 21 PSEP Pipeline Projects subject to reasonableness review.
- Section IV comprises SoCalGas's **Reasonableness Review Valve Enhancement Project Workpaper Structure**. This section provides a description of the workpaper format followed by the workpapers for the 66 PSEP Valve Project bundles subject to reasonableness review.
- Appendix A contains a **Summary of Standard Planning and Construction Practices for Replacement, Hydrotest, Valve and Abandonment Projects**. This provides a synopsis of typical pre-construction and construction activities that occurred during SoCalGas's PSEP pipeline and valve enhancement projects.
- Appendix B contains the **PSEP Glossary of Terms and Acronyms** that will assist in defining specific construction and financial terminology used throughout the workpapers.

⁷ SoCalGas recently modified the Stage Gate process from Seven to Five Stages. The activities and documentation requirements remain largely the same but have been consolidated into fewer stages.

II. SOCALGAS FORECAST PROJECT WORKPAPER STRUCTURE

The project workpapers that follow provide detailed information regarding the estimated cost for each of the five Phase 1B and 28 Phase 2A projects that are included. The methodology used to develop these costs include components that follow the guiding principles of Stages One (Project Initiation) through Three (Begin Detailed Planning) of the Five Stage Review process, which was established to promote efficient project execution. As stated in testimony, rather than presenting a forecast that relies on the execution of specific projects in specific years, SoCalGas is instead requesting authorization to establish a revenue requirement based on an anticipated level of executable spending from a portfolio of 33 Phase 1B and 2A projects. As such, the capital and O&M forecasts requested in this GRC application will be less than the total costs of the overall portfolio of projects included as supplemental workpapers.

The Table of Forecast Projects provide a summary of relevant data for each project included in this Application: Line Number, Phase, project type (replacement, pressure test, abandonment, de-rate), direct costs (O&M, capital and total), mileage, and diameter.

Table 1 – Pipeline and Valve Projects in the 2024 Forecast

Project Workpaper Title	Phase	Project Type	O&M Costs	Capital Costs	Total Costs	Mileage (Miles)
38-100	2A	Replace	-	\$1,525,187	\$1,525,187	0.002
38-539	2A	Replace	-	\$61,130,571	\$61,130,571	12.565
44-707	2A	Replace	-	\$1,753,636	\$1,753,636	0.002
44-729	2A	Replace	-	\$2,249,251	\$2,249,251	0.005
85 North Lake Station to Grapevine	1B	Replace	-	\$176,265,374	\$176,265,374	30.044
159	2A	Replace	-	\$1,116,293	\$1,116,293	0.127
225 North Coles Levee	2A	Replace	-	\$6,837,502	\$6,837,502	0.066
235 East Kelso Station	2A	Replace	-	\$3,905,158	\$3,905,158	0.099
1004 Section 2	1B	Replace	-	\$25,753,973	\$25,753,973	2.502
Station Piping ⁸	2A	Replace	-	\$3,676,864	\$3,676,864	0.095
38-362	2A	Test	\$6,323,494	\$3,520,898	\$9,844,392	7.309
38-504	2A	Test	\$446,123	\$148,708	\$594,831	1.337
225 South	2A	Test	\$10,452,879	\$3,915,925	\$14,368,803	10.634
235 East Section 1	2A	Test	\$42,486,783	\$14,633,238	\$57,120,021	58.075
235 East Section 2	2A	Test	\$34,910,921	\$13,088,305	\$47,999,227	56.332
257	2A	Test	\$2,083,012	\$588,086	\$2,671,097	0.02

⁸ Consists of four small projects that are combined into one workpaper due to similar scopes of work.

404 Section 12	2A	Test	\$3,804,471	\$1,771,345	\$5,575,815	6.071
406	2A	Test	\$24,125,801	\$9,973,260	\$34,099,061	14.324
1004	2A	Test	\$2,510,612	\$1,163,191	\$3,673,803	0.43
1005	2A	Test	\$13,793,886	\$5,320,636	\$19,114,522	15.244
3000 East	2A	Test	\$75,750,898	\$39,349,523	\$115,100,421	115.151
4000	2A	Test	\$72,505,854	\$33,929,585	\$106,435,439	45.846
36-9-09 North	2A	Test / Replace	\$552,832	\$1,658,496	\$2,211,327	0.516
38-952	2A	Test / Replace	\$4,960,249	\$17,687,682	\$22,647,931	9.22
44-306/307	1B	Retrofit	-	\$96,204,622	\$96,204,622	58.26
41-6000-1	2A	Abandon		\$9,527,983	\$9,527,983	7.434
38-101 Section 3	1B	Derate	-	\$9,058,550	\$9,058,550	8.213
38-2101	2A	Derate	-	\$2,834,571	\$2,834,571	10.015
133	2A	Derate	-	\$4,646,482	\$4,646,482	3.221
38-143	1B	Derate / Replace	-	\$5,871,308	\$5,871,308	4.422
Valve Enhancement Plan Projects ⁹	N/A	Valve	-	\$8,339,168	\$8,339,168	N/A

Forecast project costs are estimated following AACE International Recommended Practice No. 97R-18, which defines classes of estimates based on project definition and anticipated accuracy. The projects addressed in the workpapers that follow were primarily estimated at a Class 3 level, with a small number of projects estimated at a Class 4 level¹⁰. Each forecast workpaper follows the below format to provide relevant project details and the underlying assumptions informing the Basis of Estimate (BOE) for each project. An explanation describing each section’s objective is as follows:

Project Cost Summary – Provides an overview of Direct O&M, Direct Capital, and Total Direct project costs.

Project Description – Provides overview of project scope, location, and unique project attributes.

Alternatives Considered – Describes alternatives to hydrotesting or replacement such as derating and/or abandonment).

⁹ Consists of 9 projects, each including two check valve installations, that are combined into one workpaper due to similar scopes of work

¹⁰ A Class 4 estimate is based on 1-15% project definition and typically results in final project costs that are within +50% to -30% of the estimated cost. In contrast, Class 3 estimates are based on 10-40% project definition and typically result in final project costs that are within +30% to -20% of the estimated amount.

Forecast Methodology – Describes the basis of estimated costs and the categories of costs considered in developing all project estimates.

Schedule – Describes the basis for the schedule used across all project estimates.

Overview and Satellite Maps – Two maps are provided (when applicable): a conventional map to provide the reader with general location of the project, and a satellite map that shows the type of terrain (urban, rural, river crossings, highways, etc.) the project traverses.

Project Mileage Table – The mileage for the project broken down by phase and accelerated and incidental miles, as defined in the glossary.

Material Cost Table – Estimate based on the type and quantities of material required for each project.

Construction Cost Table – Based upon input from construction contractors, assumptions made in the development of the construction component of the project, which generally account for approximately 50% of total project cost. General assumptions include a geographically based construction cost estimate, estimated construction schedule duration, working days and hours taking into consideration any working hour restrictions, type of pipe installation method for replacement projects, and other pertinent construction assumptions. Additional detailed construction information, including site mobilization/facilities, site management, material handling, traffic control, substructure location, postconstruction pressure test, final pipeline tie-in, abandonment of existing pipeline, paving, site restoration, site demobilization, and construction field overhead assumptions.

Environmental Survey / Permitting / Monitoring / Abatement Cost Table – Based upon evaluation of the project by PSEP Environmental Services, assumptions and associated costs regarding anticipated permitting, surveys, and monitoring, hazardous/non-hazardous waste containment/disposal, Permit fees, and mitigation fees. Identified environmental issues unique to the project are also listed.

Permits Cost Table – Provides assumptions and estimated costs for temporary construction encroachment within a municipality, city, county, state, or federal right of way or franchise.

Land & Right-of-Way Acquisition Cost Table – Assumptions include need for new easements, construction yards for the storage of material and construction trailers and associated permits and legal services.

Company Labor Cost Table – Anticipated activity and level of effort for SoCalGas management and represented personnel in support of the project.

Other Project Costs – Estimated costs of contracted Project Management and Engineering services.

III. SOCIALGAS REASONSONABLENESS REVIEW PIPELINE PROJECT WORKPAPER STRUCTURE

The project workpapers that follow provide detailed components of the workpapers for the 21 PSEP Pipeline pressure test, replacement and abandonment projects subject to reasonableness review. The workpapers that follow support SoCalGas’ first reasonableness review of its PSEP pipeline projects being submitted in a GRC. These projects were primarily placed in operation (NOP-ed) prior to February 11, 2020 and the costs have been reconciled as of December 31, 2020. Trailing costs or adjustments posted after December 31, 2020 are not reflected in the totals shown in Table 2 below nor in the workpapers.

Table 2 – Pipeline Hydrotest, Replacement and Abandonment Projects for the 2024 Reasonableness Review

Pipeline Workpaper Title	Project Scope (miles, rounded)				Workpaper Page
	Hydrotest	Replace	Abandon	Derate	
30-18 Section 2 Replacement Project		0.619			WP-371
33-120 Section 1 Replacement Project		0.24			WP-392
36-1032 Section 4 Replacement Project		0.307			WP-411
36-9-09 North Section 5B-02 and 5C Replacement		0.894			WP-428
36-9-09 North Section 6B Replacement Project		1.732			WP-450
36-9-21 Replacement Project		0.464			WP-470
37-18-K Replacement Project		1.928			WP-488
38-101 Replacement Project		4.525			WP-507
41-6001-2 Replacement Project		0.005			WP-526
43-121 North Sections 2, 3, and 4 Replacement Project		1.054			WP-543
45-120 Section 2 Replacement Project		3.588			WP-572
404 Section 4A Replacement Project		0.831			WP-604
404-406 Somis Station Replacement Project		0.136			WP-624
2006 Replacement Project		0.094			WP-646
Storage - Goleta Project	0.286				WP-663
33-121 Hydrotest Project	0.478				WP-678
2000-D Hydrotest Project	3.184				WP-694
2001 West-C Desert Hydrotest Project	16.803				WP-716
2001 West-D Whitewater Hydrotest	4.36				WP-737
41-6000-2 Abandonment Project	0.189	0.239	24.033	3.652	WP-758
103 Derate and Replacement Project		0.001		9.303	WP-781

Each workpaper is divided into five sections: A) Project Introduction; B) Engineering, Design and Planning; C) Construction; D) Project Costs; and V) Conclusion.

A general explanation is provided for each section's objective is as follows:

A. PROJECT INTRODUCTION

1. Background and Summary

This section includes a high-level summary of the project scope which is also summarized in *Table 1: General Project Information*, providing 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 mileage¹¹.

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 and, when applicable, the rerouted pipeline alignment. Schematic drawings are sometimes included to illustrate and magnify pipeline interconnections and features that are not discernable from the map images.

B. ENGINEERING, DESIGN, AND PLANNING

1. Project Scope:

This section consists of *Table 2: Mileage Information* depicted by mileage type: Criteria, Accelerated, Incidental, New, and Total (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. The terms are defined as follows:

- Criteria Mileage is Phase 1A mileage. These are pipeline segments that lack sufficient documentation of a post-construction strength test to at least 1.25 times the MAOP and are located in Class 3 & 4 locations and Class 1 & 2 High Consequence Areas (HCA).
- Accelerated Mileage is pipeline that would otherwise be addressed in a later phase of PSEP under the approved prioritization process but has been advanced to Phase 1A or Phase 1B to realize operating and cost efficiencies. Accelerated miles may be Phase 1B or Phase 2 mileage.

¹¹ Category 4: Pipelines segments that lack sufficient documentation of a post-construction strength test to at least 1.25 times the MAOP.

- Incidental Mileage is pipeline that does not fall within the scope of the Commission's directives in D.11-06-017 or California Public Utilities Code section 958, but is addressed as part of a PSEP project, where its inclusion is determined to improve cost and program efficiency, address constructability, or facilitate continuity of testing.
- New Mileage is an alignment offset or rerouted pipeline segment that resulted in mileage that is greater than the original route.

A high-level summary of the progression of the project chronicles the project evolution is typically organized as follows:

- 2011 PSEP Filing indicates the type of project (replacement or hydrotest) and the Phase 1A mileage type as submitted in A.11-11-002.
- Scope Validation summarizes the outcome of scope validation that included evaluation of existing pipeline documentation to confirm the project scope. Criteria mileage originally included for remediation may be increased or decreased due to the scope validation efforts. Criteria mileage may have been removed if a reduction in Maximum Allowable Operating Pressure (MAOP) is determined to be appropriate from a gas operating system perspective.
- Engineering, Design and Constructability summarizes the constructability factors that influenced the project design, mileage, route and construction methods.
- Final Project Scope summarizes the final project scope including mileage, construction method and other project activity, such as engineered crossings or new mainline valves (MLV) that contributed to the project complexity and/or cost.

2. Decision Tree Analysis

This section describes the Decision Tree Analysis that confirmed or modified the 2011 PSEP filing project's designation as either a pressure test or replacement project. In some instances, and after careful analysis, a third option (abandonment) is recommended, which determined that the pipeline is no longer needed for reliability from a gas operating system perspective. Typically, for pipeline projects greater than 1,000 feet in length, a Test-versus-Replace Analysis was conducted to compare costs of at least two scenarios (test or replace), and in some cases route alternatives were also considered. Project execution options are then presented to PSEP leadership at a stage gate review and approval is given to move forward with more detailed engineering and design

efforts for the recommended project type. The workpapers summarize the relevant data points that were known at that time which influenced leadership's approval of the Decision Tree outcome. These data points are listed in the workpapers. Included are only the data points that influenced the Decision Tree outcome.

1. Shut In Analysis – describes the conditions, if any, when this pipeline can be shut in and if alternate service is available.
2. Customer Impacts – describes the impact, if any, to customers should a shut in be necessary.
3. Community Impacts – describes the construction activity impact on the neighboring community, typically traffic and noise impacts. The project alignment and route were influenced by the desire to minimize the impact on the community.
4. Permitting Conditions – lists the known jurisdictional agencies in the construction area.
5. Piggability – states if the existing pipeline was/is piggable.
6. Pipe Vintage – reflects the predominate vintage of the preexisting Category 4 Criteria mileage pipeline segments.
7. Existing Pipe Attributes – lists the known pipeline features that could prevent the pipeline from being pigged or features that would need to be addressed prior to a hydrotest.
8. Longseam Type – states the longseam type, if known.
9. Longseam Repair History – provides a summary of recorded history of repair to the pipeline section.
10. Condition of Coating – provides a description of the coating, if known.
11. History of Leaks - provides a summary of recorded history of leaks on the pipeline section.
12. Constructability – describes the known factors that influenced the preliminary project design such as geographic constraints, existing substructures, adjacent highways, railroads, waterways, etc.
13. Other – describes other factors that influenced the Decision Tree outcome.

3. Engineering, Design, and Planning Factors

This section summarizes the notable engineering, design and planning activities. Planning is initiated by the analysis of pipeline attribute records, survey and mapping activities and site visits. During the initial planning and design process, information is updated, and new information is

acquired regarding the permit conditions, existence of substructures, land rights, environmental issues, etc. that may differ from the original assumptions. These data points serve to influence the routing and design of the project, and the project schedule.

Once the detailed design is finished and construction documents are completed, necessary permits and authorizations are attained, pipeline materials are purchased, received, inspected, and prepared for turnover to the construction contractors. Material procurement is identified in two main phases, long-lead items and short-lead items. Long-lead material is identified and purchased at the 30% design stage while short-lead material is identified and purchased at the 60% design stage. When possible, SoCalGas acquires materials by aggregating anticipated material needs (bulk purchasing) from many projects thereby making periodic purchases for larger quantities of material at a lower unit cost.

The information that influenced the preliminary pre-construction design described in this section of the workpaper and will include a summary of the conditions that influenced the preliminary pre-construction design and was the basis for the preliminary cost estimate. Only the relevant factors that impacted the project design are listed in the workpaper.

4. Scope Changes

This section describes any major scope or redesign changes made after the preliminary design and estimate was authorized. Changes are initiated to accommodate constructability or scheduling challenges¹² and can occur at any stage of the project lifecycle. Scope changes are authorized and documented using a scope change form. The revised project scope and design, given all the unique conditions and constraints of each project, considers cost effectiveness, system operation efficiencies, mitigation of customer and community impacts, and system capacity. The incremental costs associated with scope changes are *not* reflected in the estimated costs in Tables 4 and 5.

¹² Examples of the challenges frequently encountered are permit or land use restrictions, environmental constraints, customer impacts, traffic and other community impacts, system constraints, or pipe conditions identified once the pipe is exposed through potholing efforts.

It is important to note that in some instances, when there are obstacles that apply to only a portion of the project, a project scope change involves the sectionalizing of the project so that the unimpeded sections can be remediated as soon as practicable. The remaining sections are postponed until the obstacles have been addressed.

C. Construction¹³

1. Construction Contractor Selection

This section details the estimated (confidential) Construction Contractor Costs and the final negotiated (confidential) Construction Contractor costs. Construction activity begins with the selection of the Construction Contractor. For PSEP projects, the Construction Contractors are predominately selected through the Performance Partner Program process which is assigned to a geographical area. 15 of the 21 pipeline projects in this Reasonableness Review were assigned to the Performance Partner selected for that region. The Performance Partner Program allows for competitive pricing of projects and provides incentives associated with the program to encourage the Construction Contractors to further reduce costs. Occasionally, Performance Partners work outside their assigned regions to maintain a balance of work across all Performance Partners. When it was not practical to use a Performance Partner, the Construction Contractor was chosen through a competitive solicitation process.

In either instance, based on the Issue-for-Bid design (90% design drawing), a final scope of work (SOW) is prepared and provided to the Construction Contractor which is used to prepare a Target Price Estimate (TPE). Each Project executed by a Performance Partner required negotiation to reach an agreed-upon TPE. In a competitive bidding process, SoCalGas awarded the construction contract to the bidder that best met the selection criteria for the Project. For each Project, the workpaper will state if the project was executed through the Performance Partnership or through Competitive Bid with further details:

- SoCalGas preliminary, confidential cost estimate for Construction Contractor costs is sometimes referred to as the Total Installed Cost (TIC).

¹³ Construction Activities further detailed in Appendix A to these workpapers, which provides a description of the large variety of field activities that may take place on a PSEP pipeline or valve project.

- The Construction Contractor's confidential Target Price Estimate (TPE) or bid and the variance between the final bid and SoCalGas preliminary estimate/TIC.

2. Construction Schedule

This section consists of *Table 3: Construction Timeline* depicting the construction start date, completion date and Notice of Operation (NOP) date for each project. For projects with more than one section, Table 3 will reflect the construction start date for the first section and the construction completion and NOP dates for the last section, if completed under different timelines.

3. Changes During Construction

This section summarizes the notable change orders that were initiated after the Project went to construction. Most of the pipeline replacement, hydrotest and abandonment projects presented for review are located in dense urban environments, which greatly adds to the complexity of the construction activities. Many of the construction challenges were mitigated and planned for; however, others were unanticipated and were addressed as they arose in the field. These unforeseen conditions may have required activities that were outside of the original scope of work upon which the TPE was established. As unexpected conditions were encountered during construction, the Construction Contractor described the conditions and proposed a solution to SoCalGas via a Request for Information (RFI) form. If authorized by the PSEP Project Manager, the solution was executed, and any incremental costs were documented via a change order. The workpapers for each project describe notable construction change orders (i.e. when the total construction change order costs are more than 10% of the TPE). Change orders are summarized in the workpapers and are categorized generally by cause.

4. Commissioning and Site Restoration

This section describes site restoration activities that are typically completed several weeks or even a month or more after the pipeline is returned to service. The site is demobilized, test water is disposed of or stored and removed for use on an adjacent project and the area is returned to its previous condition, which may include repaving and restoration of landscaping. Closeout activities are executed within the final months of the project lifecycle and include finalization of as-built

drawings and uploading of updated information into the company's documentation and recordkeeping systems to reflect the final scope of work.

D. PROJECT COSTS

1. Cost Avoidance Actions

This section describes the notable cost avoidance decisions and actions that are described in the project workpapers. Because PSEP projects are thoughtfully and prudently designed with safety and cost efficiency at top of mind, not all cost avoidance actions are specifically noted, and it would be impractical to list all the costlier design options that were briefly considered and rejected. 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 landowners and permit terms, as well as shared land use, are 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 revealed once the pipe was exposed or otherwise identified during the latter stages of project execution.

2. Cost Estimate

Estimating activities are initiated with the approval of the Phase 1 Work Order Authorization (WOA) reflecting the estimated costs for preliminary design, mapping, and survey activities. Subsequently, based on 30% design drawings, a Total Installed Cost (TIC) estimate was prepared using the most current version of the PSEP Estimating Tool. The TIC is presented to PSEP leadership 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, reflects the Total Loaded Project Cost estimate.

The approval of the Phase 2 WOA was required to proceed with execution of the project. Any significant project activities 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. These additional costs and activities are authorized and documented through the scope change process.

3. Actual Direct and Indirect Costs

The Estimated and Actual Costs shown in *Table 4: Estimated and Actual Direct Costs and Variances* in workpapers are defined as follows:

- Company Labor: Labor costs for SoCalGas employees charging directly to the project, such as project managers, engineers, land services personnel, environmental services personnel, communication and outreach managers, construction managers, and field support personnel.
- Materials: Costs for materials that SoCalGas purchased to complete the project, such as piping, valves, fittings, and other miscellaneous materials. Materials planned to be purchased by the construction contractor may be included in the construction contractor costs.
- Construction Contractor: Costs for Construction Contractor activity and materials or equipment acquired by the contractor. The actual Construction Contractor costs also include authorized change order costs and risk reward payments, minus construction credits, when applicable.
- Construction Management and Support: Costs for construction inspection, contamination mitigation, environmental monitoring, hydrotesting services, and other miscellaneous activities that occur in the field.
- Environmental: Costs for environmental assessments, monitoring, asbestos abatement, water and waste management, and miscellaneous environmental permits and fees not reflected in other cost categories.
- Engineering and Design: Costs for planning and design services, engineering, environmental services, land use and permitting fees not included in other categories, and project support, such as survey, mapping and miscellaneous expenses.
- Project Management Services: Contracted costs for project management services and general PSEP program support.

- ROW & Permits: Costs associated with permitting fees and land easement, or acquisition expenses not reflected in other cost categories.
- GMA: Programmatic PSEP costs.

Indirect Costs are listed in *Table 5: Estimated and Actual Indirect Costs, Total Costs, and Variances*.

These costs are incremental overheads applied to PSEP projects. Indirect costs are for those activities and services that are associated with indirect costs – such as payroll taxes, pension, benefits, and GMA. Also included is interest that SoCalGas earns for funds used during construction for capital projects (AFUDC) and Property Tax for construction work in progress (CWIP) for capital projects.

There are several factors that may cause a variance between actual and estimated costs. Most of the differences are attributed to one or more factors: 1) estimates are based on preliminary design, 2) reasonable changes in project scope are required to address conditions identified after the preliminary estimate is prepared, 3) Unforeseen and unplanned field conditions also contribute to variances between the preliminary estimate and actual costs.

4. Disallowances

Of the 21 PSEP pipeline projects presented for review in this Application, 5 projects addressed footages of post-1955 pipe that lacked pressure test records, making portions of those projects subject to disallowance. In the project workpapers for these 5 projects, the disallowed scope is described, and the calculation of disallowed costs is provided. The disallowed project costs are provided in the final workpapers for completeness, but the disallowed costs were previously recognized by SoCalGas, are not recorded in the PSEP balancing accounts, and are not included in the revenue requirement presented for review in this Application, as described in testimony.

III. SOCALGAS REASONABLENESS REVIEW VALVE ENHANCEMENT PROJECT WORKPAPER STRUCTURE

The workpapers that follow consist of final reports that describe the actions taken in each of SoCalGas 66 Pipeline Safety Enhancement Plan (PSEP) valve enhancement project bundles included in the 2024 Reasonableness Review. The workpapers support SoCalGas’ first reasonableness review of its PSEP valve enhancement projects being submitted in a GRC. These projects were primarily placed in operation (NOP-ed) prior to October 22, 2019 and the costs have been reconciled as of December 31, 2020. Trailing costs or adjustments posted after December 31, 2020 are not reflected in the totals shown in Table 3 below nor in the workpapers.

Table 3 – Valve Project Bundles submitted in the 2024 Reasonableness Review

Valve Workpaper Title	Project Scope (valves, sites)	Workpaper Page
29 Palms Valve Enhancement Project - Indian Canyon	1 valve, 1 site	WP-799
29 Palms Valve Enhancement Project - Mohawk Trail	1 valve, 1 site	WP-815
29 Palms Valve Enhancement Project - Sunburst Street	1 valve, 1 site	WP-829
29 Palms Valve Enhancement Project - Utah Trail	1 valve, 1 site	WP-845
45-120 Valve Enhancement Project	1 valve, 1 site	WP-861
225 Valve Enhancement Project - Beartrap	1 valve, 1 site	WP-878
225 Valve Enhancement Project - Quail Canal	1 valve, 1 site	WP-894
404-406 Valley Bundle Valve Enhancement Project	8 valves, 4 sites	WP-910
404-406 Ventura Valve Enhancement Project - Somis Yard	1 valve, 1 site	WP-941
1014 Olympic Valve Enhancement Project	6 valves, 2 sites	WP-957
1018 Valve Enhancement Project - Alipaz Street	1 valve, 1 site	WP-979
1018 Valve Enhancement Project - Avery Parkway	1 valve, 1 site	WP-995
1018 Valve Enhancement Project - Burt Road	2 valves, 1 site	WP-1012
1018 Valve Enhancement Project - Camino Capistrano	1 valve, 1 site	WP-1029
1018 Valve Enhancement Project - El Toro Road	1 valve, 1 site	WP-1047
1018 Valve Enhancement Project - Harvard & Alton	3 valves, 1 site	WP-1065
2000 Beaumont Riverside 2016 Valve Enhancement Project Bundle	4 valves, 4 sites	WP-1083
4000 Valve Enhancement Project - Camp Rock Road	1 valve, 1 site	WP-1110
4000 Valve Enhancement Project - Desert View Road	1 valve, 1 site	WP-1126
4000 Valve Enhancement Project - Devore Station	2 valves, 1 site	WP-1142
4000 Valve Enhancement Project - Powerline Road	1 valve, 1 site	WP-1158
4002 Fontana Valve Enhancement Project - Etiwanda & 4th	1 valve, 1 site	WP-1174
7000 Valve Enhancement Project - Beech & Highway 46	1 valve, 1 site	WP-1191
7000 Valve Enhancement Project - Melcher & Elmo	3 valves, 1 site	WP-1208

7000 Valve Enhancement Project - Road 68 & Avenue 232	1 valve, 1 site	WP-1226
7000 Valve Enhancement Project - Road 96 & Avenue 198	1 valve, 1 site	WP-1242
7000 Valve Enhancement Project - Visalia Station	2 valves, 1 site	WP-1258
Adelanto Valve Enhancement Project - MLV 4	1 valve, 1 site	WP-1276
Apple Valley Valve Enhancement Project - MLV 2	1 valve, 1 site	WP-1291
Apple Valley Valve Enhancement Project - MLV 13	1 valve, 1 site	WP-1307
Aviation & 104th Valve Enhancement Project	5 valves, 1 site	WP-1324
Banning 2001 Valve Enhancement Project - MLV 14.3A	3 valves, 1 site	WP-1345
Banning 2001 Valve Enhancement Project - MLV 14A	1 valve, 1 site	WP-1361
Banning 2001 Valve Enhancement Project - MLV 16A	1 valve, 1 site	WP-1377
Banning 2001 Valve Enhancement Project - MLV 17A	1 valve, 1 site	WP-1394
Banning Airport Valve Enhancement Project	2 valves, 1 site	WP-1410
Blythe Valve Enhancement Project - Cactus City	1 valve, 1 site	WP-1427
Brea Valve Enhancement Project - Atwood Station	3 valves, 1 site	WP-1442
Brea Valve Enhancement Project - Carbon Canyon	1 valve, 1 site	WP-1458
Brea Valve Enhancement Project - Gale & Azusa	1 valve, 1 site	WP-1474
Brea Valve Enhancement Project - Brea Canyon	3 valves, 1 site	WP-1490
Burbank Valve Enhancement Project - Riverside & Agnes	1 valve, 1 site	WP-1507
Carpinteria Valve Enhancement Project - Oxy & Rincon	1 valve, 1 site	WP-1522
Del Amo Station Valve Enhancement Project	3 valves, 1 site	WP-1538
Fontana 4000-4002 Valve Enhancement Project - Benson & Chino	1 valve, 1 site	WP-1554
Glendale Valve Enhancement Project - Geneva & Monterey	1 valve, 1 site	WP-1574
Indio Valve Enhancement Project - MLVs 8, 8A, & 8B	3 valves, 2 sites	WP-1589
Indio Valve Enhancement Project - MLV 9A & 9B	2 valves, 1 site	WP-1609
Indio Valve Enhancement Project - MLVs 10, 10A, & 10B	3 valves, 1 site	WP-1627
Palowalla Valve Enhancement Project	3 valves, 1 site	WP-1645
Rainbow 2017 Valve Enhancement Project - Martin & Ramona	2 valves, 1 site	WP-1661
Rainbow Check Valve Enhancement Project - Newport & Briggs	1 valve, 1 site	WP-1676
Rainbow Check Valve Enhancement Project - Scott & El Centro	2 valves, 1 site	WP-1691
Rainbow Check Valve Enhancement Project - Rainbow Valley & Pechanga	2 valves, 1 site	WP-1706
Rainbow CV Valve Enhancement Project - Ramona & Lakeview	2 valves, 1 site	WP-1722
Rainbow Valve Enhancement Project - MLV 5	3 valves, 1 site	WP-1738
Santa Barbara County Valve Enhancement Project - Lions	1 valve, 1 site	WP-1754
Spence Station Valve Enhancement Project	1 valve, 1 site	WP-1771
Taft Valve Enhancement Project - 7th Standard	1 valve, 1 site	WP-1786
Taft Valve Enhancement Project - Buttonwillow	1 valve, 1 site	WP-1802
Taft Valve Enhancement Project - Hageman & Renfro	2 valves, 1 site	WP-1818
Taft Valve Enhancement Project - Sycamore Road	1 valve, 1 site	WP-1838
Victorville COMMS Valve Enhancement Project - MLV 11	1 valve, 1 site	WP-1854
Victorville COMMS Valve Enhancement Project - MLV 12	1 valve, 1 site	WP-1870

Western Del Rey Valve Enhancement Project - Mississippi & Armacost	1 valve, 1 site	WP-1886
Wilmington Valve Enhancement Project - Eubank Station	2 valves, 1 site	WP-1902

Each workpaper is divided into five sections: A) Project Introduction; B) Engineering, Design and Planning
C) Construction; D) Project Costs; and E) Conclusion.

An explanation describing each section’s objective is as follows:

A. PROJECT INTRODUCTION

1. Background and Summary

When practical and anticipated to provide project management and cost efficiencies, SoCalGas bundled multiple valve enhancement project sites for project management and execution. Included in this background and summary section is *Table 1: General Project Information*, which provides overall valve project details by site such as location, valve type(s), and valve and site enhancements.

In addition, maps and satellite images are included for the entire bundle (when applicable) and for each site to provide a perspective of the project in relation to the community it impacts, and the other project sites. Schematic drawings are sometimes included to illustrate and magnify pipeline interconnections and features that are not discernable from the map images.

B. ENGINEERING, DESIGN, AND PLANNING

As described in testimony, the SoCalGas Engineering group guides execution of the Valve Enhancement Plan and designates which valves require remote automation capability to enable optimal system isolation in the event of an emergency.

1. Project Scope

Included in this section is *Table 2: Final Project Scope* which details valve number, valve size (confidential), installation type and function. Project scoping activities include review of existing documentation and a detailed system flow analysis to confirm the scope of the project. As appropriate, modifications are made to the plan to update the scope to include or remove valves as necessary to achieve planned isolation.

- 2011 PSEP Filing indicates valves identified as a candidate for automation as submitted in A. 11-11-002.
- Updated Scope summarizes the outcome of scope validation and documentation to confirm the project scope.
- Engineering, Design and Constructability summarizes the constructability factors that influenced the project design and route.
- Final Project Scope summarizes the final project scope including the installation of any new automated valves, actuators, vaults, power equipment, communications equipment, or the necessary automation equipment that contributed to the project complexity and/or cost.

2. Site Evaluation and Planning

Once a PSEP valve project is initiated and preliminary scope is identified, a site visit is conducted to inspect the valve, confirm the normal valve position (open or closed), location of the valve (above-grade or below-grade), valve type and identify other field and site conditions that could impact the successful automation of the valve. Upon receipt of these data points, project engineering and design commences. In cases where it is warranted, the PSEP project team recommends modifications to the project scope and selects an alternate valve for automation or recommends that the valve be moved to a location out of a roadway that is safer and less impactful to customers when routine maintenance is being conducted. A schematic drawing is included in this section to depict the existing valves and valves that were enhanced with remote isolation capability to enable system isolation.

Once the detailed design is prepared and construction documents are completed, necessary permits and authorizations are attained, and required valve materials are purchased, received, and prepared for turnover to contractors.

3. Scope Changes

Throughout the Engineering, Design and Planning process, constructability or scheduling hurdles are sometimes revealed that require design changes, such as the addition or removal of valves from the project scope, a change in which valves were being enhanced, or a change in the type of enhancement. Scope changes are reviewed and authorized. The incremental costs associated with a subsequent scope change would *not* be reflected in the estimated costs in *Tables 4 and 5*.

C. CONSTRUCTION

1. Construction Contractor Selection

SoCalGas utilize electrical contractors to execute PSEP valve automation work (installation of controls, wiring, communication and electrical work) and requires additional services of a mechanical construction contractor when a valve is relocated, or other pipeline work is required. Valve mechanical work is included within the Performance Partner's anticipated activities within each geographic region. When a Performance Partner is not used, the project is competitively bid. Similar to the Performance Partner Program, SoCalGas created an Alliance Contractor Program for PSEP electrical contractors. Unlike the Performance Partner Program however, the Alliance Partnership does not include a risk reward provision. Three electrical contractors were selected as Alliance Contractors, following receipt of competitive bids from eight qualified electrical contractors through a competitive solicitation process. Alliance Contractors are assigned projects based on workload and geographic considerations.

Once the Issue-for-Bid design (90% design drawing) is completed, a final scope of work is prepared and provided to the Electrical and Mechanical Contractors, which is used by the Electrical and Mechanical Contractors to prepare their construction cost estimates. Each project executed by an Alliance Contractor or Performance Partner requires negotiation of an agreed-upon estimated cost. The Contractor selection process for each project is described in the project workpapers.

2. Construction Schedule

Valve projects typically require less mobilization efforts than a pipeline project because the scope of work is much more contained and less invasive to the project site. Demobilization requires less effort therefore, contractors frequently work on and manage multiple adjacent projects at the same time, moving from site to site to execute work when materials and other conditions are available. This creates efficiencies and reduces downtime or standby charges as the project team can remain active but extends the duration of the construction.

Table 3: Construction Timeline lists the Construction Start and Completion Dates and includes the days on site which is a better indicator of the complexity of the project execution. It also lists the Commissioning Date which is the date that point-to-point contact verification was achieved indicating that the valve was remotely operable.

3. Changes During Construction

Once the project proceeds to construction, site conditions may have changed, or other unanticipated factors may be identified. The Construction Contractor describes the unanticipated conditions encountered during construction and the proposed solution to SoCalGas via an RFI form. If authorized by the PSEP Project Manager, the solution is executed, and the incremental costs are documented via a change order. The workpapers for each project describe notable construction change orders (i.e., when the total construction change order costs are more than 10% of the TPE).

4. Commissioning and Site Restoration

Commissioning activities include site restoration, a site Acceptance Test, which is necessary to obtain agreement from SoCalGas Gas Operations that the valve project is complete before turnover. The site is demobilized, and the area is returned to its previous condition. This may include repaving and restoration of landscaping. Closeout activities are executed within the final months of the project lifecycle and include finalization of as-built drawings and uploading of updated information into the company's documentation and recordkeeping systems to reflect the final scope of work.

D. PROJECT COSTS

1. Cost Avoidance Actions

This section describes the notable cost avoidance decisions and actions that are described in the project workpapers. Because PSEP projects are thoughtfully and prudently designed with safety and cost efficiency at top of mind, not all cost avoidance actions are specifically noted, and it would be impractical to list all the costlier design options that were briefly considered and rejected. 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 landowners and permit terms, as well as shared land use, are 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.

2. Cost Estimate

Estimation activity is initiated in Stage 1 with approval of the Phase 1 WOA reflecting 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.

3. Actual Direct and Indirect Costs

The Estimated and Actual Costs shown in *Table 4: Estimated and Actual Direct Costs and Variances* in workpapers are defined as follows:

- Company Labor: Labor costs for SoCalGas employees charge directly to the project, such as project managers, engineers, land services personnel, environmental services personnel, communication and outreach managers, construction managers, and field support personnel.
- Materials: Costs for materials that SoCalGas purchased 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's costs.
- Mechanical Construction Contractor: Costs for mechanical construction activities performed by the Mechanical Contractor and materials or equipment acquired by the contractor. The actual Mechanical construction contractor costs also include authorized change order costs and risk reward payments, minus construction credits, when applicable.

- Electrical Contractor: Costs for electrical construction activity and materials or equipment acquired by the Electrical Contractor. The actual Electrical construction contractor costs also include authorized change order costs, when applicable.
- Construction Management and Support: Costs for construction inspection, contamination mitigation, environmental monitoring, hydrotesting services, and other miscellaneous activities that occur in the field.
- Environmental: Costs for environmental assessments, monitoring, asbestos abatement, water and waste management, and miscellaneous environmental permits and fees not reflected in other cost categories.
- Engineering and Design: Costs for planning and design services, engineering, environmental services, land use and permitting fees not included in other categories, and project support, such as survey, mapping, and miscellaneous expenses.
- Project Management Services: Contracted costs for project management services and general PSEP program support.
- ROW & Permits: Costs associated with permitting fees and land easement, or acquisition expenses not reflected in other cost categories.
- GMA: Programmatic PSEP costs.

Indirect Costs are listed in *Table 5: Estimated and Actual Indirect Costs, Total Costs, and Variances* in the workpapers. These costs are incremental overheads applied to PSEP projects. Indirect costs are for those activities and services that are associated with direct costs – such as payroll taxes, pension, benefits, and GMA. Also included is interest that SoCalGas earns for funds used during construction for capital projects (AFUDC) and Property Tax for construction work in progress (CWIP) for capital projects.

There are several factors that may cause a variance (delta) between actual and estimated costs. Most of the differences are attributable to one or more factors: 1) estimates are based on a preliminary design and 2) unforeseen and unplanned field conditions also contribute to variances between the preliminary estimate and actual costs.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$53,829	\$53,829	\$139,318	\$61,104	\$308,080
DIRECT NON-LABOR	\$59,401	\$172,678	\$224,161	\$663,488	\$97,378	\$1,217,107
TOTAL DIRECT CAPITAL COSTS	\$59,401	\$226,507	\$277,990	\$802,807	\$158,482	\$1,525,187

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$0	\$53,829	\$53,829	\$139,318	\$61,104	\$308,080
DIRECT NON-LABOR	\$59,401	\$172,678	\$224,161	\$663,488	\$97,378	\$1,217,107
TOTAL COSTS	\$59,401	\$226,507	\$277,990	\$802,807	\$158,482	\$1,525,187

Project Description

The Supply Line 38-100 Phase 2A Replacement Project will replace approximately 31 feet of pipeline that includes 9 feet of Phase 2A pipe and 22 feet of Incidental pipe. The Supply Line 38-100 Phase 2A Replacement Project is located in Kern County, approximately 10 miles east of Maricopa, at the connection with Supply Line 38-7057. The Project will replace 9 feet of [REDACTED] Phase 2A pipe, 22 feet of [REDACTED] and [REDACTED] pipe, and one existing aboveground [REDACTED] plug valve with an [REDACTED] ball valve. In order to maintain service to an existing customer, a temporary [REDACTED] bypass will be installed.

Alternatives Considered

Supply Line 38-100 cannot be abandoned since it is a single fed supply line and provides service to multiple core and non-core customers. A derate of the pipeline is not feasible without the installation of a new pressure limiting station at the connection with Line 85.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

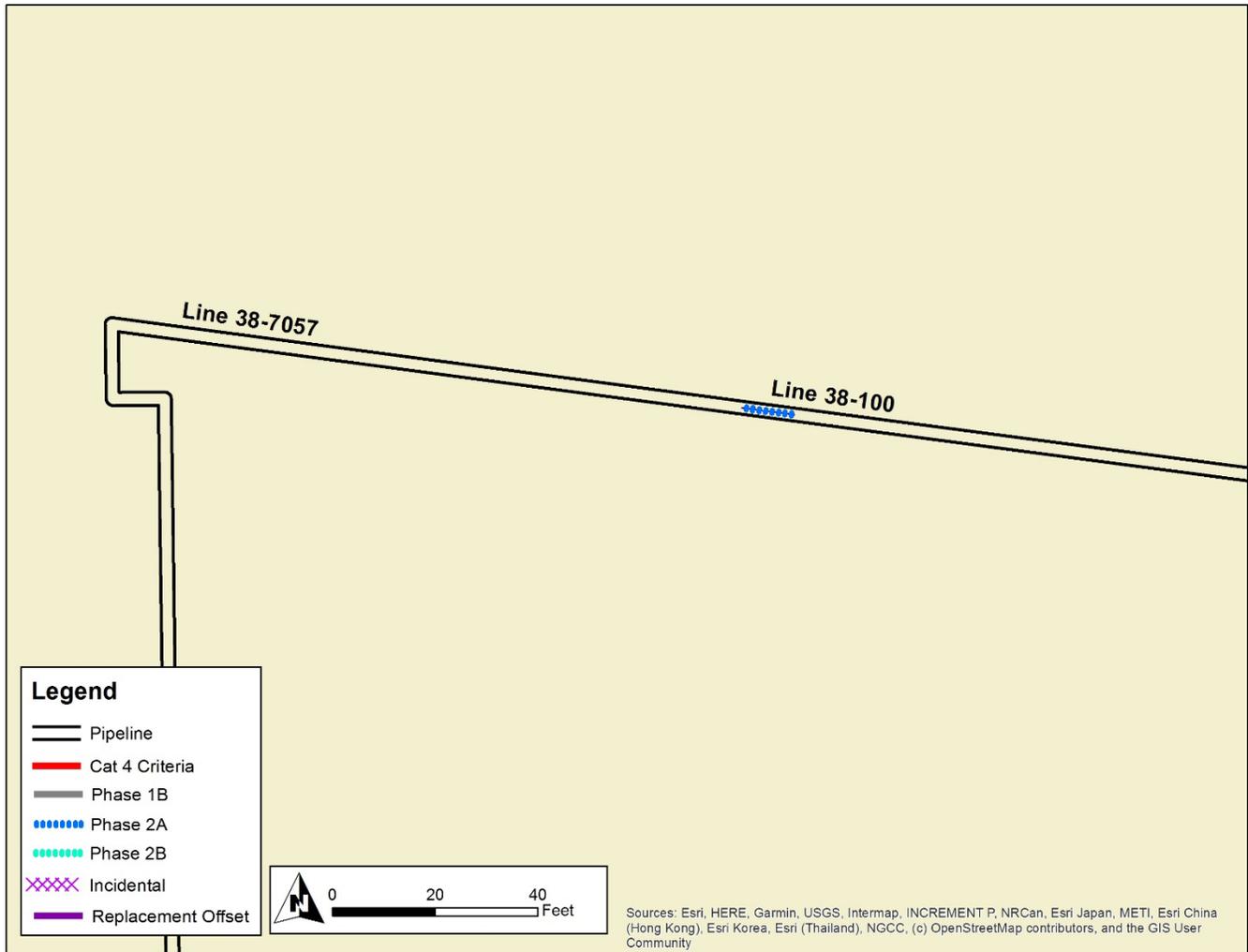
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 19 days.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

Figure 1: Project Map for Supply Line 38-100 Phase 2A Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

Figure 2: Satellite Map for Supply Line 38-100 Phase 2A Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 2A	0.002
PHASE 2B	0.000
INCIDENTAL	0.000
TOTAL MILEAGE	0.002

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$16,454	\$54,699	\$0	\$0	\$71,153
TOTAL DIRECT COSTS	\$0	\$16,454	\$54,699	\$0	\$0	\$71,153

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- One [REDACTED] ball valve.
- One [REDACTED] pressure control fitting.
- 67 feet of [REDACTED] pipe.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$1,253	\$0	\$0	\$516,261	\$0	\$517,514
TOTAL DIRECT COSTS	\$1,253	\$0	\$0	\$516,261	\$0	\$517,514

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- Access to work site shall be continuous once project commences.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

- One temporary right of entry (TRE) for work and staging.
- All piping will be shaded with zero sack slurry. Remainder of trench zone will receive native material. Excess spoils will be hauled off and disposed.
- Contaminated soil has not been anticipated.
- Tie-ins will be performed during a 24 hour continuous shift.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Site facility costs cover a one month duration.
 - Temporary fencing for all laydown yards.
- **Site Management / Best Management Practices (BMPs)**
 - Fiber rolls, sand bags, and silt fencing will be procured and installed for BMP measures.
- **Material Handling**
 - Two loads of material will be unloaded at laydown yard and transported as needed.
- **Utility Locates**
 - All excavation will be performed by hand, therefore no utility locates will be performed by contractor.
- **Isolate Existing Pipeline**
 - Project assumes the installation of two stopples and a bypass.
 - Pipeline will be cut and capped.
 - Bypass will be pretested prior to installation.
- **Pressure Test Pipeline**
 - The replacement spool will be tested using test caps.
- **Tie-In Pipeline**
 - Existing pipeline will be tied in during a 24 hour continuous shift.
 - No existing services will be tied over following the gas up of the new main.
- **Retire / Abandon Existing Pipeline**
 - 31 ft of pipeline will be removed and replaced.
- **Site Restoration**
 - Site will be returned to original grade and site cleaned up.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

- **Site Demobilization**
 - One load of excess piping will be hauled to SoCalGas designated yard.
 - All crews and equipment will be demobilized.

- **Field Overhead**
 - One Full-Time Cost Controller.
 - One Full-Time Superintendent.
 - One Full-Time Safety Personnel.
 - One Part-Time Scheduler.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$7,324	\$6,311	\$18,932	\$37,865	\$0	\$70,432
TOTAL DIRECT COSTS	\$7,324	\$6,311	\$18,932	\$37,865	\$0	\$70,432

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Preconstruction Clearance.
 - Document production for Worker Environmental Awareness Procedure (WEAP) document.
 - Document production for Environmental Clearance.

- **Preconstruction Surveys**
 - Preconstruction wildlife survey reports.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

- **Construction Monitoring**
 - One full time monitor for the first week, then three weekly spot checks.
- **Project Closeout Activities**
 - Site restoration, permit reporting, and closeout.
- **Abatement**
 - Five days for abatement of ACMs.
- **Water Treatment and Hazardous Materials**
 - Hydrostatic test water, estimated at 100 gallons, to be acquired by the pipeline contractor.
 - One truck for one day water delivery to project site.
 - Disposal of water to ground for dust control without treatment.
 - Groundwater is not anticipated for this project.
 - Soil contamination is not anticipated.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes.
- **Permit Fees**
 - San Joaquin Valley Air Pollution Control District (SJVAPCD) Dust Control Plan notification.
 - California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$100	\$300	\$0	\$0	\$400
TOTAL DIRECT COSTS	\$0	\$100	\$300	\$0	\$0	\$400

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$901	\$17,408	\$52,224	\$0	\$0	\$70,533
TOTAL DIRECT COSTS	\$901	\$17,408	\$52,224	\$0	\$0	\$70,533

Assumptions

In generating for the total estimated cost for Supply Line 38-100 Phase 2A Replacement Project the following items were considered:

- **Labor**
 - One contract land agent, administrative assistant, and document control specialist for the duration of the project.
- **Temporary Right of Entry**
 - Workspace.
- **Crops**
 - Costs for some crop damage included.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry permits.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$53,829	\$53,829	\$139,318	\$61,104	\$308,080
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$0	\$53,829	\$53,829	\$139,318	\$61,104	\$308,080

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-100 PHASE 2A REPLACEMENT PROJECT

- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$49,923	\$132,406	\$98,006	\$109,362	\$97,378	\$487,075
TOTAL DIRECT COSTS	\$49,923	\$132,406	\$98,006	\$109,362	\$97,378	\$487,075

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1¹	Stage 2²	Stage 3³	Stage 4⁴	Stage 5⁵	Total
DIRECT LABOR	\$14,914	\$245,197	\$245,197	\$598,441	\$289,757	\$1,393,505
DIRECT NON-LABOR	\$191,763	\$1,942,998	\$9,159,977	\$47,238,065	\$1,204,263	\$59,737,067
TOTAL DIRECT CAPITAL COSTS	\$206,677	\$2,188,195	\$9,405,173	\$47,836,505	\$1,494,020	\$61,130,571

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total⁷
DIRECT LABOR	\$14,914	\$245,197	\$245,197	\$598,441	\$289,757	\$1,393,505
DIRECT NON-LABOR	\$191,763	\$1,942,998	\$9,159,977	\$47,238,065	\$1,204,263	\$59,737,067
TOTAL COSTS	\$206,677	\$2,188,195	\$9,405,173	\$47,836,505	\$1,494,020	\$61,130,571

Project Description

The Supply Line 38-539 Phase 2A Replacement Project will replace approximately 12.565 miles of [REDACTED] pipeline. The Supply Line 38-539 Phase 2A Replacement Project starts at the intersection of [REDACTED] and [REDACTED], and ends south of the intersection of [REDACTED] and [REDACTED] in Tulare County. The replacement will be installed along the route via open trench. Approximately 1.02 miles will be installed in nine separate instances of horizontal directional drill (HDD) and bore methods.

Alternatives Considered

Supply Line 38-539 is a primary pipeline for the Visalia District and is critical for system operational needs. Abandoning this pipeline would create a substantial loss in capacity and would result in an inability to meet the needs of customers in the area. Because of this, abandonment is not a viable option. Derating the pipeline would negatively impact the capacity of the system as well and is not a viable option. Hydrotesting the line would require shutting in the section for approximately one month and would require supplying CNG to the 16 tap laterals and customer taps. More than half of the existing pipeline contains a spiral weld longseam and a hydrotest is not recommended.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

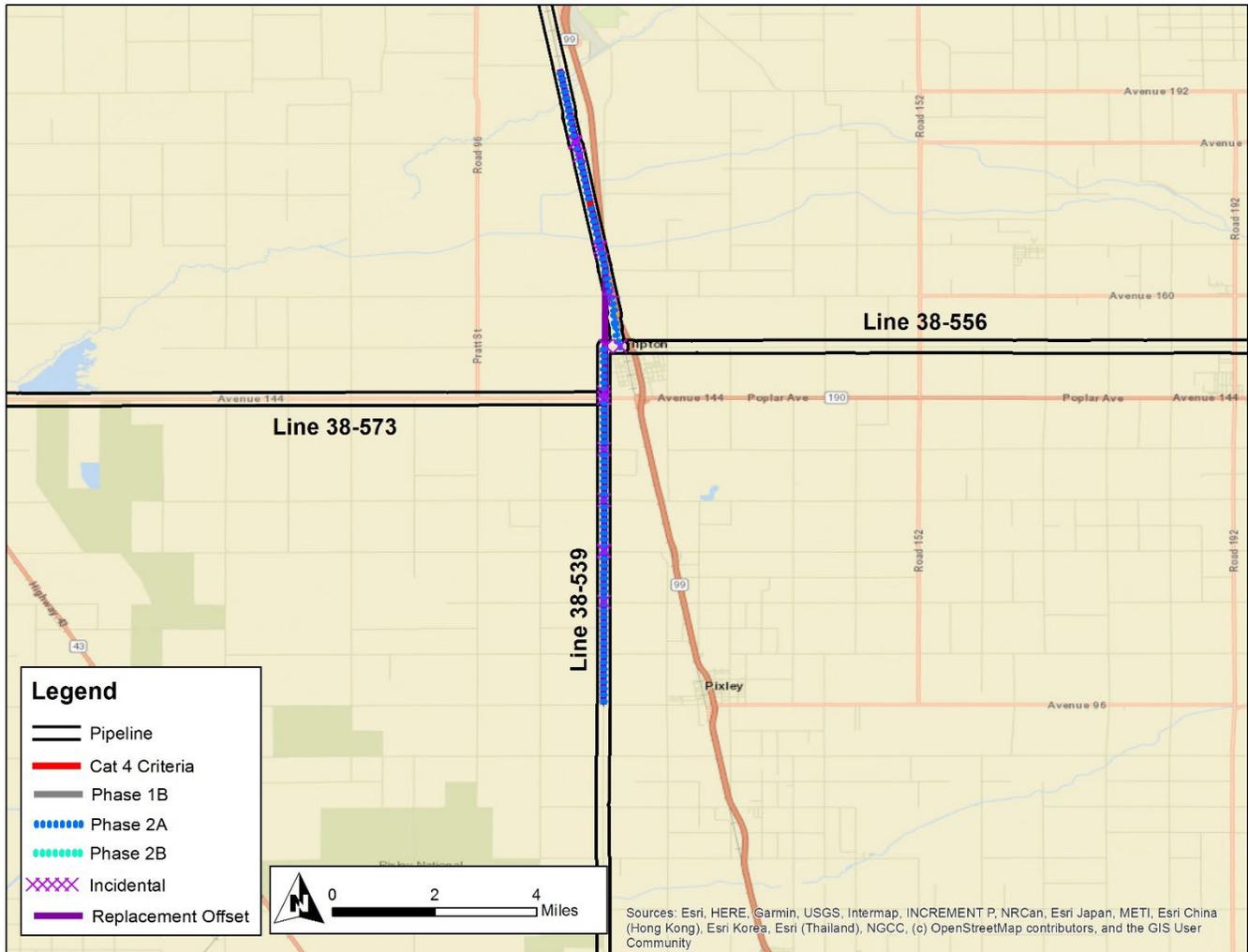
The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 146 days.

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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

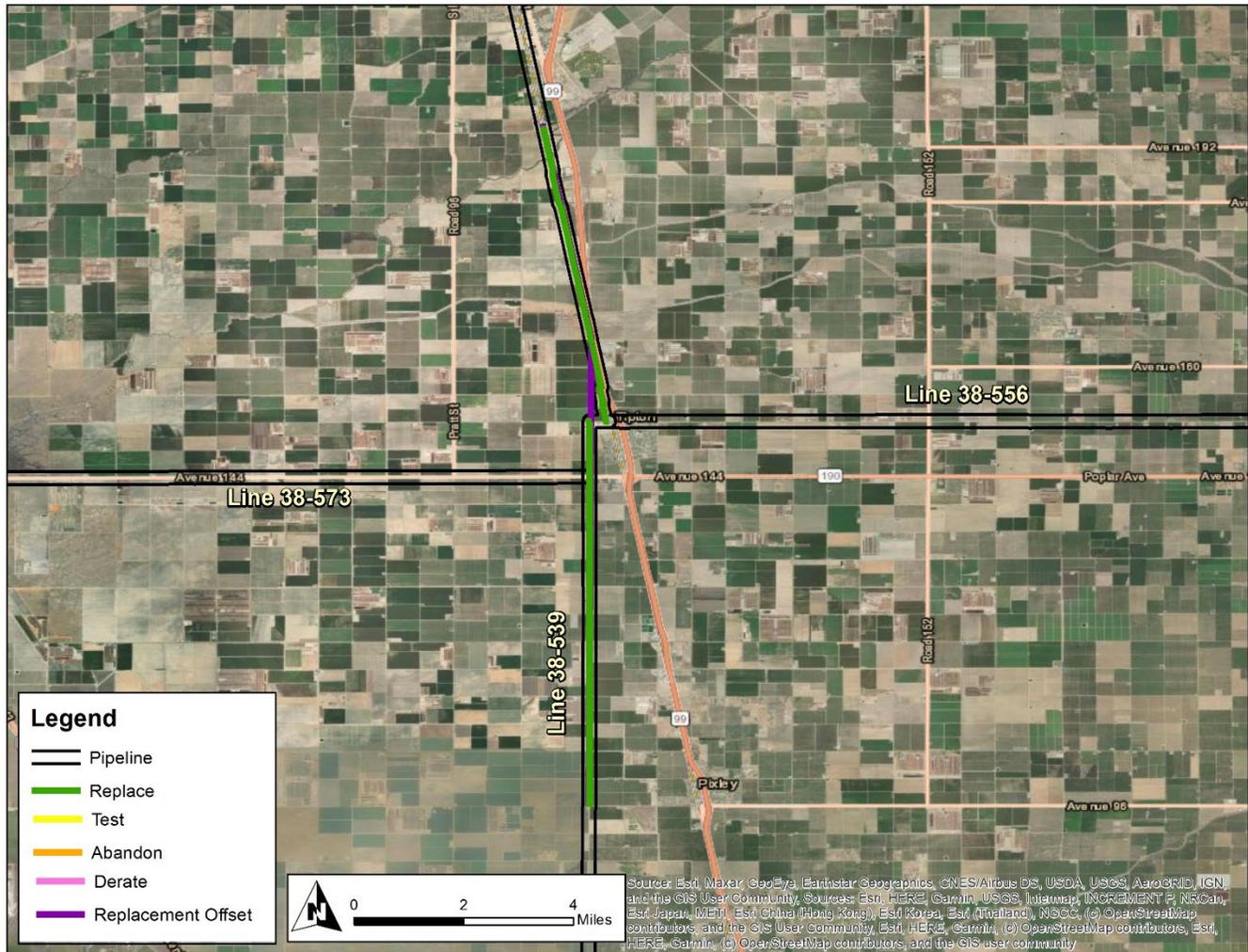
Figure 1: Overview Map for Supply Line 38-539 Phase 2A Replacement Project



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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

Figure 2: Satellite Map for Supply Line 38-539 Phase 2A Replacement Project



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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
COORDINATED ⁸	0.120
PHASE 2A	12.216
PHASE 2B	0.000
INCIDENTAL	0.071
REPLACEMENT OFFSET	0.159
TOTAL MILEAGE	12.565

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$226,862	\$5,410,373	\$0	\$0	\$5,637,235
TOTAL DIRECT COSTS	\$0	\$226,862	\$5,410,373	\$0	\$0	\$5,637,235

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 11.63 miles of [REDACTED] pipe.
- 11 [REDACTED] ball valves.
- Two [REDACTED] ball valves.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$44,362,984	\$0	\$44,362,984
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$44,362,984	\$0	\$44,362,984

⁸ Lacks documentation of a post-construction strength test in a Class 3 or 4 HCA.

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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour, five day work week.
- Environmental protection fencing for all workspaces.
- Construction will be completed assuming a single roadway lane. Efficiencies achievable for complete shutdown of entire roadway is not included.
- Utility locate crew for 30 days to locate substructures.
- All piping will be shaded with zero sack slurry. Remainder of trench zone will utilize native soil. Excess spoils will be hauled off and disposed.
- Contaminated soil has not been anticipated.
- Tie-ins will be performed during a 24 hour continuous shift.
- New pipeline will be hydrotested in one section.
- Laydown yards will be restored to original condition at the end of the project.
- Restoration of grade along right of way (ROW) will be performed at the end of the project.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Four office trailers for management and inspection personnel at various laydown yards across the project.
 - Site facility costs cover a seven month duration.
 - Temporary fencing for all laydown yards.
 - Track out plates at street access points.
- **Site Management / Best Management Practices (BMPs)**
 - SWPPP has not yet been developed.
 - Fiber rolls.
 - Sand bags.
 - Reinforced poly sheeting.
 - Silt fencing.
- **Material Handling**
 - 85 loads of material will be unloaded at laydown yard and transported as needed.
- **Traffic Control**
 - East bound lane will be closed to traffic during pipeline installation and restoration activities.
 - Cost for complete shutdown of Eucalyptus Street has not been included.
 - Traffic control devices will be set up and removed on a daily basis.

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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

- **Utility Locates**
 - Utility locate crew for 30 days to locate substructures.

- **Isolate Existing Pipeline**
 - Pipeline will be isolated and blown down in conjunction with tie-in activities.
 - Pipeline will not be separately isolated or brought down until new pipeline has been installed and tested.

- **Hydrotest / Pressure Test Pipeline**
 - Contractor will assist with the preparatory work prior to the setup of fifteen water tanks.
 - Hard piping will be installed from the test head to the lake tank pumps.
 - Two test heads will be fabricated by the contractor.
 - The pipeline will be tested in one individual segment.
 - Cleaning runs of existing pipeline are not included.

- **Tie-In Pipeline**
 - Pipeline will be tied in during a 24 hour continuous shift.
 - 16 taps will be tied over following completion of new pipeline.

- **Site Restoration**
 - Base paving of trench width will be performed to a thickness of 8-inches.
 - The grind and cap will account for one travel lane. Curb to curb asphalt restoration not included.
 - Slurry seal is not included.
 - All paved roads will receive new striping where disturbed.
 - No traffic loops.

- **Site Demobilization**
 - Removal of all office trailers and breakdown of all laydown yards.
 - Two loads of excess piping will be hauled to a SoCalGas designated yard.
 - Crew and equipment will be demobilized.

- **Field Overhead**
 - Full-Time Project Manager.
 - Full-Time Project Engineer.
 - Two Full-Time Superintendents.
 - Two Full-Time Safety Personnel.
 - Two Full-Time Timekeepers.
 - One Part-Time Scheduler.
 - Three site security personnel for non working hours.
 - Daily street sweeping for a duration of four hours per day.

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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$123,081	\$369,243	\$738,486	\$0	\$1,230,810
TOTAL DIRECT COSTS	\$0	\$123,081	\$369,243	\$738,486	\$0	\$1,230,810

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document Production for Worker Environmental Awareness Procedure (WEAP).
 - Document Production for Storm Water and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document Production for Protocol Survey Reports.
 - Document Production for Rare Plant Survey Reports.
 - Document Production for Cultural Report.
 - Document Production for Preconstruction Clearance.
 - Document Production for Environmental Clearance.
- **Preconstruction Surveys**
 - Preconstruction wildlife and nesting bird survey reports.
 - Rare plant survey and topsoil flagging.
- **Construction Monitoring**
 - Two full time monitors for duration of project.
 - Monthly SWPPP inspections.

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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

- **Project Closeout Activities**
 - Site restoration support, permit reporting, and closeout.

- **Abatement**
 - Eight days for abatement of ACMs.

- **Water Treatment and Hazardous Materials**
 - Hydrotest water, estimated at 272,000 gallons, to be acquired by the pipeline contractor.
 - 15 days for water delivery to project site.
 - Water disposal up to 250 miles roundtrip plus disposal fee.
 - 16 days of hydrotest standby support.
 - Soil contamination is not anticipated.
 - Groundwater is not anticipated for this project.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction and disposal of potentially hydrocarbon and ADL contaminated soil.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes.

- **Permit Fees**
 - San Joaquin Valley Air Pollution Control District (SJVAPCD) Dust Control Plan.
 - California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt.
 - The Project will be eligible for coverage under the SoCalGas programmatic San Joaquin Valley Habitat Conservation Plan (SJVHCP) any required take authorization will be covered under this habitat conservation plan.
 - California Department of Fish and Wildlife (CDFW) Section 1600 for span removal and notice only for horizontal directional drilling.
 - Central Valley Regional Water Quality Control Board (RWQCB) Section 401 only for potential frac out during horizontal directional drilling.
 - U.S. Army Corps of Engineers (USACE) Section 404 Nationwide Permits only for potential frac out during horizontal directional drilling.
 - SWPPP fee.

- **Mitigation Fees**
 - Estimated temporary impact to restoration areas.

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$4,702	\$14,105	\$0	\$0	\$18,807
TOTAL DIRECT COSTS	\$0	\$4,702	\$14,105	\$0	\$0	\$18,807

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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$5,098	\$950,378	\$2,851,133	\$0	\$0	\$3,806,608
TOTAL DIRECT COSTS	\$5,098	\$950,378	\$2,851,133	\$0	\$0	\$3,806,608

Assumptions

In generating for the total estimated cost for Supply Line 38-539 Phase 2A Replacement Project the following items were considered:

- **Labor**
 - One contract land agent, document control specialist, and permit coordinator.
- **Temporary Right of Entry**
 - Laydown yards.
 - Workspace.
- **Crops**
 - Approximately 1,442,763 SF of grain/silage will be impacted.
 - Approximately 1,690 almond trees will be replaced.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry permits.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$14,914	\$245,197	\$245,197	\$598,441	\$289,757	\$1,393,505
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$14,914	\$245,197	\$245,197	\$598,441	\$289,757	\$1,393,505

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SUPPLY LINE 38-539 PHASE 2A REPLACEMENT PROJECT

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$186,665	\$637,976	\$515,123	\$2,136,594	\$1,204,263	\$4,680,622
TOTAL DIRECT COSTS	\$186,665	\$637,976	\$515,123	\$2,136,594	\$1,204,263	\$4,680,622

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1¹	Stage 2²	Stage 3³	Stage 4⁴	Stage 5⁵	Total
DIRECT LABOR	\$2,275	\$54,392	\$54,392	\$93,928	\$64,810	\$269,798
DIRECT NON-LABOR	\$74,894	\$120,588	\$289,774	\$876,034	\$122,547	\$1,483,838
TOTAL DIRECT CAPITAL COSTS	\$77,169	\$174,980	\$344,167	\$969,963	\$187,357	\$1,753,636

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total⁷
DIRECT LABOR	\$2,275	\$54,392	\$54,392	\$93,928	\$64,810	\$269,798
DIRECT NON-LABOR	\$74,894	\$120,588	\$289,774	\$876,034	\$122,547	\$1,483,838
TOTAL COSTS	\$77,169	\$174,980	\$344,167	\$969,963	\$187,357	\$1,753,636

Project Description

The Supply Line 44-707 Phase 2A Replacement Project will replace approximately 10 feet of [REDACTED] pipeline. The Supply Line 44-707 Phase 2A Replacement Project is an inlet tap that feeds the Mail Road Distribution Regulator Station near the intersection of Mail Road and Domingos Road in the City of Lompoc. The Project will install a bypass on Line 1010 to maintain service during construction.

Alternatives Considered

Supply Line 44-707 cannot be abandoned or derated since it provides service to multiple customers and can only be temporarily shut-in during summer conditions to avoid system impacts.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

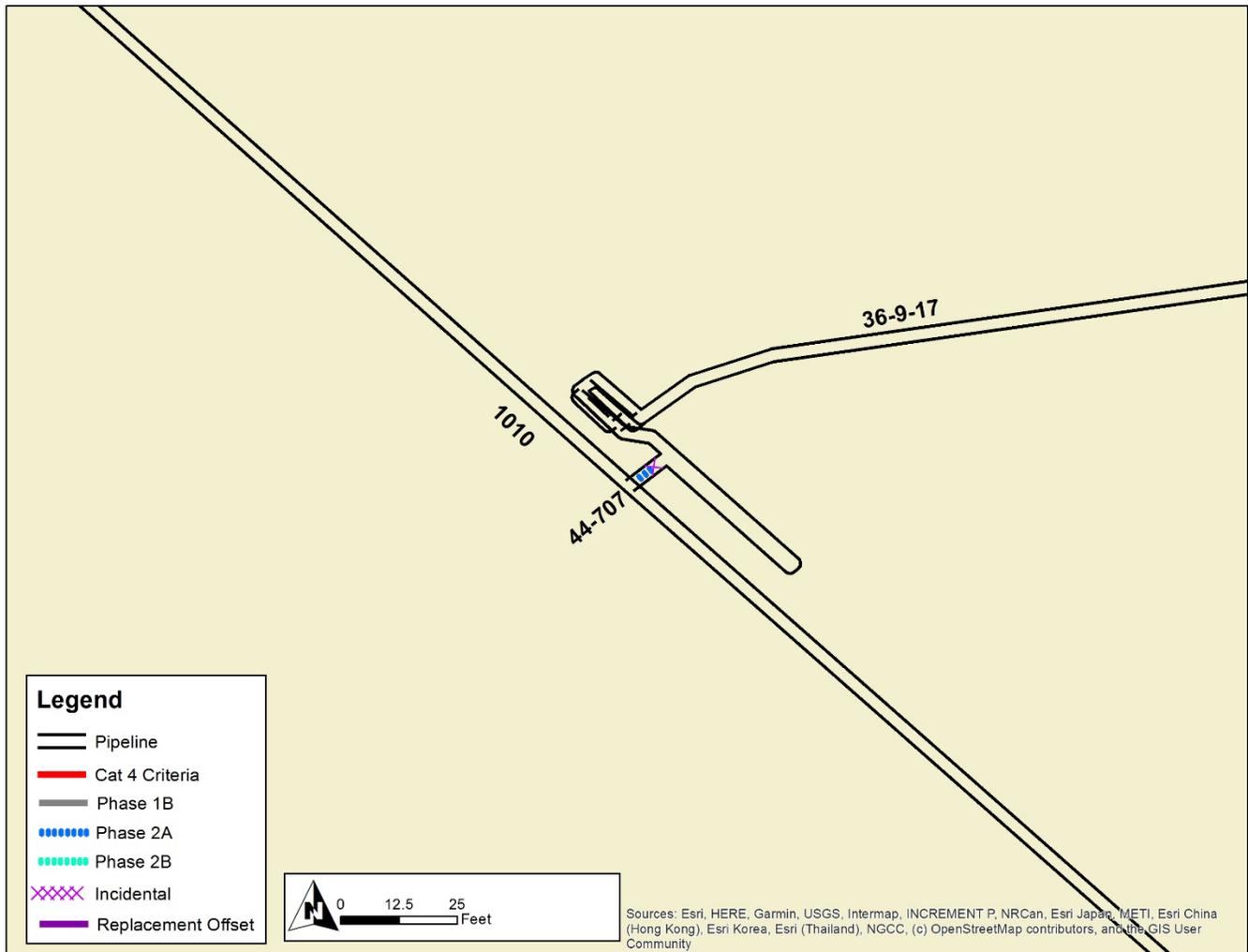
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 20 days.

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SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

Figure 1: Overview Map for Supply Line 44-707 Phase 2A Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

Figure 2: Satellite Map for Supply Line 44-707 Phase 2A Replacement Project



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SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 2A	0.001
PHASE 2B	0.000
INCIDENTAL	0.001
TOTAL MILEAGE	0.002

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$6,101	\$121,093	\$0	\$0	\$127,194
TOTAL DIRECT COSTS	\$0	\$6,101	\$121,093	\$0	\$0	\$127,194

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 300 feet of [REDACTED] pipe for temporary by-pass.
- Two [REDACTED] pressure control fitting tees.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$643,291	\$0	\$643,291
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$643,291	\$0	\$643,291

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two-foot zone.

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SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.
- The pipeline will be tested in one test segment.
- Isolation and final tie-in for a 24-hour continuous duration.
- Hydrotest water will be hauled off and disposed.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - One office trailer will be placed at the laydown yard.
 - Site facilities for a two month duration.
- **Site Preparation**
 - 837 linear feet (LF) of temporary fencing has been included to delineate the laydown yard.
 - 7,622 square feet (SF) of access road grading with a hand excavation crew.
- **Site Management / BMP's**
 - 50 fiber rolls, 250 sandbags, and 190 SY of poly sheeting.
 - Site setup and cleanup crew to install and maintenance BMPs.
- **Material Handling**
 - Two loads of material will be unloaded at laydown yard and transported as needed.
- **Utility Locates**
 - Location of existing gas line relating to two locates during one shift.
- **Pipeline Installation**
 - Hand excavation crew to excavate 27 cubic yards (CY).
 - Ten coat welds within one shift with a coating crew.
 - Fabrication crew to weld [REDACTED] MLV.
- **Pipeline Isolation**
 - One nitrogen truck to purge the pipeline.
 - Support of cross compression for the [REDACTED] pipeline presumed to be two shifts with a fabrication crew.
 - One shift with the fabrication crew for the cut out sections and capping.
 - One shift with a coating crew will support abatement of the two cut points.
 - Fabrication crew to install four fire control fittings.
 - Two shifts with the same fabrication crew will install the two isolation caps.

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SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

- **Pressure Test Pipeline**
 - One nitrogen cylinder pack.
 - Install of two test caps are assumed with the fabrication crew.
 - One shift with the fabrication crew has been allocated to perform one nitrogen test.
- **Tie-In Pipeline**
 - Material procurement includes nine tons of washed bedding sand, 27 CY of zero sack, one gallon of epoxy paint, 50 LB of mixed media, and 5 LB of weld rod.
 - One tie-in will be performed in one 24 hour shift.
 - Backfill of 30 CY relating to the tie-in bell hole is included within one shift with a slurry backfill crew.
 - All tie-in welds will be x-rayed.
- **Site Restoration**
 - One shift with a site setup and cleanup crew to remove 250 LF of temporary fencing.
 - Site setup and cleanup crew to remove SWPPP / BMPs.
 - Final cleanup will occur in one shift with the site setup and cleanup crew.
- **Site Demobilization**
 - All site facilities will be demobilized.
 - One load of excess piping will be hauled to SCG designated yard.
 - Crew and equipment will be demobilized.
- **Field Overhead**
 - One Full-Time Superintendent.
 - One Full-Time Safety Supervisor.
 - One Full-Time Cost Controller.
 - One Full-Time Water Truck and Driver.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$20,124	\$16,041	\$48,124	\$96,248	\$0	\$180,537
TOTAL DIRECT COSTS	\$20,124	\$16,041	\$48,124	\$96,248	\$0	\$180,537

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys, and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Worker Environmental Awareness Program (WEAP) document.
 - Document production for Preconstruction Clearance.
- **Preconstruction Surveys**
 - Cultural survey.
 - Preconstruction amphibian survey and report by permitted biologist.
 - Preconstruction nesting bird survey and report.
 - Assumes no new cultural or new biological resource findings.
- **Construction Monitoring**
 - One monitor for 12 days of environmental monitoring.
- **Project Closeout Activities**
 - Restoration support and closeout.
- **Abatement**
 - Two days for abatement of ACMs.
- **Water Treatment and Hazardous Materials**
 - Hydrostatic test water, 2,000 gallons, to be acquired by the pipeline contractor.
 - Water delivery to site 200 miles round trip.
 - Water will be hauled offsite with no treatment and disposed 200 miles round trip.
 - One vacuum truck for hydrotest standby support.
 - Groundwater dewatering is not anticipated.
 - Contaminated soil is not anticipated.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal for various wastes.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

Table 7: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$17,692	\$53,076	\$0	\$0	\$70,768
TOTAL DIRECT COSTS	\$0	\$17,692	\$53,076	\$0	\$0	\$70,768

Assumptions

In generating the total estimated cost for Supply Line 44-707 Phase 2A Replacement Project, the following items were considered:

- **Labor**
 - One contract land agent and administrative support for duration of the project.
- **Temporary Right of Entry**
 - Workspace.
 - Laydown yard.
 - Access road.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 8: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$2,275	\$54,392	\$54,392	\$93,928	\$64,810	\$269,798
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$2,275	\$54,392	\$54,392	\$93,928	\$64,810	\$269,798

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

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SUPPLY LINE 44-707 PHASE 2A REPLACEMENT PROJECT

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 9: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$54,770	\$80,753	\$67,482	\$136,495	\$122,547	\$462,048
TOTAL DIRECT COSTS	\$54,770	\$80,753	\$67,482	\$136,495	\$122,547	\$462,048

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Supply Line 44-707 Phase 2A Replacement Project includes 7 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$1,888. The final value of the Supply Line 44-707 Phase 2A Replacement Project cost disallowance will be adjusted once the project is placed in service.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$62,481	\$62,481	\$87,628	\$72,202	\$284,792
DIRECT NON-LABOR	\$262,536	\$173,294	\$208,984	\$1,122,256	\$197,390	\$1,964,459
TOTAL DIRECT CAPITAL COSTS	\$262,536	\$235,774	\$271,464	\$1,209,884	\$269,592	\$2,249,251

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$0	\$62,481	\$62,481	\$87,628	\$72,202	\$284,792
DIRECT NON-LABOR	\$262,536	\$173,294	\$208,984	\$1,122,256	\$197,390	\$1,964,459
TOTAL DIRECT COSTS	\$262,536	\$235,774	\$271,465	\$1,209,885	\$269,592	\$2,249,251

Project Description

The Supply Line 44-729 Phase 2A Replacement Project will replace 45 feet (ft) of [REDACTED] and [REDACTED] pipe, including 26 ft Phase 2A pipe in Maricopa. The Project will replace 16 ft of pipe on Line 203 and abandon 29 ft of pipe on Supply Line 38-143 for constructability purposes.

Alternatives Considered

In order to maintain system capacity to customers, Supply Line 44-729 cannot be abandoned. In order to derate this section of pipeline, a new limiting station would need to be installed at the connection of Line 203 and Supply Line 44-729.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

Schedule

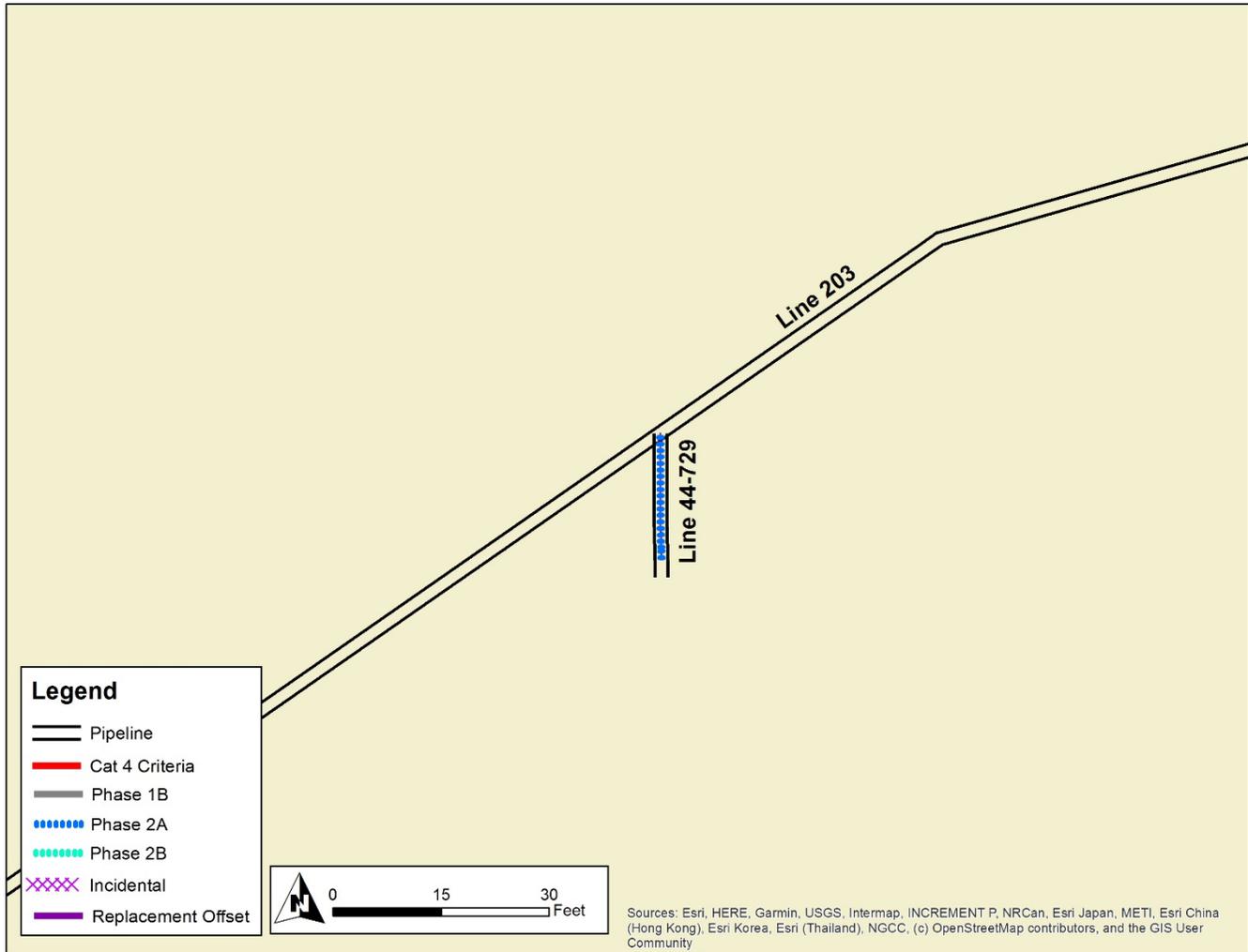
The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 25 days.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

Figure 1: Overview Map for Supply Line 44-729 Phase 2A Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

Figure 2: Satellite Map for Supply Line 44-729 Phase 2A Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 2A	0.005
PHASE 2B	0.000
INCIDENTAL	0.000
TOTAL MILEAGE	0.005

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$16,668	\$53,076	\$0	\$0	\$69,745
TOTAL DIRECT COSTS	\$0	\$16,668	\$53,076	\$0	\$0	\$69,745

Assumptions

Materials for this Project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected, and delivered to coincide with the anticipated construction start date.

- 45 feet of [redacted] and [redacted] pipe.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$894,502	\$0	\$894,502
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$894,502	\$0	\$894,502

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- There will be one laydown yard.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will utilize native soil.
- Tie-ins will be performed during a 24 hour continuous shift.
- Laydown yards will be restored to original condition at the end of the Project.
- Restoration of worksite will be performed at the end of the Project.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - One office trailer for management and inspection personnel at project laydown yard.
 - Site facility costs cover a two month duration.
 - Temporary fencing for laydown yard.
- **Site Management / Best Management Practices (BMPs)**
 - Storm Water Pollution and Prevention Plan (SWPPP) has not yet been developed.
 - Fiber rolls, sandbags, reinforced poly sheeting, and silt fencing will be procured and installed for BMPs.
- **Material Handling**
 - One load of material will be unloaded at laydown yard and transported as needed.
- **Traffic Control**
 - K-rail will be set up to protect the stopple installed in the dirt road.
- **Utility Locates**
 - Three existing gas lines will be potholed before excavation begins.
- **Isolate Existing Pipeline**
 - Pipeline will be isolated with two [REDACTED] Pressure Control Fittings (PCFs).
- **Pressure Test Pipeline**
 - All piping will be hydrotested in one test.
 - One regulator station to be nitrogen tested separately.
- **Tie-In Pipeline**
 - The existing pipeline will be tied-in during a 16 hour continuous shift.
 - Two existing taps will be tied-over following the gas up of the new main.
- **Retire / Abandon Existing Pipeline**
 - 13 feet of [REDACTED] pipe and 15 feet of [REDACTED] pipe to be abandoned in place.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

- **Site Restoration**
 - Regulator station site to be restored to original condition.

- **Site Demobilization**
 - Removal of office trailer and breakdown of laydown yard in the estimate.
 - One load of excess piping will be hauled to a designated yard.
 - Crew and equipment will be demobilized.

- **Field Overhead**
 - One full-time Superintendent.
 - One full-time Safety Personnel.
 - One full-time Timekeeper.
 - One full-time Cost Controller.
 - One site security guard has been employed for all non-working hours.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$9,682	\$29,045	\$58,090	\$0	\$96,817
TOTAL DIRECT COSTS	\$0	\$9,682	\$29,045	\$58,090	\$0	\$96,817

Assumptions

In calculating the estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys, and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this Project are described in more detail below.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Preconstruction Clearance.
 - Document production for Worker Environmental Awareness Procedure (WEAP).
 - Document production for Environmental Clearance.
- **Preconstruction Surveys**
 - Preconstruction wildlife survey reports.
- **Construction Monitoring**
 - One full-time monitor for spot checks.
- **Project Closeout Activities**
 - Site restoration, permit reporting, and closeout.
- **Abatement**
 - Five days for abatement of ACMs.
- **Water Treatment and Hazardous Materials**
 - Hydrostatic test water, estimated at 100 gallons, to be acquired by the pipeline contractor.
 - One day of water delivery to project site.
 - Hydrotest Water Disposal assumes disposal up to 100 miles roundtrip plus disposal fee.
 - Groundwater is not anticipated.
 - Soil contamination is not anticipated.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes.
- **Permit Fees**
 - San Joaquin Valley Air Pollution Control District (SJVAPCD) Dust Control Plan notification.
 - California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

Table 7: Land & Right of Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$6,343	\$9,416	\$28,249	\$0	\$0	\$44,008
TOTAL DIRECT COSTS	\$6,343	\$9,416	\$28,249	\$0	\$0	\$44,008

Assumptions

In generating the cost estimate, the following items were considered:

- **Labor**
 - One contract land agent.
- **Temporary Right of Entry**
 - Workspace.
 - Laydown yard.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 8: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$62,481	\$62,481	\$87,629	\$72,202	\$284,792
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$0	\$62,481	\$62,481	\$87,629	\$72,202	\$284,792

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-729 PHASE 2A REPLACEMENT PROJECT

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 9: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$256,192	\$137,527	\$98,614	\$169,664	\$197,390	\$859,387
TOTAL DIRECT COSTS	\$256,192	\$137,527	\$98,614	\$169,664	\$197,390	\$859,387

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Supply Line 44-729 Replacement Project includes 21 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$5,664. The final value of the Supply Line 44-729 Replacement Project cost disallowance will be adjusted once the project is placed in service.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1¹	Stage 2²	Stage 3³	Stage 4⁴	Stage 5⁵	Total
DIRECT LABOR	\$104,013	\$134,681	\$2,505,068	\$2,267,815	\$180,215	\$5,191,790
DIRECT NON-LABOR	\$459,781	\$255,671	\$57,615,060	\$112,111,315	\$631,757	\$171,073,584
TOTAL DIRECT CAPITAL COSTS	\$563,793	\$390,351	\$60,120,128	\$114,379,130	\$811,972	\$176,265,374

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total⁷
DIRECT LABOR	\$104,013	\$134,681	\$2,505,068	\$2,267,815	\$180,215	\$5,191,790
DIRECT NON-LABOR	\$459,781	\$255,671	\$57,615,060	\$112,111,315	\$631,757	\$171,073,584
TOTAL COSTS	\$563,793	\$390,351	\$60,120,128	\$114,379,130	\$811,972	\$176,265,374

Project Description

The Line 85 North Phase 1B Lake Station to Grapevine Replacement and Abandonment Project will replace and reroute approximately 21 miles of [REDACTED] pipeline. The new pipeline will be rerouted from the existing pipeline alignment to avoid private properties and roads where practical, by installing it along public roadways thus enhancing the safety of the pipeline. The Project will also permanently abandon an approximately 9 mile segment of Line 85 south of the replacement offset to Grapevine Road. The Project starts at Lake Station and ends at Grapevine Road in Kern County. The replacement will be completed in one mobilization. Due to the offset of the new alignment, additional distribution work will be required as part of the project scope, to allow for existing customers to be served from the rerouted alignment. Associated distribution work includes the installation of approximately 3.2 miles of [REDACTED] pipeline to connect Supply Line 38-101 to Supply Line 38-101-A, installation of approximately 3.5 miles of [REDACTED] pipeline from Supply Line 38-101 Extension (Ext.) to connect to Kelly Pump Station (KPS Ext.), including a horizontal direction drill (HDD) under an aqueduct. This Project will also install a cross connection with Line 225, two regulator stations, five pressure limiting stations, a pig launcher at Wheeler Ridge and receiver at Lake Station, three mainline valves (MLVs), and fiber optic monitoring for gas leak monitoring, and early detection of ground movement. The Project will coordinate construction phasing with the Supply Line 38-101 Section 3 Phase 1B Derate Project to sequence the activities of Line 85.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

Alternatives Considered

Line 85 North is a primary feed to the SoCalGas system. Abandoning or derating the pipeline would reduce the capacity of the system resulting in an inability to meet customer demand. To maintain system capacity, this pipeline cannot be abandoned or derated.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

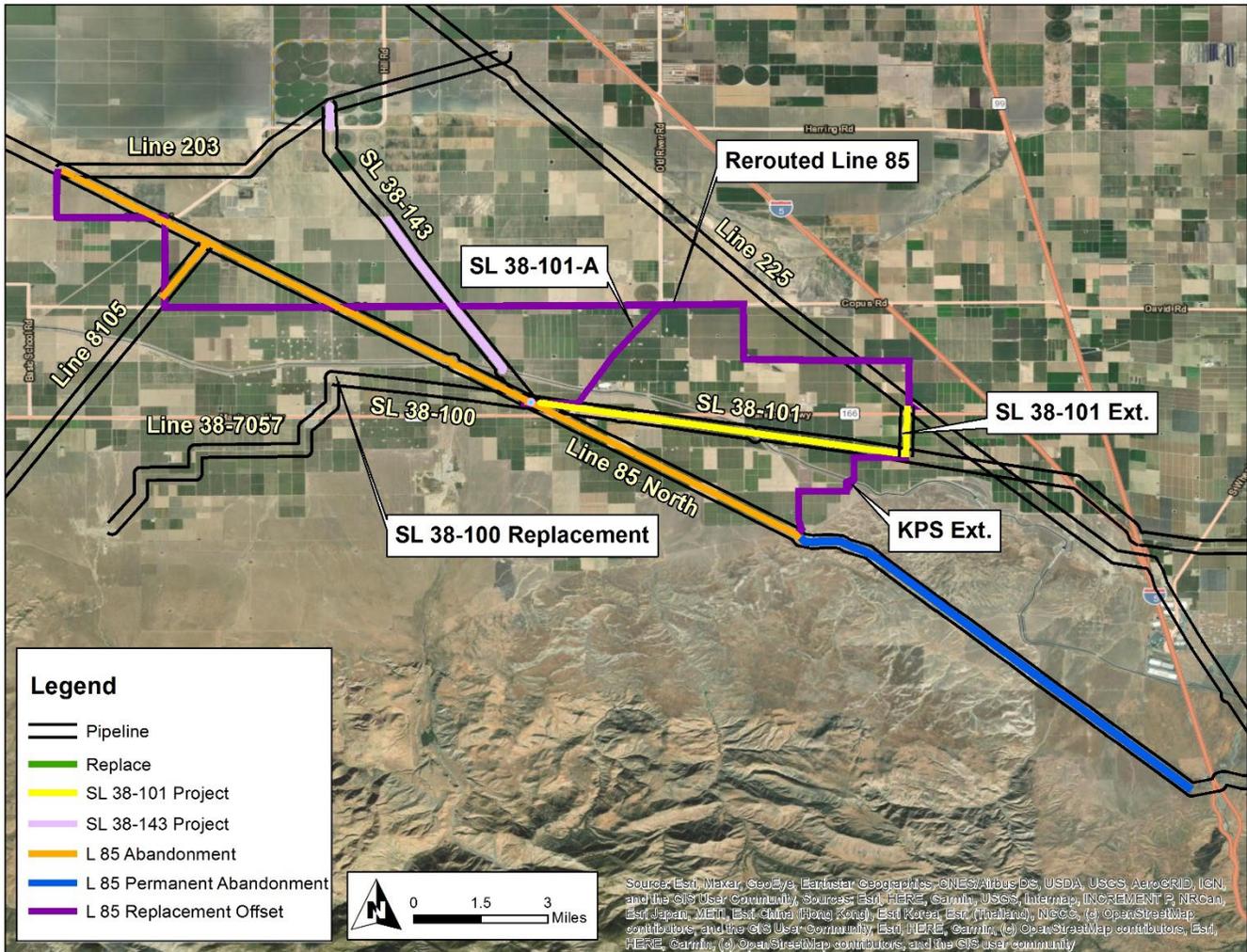
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input, considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 359 days.

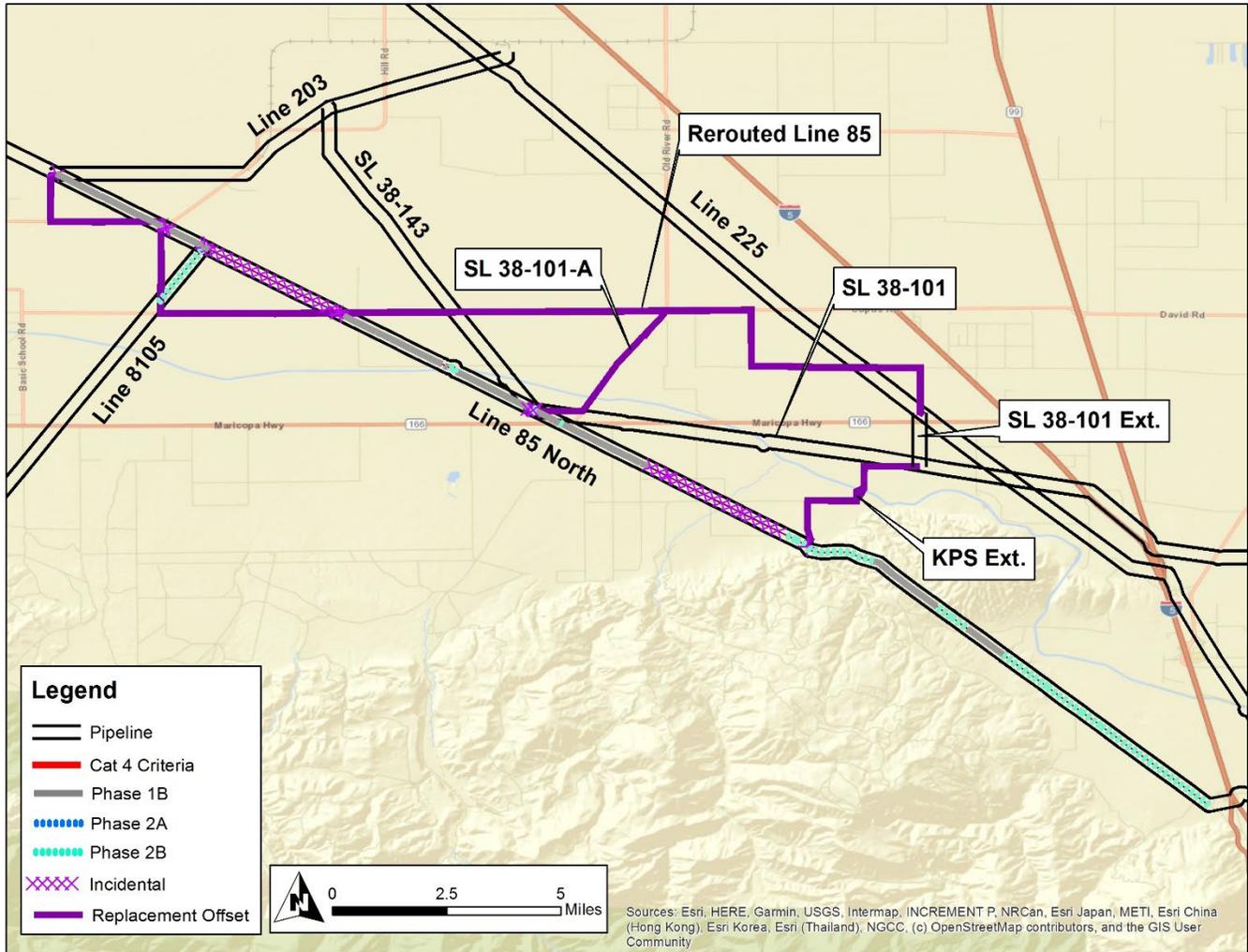
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

Figure 1: Overview Map for Line 85 North Phase 1B Lake Station to Grapevine Road Replacement and Abandonment Project and Supply Line 38-101 Section 3 Phase 1B Derate Project



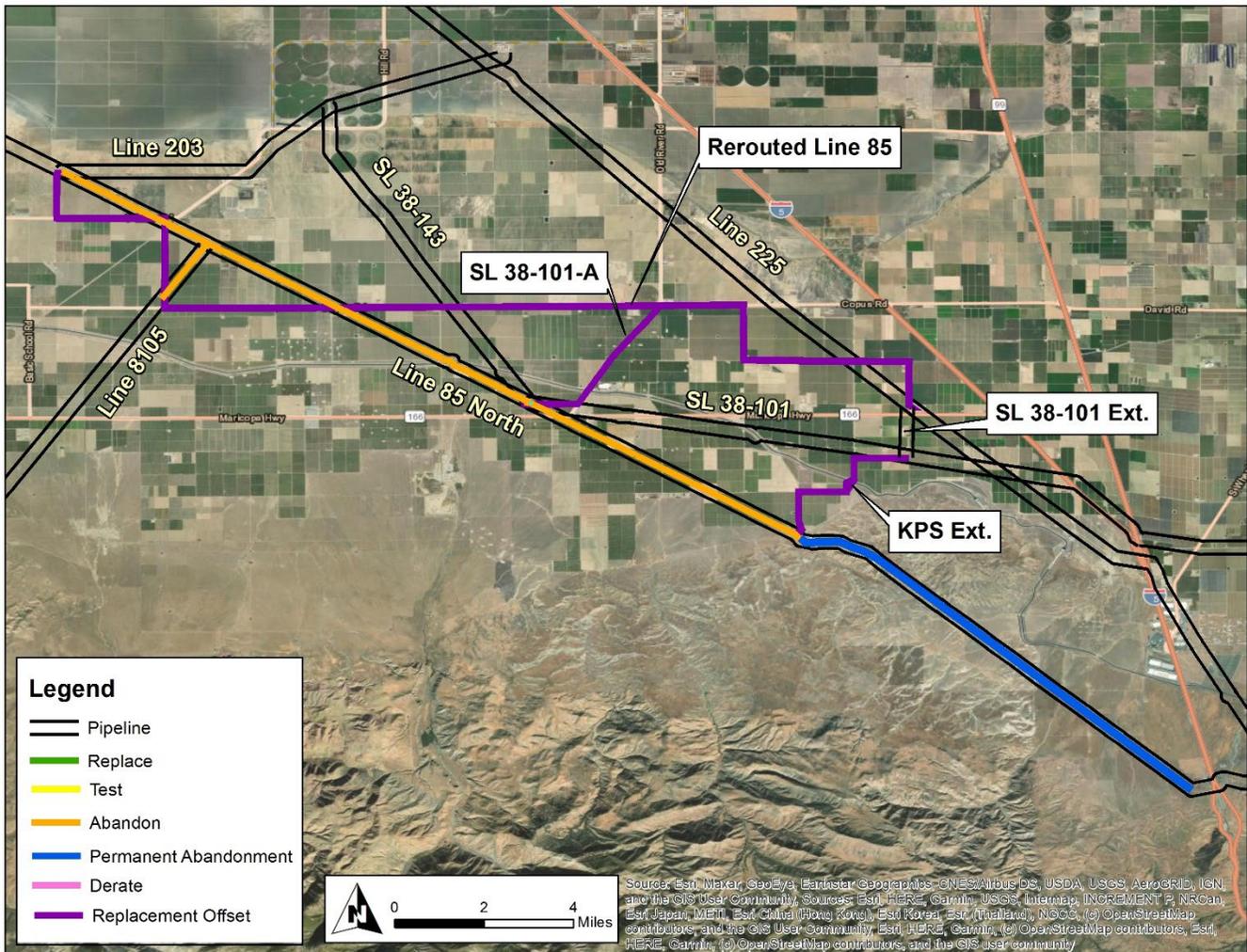
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

Figure 2: Overview Map for Line 85 North Phase 1B Lake Station to Grapevine Road Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

Figure 3: Satellite Map for Line 85 North Phase 1B Lake Station to Grapevine Road Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 1B	11.710
PHASE 2A	0.000
PHASE 2B	9.188
INCIDENTAL	5.995
REPLACEMENT OFFSET	3.150
TOTAL MILEAGE	30.044

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$28,696,138	\$0	\$0	\$28,696,138
TOTAL DIRECT COSTS	\$0	\$0	\$28,696,138	\$0	\$0	\$28,696,138

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 21.117 miles of [REDACTED] pipe.
- 3.788 miles of [REDACTED] pipe.
- Four [REDACTED] ball valves.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$79,207,792	\$0	\$79,207,792
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$79,207,792	\$0	\$79,207,792

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- Two crews will be utilized for the installation of the mainline pipeline.
- One crew will be utilized for all trenchless crossings with an additional crew to simultaneously install the lateral piping.
- One 650 ton crane will be utilized for pipe removal crew to execute the planned removal of the existing California Aqueduct spans.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. One sack slurry for all paved areas to the bottom of the base pave zone.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers for management and inspection personnel at each of the two main laydown yards.
 - One office trailer for management and inspection personnel at the central laydown yard.
 - One generator at the main laydown yards.
 - Office equipment, light plants, toilets, equipment containers and associated equipment and supplies for the duration of 15 months.
- **Site Preparation**
 - Three main laydown yards, two on either end of pipeline and one central.
 - Three additional small laydown yards for equipment and supplies are distributed along the right of way (ROW).
- **Site Management / Best Management Practices (BMPs)**
 - Laydown yard and drain protection, straw wattles, visqueen for spoil piles, and sandbags.
 - 24 rumble plates at road crossing sand access points to laydown yards.
 - Environmental fencing on both sides of ROW for all farmland crossings and open country areas.
- **Material Handling**
 - 320 loads of material will be unloaded at laydown yard and transported as needed.
 - Majority of mainline pipe to be received in quadruple random lengths (QRL) at 80 ft joints.
- **Traffic Control**
 - Traffic control plans have not been completed and were not available at the time of estimate.
- **Utility Locates**
 - Assumes a utility crossing at an average of every 500 ft.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

- **Pipeline Installation**
 - All plates recessed for defined roadwork.
 - Base pave is assumed at 6-inch thickness.

- **Cathodic Protection**
 - Installation of 37 test stations.
 - Installation of cathodic protection every 3,000 Lineal Feet (LF).
 - 17 Solid State Decouplers (SSD).

- **Fiber Optic**
 - Assumes the installation of approximately 21.088 miles of fiber optic.

- **Pipeline Markers**
 - Assumes the installation of approximately 114 pipeline markers every 1,000 LF.

- **Isolate Existing Pipeline**
 - Installation of two [REDACTED] pressure control fittings (PCFs).
 - Mainline isolation will be completed using existing MLVs.
 - Gas capture will be utilized.
 - Two 16 hour shifts to support pipeline isolation.

- **Hydrotest / Pressure Test Pipeline**
 - Preparation and installation of a lake tank.
 - Pipeline to be tested in two separate segments.
 - One day to fill each segment.
 - One 12 hour day to test each segment.
 - Two days to drain and dry each segment.

- **Tie-In Pipeline**
 - Two days to prepare for tie-in.
 - Two 24 hour tie-in days.
 - 15 days to season pipeline.

- **Retire / Abandon Existing Pipeline**
 - Assumes the blowdown and gas capture of approximately 25 miles of existing pipeline.
 - Assumes the utilization of two nitrogen trucks to purge existing line.

- **Site Restoration**
 - Grind and Cap of approximately 97,872 square feet (SF) of pavement.
 - Approximately 1.545 miles of 4-inch wide line stripping.
 - Removal of approximately 1.515 miles of temporary fencing.
 - Removal of 900 tons of sand padding from lake tank storage area.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

- Removal of 600 tons of rock from laydown yards.
- Removal of environmental fencing and BMPs.

- **Site Demobilization**
 - One demobilization of equipment and six laydown yards.
 - Excess piping and materials to be loaded and transported offsite.

- **Field Overhead**
 - One Full-Time Project Manager.
 - One Full-Time Superintendent.
 - One Full-Time General Foreman.
 - One Full-Time Cost Controller.
 - Two Full-Time Safety Supervisors.
 - One Full-Time Timekeeper.
 - Three security personnel during non-working hours.
 - Full-Time Yard Crew during working hours to support laydown areas.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$44,128	\$58,008	\$10,673,477	\$18,272,528	\$0	\$29,048,141
TOTAL DIRECT COSTS	\$44,128	\$58,008	\$10,673,477	\$18,272,528	\$0	\$29,048,141

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

- Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
- **Preconstruction Surveys**
 - Preliminary survey and base mapping.
 - Utility survey and potholing.
 - ROW and Construction staking.
 - Laydown yard staking.
 - Utility detection and markout.
 - Construction as-builting
 - Completion packages and GIS system updates.
 - Plat and legal description development.
- **Abatement**
 - 47 days for abatement of ACMs.
 - Additional abatement and IH expenses for equipment and subsistence.
 - Assumes abatement at cut points of 28 LF.
- **Water Treatment and Hazardous Materials**
 - Hydrostatic test water, estimated at 1,691,675 gallons, to be acquired by the pipeline contractor.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes (e.g. lead paint waste, pigs used to dry the pipeline post hydrotest, asbestos containing material, etc.).
- **Permit Fees**
 - SWPPP fee.
 - Dust Control Plan Fee.
 - CDFW Sreambed Alteration Agreement.
 - USACE 404 Nationwide Permit 12.
 - CVRWQCB 401 Certification.
 - CDFW Section 2081 ITP.
 - USFWS Section 10 HCP.
 - Bureau of Land Management (BLM) Standard Form 299 Fee.
- **Mitigation Fees**
 - Monitoring and reporting of onsite restoration of undeveloped land Wind Wolves Preserve.
 - Compensatory Mitigation – assumes one to one mitigation ratio that would occur through purchase of credits at CDFW approved mitigation banks.
 - Monitoring and reporting of onsite restoration for undeveloped BLM Land.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$467,207	\$0	\$0	\$467,207
TOTAL DIRECT COSTS	\$0	\$0	\$467,207	\$0	\$0	\$467,207

Assumptions

In generating the cost estimate, the following items were considered:

- Encroachment permit and traffic control plan costs.
- Caltrans Permits.
- Kern County Permit.
- Kern County Inspector.
- Department of Water Resources Inspector.

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$101,911	\$15,014,818	\$1,868,360	\$0	\$16,985,088
TOTAL DIRECT COSTS	\$0	\$101,911	\$15,014,818	\$1,868,360	\$0	\$16,985,088

Assumptions

In generating for the total estimated cost for Line 85 North the following items were considered:

- **Labor**
 - One contract land agent.
- **Temporary Right of Entry**
 - Land acquisition costs.
- **Crops**
 - Crop loss for impacted areas along pipeline route.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 85 NORTH PHASE 1B LAKE STATION TO GRAPEVINE ROAD REPLACEMENT PROJECT

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$104,013	\$134,681	\$2,505,068	\$2,267,815	\$180,215	\$5,191,790
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$104,013	\$134,681	\$2,505,068	\$2,267,815	\$180,215	\$5,191,790

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$415,653	\$95,752	\$2,763,421	\$12,762,636	\$631,757	\$16,669,219
TOTAL DIRECT COSTS	\$415,653	\$95,752	\$2,763,421	\$12,762,636	\$631,757	\$16,669,219

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 159 PHASE 2A REPLACEMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1¹	Stage 2²	Stage 3³	Stage 4⁴	Stage 5⁵	Total
DIRECT LABOR	\$5,305	\$19,772	\$25,077	\$68,480	\$28,935	\$147,568
DIRECT NON-LABOR	\$19,337	\$59,510	\$131,388	\$720,571	\$37,919	\$968,725
TOTAL DIRECT CAPITAL COSTS	\$24,642	\$79,282	\$156,465	\$789,050	\$66,854	\$1,116,293

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total⁷
DIRECT LABOR	\$5,305	\$19,772	\$25,077	\$68,480	\$28,935	\$147,568
DIRECT NON-LABOR	\$19,337	\$59,510	\$131,388	\$720,571	\$37,919	\$968,725
TOTAL COSTS	\$24,642	\$79,282	\$156,465	\$789,050	\$66,854	\$1,116,293

Project Scope

The Line 159 Phase 2A Replacement Project will replace approximately 670 feet of [REDACTED] pipe within the Goleta Storage Facility. The Project will coordinate with planned maintenance activities in order to reduce any impacts to storage facility operations. A nitrogen test will be performed for the 670 feet of new [REDACTED] pipe.

Alternatives Considered

Segments of less than 1,000 feet are identified for replacement under the approved PSEP Decision Tree because, for short segments of pipe, the logistical costs associated with pressure testing (for example, permitting, construction, water handling, and service disruptions for a non-looped system) can approach or exceed the cost of replacement. In such circumstances, replacement affords a more cost-effective approach to achieving compliance with D.11-06-017 while providing equal safety enhancement benefits. Moreover, installation of the new segment can usually be performed while the existing service is maintained to customers, thereby avoiding service disruptions that may otherwise occur during pressure testing.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 159 PHASE 2A REPLACEMENT PROJECT

Forecast Methodology

SoCalGas developed a Class 4 Estimate⁸ to implement the above scope of work. The Class 4 estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

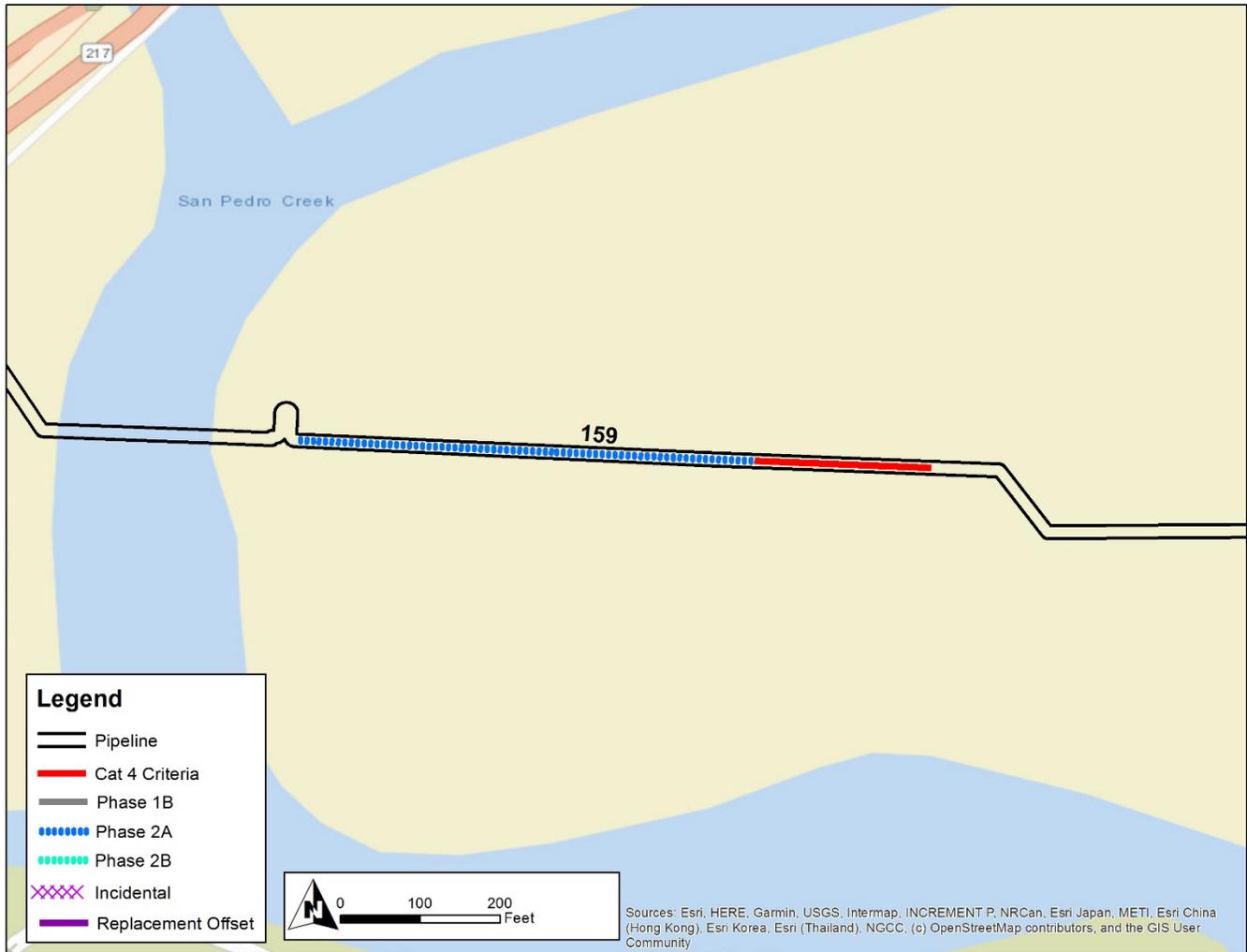
The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 23 days.

⁸According to AACE International Recommended Practice No. 97R-18, a Class 4 estimate is based on 1-15% project definition and typically results in final project costs that are within +50% to -30% of the estimated cost. In contrast, Class 3 estimates are based on 10-40% project definition and typically result in final project costs that are within +30% to -20% of the estimated amount.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 159 PHASE 2A REPLACEMENT PROJECT

Figure 1: Overview Map for Line 159 Phase 2A Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 159 PHASE 2A REPLACEMENT PROJECT

Figure 2: Satellite Map for Line 159 Phase 2A Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 159 PHASE 2A REPLACEMENT PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
COORDINATED ⁹	0.036
PHASE 2A	0.091
PHASE 2B	0.000
INCIDENTAL	0.000
TOTAL MILEAGE	0.127

The direct costs for each area are summarized below.

Table 4: Material

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$40,559	\$0	\$0	\$40,559
TOTAL DIRECT COSTS	\$0	\$0	\$40,559	\$0	\$0	\$40,559

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 700 feet of [REDACTED] pipe.

Table 5: Construction

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$538,070
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$538,070

Assumptions

Construction costs were developed using an estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

⁹ Lacks documentation of a post-construction strength test in a Class 3 or 4 HCA.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 159 PHASE 2A REPLACEMENT PROJECT

The major components in this category include:

- Site Mobilization / Site Facilities.
- Site Preparation.
- Site Management / Best Management Practices (BMPs).
- Material Handling.
- Isolate Existing Pipeline.
- Pressure Test Pipeline.
- Tie-In Pipeline.
- Site Restoration.

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- No excavation required, existing pipe above ground.
- Pressure test to be nitrogen.
- Gas will be gas captured or cross compressed.
- All welds to be x-rayed.
- Project support costs based on historical factors from past project history.
- Contractor will restore laydown and work sites to original condition.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$5,786	\$11,573	\$28,931	\$69,435	\$0	\$115,726
TOTAL DIRECT COSTS	\$5,786	\$11,573	\$28,931	\$69,435	\$0	\$115,726

Assumptions

Environmental costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 159 PHASE 2A REPLACEMENT PROJECT

The major components in this category include:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

In the development of the construction estimate, the following assumptions and clarifications have been made:

- Two full time biological monitors.

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$2,893	\$8,679	\$0	\$0	\$11,573
TOTAL DIRECT COSTS	\$0	\$2,893	\$8,679	\$0	\$0	\$11,573

Assumptions

Permit costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 8: Land & Right-of-Way Acquisition

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$1,157	\$2,315	\$8,101	\$0	\$0	\$11,573
TOTAL DIRECT COSTS	\$1,157	\$2,315	\$8,101	\$0	\$0	\$11,573

Assumptions

Land & Right-of-Way costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 159 PHASE 2A REPLACEMENT PROJECT

The major components in this category include:

- Contract Labor.
- Legal Services.
- Temporary Right of Entry.
- New Easement Costs.

Table 9: Company Labor

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$5,305	\$19,772	\$25,077	\$68,480	\$28,935	\$147,568
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$5,305	\$19,772	\$25,077	\$68,480	\$28,935	\$147,568

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union costs were developed based on top down estimating approach consistent with an ACEC Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed based on top down estimating approach consistent with an ACEC Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 159 PHASE 2A REPLACEMENT PROJECT

Table 10: Other Costs

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$12,394	\$42,730	\$45,118	\$113,065	\$37,919	\$251,225
TOTAL DIRECT COSTS	\$12,394	\$42,730	\$45,118	\$113,065	\$37,919	\$251,225

Assumptions

Other Costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$78,344	\$78,344	\$174,465	\$88,109	\$419,263
DIRECT NON-LABOR	\$158,338	\$837,985	\$1,264,842	\$3,893,932	\$263,142	\$6,418,239
TOTAL DIRECT CAPITAL COSTS	\$158,338	\$916,329	\$1,343,186	\$4,068,397	\$351,252	\$6,837,502

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$0	\$78,344	\$78,344	\$174,465	\$88,109	\$419,263
DIRECT NON-LABOR	\$158,338	\$837,985	\$1,264,842	\$3,893,932	\$263,142	\$6,418,239
TOTAL COSTS	\$158,338	\$916,329	\$1,343,186	\$4,068,397	\$351,252	\$6,837,502

Project Description

The Line 225 North Coles Levee Phase 2A Replacement Project will replace approximately 343 feet of [REDACTED], [REDACTED] and [REDACTED] pipeline. The Line 225 North Coles Levee Phase 2A Replacement Project is located at the North Coles Levee Station, [REDACTED] of [REDACTED] and [REDACTED], in unincorporated Kern County. The existing [REDACTED], [REDACTED], and [REDACTED] pipe will be replaced with new [REDACTED], [REDACTED], and [REDACTED] pipe, respectively. Eight valves including one [REDACTED] valve, six [REDACTED] valves, and one [REDACTED] valve will be replaced. Due to capacity constraints, an above ground bypass will be installed to maintain Line 225 during the execution of the work. Two stopple fittings will be installed, one [REDACTED] stopple on Line 225 and one [REDACTED] stopple on Line 293. The replacement will be executed in one mobilization.

Alternatives Considered

Line 225 provides critical system capacity to meet the operational needs of the transmission system. Abandoning this line would create a substantial loss in capacity. Derating the pipeline would also negatively impact the capacity of the system and is not a viable option.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

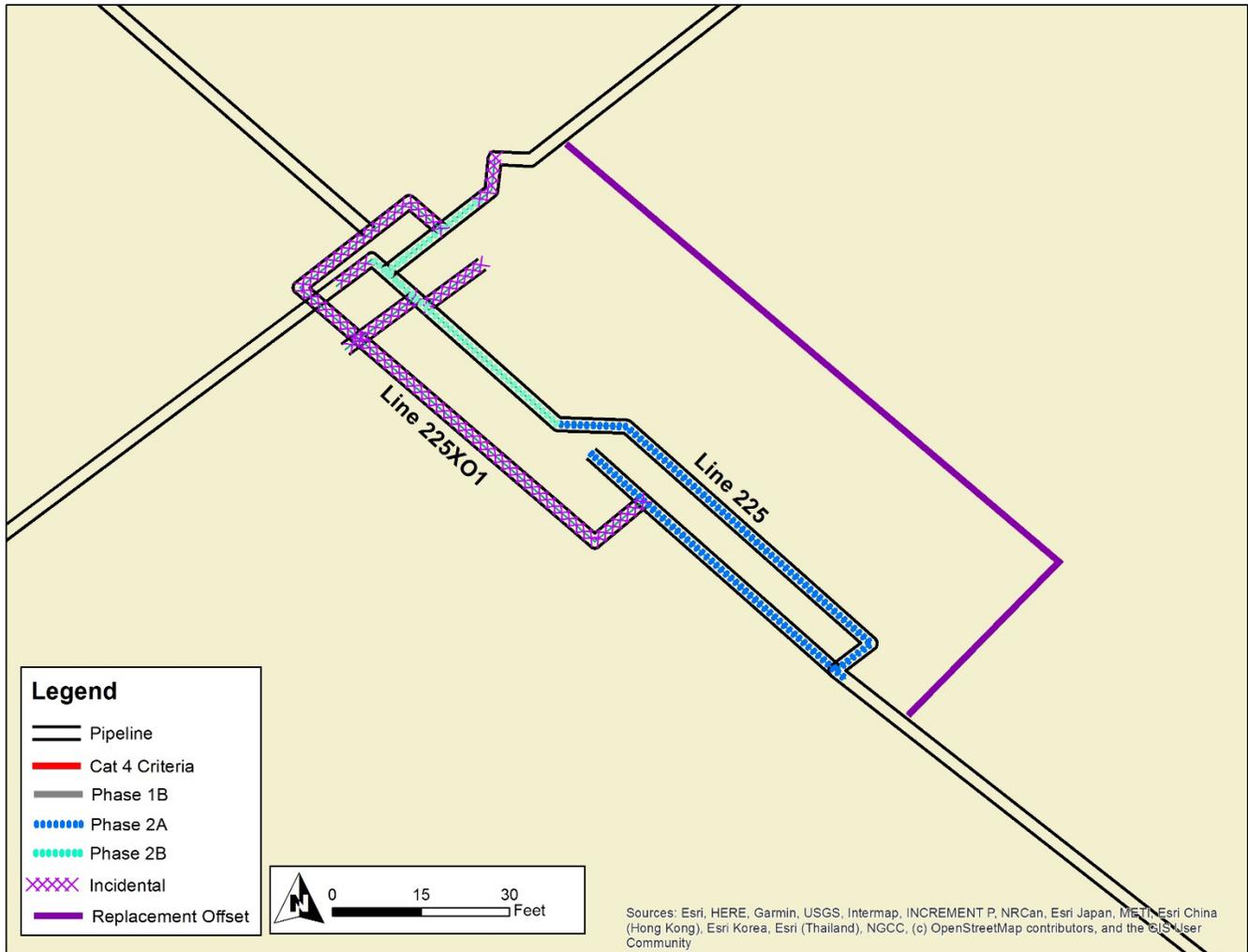
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 62 days.

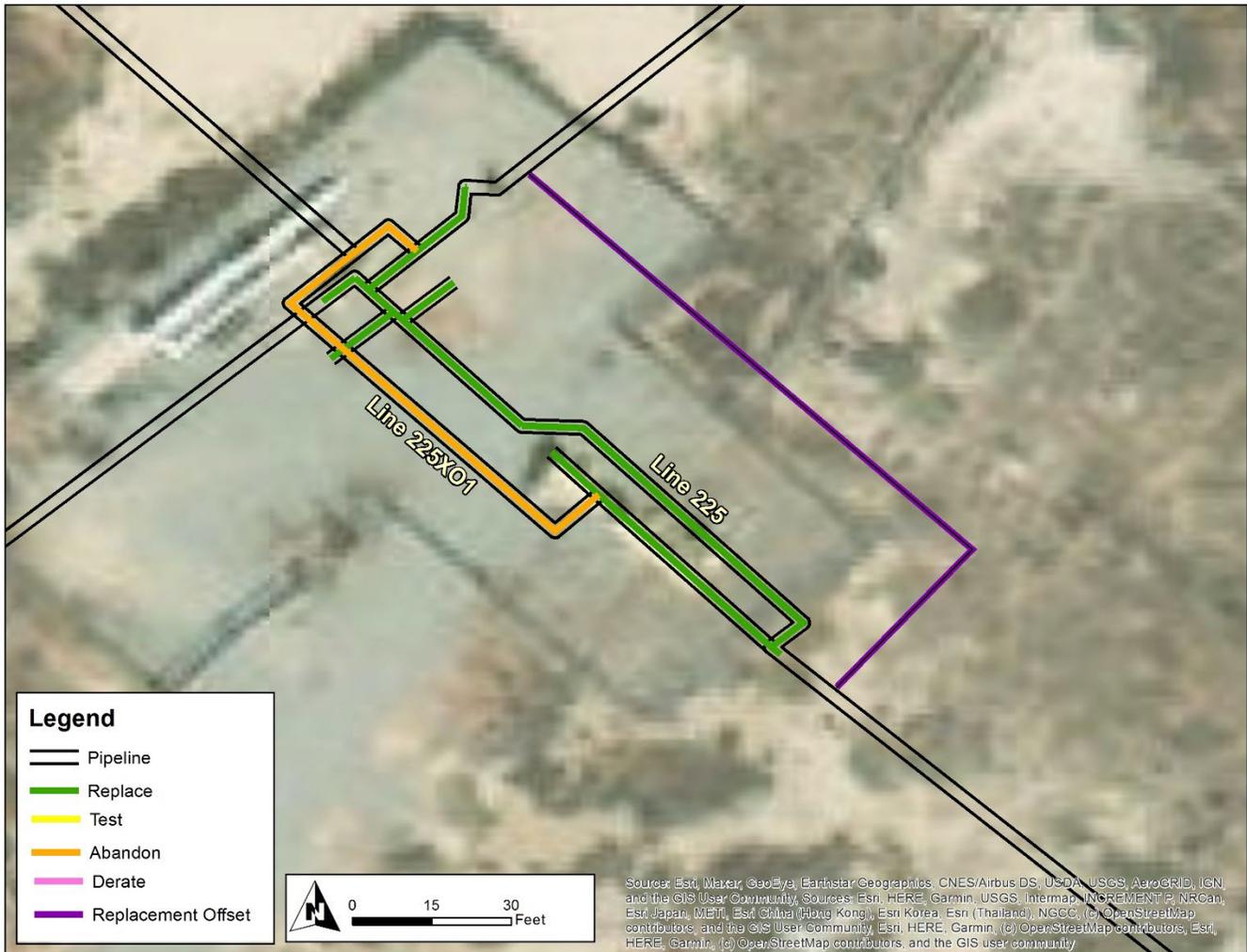
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

Figure 1: Overview Map for Line 225 North Coles Levee Phase 2A Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

Figure 2: Satellite Map for Line 225 North Coles Levee Phase 2A Replacement Project



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LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 2A	0.033
PHASE 2B	0.010
INCIDENTAL	0.021
REPLACEMENT OFFSET	0.001
TOTAL MILEAGE	0.066

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$423,127	\$830,151	\$0	\$0	\$1,253,279
TOTAL DIRECT COSTS	\$0	\$423,127	\$830,151	\$0	\$0	\$1,253,279

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 160 feet of [REDACTED] pipe.
- One [REDACTED] ball valve.
- Six [REDACTED] ball valves.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$22,698	\$0	\$0	\$3,262,108	\$0	\$3,284,806
TOTAL DIRECT COSTS	\$22,698	\$0	\$0	\$3,262,108	\$0	\$3,284,806

Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- All materials will be received at the laydown yard.

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LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

- Mechanical excavation will be authorized up to within two foot of the existing pipeline. Hand excavation will be required within the two foot zone.
- All excavations will be backfilled with native soil.
- This project assumes one stopple to be installed, opposite end of the pipeline will utilize a recently installed stopple fitting for purposes of isolation.
- Presumes no bypass piping is required.
- A single final tie-in will be performed.
- Assuming potable water to be purchased for hydrotesting.
- Hydrotest water will be hauled off and disposed.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - One office trailer will be placed at the laydown yard.
 - Site facility costs cover a three month duration.
- **Site Preparation**
 - 450 linear feet (LF) of Temporary Fencing to delineate the laydown yard.
 - 100 tons of crushed rock for laydown yard preparations.
- **Site Management / Best Management Practices (BMPs)**
 - 30 25 ft fiber rolls.
 - 200 sandbags.
 - 500 square yards (SY) non-woven geotextile.
 - 500 wooden stakes and 500 SY of poly sheeting for silt fencing will be procured and installed for BMP measures.
 - BMP install crew to install and maintain BMP measures in one shift.
- **Material Handling**
 - Five loads of material will be unloaded at laydown yard and transported as needed.
- **Utility Locates**
 - Utility locates to pothole existing piping. Includes eight potholes within two shifts with a utility locate crew with a vac truck.
- **Pipeline Installation**
 - Material procurement includes 84 gallons of epoxy paint, 8,325 lbs of mixed media, and 317 cubic yards (CY) of zero sack.
 - Shoring rentals include four shields for a two month rental duration.
 - Excavation presumes 842 CY relating to the station scope of work to be completed within 25 shifts with a hand excavation crew.

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LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

- Assumes 240 LF of pipeline abatement support in three shifts with a coating crew, including a sandblasting pot.
 - Fabrication of 56 welds of [REDACTED], 12 welds of [REDACTED], four welds of [REDACTED], 34 welds of [REDACTED], and one weld of [REDACTED].
 - Fabrication of six test caps in 22 shifts with a fabrication crew, includes a 60 ton crane.
 - Assumes install of one concrete support for the blowoff.
 - Coating requirements will be completed in 21 shifts with a coating crew.
 - Eight shifts with a backfill crew to backfill 774 CY relating to the station scope of work and stopple location.
 - 475 tons of mixed debris disposal.
- **Cathodic Protection**
 - Installation of two insulating joints.
- **Isolate Existing Pipeline**
 - Includes excavation of 45 CY related to the stopple, abatement of approximately 10 LF of pipeline, and install support of one stopple.
 - Support of the two line stoppings will be provided in two shifts with a fabrication crew.
 - Two completion plugs will be installed within one shift with the aforementioned fabrication crew.
 - One shift with a tie-in crew to cut out, cap, and isolate the two sections.
- **Pressure Test Pipeline**
 - Pretest and installation of the four test heads presumed to occur in two shifts with a fabrication crew.
 - 100 LF of hard piping will be installed in one shift with the aforementioned fabrication crew.
 - Three shifts with a tie-in is assumed to fill, test, dewater, and dry 145 LF of pipeline.
 - 200 LF of test headers and hard piping will be removed.
- **Tie-In Pipeline**
 - Assuming one tie-in will occur at either end of the project and will be performed as a single hot tie-in during a 24 hour period with a tie-in crew.
 - Five coat tie-ins is included within two shifts with a coating crew.
 - Backfill of 619 CY in six shifts with a backfill crew is presumed.
- **Retire / Abandon Existing Pipeline**
 - Two shifts with a coating crew to support abatement of 17 cut points of varying diameters ranging from [REDACTED] to [REDACTED].
 - Nine cut and removal of 110 LF of [REDACTED], one cut and removal of 20 LF of [REDACTED], and seven cut and removal of 155 LF of [REDACTED].
 - Assumes install of two abandonment plates on existing [REDACTED] Line 225.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

- **Site Restoration**
 - Material procurement includes 50 tons of crushed gravel.
 - One shift with a sitework crew to install gravel at the station.
 - Includes 60 LF and 200 SF of concrete curb and sidewalk to be installed, respectively.
 - All work site locations will be restored to original condition.
 - Removal of 450 LF of temporary fencing, removal of SWPPP and BMP measures, and final cleanup.

- **Site Demobilization**
 - All site facilities will be demobilized.
 - One load of excess piping will be hauled to SoCalGas designated yard.
 - Crew and equipment will be demobilized.

- **Field Overhead**
 - One Full-Time Superintendent.
 - One Full-Time Safety Personnel.
 - One Full-Time Cost Controller.
 - One Full-Time Timekeeper.
 - One Full-Time Project Manager.
 - One Full-Time Water Truck and Driver.
 - One site security personnel for all non-working hours.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$18,637	\$39,314	\$117,941	\$235,882	\$0	\$411,773
TOTAL DIRECT COSTS	\$18,637	\$39,314	\$117,941	\$235,882	\$0	\$411,773

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.

- **Preconstruction Surveys**
 - Survey support staff for project and site facility layout and as-builts.

- **Construction Monitoring**
 - Biological monitoring only.

- **Abatement**
 - 33 days for abatement of ACMs.

- **Water Treatment and Hazardous Materials**
 - Hydrostatic test water, estimated 10,000 gallons, to be acquired by the contractor.
 - Hydrotest will be with potable water to be disposed at Los Angeles treatment center.
 - Water treatment included.
 - Contaminated Soil Allowance.

- **Permit Fees**
 - Environmental discharge permits, dust control plan, and ITP.

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$3,509	\$10,526	\$0	\$0	\$14,035
TOTAL DIRECT COSTS	\$0	\$3,509	\$10,526	\$0	\$0	\$14,035

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$15,777	\$47,331	\$0	\$0	\$63,108
TOTAL DIRECT COSTS	\$0	\$15,777	\$47,331	\$0	\$0	\$63,108

Assumptions

In generating for the total estimated cost for Line 225 North Coles Levee Phase 2A Replacement Project the following items were considered:

- **Labor**
 - One contract land agent for duration of the project.
- **Permitting Fees**
 - Anticipated cost for all local, state and federal permits.
- **Temporary Right of Entry**
 - Workspace.
 - Laydown yard.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry permits.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$78,344	\$78,344	\$174,465	\$88,109	\$419,263
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$0	\$78,344	\$78,344	\$174,465	\$88,109	\$419,263

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 225 NORTH COLES LEVEE PHASE 2A REPLACEMENT PROJECT

- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$117,003	\$356,259	\$258,892	\$395,942	\$263,142	\$1,391,239
TOTAL DIRECT COSTS	\$117,003	\$356,259	\$258,892	\$395,942	\$263,142	\$1,391,239

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The 225 North Coles Levee Phase 2A Replacement Project includes 175 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$48,359. The final value of the 225 North Coles Levee Phase 2A Replacement Project cost disallowance will be adjusted once the project is placed in service.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$1,485	\$78,349	\$78,349	\$174,142	\$91,215	\$423,540
DIRECT NON-LABOR	\$4,748	\$372,580	\$431,861	\$2,470,666	\$201,762	\$3,481,617
TOTAL Direct CAPITAL COSTS	\$6,233	\$450,929	\$510,210	\$2,644,808	\$292,977	\$3,905,158

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$1,485	\$78,349	\$78,349	\$174,142	\$91,215	\$423,540
DIRECT NON-LABOR	\$4,748	\$372,580	\$431,861	\$2,470,666	\$201,762	\$3,481,617
TOTAL COSTS	\$6,233	\$450,929	\$510,210	\$2,644,808	\$292,977	\$3,905,158

Project Description

The Line 235 East Phase 2A Kelso Station Replacement project will replace approximately 0.052 miles of [REDACTED] pipeline and replace one mainline valve (MLV). The Line 235 East Phase 2A Kelso Replacement Project is located at the Kelso Compressor Station within San Bernardino County. The replacement will be completed in one mobilization and one demobilization.

Alternatives Considered

Line 235 East is critical in meeting transmission system operational needs. Abandoning this line would create a substantial loss in capacity to the Northern Transmission Zone since gas moves from the receipt points at [REDACTED] and [REDACTED] towards [REDACTED] via Line 235. The gas supply from Adelanto supports the entire SoCalGas Transmission System, which serves the Los Angeles Basin Loop from one or more of the City Gates. Derating the pipeline would negatively impact the capacity of the system and is not a viable option.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

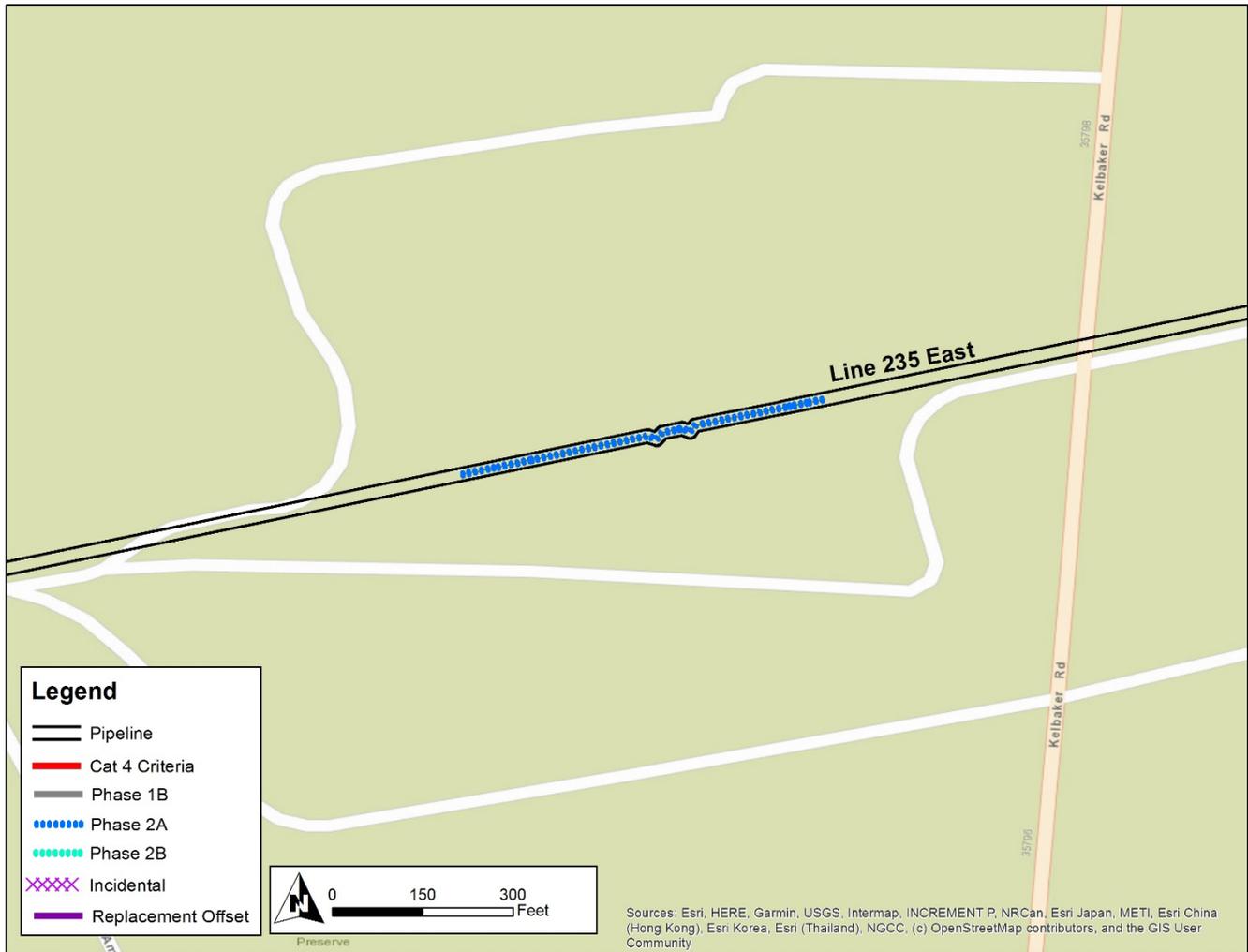
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 50 days.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

Figure 1: Overview Map for Line 235 East Phase 2A Kelso Station Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

Figure 2: Satellite Map for Line 235 East Phase 2A Kelso Station Replacement Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 2A	0.099
PHASE 2B	0.000
INCIDENTAL	0.000
TOTAL MILEAGE	0.099

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$150,922	\$186,575	\$0	\$0	\$337,497
TOTAL DIRECT COSTS	\$0	\$150,922	\$186,575	\$0	\$0	\$337,497

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 280 feet of [REDACTED] pipe.
- Four [REDACTED] ball valves.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$1,944,050	\$0	\$1,944,050
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$1,944,050	\$0	\$1,944,050

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- Access to work site shall be continuous once project commences.
- No environmental protection fencing will be required within the compressor station.
- One laydown yard located within the compressor station.
- All piping will be shaded with zero sack slurry. Remainder of trench zone will receive native soils material.
- Excess spoils will be hauled off and disposed of nearest approved location or landfill.
- One construction crew.
- Tie-ins will be performed during a 24 hour continuous shift.
- New replacement pipe will be water filled, hydrotested, drained and dried above ground prior to tie-in.
- Laydown yard and work areas will be restored to original condition at the end of the project.
- Restoration of grade along ROW will be performed at the end of the project.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers for management and inspection personnel.
 - Six portable toilets, two wash stations, and one storage container for a three month duration.
- **Site Preparation**
 - 300 linear feet (LF) of temporary fencing.
- **Site Management / Best Management Practices (BMPs)**
 - Fiber rolls, sand bags, reinforced poly sheeting, and silt fencing will be procured and installed for BMP measures.
- **Material Handling**
 - Two loads of material will be unloaded at laydown yard and transported as needed.
- **Pipeline Installation**
 - Demolition, haul off, and disposal fees of existing concrete vault.
 - Excavation and exposing of existing pipeline will be through soft excavation means with the assistance of mechanical means for lifting, loading, and stockpiling.
 - Two open cuts for a total of 274 LF of exposed pipeline.
 - Fabrication of three pipe replacement sections.
 - Zero sack slurry for bedding and shading materials cost.
 - Backfill material is native soils.
 - Two days of soils density testing.
 - Excess spoils haul off and disposal fees.

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LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

- **Mainline Valve**
 - Fabrication and installation of new [REDACTED] MLV.

- **Isolate Existing Pipeline**
 - Two [REDACTED] isolation caps.
 - Cut out and removal of three pipe sections.
 - Installation and removal of isolation caps.
 - Pipeline will be isolated and blown down in conjunction with tie-in activities.
 - Pipeline will not be separately isolated or brought down until new pipeline has been fabricated and tested.

- **Pressure Test Pipeline**
 - Two [REDACTED] test heads.
 - Installation and removal of two test heads.
 - Hard piping is assumed to be less than 200 LF and will be installed from the test head to the water pumps.
 - Tested pipe will be intermittently dried following dewatering.

- **Tie-In Pipeline**
 - 10 hour shift for tie-in preparations.
 - Two pipeline section tie-ins.
 - Two 24 hour continuous shifts.
 - Final backfill includes installation of slurry and native soil backfill materials.
 - Two days of soils density testing.
 - Excess spoils haul off and disposal fees.

- **Retire / Abandon Existing Pipeline**
 - Removal of 290 LF of pipe during isolation.

- **Site Restoration**
 - Final clean up includes the removal of BMPs and temporary fencing.

- **Site Demobilization**
 - Removal of two office trailers, six portable toilets, two wash stations, and one storage container.
 - Loading and return transportation of one load of excess piping materials.
 - Crew and equipment will be demobilized.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

• **Field Overhead**

- One Full-Time Superintendent.
- One Full-Time Safety Supervisor.
- One Part-Time Cost Controller.
- One Part-Time Scheduler.
- 10 additional days for Superintendent and Cost Controller for project closeout.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$32,219	\$96,657	\$193,314	\$0	\$322,190
TOTAL DIRECT COSTS	\$0	\$32,219	\$96,657	\$193,314	\$0	\$322,190

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

• **Environmental Labor**

- Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
- Document production for Cultural and Biological report for National Park Service (NPS) streamlined review process.
- Document production for Worker Environmental Awareness Procedure (WEAP) document.
- Document production for Environmental Clearance.
- Document production for hydrostatic test water discharge.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

- **Preconstruction Surveys**
 - One preconstruction survey within 50 ft of project area.
 - Preconstruction wildlife and tortoise survey report.

- **Construction Monitoring**
 - Two desert tortoise monitors for the duration of the project.

- **Project Closeout Activities**
 - Site restoration support, permit reporting, and closeout.

- **Abatement**
 - 12 days for abatement of ACMs.
 - Eight days for hand excavation for test head installation at existing line to cover potential debris fields.

- **Water Treatment and Hazardous Materials**
 - Hydrostatic test water, estimated at 15,000 gallons, to be acquired by the pipeline contractor.
 - Water delivery to site 400 miles round trip.
 - Water will either be hauled off site to an approved facility or reused for dust control and soil compaction.
 - One vacuum truck for four days of hydrotest standby report.
 - Groundwater is not anticipated for this project.
 - Anticipating clean soil excavated and transported to disposal facility by construction contractor.
 - Two drums for accidental spills during construction and two drums for lead paint contaminant.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal for various wastes.

Table 7: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$334	\$299	\$896	\$0	\$0	\$1,529
TOTAL DIRECT COSTS	\$334	\$299	\$896	\$0	\$0	\$1,529

Assumptions

In generating for the total estimated cost for Line 235 East Phase 2A Kelso Station Replacement Project the following items were considered:

- **Labor**
 - One contract land agent.
 - Administrative support, document control specialist and permit coordinator.

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LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

- **Permitting Fees**
 - Mojave National Preserve.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry permits.

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$826	\$2,479	\$0	\$0	\$3,305
TOTAL DIRECT COSTS	\$0	\$826	\$2,479	\$0	\$0	\$3,305

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$1,485	\$78,349	\$78,349	\$174,142	\$91,215	\$423,540
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$1,485	\$78,349	\$78,349	\$174,142	\$91,215	\$423,540

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

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LINE 235 EAST PHASE 2A KELSO STATION REPLACEMENT PROJECT

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$4,414	\$188,314	\$145,254	\$333,302	\$201,762	\$873,047
TOTAL DIRECT COSTS	\$4,414	\$188,314	\$145,254	\$333,302	\$201,762	\$873,047

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Line 235 East Phase 2A Kelso Station Replacement Project includes 104 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$28,609. The final value of the Line 235 East Phase 2A Kelso Station Replacement Project cost disallowance will be adjusted once the project is placed in service.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 1004 PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$4,030	\$61,667	\$61,667	\$103,087	\$72,047	\$302,498
DIRECT NON-LABOR	\$34,660	\$328,641	\$238,655	\$1,431,881	\$174,277	\$2,208,114
TOTAL DIRECT O&M COSTS	\$38,690	\$390,308	\$300,322	\$1,534,968	\$246,325	\$2,510,612

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$29,761	\$29,761	\$48,412	\$34,819	\$142,753
DIRECT NON-LABOR	\$0	\$118,988	\$165,855	\$655,827	\$79,767	\$1,020,438
TOTAL DIRECT CAPITAL COSTS	\$0	\$148,750	\$195,616	\$704,239	\$114,587	\$1,163,191

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$4,030	\$91,428	\$91,428	\$151,499	\$106,866	\$445,251
DIRECT NON-LABOR	\$34,660	\$447,629	\$404,510	\$2,087,708	\$254,045	\$3,228,552
TOTAL COSTS	\$38,690	\$539,057	\$495,938	\$2,239,207	\$360,911	\$3,673,803

Project Description

The Line 1004 Phase 2A Hydrotest Project will hydrotest approximately 0.430 miles of [REDACTED] pipeline. The Line 1004 Phase 2A Hydrotest Project is located west of Taylor Ranch Road within unincorporated Ventura County. The hydrotest will be executed in one hydrotest section and the Project will be completed in one mobilization.

Alternatives Considered

Line 1004 and Line 1005 provide critical redundancy for the coastal communities between Ventura and Santa Barbara, and are required to fully utilize the Goleta Storage Field. To maintain system capacity, these pipelines cannot be abandoned, derated, or reduced in diameter.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 1004 PHASE 2A HYDROTEST PROJECT

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

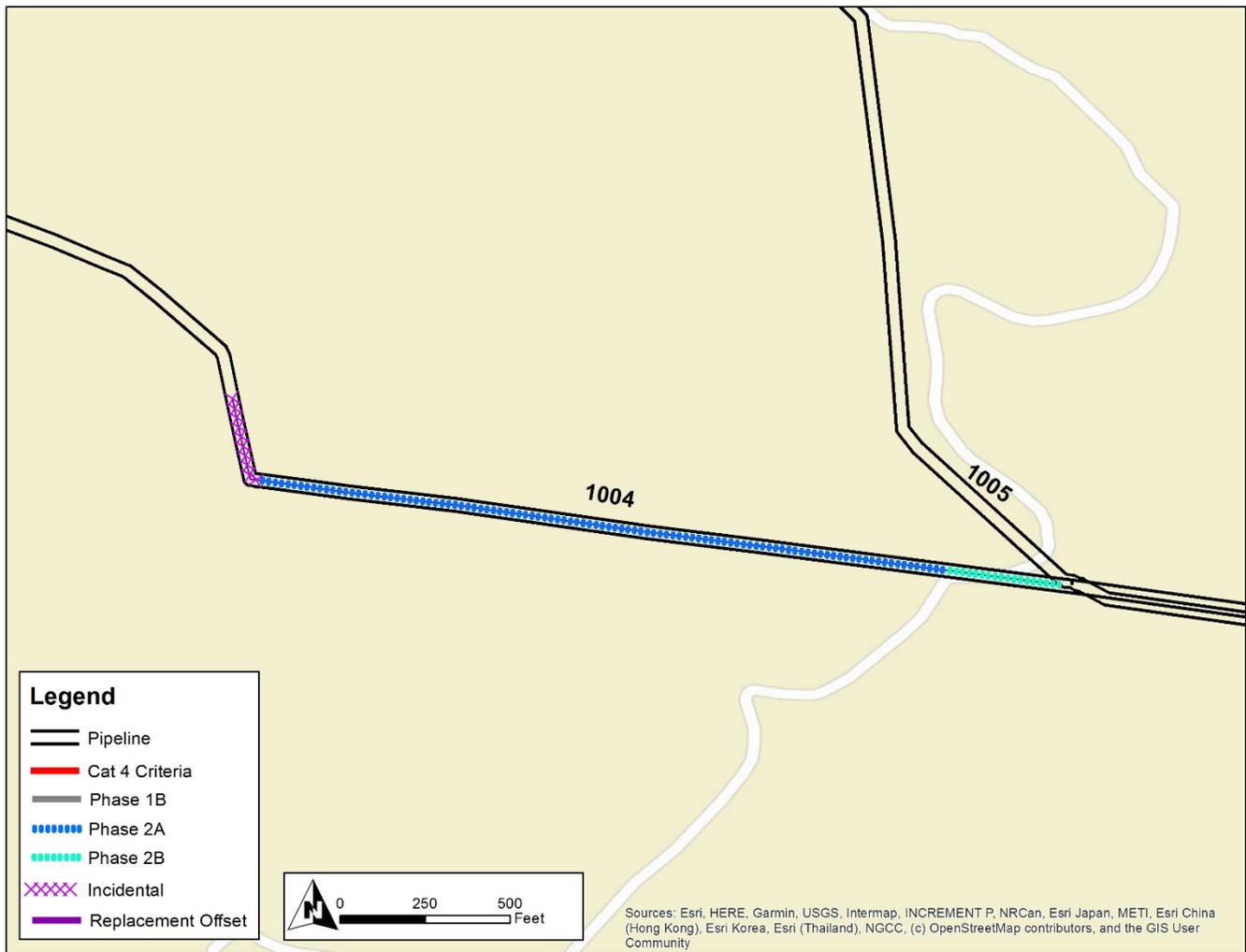
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 34 days.

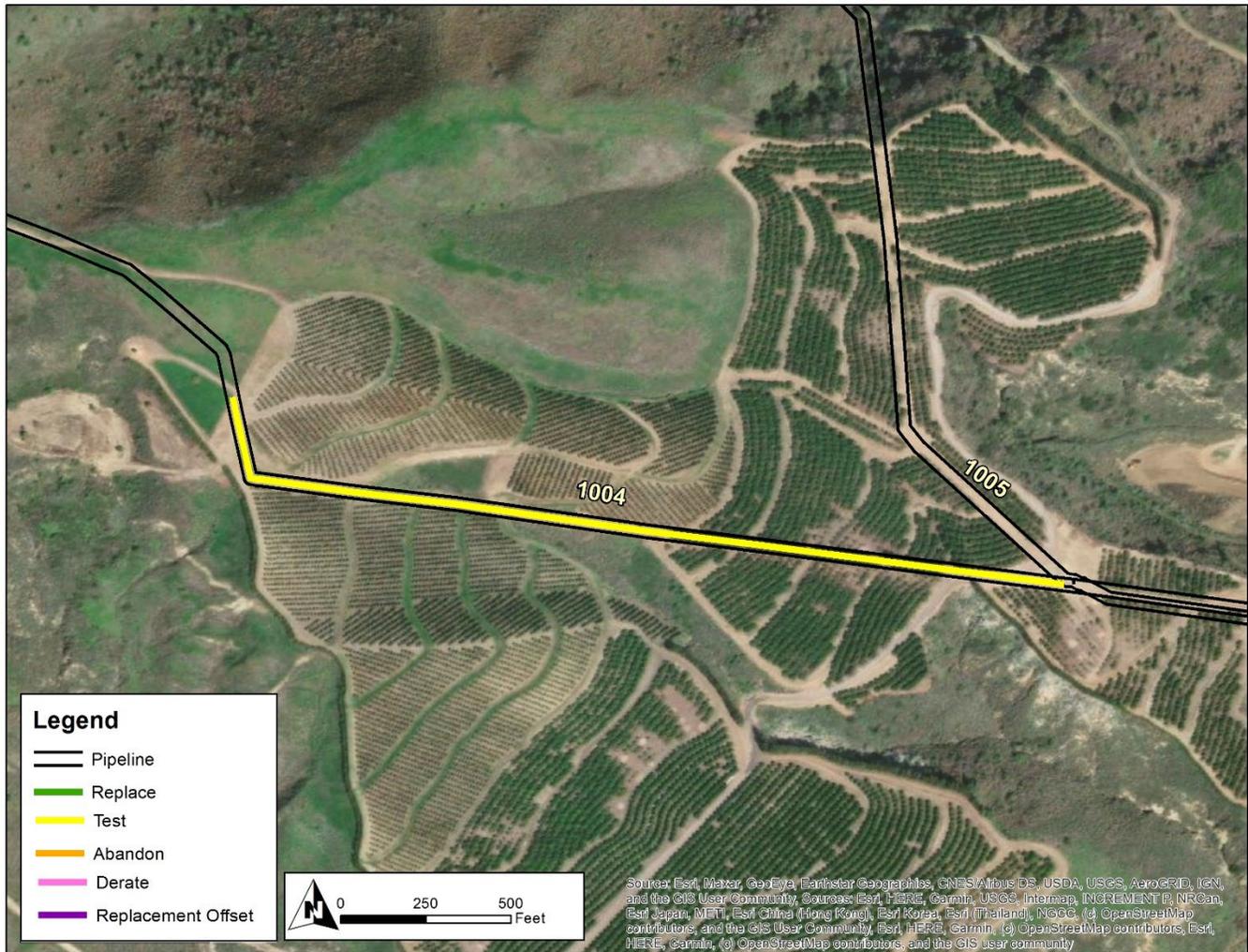
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LINE 1004 PHASE 2A HYDROTEST PROJECT

Figure 1: Overview Map for Line 1004 Phase 2A Hydrotest Project



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LINE 1004 PHASE 2A HYDROTEST PROJECT

Figure 2: Satellite Map for Line 1004 Phase 2A Hydrotest Project



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LINE 1004 PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	0.330
PHASE 2B	0.055
INCIDENTAL	0.045
TOTAL MILEAGE	0.430

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$68,673	\$71,959	\$0	\$0	\$140,631
TOTAL DIRECT COSTS	\$0	\$68,673	\$71,995	\$0	\$0	\$140,631

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 120 feet of [redacted] pipe.
- Four [redacted] ball valves.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$1,642,442	\$0	\$1,642,442
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$1,642,442	\$0	\$1,642,442

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- Two test heads will be fabricated and pretested.
- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two foot zone.

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LINE 1004 PHASE 2A HYDROTEST PROJECT

- Assumed existing pipeline is buried in sandy loam soil type.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.
- This project assumes that the taps within the shut-in section will not require isolation.
- Isolation and final tie-in have been assumed for a 24 hour continuous shift.
- Line seasoning is not required.
- Hydrotest water will be hauled off and disposed.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers will be placed at the laydown yard.
 - Site facility costs cover a two month duration.
 - Crushed rock for the laydown yards.
 - Sand for water tank pad stabilization.
 - 500 Linear Feet (LF) of temporary fill piping will be installed from the water tanks to the first test head.
 - Temporary Fencing to delineate the laydown yard. An additional 1,400 LF of silt fencing for environmental protection.
- **Site Preparation**
 - Two days for clearing to allow site access.
- **Site Management / Best Management Practices (BMPs)**
 - Environmental protective fencing has been included at each of the test breaks.
 - BMP materials for all spoil piles, laydown yards, and work sites.
- **Material Handling**
 - One load of material will be unloaded at laydown yard and transported as needed.
- **Utility Locates**
 - Utility locates to verify coating and pipe integrity prior to installing testing manifolds.
- **Isolate Existing Pipeline**
 - No tap isolations assumed.
 - One continuous 24 hour shift to purge and isolate the pipeline.
- **Pressure Test Pipeline**
 - Two hydrotest breaks sites will be excavated for test head manifold installation.
 - One individual test section will be hydrotested.
 - Test heads will be installed below grade. Costs for vertical offset installation of test heads to an above-ground orientation has not been included.

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LINE 1004 PHASE 2A HYDROTEST PROJECT

- **Tie In Pipeline**
 - One 24 hour hot tie-in will be performed.
 - All tie-in welds will be x-rayed.
- **Site Restoration**
 - All work site locations will be restored to original condition.
- **Site Demobilization**
 - All site facilities will be demobilized.
 - One load of excess piping will be hauled to SoCalGas designated yard.
 - Crew and equipment will be demobilized.
- **Field Overhead**
 - Full-Time Superintendent.
 - Full-Time Safety Coordinator.
 - Full-Time Cost Controller.
 - Full-Time Timekeeper.
 - Part-Time Scheduler.
 - One Full-Time Water Truck and Driver for dust suppression and to support backfill.
 - One site security personnel for all non-working hours.

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$5,974	\$16,063	\$48,189	\$96,378	\$0	\$166,603
TOTAL DIRECT COSTS	\$5,974	\$16,063	\$48,189	\$96,378	\$0	\$166,603

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 1004 PHASE 2A HYDROTEST PROJECT

- **Environmental Labor**
 - Consultant support throughout duration of project planning, permitting, and construction.
 - Document production for Biological Reports.
 - Document production for Worker Environmental Awareness Procedure (WEAP) document.
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Preconstruction Clearance.
 - Document production for Environmental Clearance.
 - Document production for Coastal Zone Clearance Application.

- **Preconstruction Surveys**
 - Preconstruction wildlife survey report.
 - Rare plant survey and topsoil flagging.
 - Cultural survey.

- **Construction Monitoring**
 - Two days full time monitoring and six weekly spot checks.

- **Project Closeout Activities**
 - Site restoration, permit reporting, and closeout.

- **Abatement**
 - 10 days for abatement of ACMs.

- **Water Treatment and Hazardous Materials**
 - Hydrotest water, estimated at 22,000 gallons, to be acquired by the pipeline contractor.
 - Two days water delivery to project site.
 - Disposal of water up to two 200 miles roundtrip plus disposal fee.
 - Hydrotest standby support.
 - Groundwater is not anticipated for this project.
 - Estimated 22 tons of potential contaminated soil requiring up to 200 miles round trip for transport and disposal.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction and disposal of potentially hydrocarbon contaminated soil.
 - Hazardous and non-hazardous waste transport and disposal.

- **Permit Fees**
 - Storm Water Pollution and Prevention Plan (SWPPP) fee.
 - Ventura County Air Pollution Control District (VCAPCD) Asbestos Notification fee.
 - California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt.
 - Assumes formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Sections 7 or 10 of the Endangered Species Act (ESA) or California Endangered Species Act § 2081 will not be required.
 - Ventura County Zoning Clearance for taps in the coastal zone.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 1004 PHASE 2A HYDROTEST PROJECT

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$430	\$1,291	\$0	\$0	\$1,722
TOTAL DIRECT COSTS	\$0	\$430	\$1,291	\$0	\$0	\$1,722

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$3,662	\$11,388	\$34,165	\$0	\$0	\$49,216
TOTAL DIRECT COSTS	\$3,662	\$11,388	\$34,165	\$0	\$0	\$49,216

Assumptions

In generating for the total estimated cost for Line 1004 the following items were considered:

- **Labor**
 - One contract land agent for duration of project.
- **Legal Services**
 - Appraisal Reports.
 - Title Reports.
- **Temporary Right of Entry (TRE)**
 - Workspace.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

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LINE 1004 PHASE 2A HYDROTEST PROJECT

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$4,030	\$91,428	\$91,428	\$151,499	\$106,866	\$445,251
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$4,030	\$91,428	\$91,428	\$151,499	\$106,866	\$445,251

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$25,024	\$351,075	\$248,906	\$348,888	\$254,045	\$1,227,938
TOTAL DIRECT COSTS	\$25,024	\$351,075	\$248,906	\$348,888	\$254,045	\$1,227,938

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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PHASE 2A STATION PIPING REPLACEMENT PROJECTS

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1¹	Stage 2²	Stage 3³	Stage 4⁴	Stage 5⁵	Total
DIRECT LABOR	\$17,663	\$65,836	\$83,499	\$228,018	\$96,346	\$491,362
DIRECT NON-LABOR	\$58,359	\$466,771	\$445,243	\$2,072,970	\$142,157	\$3,185,502
TOTAL DIRECT CAPITAL COSTS	\$76,023	\$532,607	\$528,743	\$2,300,988	\$238,503	\$3,676,864

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total⁷
DIRECT LABOR	\$17,663	\$65,836	\$83,499	\$228,018	\$96,346	\$491,362
DIRECT NON-LABOR	\$58,359	\$466,771	\$445,243	\$2,072,970	\$142,157	\$3,185,502
TOTAL COSTS	\$76,023	\$532,607	\$528,743	\$2,300,988	\$238,503	\$3,676,864

Project Description

The Phase 2A Station Piping Replacement Projects will replace approximately 418 feet (ft) of pipeline, including 317 ft of Phase 2A pipe, at four individual Project sites within existing SoCalGas station facilities.

The Indio Laterals Phase 2A Replacement Project will replace approximately 113 ft of [REDACTED] pipeline in Indio.

The Mesa Cathodic Station Phase 2A Replacement Project will replace approximately 76 ft of [REDACTED] above ground piping in Ventura. The Project will also replace one [REDACTED] check valve and replace eight [REDACTED] valves.

The Newhall - Potrero Phase 2A Replacement Project will replace approximately 179 feet of [REDACTED] and [REDACTED] pipeline in Newhall.

The Brea Canyon Road Phase 2A Replacement Project will replace approximately 60 feet of pipeline of varying diameters in location.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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PHASE 2A STATION PIPING REPLACEMENT PROJECTS

Alternatives Considered

Segments of less than 1,000 feet are identified for replacement under the approved PSEP Decision Tree because, for short segments of pipe, the logistical costs associated with pressure testing (for example, permitting, construction, water handling, and service disruptions for a non-looped system) can approach or exceed the cost of replacement. In such circumstances, replacement affords a more cost-effective approach to achieving compliance with D.11-06-017 while providing equal safety enhancement benefits. Moreover, installation of the new segment can usually be performed while the existing service is maintained to customers, thereby avoiding service disruptions that may otherwise occur during pressure testing.

Forecast Methodology

SoCalGas developed a Class 4 Estimate⁸ to implement the above scope of work. The Class 4 Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 16 days for Indio Laterals Replacement Project, 26 days for Mesa Cathodic Station Phase 2 Replacement Project, 30 days for Newhall - Potrero Phase 2 Replacement Project, and 14 days for Brea Canyon Road Phase 2 Replacement Project.

Table 3: Project Mileage

PHASE	MILEAGE
COORDINATED ⁹	0.002
PHASE 2A	0.077
PHASE 2B	0.000
INCIDENTAL	0.017
TOTAL MILEAGE	0.095

The direct costs for each area are summarized below.

⁸According to AACE International Recommended Practice No. 97R-18, a Class 4 estimate is based on 1-15% project definition and typically results in final project costs that are within +50% to -30% of the estimated cost. In contrast, Class 3 estimates are based on 10-40% project definition and typically result in final project costs that are within +30% to -20% of the estimated amount.

⁹ Lacks documentation of a post-construction strength test in a Class 3 or 4 HCA.

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PHASE 2A STATION PIPING REPLACEMENT PROJECTS

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$243,247	\$137,663	\$0	\$0	\$380,910
TOTAL DIRECT COSTS	\$0	\$243,247	\$137,663	\$0	\$0	\$380,910

Assumptions

Material costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$1,545,765	\$0	\$1,545,765
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$1,545,765	\$0	\$1,545,765

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- Site Mobilization.
- Site Preparation.
- Site Facilities.
- Site Management / Best Management Practices (BMPs).
- Material Handling.
- Isolate Existing Pipeline.
- Pressure Test Pipeline.
- Tie-In Pipeline.
- Site Restoration.
- Site Demobilization.
- Field Overhead.

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PHASE 2A STATION PIPING REPLACEMENT PROJECTS

Indio Laterals Replacement Project

- No excavation required.
- One nitrogen pressure test for replacement pipe.
- Gas captured or cross compression will be utilized.
- X-ray of all welds.
- Laydown yard and work sites will be restored to original condition.

Mesa Cathodic Station Phase 2 Replacement Project

- Hand excavation required.
- Two nitrogen pressure tests for replacement pipe.
- Gas captured or cross compression will be utilized.
- X-ray of all welds.
- Laydown yard and work sites will be restored to original condition.
- Stopple services.

Newhall - Potrero Phase 2 Replacement Project

- No excavation required.
- Six nitrogen pressure tests for replacement pipe.
- Gas captured or cross compression will be utilized.
- X-ray of all welds.
- Laydown yard and work sites will be restored to original condition.
- Stopple services.

Brea Canyon Road Phase 2 Replacement Project

- No excavation required.
- One nitrogen pressure tests for replacement pipe.
- Gas captured or cross compression will be utilized.
- X-ray of all welds.
- Laydown yard and work sites will be restored to original condition.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$14,235	\$28,470	\$71,175	\$170,820	\$0	\$284,700
TOTAL DIRECT COSTS	\$14,235	\$28,470	\$71,175	\$170,820	\$0	\$284,700

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PHASE 2A STATION PIPING REPLACEMENT PROJECTS

Assumptions

Environmental costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Construction Monitoring**
 - Two full-time bio monitors for each Project.

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$9,633	\$28,900	\$0	\$0	\$38,533
TOTAL DIRECT COSTS	\$0	\$9,633	\$28,900	\$0	\$0	\$38,533

Assumptions

Permit costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Encroachment permit fees if encountered.

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PHASE 2A STATION PIPING REPLACEMENT PROJECTS

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$3,853	\$7,707	\$26,973	\$0	\$0	\$38,533
TOTAL DIRECT COSTS	\$3,853	\$7,707	\$26,973	\$0	\$0	\$38,533

Assumptions

Land & Right-of-Way costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Contract Labor.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$17,663	\$65,836	\$83,499	\$228,018	\$96,346	\$491,362
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$17,663	\$65,836	\$83,499	\$228,018	\$96,346	\$491,362

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

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PHASE 2A STATION PIPING REPLACEMENT PROJECTS

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$40,271	\$177,714	\$180,532	\$356,385	\$142,157	\$897,060
TOTAL DIRECT COSTS	\$40,271	\$177,714	\$180,532	\$356,385	\$142,157	\$897,060

Assumptions

Other Costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Phase 2A Station Piping Replacement Projects includes 210 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$57,654. The final value of the Phase 2A Station Piping Replacement Projects cost disallowance will be adjusted once the project is placed in service.

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SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$70,492	\$70,492	\$139,665	\$82,393	\$363,042
DIRECT NON-LABOR	\$132,547	\$260,494	\$356,286	\$4,943,027	\$268,098	\$5,960,452
TOTAL DIRECT O&M COSTS	\$132,547	\$330,986	\$426,778	\$5,082,692	\$350,491	\$6,323,494

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$46,264	\$46,264	\$83,505	\$54,290	\$230,324
DIRECT NON-LABOR	\$0	\$203,313	\$281,682	\$2,655,889	\$149,689	\$3,290,573
TOTAL DIRECT CAPITAL COSTS	\$0	\$249,578	\$327,946	\$2,739,394	\$203,980	\$3,520,898

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$0	\$116,757	\$116,757	\$223,170	\$136,683	\$593,366
DIRECT NON-LABOR	\$132,547	\$463,807	\$637,968	\$7,598,916	\$417,787	\$9,251,025
TOTAL COSTS	\$132,547	\$580,564	\$754,725	\$7,822,086	\$554,470	\$9,844,392

Project Description

The Supply Line 38-362 Phase 2A Hydrotest Project will hydrotest approximately 7.309 miles of [REDACTED] pipe in Kern County. The Project begins [REDACTED] of the [REDACTED] freeway northbound rest stop near [REDACTED] to the intersection of [REDACTED] and [REDACTED]. The Project includes the replacement of 13 taps and three pipeline features in order to facilitate the hydrotest.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

Alternatives Considered

Supply Line 38-362 is the only source of supply to multiple distribution taps and is critical for system operational needs. Abandonment of the line is not feasible since it would create a substantial loss in capacity and would result in an inability to meet the needs of customers in the area. To derate the pipeline, the resulting system capacity decrease would result in an inability to meet customer demand.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

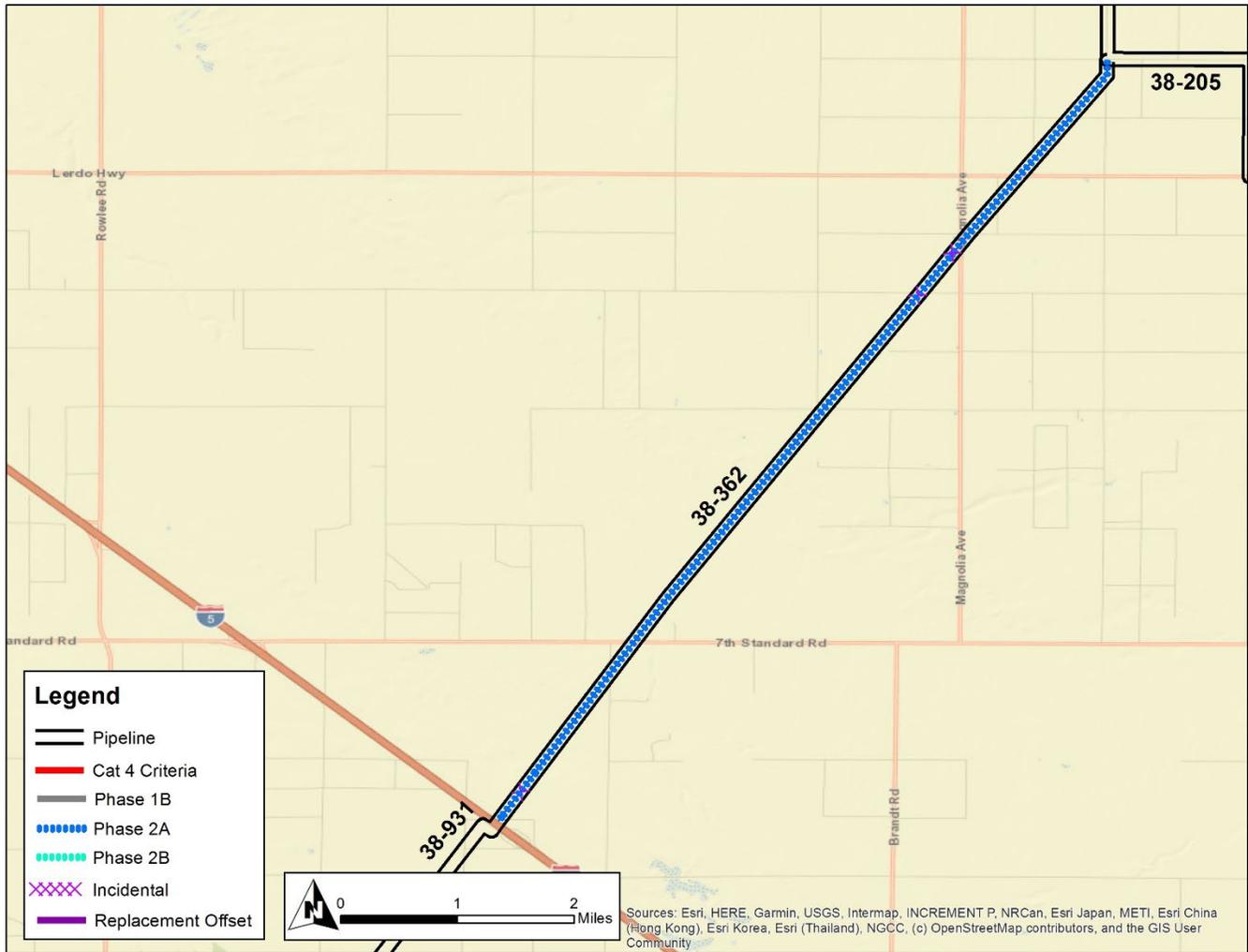
Schedule

The schedule was developed based on the five-stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 50 days.

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SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

Figure 1: Overview Map for Supply Line 38-362 Phase 2A Hydrotest Project



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SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	7.299
PHASE 2B	0.000
INCIDENTAL	0.010
TOTAL MILEAGE	7.309

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$57,869	\$82,754	\$0	\$0	\$140,623
TOTAL DIRECT COSTS	\$0	\$57,869	\$82,754	\$0	\$0	\$140,623

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- Two [REDACTED] ball valves.
- Two [REDACTED] ball valves.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$2,465,424	\$0	\$2,465,424
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$2,465,424	\$0	\$2,465,424

Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five-day work week.
- All materials will be received at the laydown yard.

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SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

- A total of two test heads will be fabricated and pretested.
- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two feet zone.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.
- Isolation of thirteen existing taps.
- Three pressure control fittings (PCFs) will be installed to utilize CNG/LNG setups to impacted customers.
- The pipeline will be tested in one test segment.
- Isolation and final tie-ins for a 24-hour continuous duration.
- Line taps will be fabricated and then reconnected after line is brought back into service.
- Hydrotest water will be hauled off and disposed by others.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers at the laydown yard for construction and inspection personnel.
 - Site facility costs cover a three-month duration.
 - Crushed rock for the laydown yards and water tank pad stabilization.
 - 100 linear feet (LF) of temporary fill piping will be installed from the water tanks to the first test head.
 - 1,200 LF of temporary fencing to delineate the laydown yard and any open excavations.
- **Site Preparation**
 - Two days to clear and grub the yard and one day to prepare Baker tank pads.
- **Site Management / Best Management Practices (BMPs)**
 - Environmental protective fencing at each of the hydrotest and anomaly excavations.
 - BMP materials for all spoil piles, laydown yards, and work sites.
 - 6,400 LF of silt fencing.
- **Material Handling**
 - One load of material will be unloaded at laydown yard and transported as needed.
- **Traffic Control**
 - Traffic control for tap isolation.
- **Utility Locates**
 - A utility locate crew will be utilized for three days to locate existing pipeline.

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SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

- **Isolate Existing Pipeline**
 - Thirteen taps will be isolated prior to hydrotesting.
 - One 24-hour day for isolation of the pipeline.
 - Five days to isolate taps.
 - Seven taps will be supported with CNG.
 - Four taps will be supported with LNG.

- **Pressure Test Pipeline**
 - One hydrotest will be performed in a sixteen-hour day.
 - Test heads will be installed below grade. Costs for vertical offset installation of test heads to an above-ground orientation has not been included.

- **Tie-In Pipeline**
 - Two tie-ins will be performed in one 24-hour day.
 - 100% of tie-in welds will be x-rayed.

- **Site Restoration**
 - All work site locations will be restored to original condition.
 - 250,000 square Feet (SF) of hydroseeding.

- **Site Demobilization**
 - All site facilities will be demobilized.
 - One load of excess piping will be hauled to SoCalGas designated yard.
 - Crew and equipment will be demobilized.

- **Field Overhead**
 - One Full-Time Superintendent.
 - One Full-Time Cost Controller.
 - One Full-Time Timekeeper.
 - One Full-Time Safety Supervisor.
 - One Part-Time Scheduler.
 - Two site security guards for all non-working hours.

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SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$9,114	\$47,762	\$143,287	\$286,575	\$0	\$486,738
TOTAL DIRECT COSTS	\$9,114	\$47,762	\$143,287	\$286,575	\$0	\$486,738

Assumptions

The major components in this category include:

- Environmental Services (permitting support, surveys, and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Document Preparation and Project Management**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Protocol Survey Reports.
 - Document production for Rare Plant Survey Report.
 - Document production for Preconstruction Clearance.
 - Document production for Environmental Clearance.
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Worker Environmental Awareness Procedure (WEAP) document.
- **Preconstruction Surveys**
 - Preconstruction wildlife and nesting bird survey reports.
 - Rare plant survey and topsoil flagging.
- **Construction Monitoring**
 - One full-time monitor for duration of project.

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SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

- **Project Closeout activities**
 - Restoration support, permit reporting and closeout.

- **Abatement**
 - 17 days for abatement of ACMs.

- **Water Treatment and Hazardous Materials**
 - Hydrostatic test water, estimated at 106,000 gallons, to be acquired by pipeline contractor.
 - Eight days for hydrotest water delivery to project site.
 - Disposal up to 100 miles roundtrip plus disposal fee.
 - One day for hydrotest standby support.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes (e.g., lead paint waste, pigs used to dry the pipeline post hydrotest, asbestos containing material, etc.).

- **Permit Fees**
 - San Joaquin Valley Air Pollution Control District (SJVAPCD) Dust Control Plan notification (no fee).
 - California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt.
 - The project will be eligible for coverage under the SoCalGas programmatic San Joaquin Valley Habitat Conservation Plan (SJVHCP) (currently in development) any required take authorization will be covered under this habitat conservation plan.
 - SWPPP fee (fees are set by the agency and are subject to change).

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$615	\$1,845	\$0	\$0	\$2,460
TOTAL DIRECT COSTS	\$0	\$615	\$1,845	\$0	\$0	\$2,460

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

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SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$2,056	\$62,594	\$187,781	\$0	\$0	\$252,432
TOTAL DIRECT COSTS	\$2,056	\$62,594	\$187,781	\$0	\$0	\$252,432

Assumptions

In generating for the total estimated cost for Supply Line 38-362 Phase 2A Hydrotest Project the following items were considered:

- **Labor**
 - One contract land agent.
- **Temporary Right of Entry**
 - Workspace.
 - Access road.
 - Laydown yard.
- **Crops**
 - Crop restoration for six almond trees.
 - Crop restoration for 2.66 acres of grain/silage.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$116,757	\$116,757	\$223,170	\$136,683	\$593,366
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$0	\$116,757	\$116,757	\$223,170	\$136,683	\$593,366

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 38-362 PHASE 2A HYDROTEST PROJECT

- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$121,377	\$294,966	\$222,301	\$4,846,917	\$417,787	\$5,903,349
TOTAL DIRECT COSTS	\$121,377	\$294,966	\$222,301	\$4,846,917	\$417,787	\$5,903,349

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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SUPPLY LINE 38-504 PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$1,748	\$6,265	\$8,013	\$21,562	\$9,033	\$46,621
DIRECT NON-LABOR	\$6,410	\$24,126	\$89,822	\$266,266	\$12,879	\$399,503
TOTAL DIRECT O&M COSTS	\$8,159	\$30,391	\$97,835	\$287,828	\$21,912	\$446,123

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$583	\$2,089	\$2,671	\$7,187	\$3,011	\$15,540
DIRECT NON-LABOR	\$2,136	\$8,042	\$29,940	\$88,755	\$4,293	\$133,168
TOTAL DIRECT CAPITAL COSTS	\$2,720	\$10,130	\$32,611	\$95,943	\$7,304	\$148,708

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$2,331	\$8,353	\$10,684	\$28,749	\$12,044	\$62,161
DIRECT NON-LABOR	\$8,547	\$32,168	\$119,762	\$355,021	\$17,172	\$532,670
TOTAL COSTS	\$10,878	\$40,521	\$130,446	\$383,770	\$29,216	\$594,831

Project Description

The Supply Line 38-504 Phase 2A Hydrotest Project will hydrotest approximately 1.337 miles of [REDACTED] pipeline in Hanford. The Project runs along [REDACTED], starting near [REDACTED] and ending at [REDACTED].

Alternatives Considered

Abandonment of this section of Supply Line 38-504 is not a viable option as it is a critical line within the central valley distribution system and is the major supply line for customers in the area. Abandonment would result in an inability

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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SUPPLY LINE 38-504 PHASE 2A HYDROTEST PROJECT

to meet customer needs. Derating this section of Supply Line 38-504 is not a viable option in order to maintain system capacity during peak conditions.

Forecast Methodology

SoCalGas developed a Class 4 Estimate⁸ to implement the above scope of work. The Class 4 Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

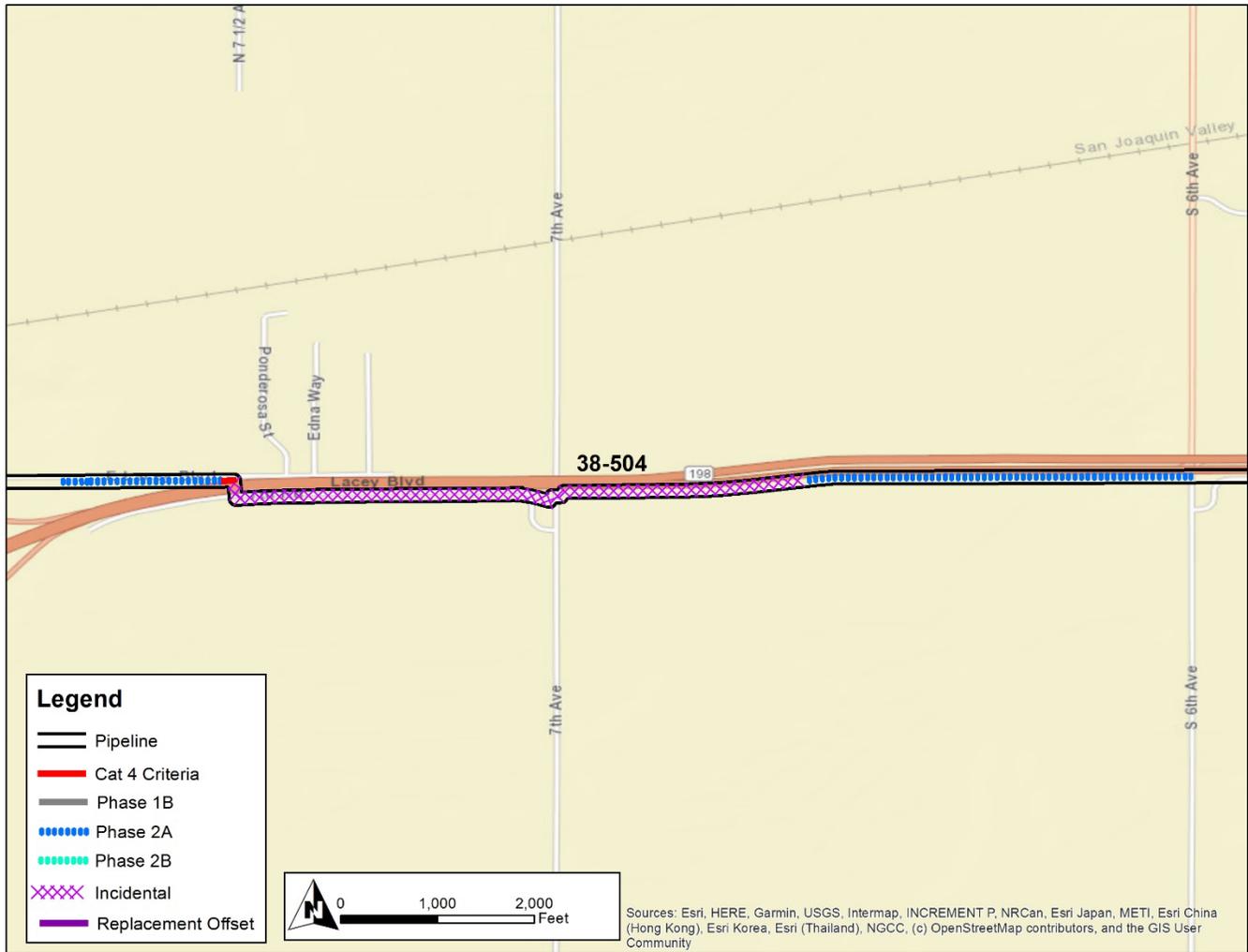
The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 19 days.

⁸According to AACE International Recommended Practice No. 97R-18, a Class 4 estimate is based on 1-15% project definition and typically results in final project costs that are within +50% to -30% of the estimated cost. In contrast, Class 3 estimates are based on 10-40% project definition and typically result in final project costs that are within +30% to -20% of the estimated amount.

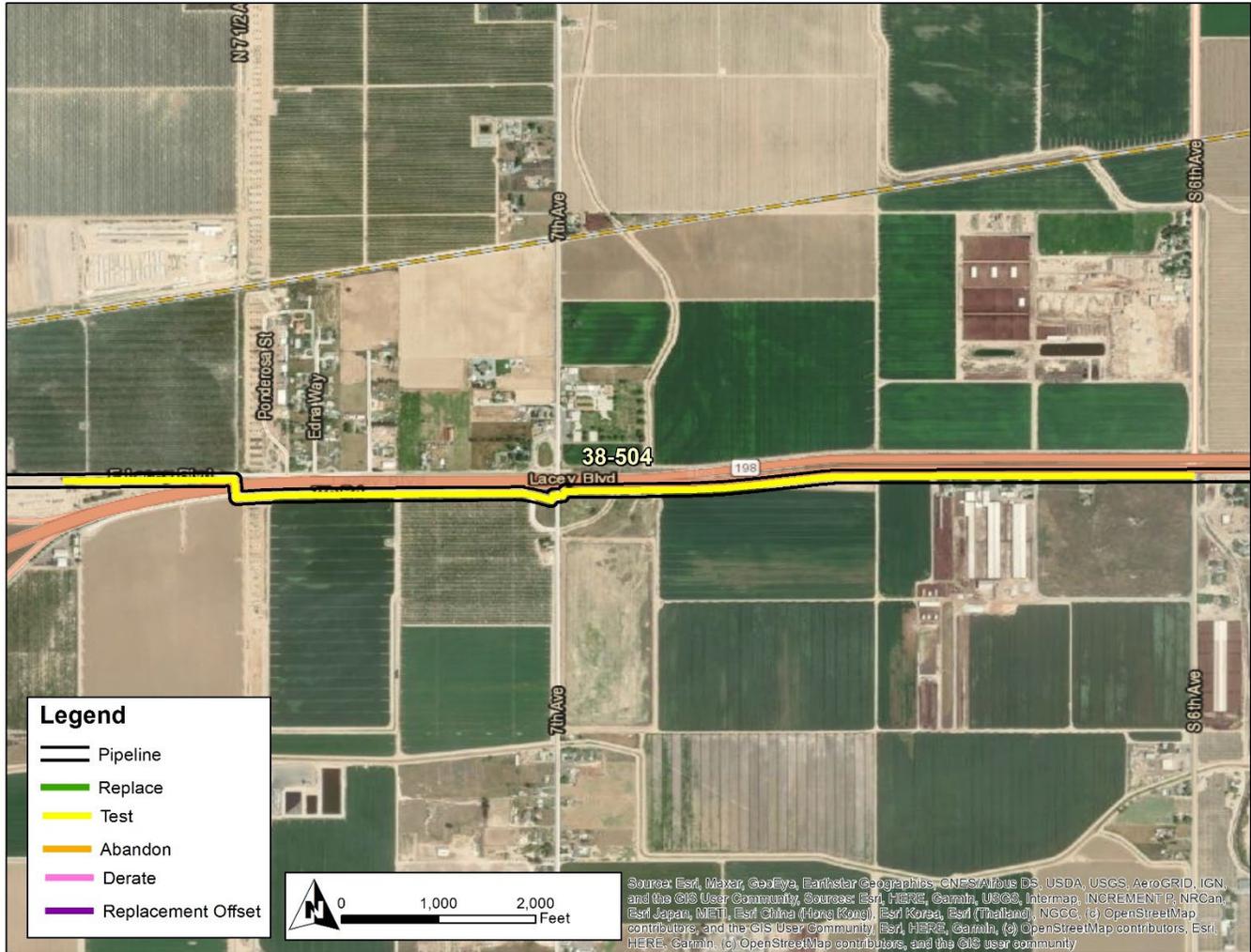
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SUPPLY LINE 38-504 PHASE 2A HYDROTEST PROJECT

Figure 1: Overview Map for Supply Line 38-504 Phase 2A Hydrotest Project



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SUPPLY LINE 38-504 PHASE 2A HYDROTEST PROJECT

Figure 2: Satellite Map for Supply Line 38-504 Phase 2A Hydrotest Project



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SUPPLY LINE 38-504 PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
COORDINATED ⁹	0.024
PHASE 2A	0.861
PHASE 2B	0.000
INCIDENTAL	0.452
TOTAL MILEAGE	1.337

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$75,900	\$0	\$0	\$75,900
TOTAL DIRECT COSTS	\$0	\$0	\$75,900	\$0	\$0	\$75,900

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$282,720	\$0	\$282,720
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$282,720	\$0	\$282,720

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.

Additional Construction Information

⁹ Lacks documentation of a post-construction strength test in a Class 3 or 4 HCA.

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SUPPLY LINE 38-504 PHASE 2A HYDROTEST PROJECT

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - One office trailer considered.

- **Site Preparation**
 - Clear, grade, and installation of temporary fencing at laydown yard.

- **Site Management / Best Management Practices (BMPs)**
 - Environmentally sensitive area – assume extra BMP measures.

- **Material Handling**
 - Two loads of material will be unloaded at laydown yards and transported as needed.

- **Traffic Control**
 - Traffic control required for one lane of street.

- **Utility Locates**
 - Two utility locates required.

- **Isolate Existing Pipeline**
 - Project Details.

- **Hydrotest / Pressure Test Pipeline**
 - Assume one hydrotest.

- **Tie-In Pipeline**
 - Assume one cold tie-in.

- **Field Overhead**
 - Assumes five eight hour work days.

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$1,166	\$2,331	\$5,828	\$13,986	\$0	\$23,310
TOTAL DIRECT COSTS	\$1,166	\$2,331	\$5,828	\$13,986	\$0	\$23,310

Assumptions

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SUPPLY LINE 38-504 PHASE 2A HYDROTEST PROJECT

Environmental costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.
- The identification of a critical habitat for seasonal species, which include red legged frog, steelhead trout, and fairy shrimp. These species can limit the construction window.
- Species survey is required up to a year before construction.
- Potential impacts to existing vegetation due to soil boring excavation, potholing, and trenching.
- Proposed route could trigger CEQA involvement due to potential environmental impacts.

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$1,943	\$5,828	\$0	\$0	\$7,770
TOTAL DIRECT COSTS	\$0	\$1,943	\$5,828	\$0	\$0	\$7,770

Assumptions

Permit costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Permitting fees related to encroachment permit and traffic control plan costs.
- Traffic control plan costs.

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SUPPLY LINE 38-504 PHASE 2A HYDROTEST PROJECT

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$777	\$1,554	\$5,439	\$0	\$0	\$7,770
TOTAL DIRECT COSTS	\$777	\$1,554	\$5,439	\$0	\$0	\$7,770

Assumptions

Land & Right-of-Way costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Contract Labor.
- Legal Services.
- Temporary Right of Entry.
- New Easement Costs.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$2,331	\$8,353	\$10,684	\$28,749	\$12,044	\$62,161
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$2,331	\$8,353	\$10,684	\$28,749	\$12,044	\$62,161

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

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SUPPLY LINE 38-504 PHASE 2A HYDROTEST PROJECT

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$6,605	\$26,341	\$26,768	\$58,315	\$17,172	\$135,200
TOTAL DIRECT COSTS	\$6,605	\$26,341	\$26,768	\$58,315	\$17,172	\$135,200

Assumptions

Other Costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$85,629	\$92,204	\$92,204	\$166,162	\$108,596	\$544,794
DIRECT NON-LABOR	\$144,478	\$287,691	\$730,437	\$8,578,747	\$166,731	\$9,908,084
TOTAL DIRECT O&M COSTS	\$230,106	\$379,895	\$822,641	\$8,744,909	\$275,327	\$10,452,879

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$3,904	\$47,736	\$47,736	\$71,215	\$56,550	\$227,139
DIRECT NON-LABOR	\$82,719	\$97,005	\$455,147	\$2,994,319	\$59,596	\$3,688,786
TOTAL DIRECT CAPITAL COSTS	\$86,622	\$144,740	\$502,882	\$3,065,534	\$116,146	\$3,915,925

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$89,532	\$139,939	\$139,939	\$237,377	\$165,146	\$771,933
DIRECT NON-LABOR	\$227,196	\$384,697	\$1,185,583	\$11,573,066	\$226,328	\$13,596,870
TOTAL COSTS	\$316,729	\$524,636	\$1,325,523	\$11,810,443	\$391,474	\$14,368,803

Project Description

Line 225 South Phase 2A Hydrotest Project will hydrotest approximately 10.6 miles of [REDACTED] pipeline. The Line 225 South Phase 2A Hydrotest project begins on the [REDACTED] end of [REDACTED] and continues [REDACTED] through [REDACTED]. The Project will be split into six hydrotest sections due to hydrotest pressure limitations based on elevation changes and include the replacement of approximately 998 feet of pipeline to tie-in these sections following the completion of the hydrotests. The Project will also replace one mainline valve (MLV). The hydrotest will be completed in one mobilization.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

Alternatives Considered

Line 225 is a critical pipeline within the SoCalGas to meet operational needs. Abandoning this line would create a substantial loss in capacity since Line 225 is a critical pipeline to receive Rocky Mountain supplies and support customers, particularly in the San Joaquin Valley. Derating the pipeline negatively impacts the capacity of the system and is not a viable option.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

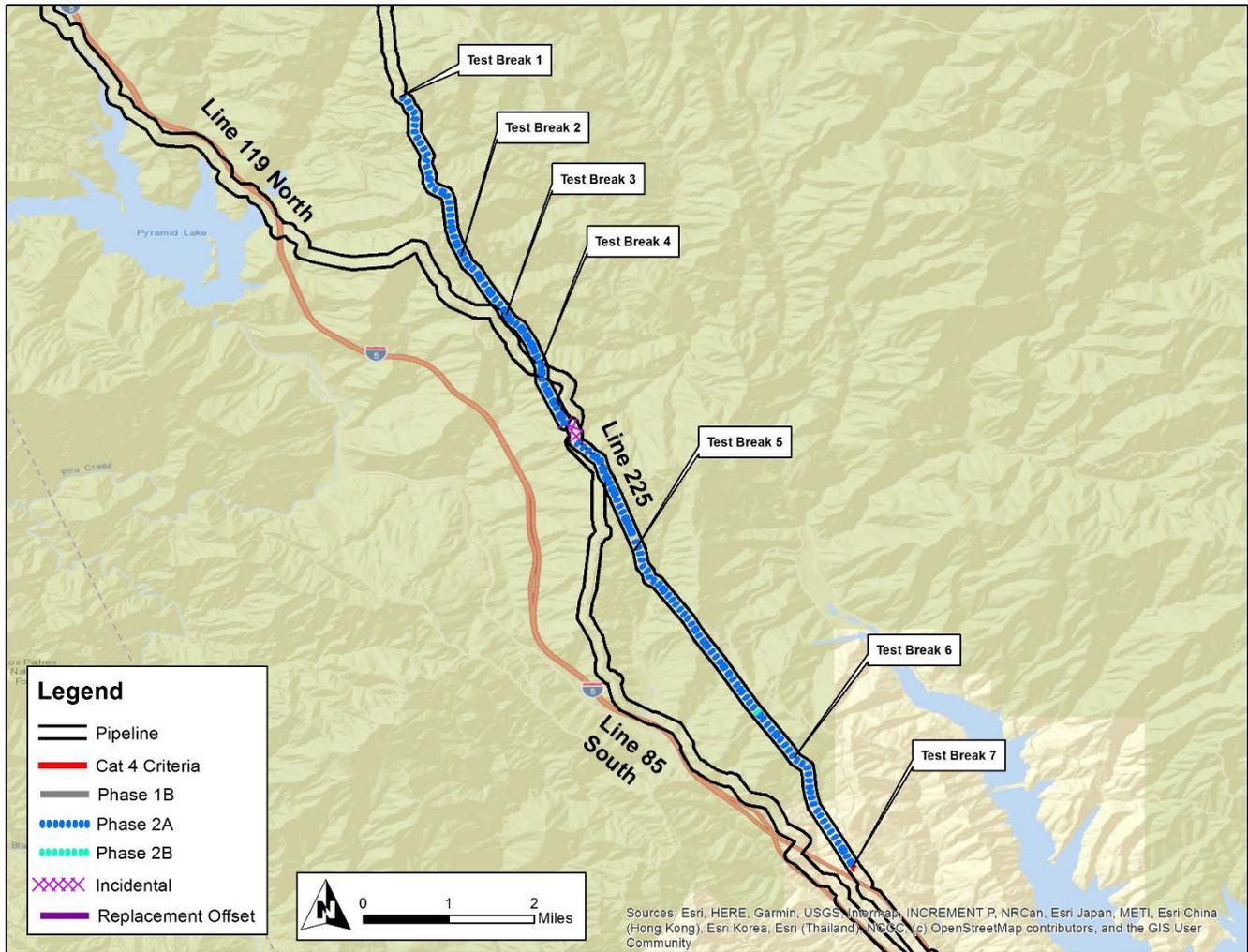
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 60 days.

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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

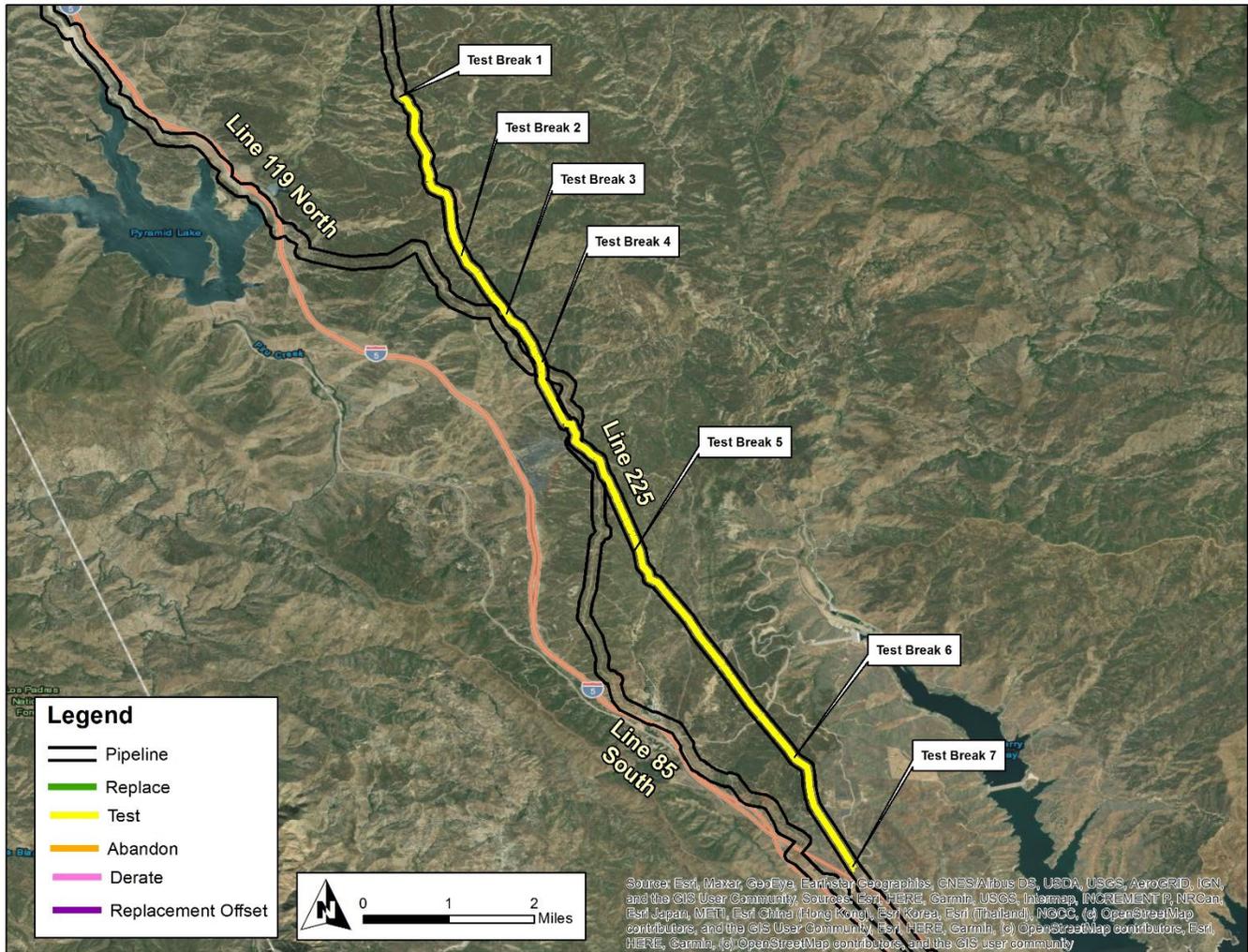
Figure 1: Overview Map for Line 225 South Phase 2A Hydrotest Project



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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

Figure 2: Satellite Map for Line 225 South Phase 2A Hydrotest Project



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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
COORDINATED ⁸	0.038
PHASE 2A	10.283
PHASE 2B	0.033
INCIDENTAL	0.281
TOTAL MILEAGE	10.634

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$113,783	\$575,034	\$0	\$0	\$688,817
TOTAL DIRECT COSTS	\$0	\$113,783	\$575,034	\$0	\$0	\$688,817

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 600 feet of [redacted] pipe.
- 16 [redacted] ball valves.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$7,909,649	\$0	\$7,909,649
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$7,909,649	\$0	\$7,909,649

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- One lake tank will be installed.

⁸ Lacks documentation of a post-construction strength test in a Class 3 or 4 HCA.

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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

- All materials will be received at the laydown yard.
- Existing pipeline spans will require temporary pipe supports to support the additional weight of hydrotesting water within the pipeline during the hydrotest.
- A total of two isolation caps, 12 test heads, and 12 test caps with the associated 8-inch transfer piping will be fabricated and pretested.
- Two construction crews will be used in this project for mainline excavation, fabrication, and testing.
- No shoring is planned as excavations will be sloped back.
- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two foot zone.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.
- Cold tie-ins have been assumed for a 16 hour continuous duration.
- A single final tie-in will be performed.
- Line 225 isolation and final tie-ins have been assumed for a 24 hour continuous duration.
- Hydrotest water will be hauled off and disposed.
- 14 day or less duration will be allowable from the day of the initial fill until the drying of each pipeline section.
- Included cost to grade and build access at four locations.
- Two hydrotests to be simultaneously occurring during construction.
- A separate hydrotest will be conducted for replacement pipe.
- Test heads will be installed below grade.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers at the laydown yard.
 - Site facility costs cover a three month duration.
 - One 6 kw light tower and one 100 kw generator for lighting and power.
 - Two storage containers.
 - Two wash stations.
 - Included one Safety Supervisor for COVID services.
 - Included COVID Cleaning services for restrooms and offices for 3 months.
- **Site Preparation**
 - Approximately 4,600 LF of temporary fencing for the laydown yard and test break site to secure open excavations.
 - 650 tons of sand for Lake Tank pad stabilization.
 - Included cost to support 32 spans.
 - Grade or build 9,850 LF of temporary access roads for sites 9A, 10, 11, and 12.
 - Setup one laydown yard.

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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

- **Site Management / BMP's**
 - 300 fiber rolls, 2,500 sandbags, 500 SY of non-woven fabric, and 500 SY of poly sheeting for BMP use.
 - A total of 1,000 LF of orange snow fencing has been included.
 - Eight 8 ft x 10 ft rumble plates for BMPs.
 - A general crew will setup and maintain BMP measures in five shifts, includes a John Deer 710G Loader / Backhoe, and a 3-Ton truck with float trailer.
- **Material Handling**
 - Five loads of material will be unloaded at laydown yard and transported as needed.
- **Traffic Control**
 - Traffic control signage has been procured for project duration.
 - Crew will grade and clear to access seven test breaks.
- **Site Excavation**
 - Included excavations for seven test breaks.
 - Seven site move arounds.
 - Abatement support for 14 cuts.
- **Remove Existing / Install New Features**
 - Contractor to fabricate two isolation caps, 12 test caps, 12 test heads, and six sets of water transfer pipe.
 - Fabricate and bend seven tie-in replacement pieces.
 - Included hauling and stringing of seven tie-in replacement pieces.
- **Isolate Existing Pipeline**
 - Included one nitrogen purge sub and 1,347,772 SCF of nitrogen for isolation purposes.
 - A continuous 24 hour shift is assumed to assist in isolation of Line 225 South.
 - One shift is assumed for purging existing line.
- **Pressure Test Pipeline**
 - Included one 4,000 gallon Water Truck and Teamster for 45 shifts for water trucking.
 - Purchased 1,800,000 gallons of water for hydrotests.
 - 1,600 linear feet (LF) of temporary fill piping will be installed from the lake tank to the first test head.
 - Included install of 12 test heads and associated tie downs.
 - Six individual mainline test sections will be hydrotested.
- **Tie In Pipeline**
 - Five cold tie-ins.
 - Two hot tie-ins.
- **Backfill Excavations**
 - Coating of 14 tie-in welds.
 - Backfill seven test breaks using native materials and screened sand for padding.

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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

- **Site Restoration**
 - Restore seven work sites, test breaks, and removal of BMPs.
 - Removal of approximately 4,600 LF of temporary fencing.
 - All work site locations will be resotred to original condition.
 - Two shifts have been allocated for final cleanup.

- **Site Demobilization**
 - One demobilization for crew and equipment.
 - Three loads of excess piping will be hauled to designated yard.
 - Remove and breakdown one yard and one lake tank pad.

- **Field Overhead**
 - One Full-Time Project Manager.
 - One Full-Time Superintendent.
 - One Full-Time General Foreman.
 - One Full-Time Cost Controller.
 - One Full-Time Timekeeper.
 - One Full-Time Safety Personnel.
 - One Part-Time Scheduler.
 - Two Full-Time Water Trucks and Drivers for dust suppression.
 - One Full-Time 60 ton rough terrain crane with operator.
 - One Full-Time Mechanic for equipment support.
 - Two low bed trucks to assist with equipment move arounds.
 - One motor grader to assist with site access routes.
 - One rough terrain forklift to assist with material management.
 - Two site security personnel for all non-working hours.
 - 3,720,000 gallons of water material for dust suppression, fire suppression, and backfill support.

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$56,712	\$152,157	\$456,471	\$912,943	\$0	\$1,578,283
TOTAL DIRECT COSTS	\$56,712	\$152,157	\$456,471	\$912,943	\$0	\$1,578,283

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).

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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Biological Surveys and Reports.
 - Document production for Jurisdictional Delineation for span support locations.
 - Document production for CDFW Streambed Alteration Agreement (SAA) for span support locations.
 - Document production for Angeles National Forest Special Use Permit.
 - Document production for Biological Assessment/Biological Evaluation.
 - Document production for Spring Rare Plant Survey for all undisturbed workspaces in ANF.
 - Document production for Old Ridge Route Protection Plan.
 - Document production for Erosion Control Plan.
 - Document production for Transportation Plan.
 - Document production for Fire Protection Plan.
 - Document production for Habitat Restoration and Revegetation Plan (HRRP).
 - Document production for Cultural Pedestrian Survey.
- **Preconstruction Surveys**
 - Native seed collection for restoration in ANF.
 - Wildlife and nesting bird survey and report.
- **Construction Monitoring**
 - Worker Environmental Awareness Procedure (WEAP) training.
 - Nine days of monitoring for Cultural/Paleo Resources.
 - 83 days of biological monitoring.
 - Four hours of overtime per monitoring day.
- **Project Closeout Activities**
 - Restoration, monitoring and permit closeout.
 - 10 years of monitoring and reporting of sites in the ANF.
- **Abatement**
 - 27 days for abatement of ACMs.
 - One facility survey for asbestos.

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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

• **Water Treatment and Hazardous Materials**

- Hydrostatic test water, estimated at 915,000 gallons, to be acquired by the pipeline contractor.
- Hydrotest water disposal from up to 150 miles roundtrip plus disposal fee.
- Assumes two months treatment and disposal to land.
- Assumes up to 10 sampling events of hydrotest water (one for each hydrotest plus three additional).
- Contaminated soil allowance for removal of 992 tons assuming 46 disposal trips at 150 miles round trip.
- Groundwater is not anticipated.
- Two drums with disposal for spills and lead based paint up to 150 miles round trip.
- 18 days of vacuum truck support.
- ACM and hydrotest water sampling.
- Seven roll off bins for pig containment and lake tank liner.
- Water tank cleaning for each hydrotest and treated water.
- Lake tank cleaning.

• **Permit Fees**

- CDFW SAA fee.
- ANF Special Use Permit fee.
- SCAQMD Asbestos Abatement fee.

• **Mitigation Fees**

- Assumes 2.7 acres temporary disturbance in the ANF native vegetation.
- Assumes 0.01 acres temporary disturbance to CDFW-jurisdictional habitat.

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$7,947	\$23,841	\$0	\$0	\$31,788
TOTAL DIRECT COSTS	\$0	\$7,947	\$23,841	\$0	\$0	\$31,788

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$537	\$17,072	\$51,217	\$0	\$0	\$68,826
TOTAL DIRECT COSTS	\$537	\$17,072	\$51,217	\$0	\$0	\$68,826

Assumptions

In generating the total estimated cost for Line 225 South the following items were considered:

- **Labor**
 - One contract land agent.
- **Permitting Fees**
 - Bureau of Land Management (BLM) and State of California.
- **Temporary Right of Entry**
 - Construction yards.
 - Workspace.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$89,532	\$139,939	\$139,939	\$237,377	\$165,146	\$771,933
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$89,532	\$139,939	\$139,939	\$237,377	\$165,146	\$771,933

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

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LINE 225 SOUTH PHASE 2A HYDROTEST PROJECT

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$169,948	\$99,528	\$96,393	\$2,750,475	\$226,328	\$3,342,672
TOTAL DIRECT COSTS	\$169,948	\$99,528	\$96,393	\$2,750,475	\$226,328	\$3,342,672

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$221,690	\$232,285	\$232,285	\$712,474	\$268,067	\$1,666,800
DIRECT NON-LABOR	\$581,081	\$1,924,762	\$4,097,921	\$33,595,143	\$619,059	\$40,817,966
TOTAL DIRECT O&M COSTS	\$802,771	\$2,157,047	\$4,330,206	\$34,307,617	\$887,126	\$42,484,766

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$97,050	\$97,050	\$259,359	\$112,776	\$566,236
DIRECT NON-LABOR	\$0	\$346,590	\$2,138,645	\$11,370,178	\$213,606	\$14,069,020
TOTAL DIRECT CAPITAL COSTS	\$0	\$443,640	\$2,235,695	\$11,629,537	\$326,382	\$14,635,256

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$221,690	\$329,335	\$329,335	\$971,832	\$380,843	\$2,233,036
DIRECT NON-LABOR	\$581,081	\$2,271,352	\$6,236,566	\$44,965,321	\$832,666	\$54,886,986
TOTAL DIRECT COSTS	\$802,771	\$2,600,688	\$6,565,901	\$45,937,154	\$1,213,509	\$57,120,021

Project Description

The Line 235 East Section 1 Phase 2A Hydrotest Project will hydrotest approximately 58 miles of [REDACTED] pipeline. The Project begins at the [REDACTED] and ends at the [REDACTED]. This Project consists of 25 hydrotest segments due to elevation changes to compensate for the hydrotest pressure limitations.

Alternatives Considered

Line 235 East is a backbone pipeline that plays a critical role in meeting operational needs of the transmission pipeline

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

system. Abandoning this pipeline would create a substantial loss in capacity to the Northern Transmission Zone since gas moves from the receipt points at North and South Needles towards Adelanto via Line 235. The gas supply from Adelanto supports the entire SoCalGas Transmission System, which serves the Los Angeles Basin Loop from one or more of the City Gates. Derating the pipeline would negatively impact the capacity of the system and is not a viable option.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) Estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

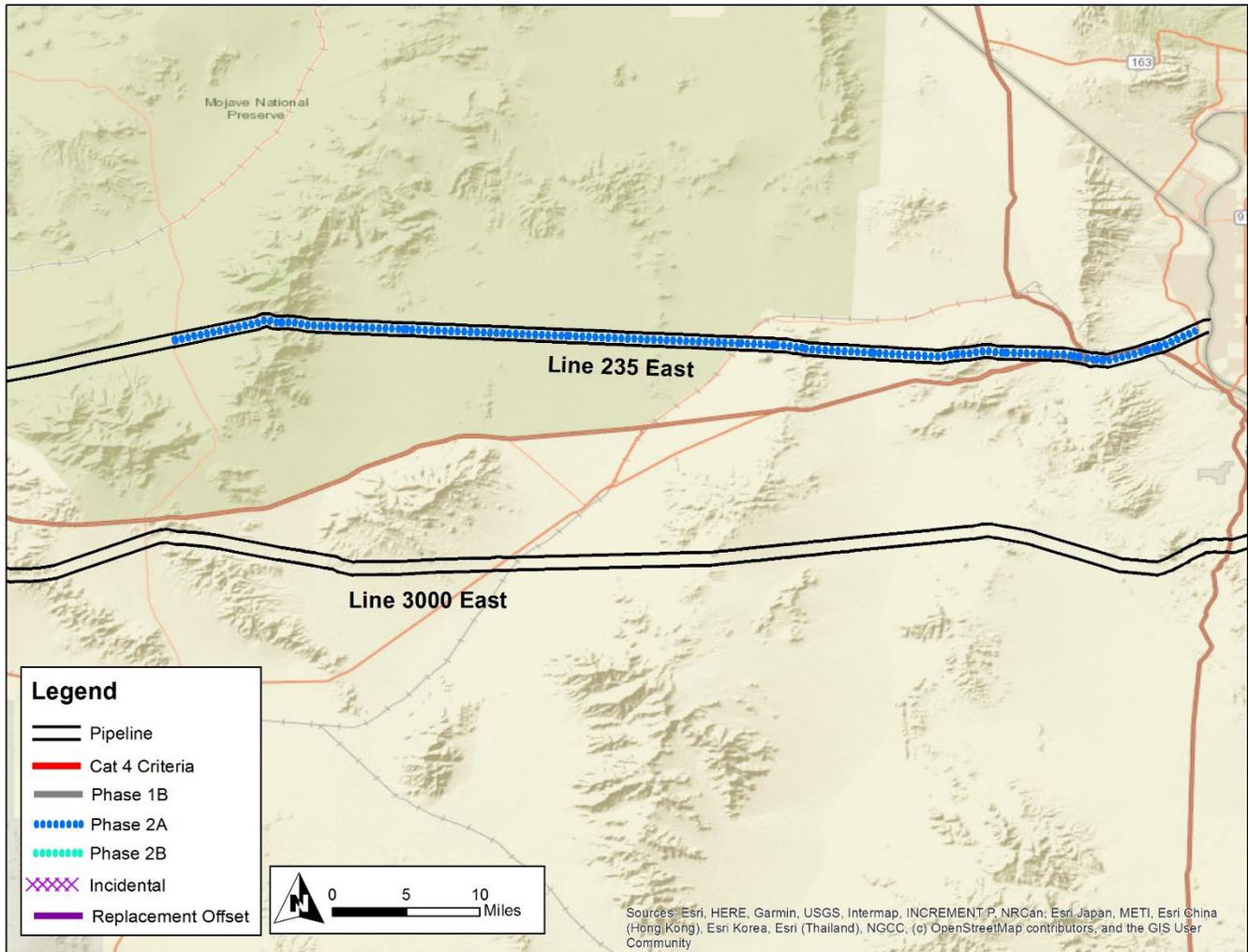
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 167 days.

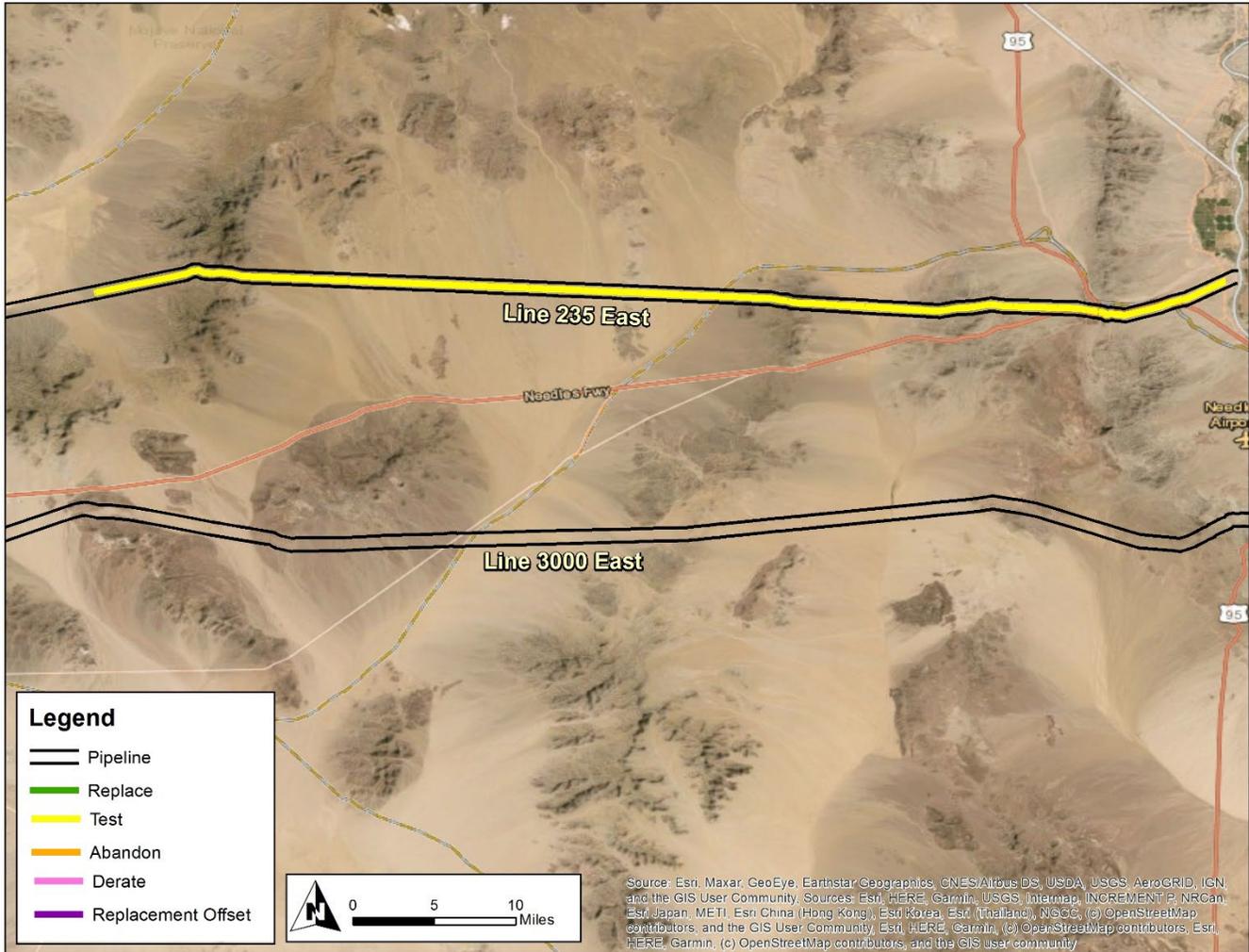
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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

Figure 1: Overview Map for Line 235 East Section 1 Phase 2A Hydrotest Project



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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

Figure 2: Satellite Map for Line 235 East Section 1 Phase 2A Hydrotest Project



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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	58.075
PHASE 2B	0.000
INCIDENTAL	0.000
TOTAL MILEAGE	58.075

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$920,297	\$2,582,879	\$0	\$0	\$3,503,176
TOTAL DIRECT COSTS	\$0	\$920,297	\$2,582,879	\$0	\$0	\$3,503,176

Assumptions

Materials for this Project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 2,000 feet of [REDACTED] pipe.
- 35 [REDACTED] ball valves.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$26,706,821	\$0	\$26,706,821
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$26,706,821	\$0	\$26,706,821

General Assumptions

In development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 12 hour per day, six day work week.
- Two lake tanks will be installed to store hydrotesting water.
- 30 [REDACTED] test heads, and six [REDACTED] isolation caps will be fabricated.

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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two foot zone.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.
- Hydrotest sections will be filled with nitrogen during down time to reduce pipe contamination.
- The pipeline will be tested in 25 separate hydrotest segments, tested one per day.
- 24 cold tie-ins will occur during a 16 hour work shift.
- Two final hot tie-ins will be completed.
- Isolation and final tie-ins have been assumed for a 24 hour continuous duration.
- Hydrotest water will be treated and used for dust control after hydrotests.

Additional Construction Information

In development of the construction estimate, the following assumptions and clarifications have been made:

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers will be placed at the laydown yard.
 - Site facility costs cover a seven month duration for hand wash facilities, portable toilets, and storage containers.
- **Site Preparation**
 - 18 days for preparation of access roads for a grading crew.
 - Four shifts included to cover the delays due to site move arounds.
 - Clearing and grubbing of the laydown yards, work sites, and water storage area.
 - Disposal of vegetation is not assumed.
 - 660 tons of sand is included for the lake tank pads stabilization.
 - 800 Linear Feet (LF) of temporary fencing has been included to delineate the laydown yard.
 - Additional 10,000 LF of temporary fencing for test break sites to secure open excavations.
- **Site Management / Best Management Practices (BMPs)**
 - Fiber rolls, sandbags, reinforced poly sheets, silt fence, metal tee posts, wooden stakes, and spill kits are included for BMP measures.
 - 12 shifts included to install BMPs.
- **Material Handling**
 - 30 wooden pallets, 136 wood pipe dunnage and one picking gear included.
 - 12 loads of material will be unloaded at laydown yard and transported as needed.
- **Site ROW Clearing**
 - Support for ROW clearing included under Site Preparation.

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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

- **Site Excavations**

- Four month duration for shoring equipment at hydrotest breaks.
- 13 hydrotest breaks to be excavated both mechanical and hand excavation.
- 22 shifts per crew to perform the required hand excavation for 13 hydrotest breaks.
- Five shifts per crew to perform the required mechanical excavation for 13 hydrotest breaks.
- 18 shifts per crew included for loss of productivity due to shoring.
- Four shifts per crew included to cover delays due to move arounds.
- 49 shifts per crew for 13 hydrotest breaks.
- 26 bell hole excavations for hydrotest breaks.
- Two excavation crews to perform all mechanical and hand excavations.
- Assumes native backfill.

- **Remove Existing/Install New Pipeline Features**

- 29 shifts for the fabrication of 30 test heads.
- Three shifts for the fabrication of iso caps / test caps.
- 11 shifts for the fabrication of water transfer piping.
- Three shifts for the bolting up and preparation of the water transfer piping.
- Six shifts for the fabrication of replacement tie-in pieces.
- Three shifts for the prepping and testing of test caps and test heads.
- Three shifts to fill, hydrotest and dewater the replacement pipe.

- **Isolate Existing Pipeline**

- Approximately 3,850,991 standard cubic feet (SCF) of nitrogen for purging of the pipeline.
- Three shifts to support the isolation and blowdown of the pipeline.
- Two shifts to support the purge of the mainline.
- 20 shifts to cut and abate hydrotest breaks.

- **Pressure Test Pipeline**

- One shift to install hard piping at Test Break 1 and Lake Tank.
- 22 shifts to install test heads, isolation caps, water transfer piping at 26 hydrotest breaks.
- 12 shifts to fill lake tanks at Needles Compressor Station.
- Two shifts to fill test section group one (Test Sections 1 – 6).
- 25 shifts to perform 25 hydrotests.
- Two shifts each to dewater test group one (Test Sections TS 1 – 6), test group two (Test Sections 7 – 12), test group three (Test Sections 13), test group four (Test Sections 14), and test group five (Test Sections 15).
- 19 shifts to account for delays due to site move arounds when dewatering.
- Two shifts each to dry test group one, test group two, test group three, test group four, and test group five.
- 19 shifts to account for delays due to site move arounds when drying.
- One shift each to nitrogen fill test group one, test group two, test group three, and test group four.
- Eight shifts for the final dewatering into lake tanks.
- Eight shifts for the final drying of the pipeline.

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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

- **Tie-In Pipeline**
 - 24 pipe sections each with a 16 hour shift.
 - One shift included to prepare for the final hot tie-in.
 - Two 24 hour shifts included to perform two final hot tie-ins.

- **Backfill Excavations**
 - 18,750 pounds (lbs) of mixed media and 24 gallons of two part epoxy.
 - 22 shifts to coat 75 welds.
 - 5,487 cubic yards (CY) of zero sack slurry.
 - 43 shifts to backfill hydrotest breaks with native and zero sack slurry.
 - 11 shifts to account for site move around delays.

- **Site Restoration**
 - One shift to remove 440 CY of sand padding for the lake tanks.
 - 66 tons of aggregate disposal.
 - 22 shifts to restore 26 work sites.
 - Support for disconnecting of trailers, removal of FF&E and demobilizing trailers.

- **Site Demobilization**
 - Support for loading of tools and supplies, removal of piping materials, demobilizing equipment and personnel.

- **Field Overhead**
 - One Full-Time Project Manager.
 - One Full-Time Superintendent.
 - One Full-Time Cost Controller.
 - One Full-Time Timekeeper.
 - Two Full-Time Safety Personnel.
 - Four Full-Time Water Trucks and Drivers for dust suppression.
 - Five site security personnel for all non-working hours.

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$124,928	\$1,037,204	\$3,111,611	\$6,223,221	\$0	\$10,496,964
TOTAL DIRECT COSTS	\$124,928	\$1,037,204	\$3,111,611	\$6,223,221	\$0	\$10,496,964

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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this Project are described in more detail below.

Environmental Labor

- **Environmental Contract Services Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Biological Report.
 - Document production for Rare Plant Survey Report.
 - Document production for Cultural Report and National Park Service (NPS) streamlined review process.
 - Document production for Waters Delineation.
 - Document production for Dust Control Plan under Mojave Desert AQMD Rule 402.
 - Document production for Worker Environmental Awareness Procedure (WEAP).
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Preconstruction Clearance.
 - Document production for Habitat Mitigation and Monitoring Plan (HMMP).
 - Document production for Environmental Clearance.
- **Preconstruction Surveys**
 - Preconstruction clearance survey 50 ft buffer of construction zone for 58 mile Section 1 utilizing two biologists for 15 days with 18 hours travel and 40 hours reporting.
 - Preconstruction wildlife and tortoise survey report.
 - Rare plant survey and top soil flagging.
- **Construction Monitoring**
 - Six total monitors: one at Kelso yard, one with each crew, one escorting vehicles from the road to each crew, and one floater.
 - Six biologists working six 10 hour shifts for 28 weeks including six hours for travel per week, and 80 hours for reporting and annual report.
 - Additional field work and reporting required to support tortoise monitoring (five trips).

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

- **Project Closeout Activities**
 - Restoration support, permit reporting, and closeout.

- **Abatement**
 - 74 days for abatement of ACMs.
 - Includes four days for excavation and abatement at each of the 26 hydrotest breaks (104 days total).

- **Water Treatment and Hazardous Materials**
 - Hydrotest water, estimated at 3,100,000 gallons, to be acquired by the pipeline contractor for hydrotesting of existing pipeline.
 - Water to be obtained from hydrant in Needles and trucked to the lake tanks at the Needles Station.
 - Hydrotest water disposal for six bins 500 mile round trip from Ontario for material containment.
 - Groundwater dewatering is not anticipated for this Project.
 - Contaminated soil is not anticipated.
 - Two drums will be needed for accidental spills during construction and two drums for lead paint contaminant.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes.

- **Permit Fees**
 - SWPPP fee.
 - Dust Control and abatement fees for Mojave Desert AQMD.
 - Streambed Alteration Agreement fee.
 - Agency 401 applications and notifications.
 - Estimated fees per Bureau of Land Management (BLM) and California Department of Fish and Wildlife (CDFW) requirements.

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$68,966	\$206,899	\$0	\$0	\$275,865
TOTAL DIRECT COSTS	\$0	\$68,966	\$206,899	\$0	\$0	\$275,865

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$21,138	\$63,414	\$0	\$0	\$84,551
TOTAL DIRECT COSTS	\$0	\$21,138	\$63,414	\$0	\$0	\$84,551

Assumptions

In generating for the total estimated cost for Line 235 East Section 1 Phase 2A Hydrotest Project the following items were considered:

- **Labor**
 - One contract land agent.
 - Administrative support, document control specialist, and permit coordinator.
- **Permitting Fees**
 - Mojave National Preserve Land permit fee.
 - BLM US Government permit fee.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$221,690	\$329,335	\$329,335	\$971,832	\$380,843	\$2,233,036
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$221,690	\$329,335	\$329,335	\$971,832	\$380,843	\$2,233,036

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Project Services.
- Other Departments.

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LINE 235 EAST SECTION 1 PHASE 2A HYDROTEST PROJECT

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$456,152	\$223,748	\$271,764	\$12,035,279	\$832,666	\$13,819,609
TOTAL DIRECT COSTS	\$456,152	\$223,748	\$271,764	\$12,035,279	\$832,666	\$13,819,609

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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LINE 235 EAST SECTION 2 PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$89,622	\$176,420	\$176,420	\$675,371	\$208,450	\$1,326,284
DIRECT NON-LABOR	\$514,887	\$1,934,874	\$3,982,002	\$26,561,142	\$591,732	\$33,584,637
TOTAL DIRECT O&M COSTS	\$604,509	\$2,111,294	\$4,158,422	\$27,236,513	\$800,183	\$34,910,921

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$82,861	\$82,861	\$266,032	\$98,217	\$529,971
DIRECT NON-LABOR	\$0	\$568,513	\$2,085,890	\$9,682,690	\$221,241	\$12,558,334
TOTAL DIRECT CAPITAL COSTS	\$0	\$651,374	\$2,168,751	\$9,948,722	\$319,458	\$13,088,305

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$89,622	\$259,282	\$259,282	\$941,403	\$306,667	\$1,856,256
DIRECT NON-LABOR	\$514,887	\$2,503,387	\$6,067,892	\$36,243,832	\$812,973	\$46,142,970
TOTAL DIRECT COSTS	\$604,509	\$2,762,668	\$6,327,174	\$37,185,235	\$1,119,640	\$47,999,227

Project Description

The Line 235 East Section 2 Phase 2A Hydrotest Project will hydrotest approximately 56 miles of [REDACTED] natural gas pipeline and install one mainline valve (MLV). The Project begins in [REDACTED] and ends in [REDACTED]. This Project consists of 16 hydrotest segments due to elevation changes to compensate for the hydrotest pressure limitations. Section 2 will be isolated to accommodate the timely completion of hydrostatic activities.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 235 EAST SECTION 2 PHASE 2A HYDROTEST PROJECT

Alternatives Considered

Line 235 East is a backbone pipeline that plays a critical role in meeting operational needs of the transmission pipeline. Abandoning this pipeline would create a substantial loss in capacity to the Northern Transmission Zone since gas moves from the receipt points at North and South Needles towards Adelanto via Line 235. The gas supply from Adelanto supports the entire SoCalGas Transmission System, which serves the Los Angeles Basin Loop from one or more of the City Gates. Derating the pipeline would negatively impact the capacity of the system and is not a viable option.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) Estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

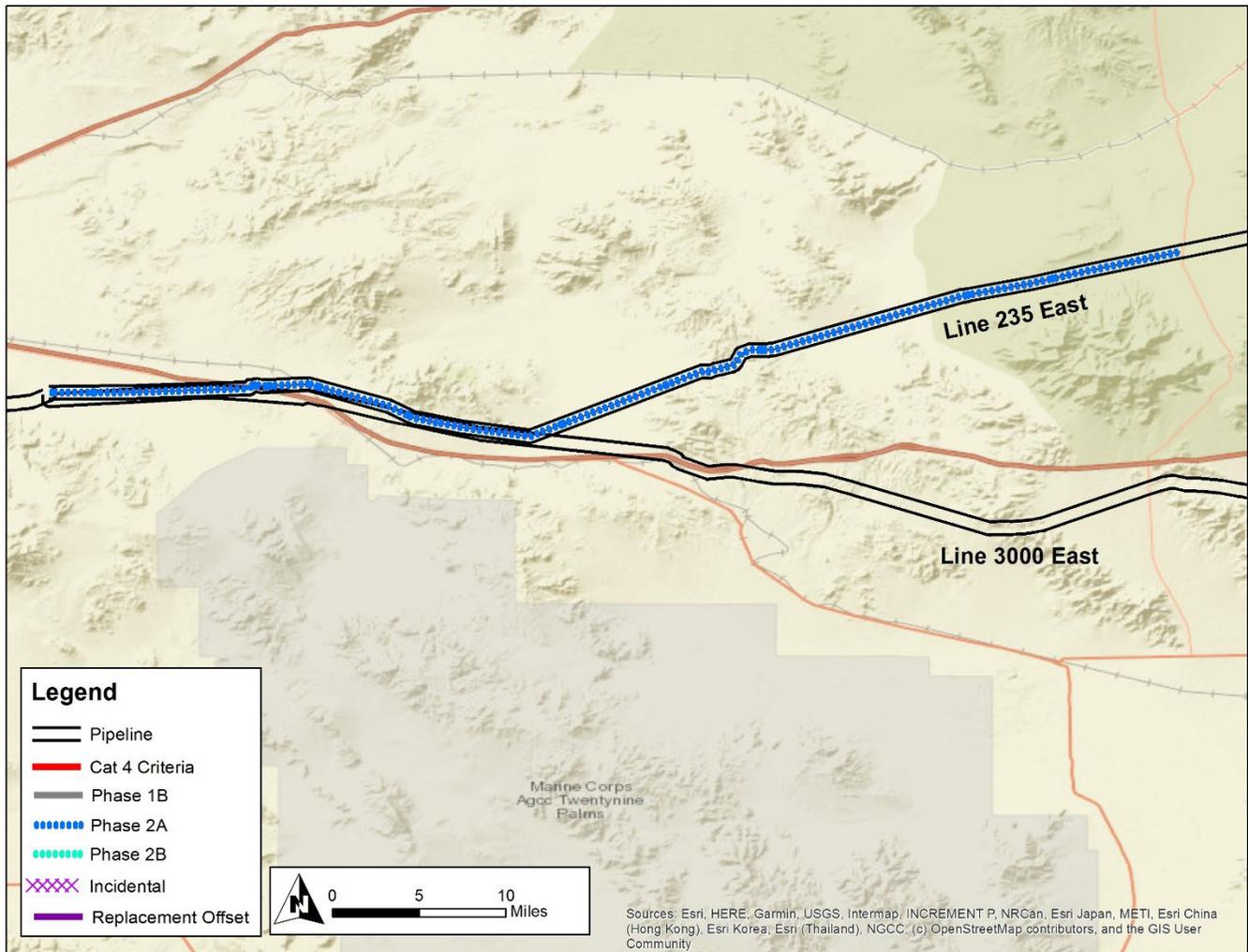
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 145 days.

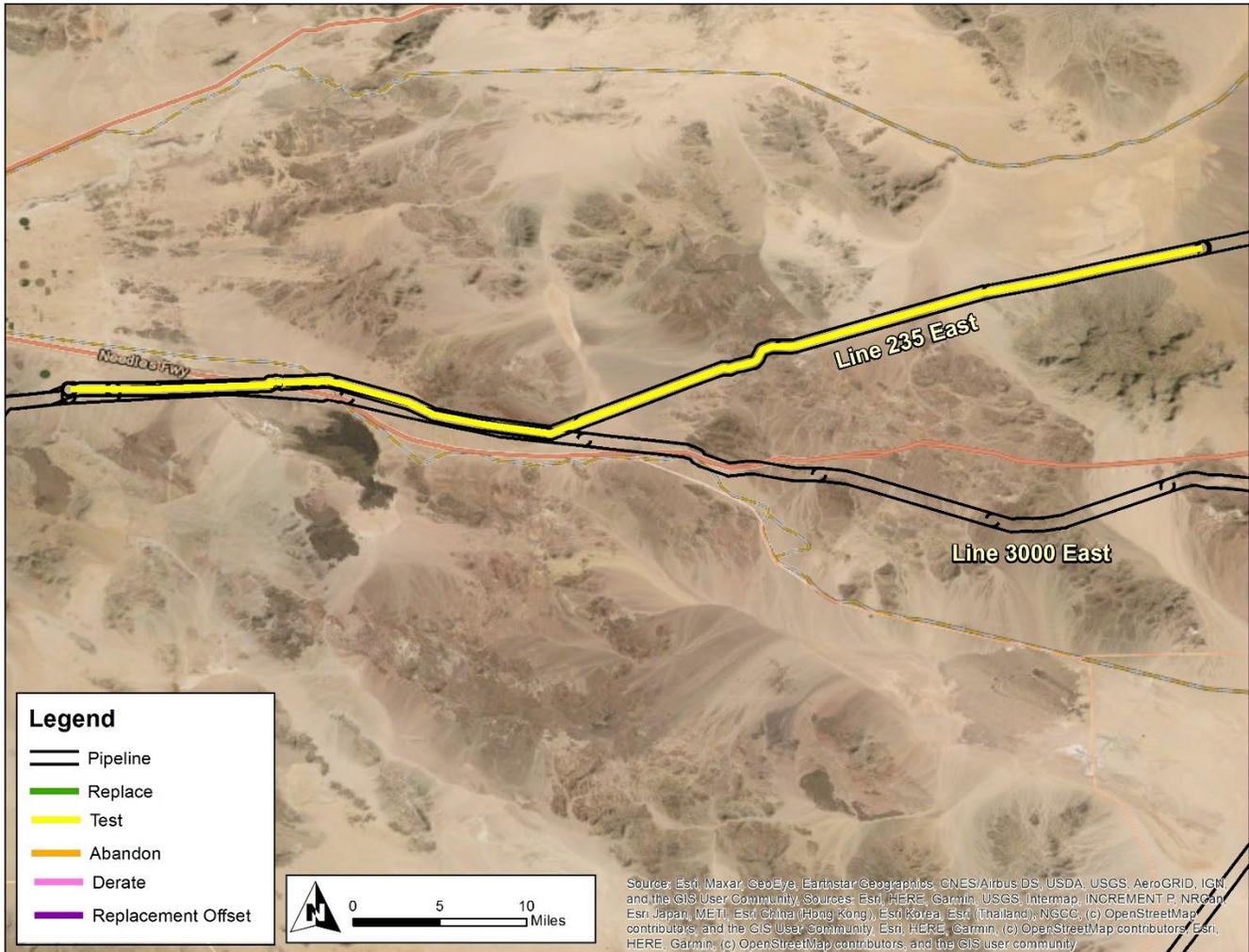
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LINE 235 EAST SECTION 2 PHASE 2A HYDROTEST PROJECT

Figure 1: Overview Map for Line 235 East Section 2 Phase 2A Hydrotest Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 235 EAST SECTION 2 PHASE 2A HYDROTEST PROJECT

Figure 2: Satellite Map for Line 235 East Section 2 Phase 2A Hydrotest Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 235 EAST SECTION 2 PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	56.332
PHASE 2B	0.000
INCIDENTAL	0.000
TOTAL MILEAGE	56.332

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$1,072,796	\$2,340,315	\$0	\$0	\$3,413,111
TOTAL DIRECT COSTS	\$0	\$1,072,796	\$2,340,315	\$0	\$0	\$3,413,111

Assumptions

Materials for this Project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 1,200 feet of [REDACTED] pipe.
- One [REDACTED] ball valve.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$20,281,037	\$0	\$20,281,037
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$20,281,037	\$0	\$20,281,037

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 12 hour per day, six day work week.
- Two lake tanks will be installed.
- Test Heads and Isolation Caps will be reused from PSEP Line 235 East Section 1 Phase 2A Hydrotest Project.
- Support for the fabrication and testing of isolation caps.

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LINE 235 EAST SECTION 2 PHASE 2A HYDROTEST PROJECT

- Water Transfer Manifolds will be reused from PSEP Line 235 East Section 1 Phase 2A Hydrotest Project.
- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two foot zone.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native fill.
- The pipeline will be tested in 16 separate hydrotest segments, at a rate of two test sections per day.
- 15 cold tie-ins have been presumed.
- Cold tie-ins will occur during a 16 hour work shift.
- Two final tie-ins with a 24 hour work shift will be performed. Intermittent gas ups have not been included.
- Isolation and final tie-ins for a 24 hour continuous duration.
- It is assumed that no line taps will be fabricated, nor need to be reconnected after the line is brought back into service.
- Support for the grading of access roads and lake tanks is included.
- No utility locates have been assumed.
- Hydrotest water will be hauled off and disposed.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers will be placed at the laydown yard.
 - Site facility costs cover a six month duration for hand wash facilities, portable toilets, and storage containers.
 - No import materials for preparation of site facilities.
- **Site Preparation**
 - 17 days for preparation of access roads for a grading crew.
 - Clearing of the laydown yards, work sites, and water storage area.
 - Disposal of vegetation is not assumed.
 - Cost for sand is included for the lake tank pads stabilization.
 - 400 Linear Feet (LF) of temporary fencing has been included to delineate the laydown yard.
 - Additional 6,400 LF of temporary fencing has been included for test break sites, to secure open excavations.
- **Site Management / Best Management Practices (BMPs)**
 - Fiber rolls, sandbags, reinforced poly sheets, silt fence, metal tee posts, wooden stakes, and spill kits are included for BMP measures.
 - 10 shifts to install BMPs.
- **Material Handling**
 - 10 loads of material will be unloaded at laydown yard and transported as needed.

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- **Traffic Control**
 - Traffic control is not included on this Project.
- **Site ROW Clearing**
 - Four shifts to clear work sites.
- **Utility Locates**
 - Utility locates are not assumed.
- **Site Excavations**
 - Four month duration for shoring equipment at test breaks and the new MLV excavation.
 - 17 hydrotest breaks to be excavated using mechanical and hand excavation.
 - 65 shifts included for all excavations regarding the hydrotest breaks. This total considers site move arounds and loss of productivity due to shoring.
 - 28 shifts included for the hand excavations within two feet surrounding the pipeline.
 - Seven shifts included for the machine excavation required at the hydrotest breaks.
 - Seven shifts included for hand and machine excavation required for the MLV installation.
 - Assumes two excavation crews to perform all mechanical and hand excavations.
 - Cost for haul off and disposal of excess spoils considered.
- **Remove Existing/Install New Pipeline Features**
 - No fabrication cost included for the fabrication of test heads, isolation caps, or water transfer manifolds.
 - Test heads, isolation caps and water transfer manifolds to be reused from Line 235 East Section 1 Phase 2A Hydrotest Project.
 - Fabrication for 17 [REDACTED] cut outs, pipe replacements section.
 - Pretesting of provided test heads and isolation caps.
 - Fabrication of the new MLV assembly.
- **Isolate Existing Pipeline**
 - Nitrogen cost for purging existing pipeline.
 - Additional cost for isolation and blowdown support.
 - No abatement support.
 - Assumes no taps will be isolated prior to hydrotesting.
 - Three shifts to isolate and blowdown pipeline.
 - Two shifts to nitrogen purge two sections of pipeline.
- **Pressure Test Pipeline**
 - 17 test breaks sites will be excavated for test heads.
 - 16 individual test sections will be hydrotested.
 - Two hydrotest sections will be tested per day.
 - Test heads will be installed below grade. Costs for vertical offset installation of test heads to an above-ground orientation has not been included.

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LINE 235 EAST SECTION 2 PHASE 2A HYDROTEST PROJECT

- Purchase cost of the water needed to perform hydrotesting.
- Install cost for test heads, test caps, water transfer, jumper lines, and hard fill lines.
- Support crew for filling of water storage lake tanks.
- Filling of existing pipeline test sections, testing pipeline test sections, initial draining of pipeline test sections, initial drying of pipeline test sections, and material and installation cost of nitrogen blanket.
- Final draining and drying of tested pipeline sections.
- **Tie-In Pipeline**
 - 15 pipe sections have been tested and dewatered; the test breaks will have pipe re-installed prior to drying of test groups. 16 hour work shift.
 - Two hot tie-ins will be performed at Test Break 1 and Test Break 17 during a 24 hour shift.
 - All pipeline tie-in welds will be inspected with x-ray.
- **Backfill Excavations**
 - Material cost for blasting media and pipeline coating.
 - All pipeline tie-in welds will be coated.
 - Approximately 3,942 cubic yards (CY) zero sack slurry for all pipeline bedding and shading.
 - 2,470 CY of native spoils to be used as backfill.
 - Haul off of 5,950 tons of excess spoils.
 - Two backfill crews.
- **Site Restoration**
 - Assumes site facility, laydown yards/water storage areas, and work sites will be restored to their original conditions.
 - Includes removal and disposal of BMP materials and lake tank stability sand padding.
 - Removal of all temporary fencing.
- **Site Demobilization**
 - All site facilities will be demobilized.
 - Seven loads of excess piping will be hauled to a designated yard.
 - Crew and equipment will be demobilized.
- **Field Overhead**
 - One Full-Time Project Manager.
 - One Full-Time Superintendent.
 - One Full-Time Cost Controller.
 - One Full-Time Timekeeper.
 - Two Full-Time Safety Personnel.
 - Four Full-Time Water Trucks and Drivers for dust suppression.
 - Two low bed trucks to assist with equipment move arounds, two snorkel lifts, three light towers, and one air compressor.
 - Five site security personnel for all non-working hours.

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LINE 235 EAST SECTION 2 PHASE 2A HYDROTEST PROJECT

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$83,607	\$984,804	\$2,954,412	\$5,908,824	\$0	\$9,931,647
TOTAL DIRECT COSTS	\$83,607	\$984,804	\$2,954,412	\$5,908,824	\$0	\$9,931,647

Assumptions

In calculating the estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this Project are described in more detail below.

Environmental Labor

- **Environmental Contract Services Labor:**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Cultural Report and National Park Service (NPS) streamlined review process.
 - Document production for Waters Delineation.
 - Document production for Dust Control Plan under Mojave Desert AQMD Rule 402.
 - Document production for Worker Environmental Awareness Procedure (WEAP).
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Preconstruction Clearance.
 - Document production for Habitat Mitigation and Monitoring Plan (HMMP).
 - Document production for Environmental Clearance.
- **Preconstruction Surveys**
 - Preconstruction clearance survey of 50 ft buffer of construction zone for 56 mile Section 2 utilizing two biologists for 15 days with 18 hours travel and 40 hours reporting.
- **Construction Monitoring**
 - Environmental Monitoring Support includes six monitors: one at Newberry yard, one with each crew, one escorting vehicles from the road to each crew, and one floater.
 - Six biologists working six 10 hour shifts for 20 weeks including six hours for travel per week, and 80 hours for

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- reporting and annual report.
 - Additional field work and reporting required to support tortoise monitoring, five trips.
- **Project Closeout Activities**
 - Restoration support, permit reporting, and closeout.
- **Abatement**
 - 74 days of abatement for ACMs.
 - Includes four days for excavation and abatement at each of the 17 hydrotest breaks.
- **Water Treatment and Hazardous Materials**
 - Hydrotest water, estimated at 3,300,000 gallons, to be acquired by the pipeline contractor for hydrotesting of existing pipeline.
 - Water will be obtained from nearby well at Newberry or hydrant in Barstow and trucked to the site.
 - Hydrotest water disposal for six bins 200 mile round trip from Ontario for material containment.
 - Water treatment will be done as part of Section 1 hydrotest at Needles Station.
 - Groundwater dewatering is not anticipated for this Project.
 - Contaminated soil is not anticipated.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes.
- **Permit Fees**
 - SWPPP fee.
 - Dust Control and abatement fees for Mojave Desert AQMD.
 - Streambed Alteration Agreement fee.
 - Agency 401 applications and notifications.
 - Estimated fees per Bureau of Land Management (BLM) and California Department of Fish and Wildlife (CDFW) requirements.
 - Approximately 3.44 acres of disturbance to federal West Mojave per BLM and CDFW requirements.

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$47,112	\$141,336	\$0	\$0	\$188,448
TOTAL DIRECT COSTS	\$0	\$47,112	\$141,336	\$0	\$0	\$188,448

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

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Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$12,467	\$117,386	\$352,157	\$0	\$0	\$482,009
TOTAL DIRECT COSTS	\$12,467	\$117,386	\$352,157	\$0	\$0	\$482,009

Assumptions

In generating for the total estimated cost for Line 235 East Section 2 Phase 2A Hydrotest Project the following items were considered:

- **Labor**
 - One contract agent.
 - Administrative support, document control specialist and permit coordinator.
- **Permitting Fees**
 - Mojave National Preserve Land permit fee.
 - BLM US Government permit fee.
- **Temporary Right of Entry**
 - Construction yards.
 - Workspace.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$89,622	\$259,282	\$259,282	\$941,403	\$306,667	\$1,856,256
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$89,622	\$259,282	\$259,282	\$941,403	\$306,667	\$1,856,256

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.

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LINE 235 EAST SECTION 2 PHASE 2A HYDROTEST PROJECT

- Project Engineers.
- Construction Management.
- Project Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$418,814	\$281,289	\$279,673	\$10,053,971	\$812,973	\$11,846,719
TOTAL DIRECT COSTS	\$418,814	\$281,289	\$279,673	\$10,053,971	\$812,973	\$11,846,719

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Line 235 East Section 2 Phase 2A Hydrotest Project includes 10 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$1,174. The final value of the Line 235 East Section 2 Phase 2A Hydrotest Project cost disallowance will be adjusted once the project is placed in service.

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LINE 257 PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$39,477	\$39,477	\$97,635	\$46,785	\$223,375
DIRECT NON-LABOR	\$74,179	\$206,522	\$369,796	\$1,091,178	\$117,962	\$1,859,637
TOTAL DIRECT O&M COSTS	\$74,179	\$246,000	\$409,273	\$1,188,813	\$164,748	\$2,083,012

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$11,480	\$11,480	\$28,393	\$13,605	\$64,959
DIRECT NON-LABOR	\$0	\$58,807	\$114,804	\$315,212	\$34,304	\$523,127
TOTAL DIRECT CAPITAL COSTS	\$0	\$70,287	\$126,284	\$343,605	\$47,910	\$588,086

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$0	\$50,957	\$50,957	\$126,028	\$60,391	\$288,334
DIRECT NON-LABOR	\$74,179	\$265,329	\$484,599	\$1,406,390	\$152,266	\$2,382,763
TOTAL COSTS	\$74,179	\$316,286	\$535,557	\$1,532,418	\$212,657	\$2,671,097

Project Description

The Line 257 Phase 2A Hydrotest Project will hydrotest approximately 24 feet of [REDACTED] pipeline within the Goleta storage field. The Project will hydrotest the pipeline in two test sections with water and the project will be completed in one mobilization and one demobilization.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 257 PHASE 2A HYDROTEST PROJECT

Alternatives Considered

Line 257 is critical in meeting operational needs. Abandoning this line would create a loss in capacity to the system. Derating the pipeline would negatively impact the capacity of the system and is not a viable option.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

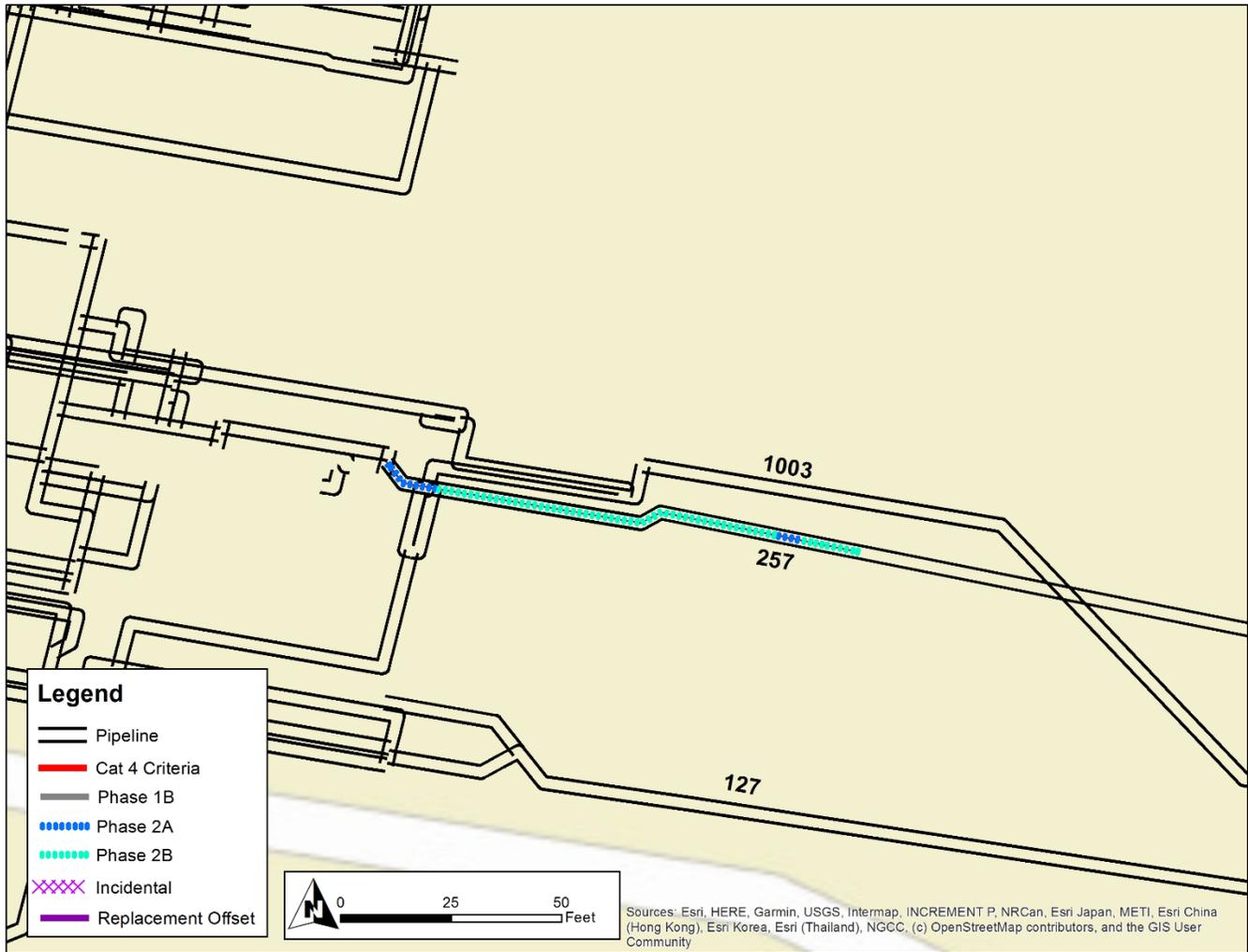
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 19 days.

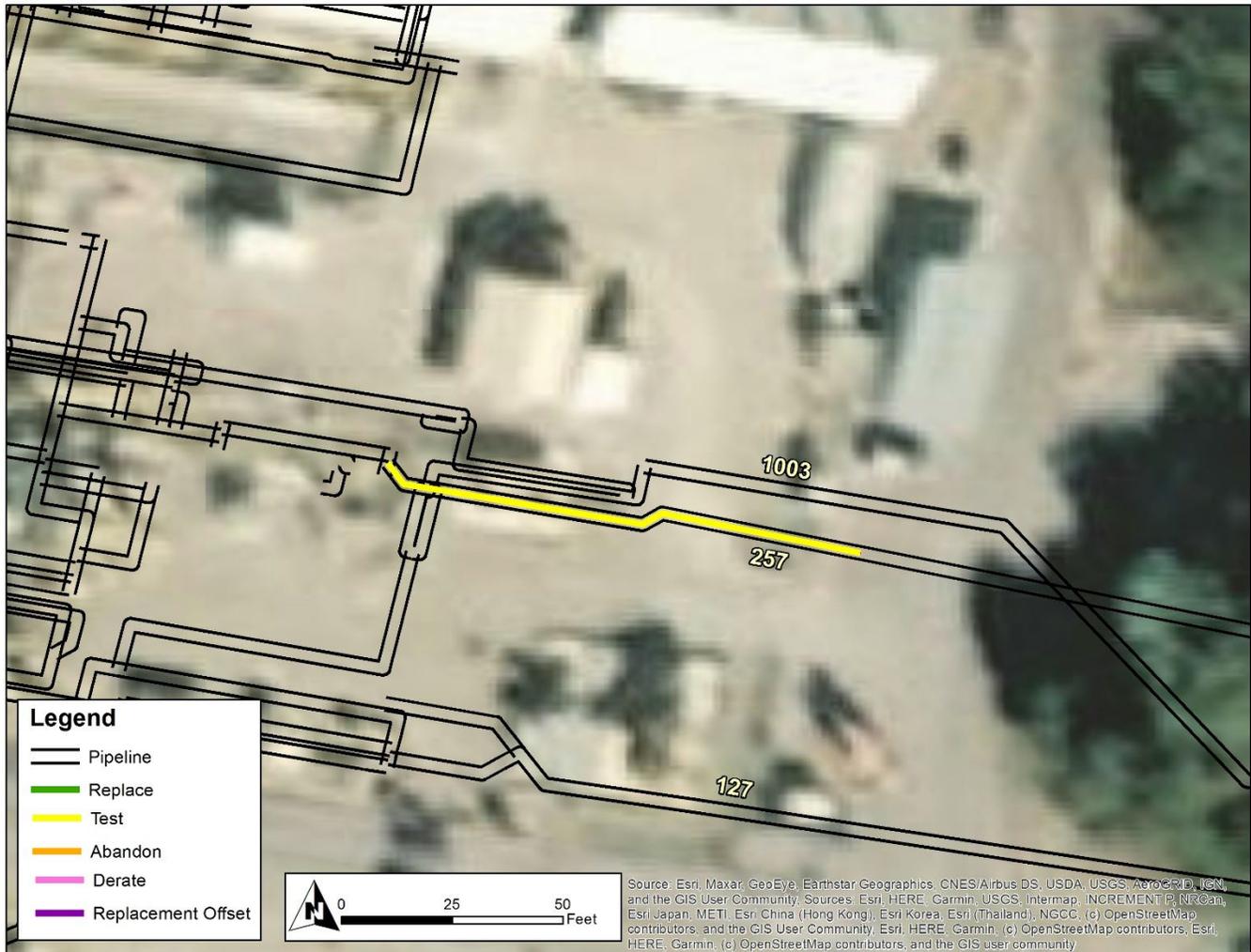
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LINE 257 PHASE 2A HYDROTEST PROJECT

Figure 1: Overview Map for Line 257 Phase 2A Hydrotest Project



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LINE 257 PHASE 2A HYDROTEST PROJECT

Figure 2: Satellite Map for Line 257 Phase 2A Hydrotest Project



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LINE 257 PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	0.005
PHASE 2B	0.015
INCIDENTAL	0.000
TOTAL MILEAGE	0.020

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$4,303	\$15,983	\$0	\$0	\$20,286
TOTAL DIRECT COSTS	\$0	\$4,303	\$15,983	\$0	\$0	\$20,286

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 20 feet of [redacted] pipe.
- Two [redacted] 90 degree elbows.
- Nine [redacted] ball valves.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$491,589	\$0	\$491,589
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$491,589	\$0	\$491,589

Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- Work has been scheduled using a 10 hour per day, four day work week.
- Access to work site shall be continuous once project commences.
- Materials will be unloaded by the contractor at laydown yard.

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LINE 257 PHASE 2A HYDROTEST PROJECT

- One laydown yard.
- Two test heads to be fabricated and pretested.
- All piping will be shaded with zero sack slurry. Remainder of trench zone will receive one sack slurry. Excess spoils to be hauled off and disposed.
- Improved areas disturbed will be restored at the end of the project.
- Shoring for a one month duration.
- Traffic control includes reflective cones, but no dedicated traffic control crew.
- Blowdown support.
- The pipeline will be tested in one section within a four day window.
- Hydrotest water will be hauled off and disposed.
- Tie-ins will be performed during two 16 hour shifts.
- Laydown yard will be restored to original condition at the end of the project.
- Restoration of grade along ROW will be performed at the end of the project.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Site facility costs for delivery and removal.
- **Site Management / Best Management Practices (BMPs)**
 - Fiber rolls, sand bags, reinforced poly sheeting, and silt fencing will be procured and installed for BMP measures.
 - BMP materials for silt fencing and tire grates.
- **Material Handling**
 - One load of material will be unloaded at laydown yards and transported as needed.
- **Traffic Control**
 - 20 reflective cones.
- **Site Excavation**
 - Shoring materials include for one month rentals of twelve hydraulic jacks, and one hydraulic jack pump.
 - Remaining material procurement includes one month rental of 10 steel plates, and 15 Tons of crushed gravel.
- **Site Feature Demolition**
 - Includes 596 linear feet (LF) of asphalt-concrete saw cutting.
- **Excavation**
 - Hand excavation crew to excavate 36 cubic yards (CY) related to a test head bell hole.

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LINE 257 PHASE 2A HYDROTEST PROJECT

- Includes 47 ton aggregate disposal fee.
- **Fabricate New Features**
 - Fabrication crew to fabricate two welds related to a goose neck, two tie-in pieces, and two test heads.
- **Isolate Existing Pipeline**
 - Fabrication crew, two welding trucks, and one 22 ton boom truck to support the blowdown.
- **Hydrotest / Pressure Test Pipeline**
 - Material procurement for six wood pipe dunnage, two month rental of four steel plates, hydrant permit, backflow preventer, and 600 gallons of water.
 - Fabrication crew to install four test heads.
 - Hydrotest support crew to fill, test, drain, and dry the pipeline.
- **Tie-In Pipeline**
 - Material procurement includes eight gallons of epoxy paint and 400 pounds (LB) of sandblasting media.
 - Fabrication crew to prepare for two tie-ins.
 - Tie-in crew to tie-in two locations.
 - Two shifts to coat four welds.
- **Backfill Excavations**
 - Backfill material included are 16 CY of zero sack slurry, and 20 CY of one sack slurry.
 - Backfill crew to backfill 22 CY.
- **Site Restoration and Site Cleanup**
 - Includes 100 square feet (SF) of asphalt base paving up to 6-inch.
 - BMP install crew to remove the silt fencing, tire grate, and remaining SWPPP / BMPs, as well as final cleanup.
- **Site Demobilization**
 - Backfill crew to demobilize steel plates.
 - All crews and equipment will be demobilized.
- **Field Overhead**
 - One full-time Cost Controller.
 - One full-time Safety Supervisor.
 - One full-time Superintendent.
 - One full-time Timekeeper.
 - One full-time Assistant Project Manager.

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LINE 257 PHASE 2A HYDROTEST PROJECT

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$121,902	\$365,705	\$731,410	\$0	\$1,219,016
TOTAL DIRECT COSTS	\$0	\$121,902	\$365,705	\$731,410	\$0	\$1,219,016

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
- **Preconstruction Surveys**
 - 12 month preconstruction planning.
- **Project Closeout Activities**
 - Restoration support, permit reporting, and closeout.
- **Abatement**
 - Eight days for abatement of ACMs.
 - Five feet of wrapping abatement per DER.
 - Hydrotest includes four pipe cuts and assumes one day of abatement per cut.
 - Four additional days assumed for unexpected debris fields for the duration of excavation.
- **Water Treatment and Hazardous Materials**
 - Hydrotest water, 1,000 gallons total, from hydrant.
 - Groundwater to be dewatered and sent to disposal facility.
 - Contaminated soil allowance.

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LINE 257 PHASE 2A HYDROTEST PROJECT

- **Permit Fees**
 - Environmental discharge permits and dust control plan.

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$2,777	\$0	\$0	\$0	\$0	\$2,777
TOTAL DIRECT COSTS	\$2,777	\$0	\$0	\$0	\$0	\$2,777

Assumptions

In generating for the total estimated cost for Supply Line 38-362 Phase 2A Hydrotest Project the following items were considered:

- **Labor**
 - One contract land agent.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$50,957	\$50,957	\$126,028	\$60,391	\$288,334
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$0	\$50,957	\$50,957	\$126,028	\$60,391	\$288,334

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

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LINE 257 PHASE 2A HYDROTEST PROJECT

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$71,402	\$139,124	\$102,911	\$183,392	\$152,266	\$649,096
TOTAL DIRECT COSTS	\$71,402	\$139,124	\$102,911	\$183,392	\$152,266	\$649,096

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Line 257 Phase 2A Hydrotest Project includes 24 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$479,093. The final value of the Line 257 Hydrotest Project cost disallowance will be adjusted once the project is placed in service.

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LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$78,256	\$78,256	\$122,041	\$90,167	\$368,719
DIRECT NON-LABOR	\$0	\$489,340	\$465,501	\$2,241,281	\$239,629	\$3,435,751
TOTAL DIRECT O&M COSTS	\$0	\$567,596	\$543,757	\$2,363,321	\$329,796	\$3,804,471

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$13,363	\$36,886	\$36,886	\$55,565	\$42,623	\$185,323
DIRECT NON-LABOR	\$65,163	\$164,993	\$277,911	\$972,904	\$105,052	\$1,586,022
TOTAL DIRECT CAPITAL COSTS	\$78,526	\$201,879	\$314,796	\$1,028,469	\$147,675	\$1,771,345

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$13,363	\$115,141	\$115,141	\$177,606	\$132,790	\$554,042
DIRECT NON-LABOR	\$65,163	\$654,333	\$743,412	\$3,214,185	\$344,680	\$5,021,773
TOTAL COSTS	\$78,526	\$769,475	\$858,553	\$3,391,791	\$477,471	\$5,575,815

Project Description

The Line 404 Section 12 Phase 2A Hydrotest Project will hydrotest approximately 6.07 miles of [REDACTED] pipeline. The Project starts [REDACTED] of [REDACTED] near [REDACTED] within unincorporated Ventura County and ends at [REDACTED] in [REDACTED]. The hydrotest will be executed in two segments due to elevation and be completed in one mobilization.

Alternatives Considered

Line 404 and Line 406 provide critical redundancy for the communities between Ventura and Los Angeles, and are required to fully utilize the Goleta storage field. To maintain system capacity, these pipelines cannot be abandoned, derated, or reduced in diameter.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

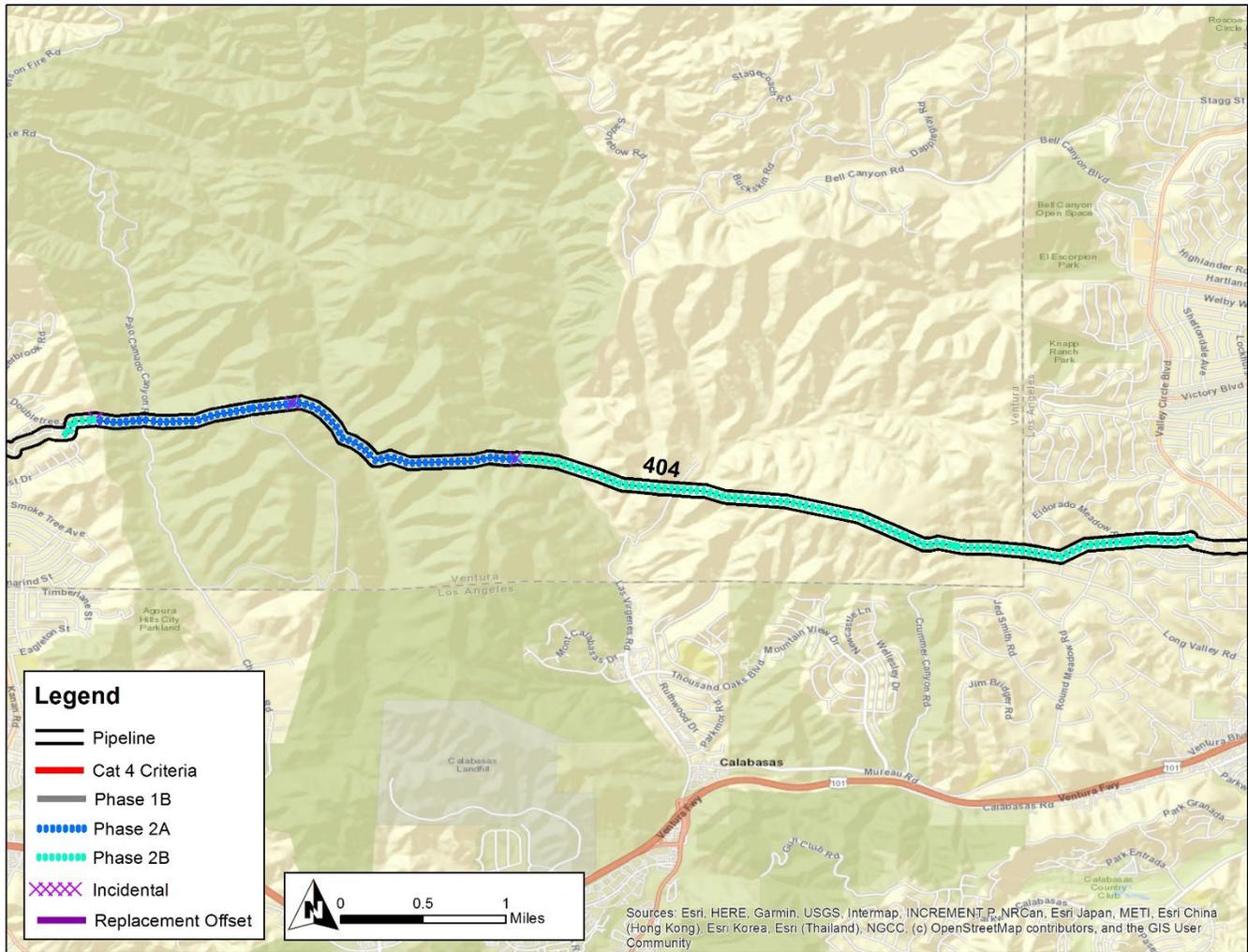
The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 47 days.

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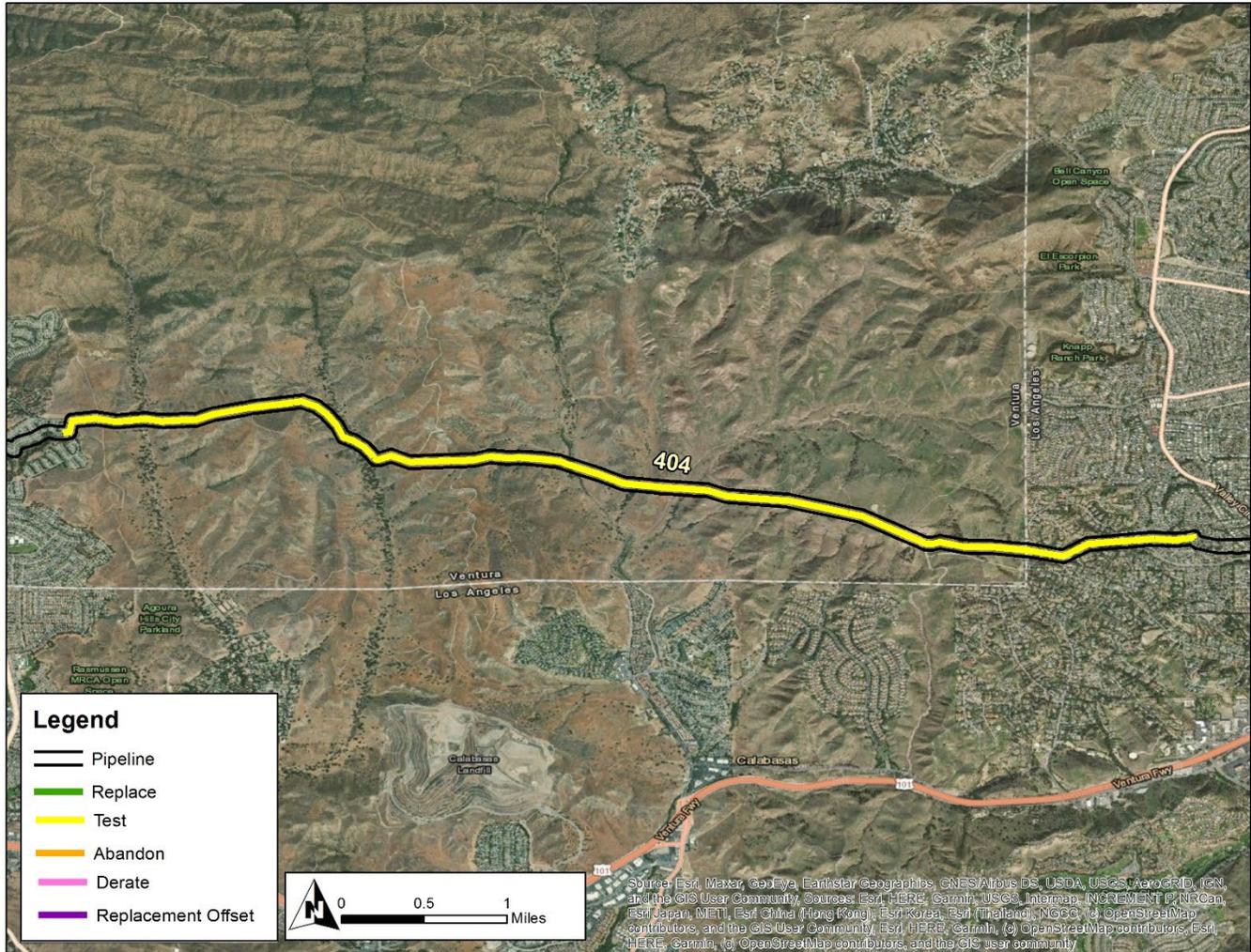
LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

Figure 1: Overview Map for Line 404 Section 12 Phase 2A Hydrotest Project



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LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

Figure 2: Satellite Map for Line 404 Section 12 Phase 2A Hydrotest Project



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LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	2.273
PHASE 2B	3.773
INCIDENTAL	0.024
TOTAL MILEAGE	6.071

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$112,982	\$100,924	\$0	\$0	\$213,906
TOTAL DIRECT COSTS	\$0	\$112,982	\$100,924	\$0	\$0	\$213,906

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 160 feet of [redacted] pipe.
- Six [redacted] wedding bands.
- Six [redacted] ball valves.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$2,076,318	\$0	\$2,076,318
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$2,076,318	\$0	\$2,076,318

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- One lake tank.
- Four test heads with the associated [redacted] transfer piping will be fabricated and pretested.

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LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two foot zone.
- Two work sites will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.
- One work site will be backfilled with zero sack slurry.
- The pipeline will be hydrotested in two separate hydrotest segments, one segment will be hydrotested per day.
- One final tie-in will be performed.
- Isolation and final tie-ins have been assumed for a 24 hour continuous duration.
- Taps will be fabricated and then reconnected after line is brought back into service.
- Line seasoning is not required.
- Hydrotest water will be hauled off and disposed.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers will be placed at the laydown yard.
 - Site facility costs cover a two month duration.
 - 1,030 linear feet (LF) of temporary fill piping will be installed from the water hydrant to the lake tank.
- **Site Preparation**
 - One day of preparation for grading a stabilization pad for lake tank.
 - 1,480 LF temporary fencing to delineate the laydown yard.
 - Two days for four pipeline span supports.
- **Site Management / Best Management Practices (BMPs)**
 - 1,000 LF Environmental protective fencing.
 - BMP cost to cover the creation of two separate wheel wash points.
 - The installation of tire rumble plates for two separate entrance locations.
- **Material Handling**
 - Two loads of material will be unloaded at laydown yard and transported as needed.
- **Site ROW Clearing**
 - One day of site clearing for two separate work areas.
- **Utility Locates**
 - Utility locates to verify coating and pipe integrity for placement of test head manifolds.
- **Isolate Existing Pipeline**
 - A total of four taps will be isolated prior to hydrotesting.

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LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

- **Pressure Test Pipeline**
 - Three sites will be excavated for test head manifold installation.
 - Two individual test sections will be hydrotested.
 - One hydrotest section will be tested per day.
 - Test heads will be installed below grade.

- **Tie In Pipeline**
 - Once pipe sections have been hydrotested and dewatered, the test breaks will have pipe reinstalled prior to drying of test groups.
 - Two hot tie-ins will be performed at hydrotest breaks.
 - All tie-in welds will be x-rayed.

- **Site Restoration**
 - All work site locations will be restored to original condition.
 - Disturbed native areas will be restored and graded to drain.

- **Site Demobilization**
 - All site facilities will be demobilized.
 - One load of excess piping will be hauled to SCG designated yard.
 - Crew and equipment will be demobilized.

- **Field Overhead**
 - One Full-Time Superintendent.
 - One Full-Time Safety Supervisor.
 - One Full-Time Timekeeper.
 - One Part-Time Project Engineer.
 - One Part-Time Cost Controller.
 - One Full-Time Water Truck and Driver and one Water Truck and Driver from excavation through backfill activities for dust and fire suppression.
 - Three site security personnel for all non working hours.

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$6,926	\$65,193	\$195,578	\$391,156	\$0	\$658,853
TOTAL DIRECT COSTS	\$6,926	\$65,193	\$195,578	\$391,156	\$0	\$658,853

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LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Worker Environmental Awareness Procedure (WEAP).
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Preconstruction Clearance.
 - Document production for Environmental Clearance.
 - Document production for Habitat Mitigation and Monitoring Plan (HMMP).
 - Document production for Cultural Report and National Park Service (NPS) streamlined review process.
 - Document production for Waters Delineation.
 - Document production for Biological Report.
 - Document production for Rare Plant Survey Report.
 - Document production for Agency (401/404/SAA) applications and notifications.
 - Document production for Section 7 (BE/BA).
- **Preconstruction Surveys**
 - Preconstruction wildlife and nesting bird survey report.
 - Rare plant survey and topsoil flagging.
- **Construction Monitoring**
 - 79 days full time monitoring.
- **Project Closeout Activities**
 - Restoration support, permit reporting, and closeout.
- **Abatement**
 - 12 days for abatement of ACMs.
- **Water Treatment and Hazardous Materials**
 - Hydrostatic test water, estimated at 397,544 gallons, to be acquired by the pipeline contractor.
 - Water for hydrotest will be provided from nearby hydrant.
 - Hydrotest water disposal from up to 200 miles roundtrip plus disposal fee.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

- Hydrotest standby support for four days.
 - Groundwater dewatering is not anticipated for this project.
 - Contaminated soil is not anticipated.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes (e.g. lead paint waste, pigs used to dry the pipeline post hydrotest, asbestos containing material, etc.).
- **Permit Fees**
 - Storm Water Pollution and Prevention Plan (SWPPP) fee.
 - Ventura County Air Pollution Control District (VCAPCD) and South Coast Air Quality Management District (SCAQMD) asbestos notification fee.
 - California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt.
 - Assumes formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Sections 7 of the Endangered Species Act (ESA) will be required, and that California Endangered Species Act § 2081 will not be required.
 - California Department of Fish and Wildlife (CDFW) Section 1600 for span supports.
 - Los Angeles Regional Water Quality Control Board (RWQCB) Section 401.
 - U.S. Army Corps of Engineers (USACE) Section 404 Nationwide Permits (e.g., NWP 12 [Utility Line Activities] and/or NWP 3 [Maintenance], and/or NWP 33 [Temporary Construction, Access and Dewatering]).
 - Archaeological Resources Protection Act (ARPA) permit.
 - Ventura County Watershed Protection District Red Line Creek Watercourse Permit.
 - **Mitigation Fees**
 - Assumes no jurisdictional waters compensatory mitigation required for span support.
 - Temporary impact to 2.05 acres of California grassland in specified areas.

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$7,947	\$23,841	\$0	\$0	\$31,788
TOTAL DIRECT COSTS	\$0	\$7,947	\$23,841	\$0	\$0	\$31,788

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

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LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$5,988	\$34,465	\$103,395	\$0	\$0	\$143,848
TOTAL DIRECT COSTS	\$5,988	\$34,465	\$103,395	\$0	\$0	\$143,848

Assumptions

In generating for the total estimated cost for Line 404 Section 12 Phase 2A Hydrotest Project the following items were considered:

- **Labor**
 - One contract land agent, administrative support, document control specialist, and permit coordinator for duration of the project.
- **Permitting Fees**
 - Rancho Simi Recreation and Park District.
 - National Park Service.
 - Mountains and Recreation Conservation Authority.
 - Ventura County Encroachment.
 - State Lands Commission.
- **Temporary Right of Entry**
 - Laydown yard.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$13,363	\$115,141	\$115,141	\$177,606	\$132,790	\$554,042
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$13,363	\$115,141	\$115,141	\$177,606	\$132,790	\$554,042

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.

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LINE 404 SECTION 12 PHASE 2A HYDROTEST PROJECT

- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$52,249	\$433,747	\$319,673	\$746,711	\$344,680	\$1,897,060
TOTAL DIRECT COSTS	\$52,249	\$433,747	\$319,673	\$746,711	\$344,680	\$1,897,060

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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LINE 406 PHASE 2A HYDROTEST PROJECTS

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$28,070	\$453,618	\$453,618	\$812,208	\$529,033	\$2,276,546
DIRECT NON-LABOR	\$599,863	\$2,928,829	\$3,013,258	\$13,815,107	\$1,492,197	\$21,849,255
TOTAL DIRECT O&M COSTS	\$627,933	\$3,382,447	\$3,466,876	\$14,627,314	\$2,021,230	\$24,125,801

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$4,527	\$212,370	\$212,370	\$353,709	\$248,524	\$1,031,500
DIRECT NON-LABOR	\$68,759	\$855,366	\$1,260,933	\$6,146,183	\$610,520	\$8,941,760
TOTAL DIRECT CAPITAL COSTS	\$73,286	\$1,067,736	\$1,473,303	\$6,499,892	\$859,044	\$9,973,260

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$32,597	\$665,988	\$665,988	\$1,165,917	\$777,557	\$3,308,046
DIRECT NON-LABOR	\$668,622	\$3,784,195	\$4,274,191	\$19,961,289	\$2,102,717	\$30,791,015
TOTAL COSTS	\$701,219	\$4,450,183	\$4,940,179	\$21,127,206	\$2,880,274	\$34,099,061

Project Description

The Line 406 Phase 2A Hydrotest Projects will hydrotest approximately 14.32 miles of [REDACTED] pipeline across six individual Project Sections. The Projects start in Ventura and end in Thousand Oaks.

The Line 406 Section 11 Phase 2A Hydrotest Project will hydrotest approximately 3.72 miles of pipeline in six test segments due to elevation. The Project begins approximately [REDACTED] of [REDACTED] and ends approximately [REDACTED] of [REDACTED] in Ventura.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 406 PHASE 2A HYDROTEST PROJECTS

The Line 406 Section 12 Phase 2A Hydrotest Project will hydrotest approximately 1.39 miles of pipeline in two test segments due to elevation. The Project begins on Harmon Canyon Road and ends at the intersection of Elizabeth Road and Foothill Road in Ventura.

The Line 406 Section 13 Phase 2A Hydrotest Project will hydrotest approximately 1.92 miles of pipeline. The Project starts at mainline valve (MLV) 406-11.49-0 in unincorporated Ventura County and ends west of Clubhouse Drive near the Saticoy Country Club in Somis.

The Line 406 Section 14 Phase 2A Hydrotest Project will hydrotest approximately 4.56 miles of pipeline. The Project starts east of Saticoy Country Club near Center Road and ends west of Bradley Road in Somis.

The Line 406 Section 15 Phase 2A Hydrotest Project will hydrotest approximately 1.65 miles of pipeline in two test segments due to elevation. The Project starts east of East Street in Somis and ends on Hilltop Lane north of Santa Rosa Road in Camarillo.

The Line 406 Section 16 Phase 2A Hydrotest project will hydrotest approximately 1.11 miles of pipeline in two test segments due to elevation. The Line 406 Section 16 Phase 2A Hydrotest project starts at MLV 406-25.06-0 on Hill Canyon Fire Road in Thousand Oaks and ends on the Mesa Trail west of West Avenida De Los Arboles in Thousand Oaks.

Project activities described below will identify cumulative estimating assumptions for all Project sections and will also separately identify any estimating assumptions unique to one or more of the Project sections.

Alternatives Considered

Line 404 and Line 406 provide critical redundancy for the coastal communities between Ventura and Los Angeles, and are required to fully utilize the Goleta storage field. To maintain system capacity, these pipelines cannot be abandoned, derated, or reduced in diameter.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

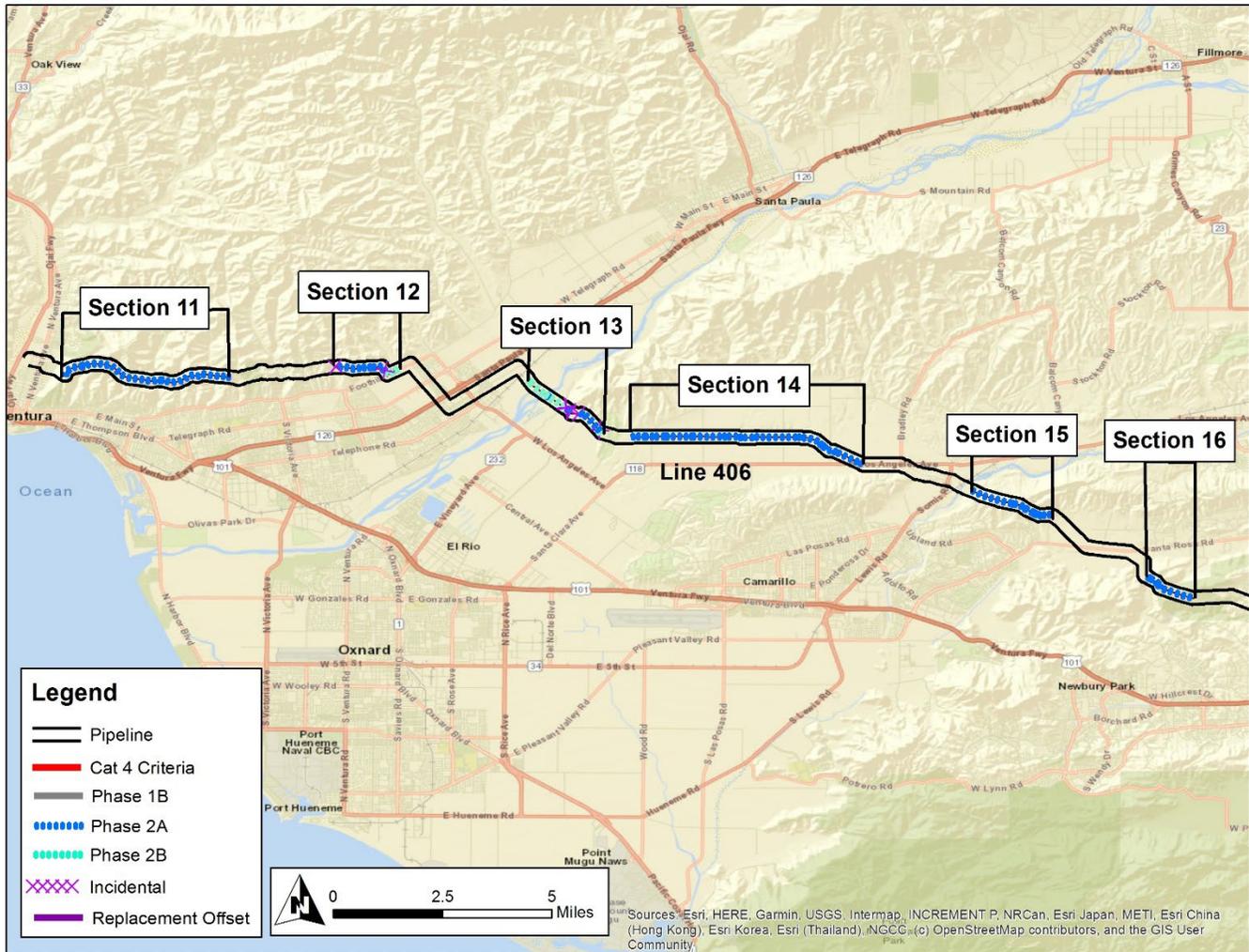
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be: 64 days for Section 11, 42 days for Section 12, 41 days for Section 13, 38 days for Section 14, 42 days for Section 15, and 41 days for Section 16.

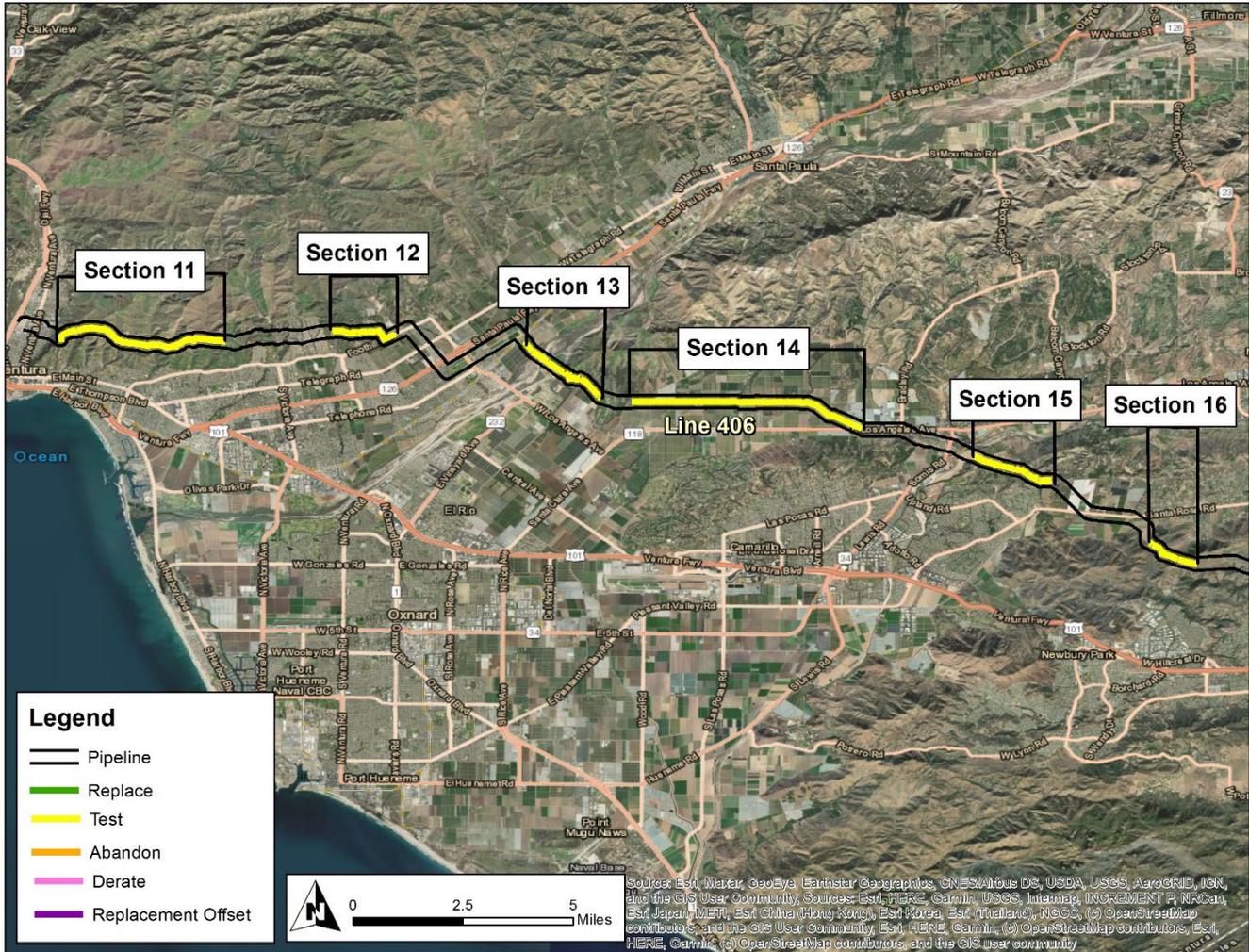
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
LINE 406 PHASE 2A HYDROTEST PROJECTS

Figure 1: Overview Map for Line 406 Phase 2A Hydrotest Projects



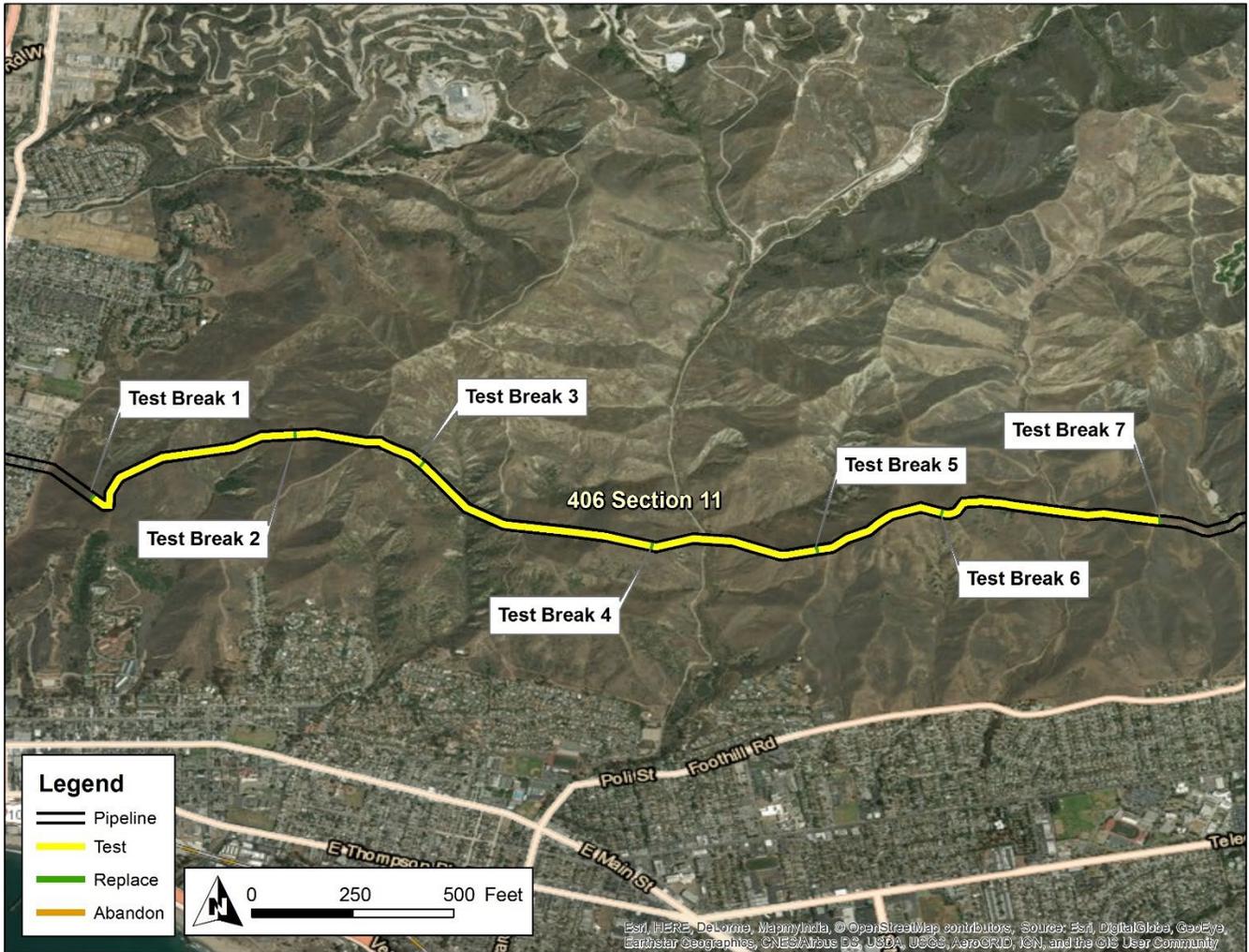
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LINE 406 PHASE 2A HYDROTEST PROJECTS

Figure 2: Satellite Map for Line 406 Phase 2A Hydrotest Projects



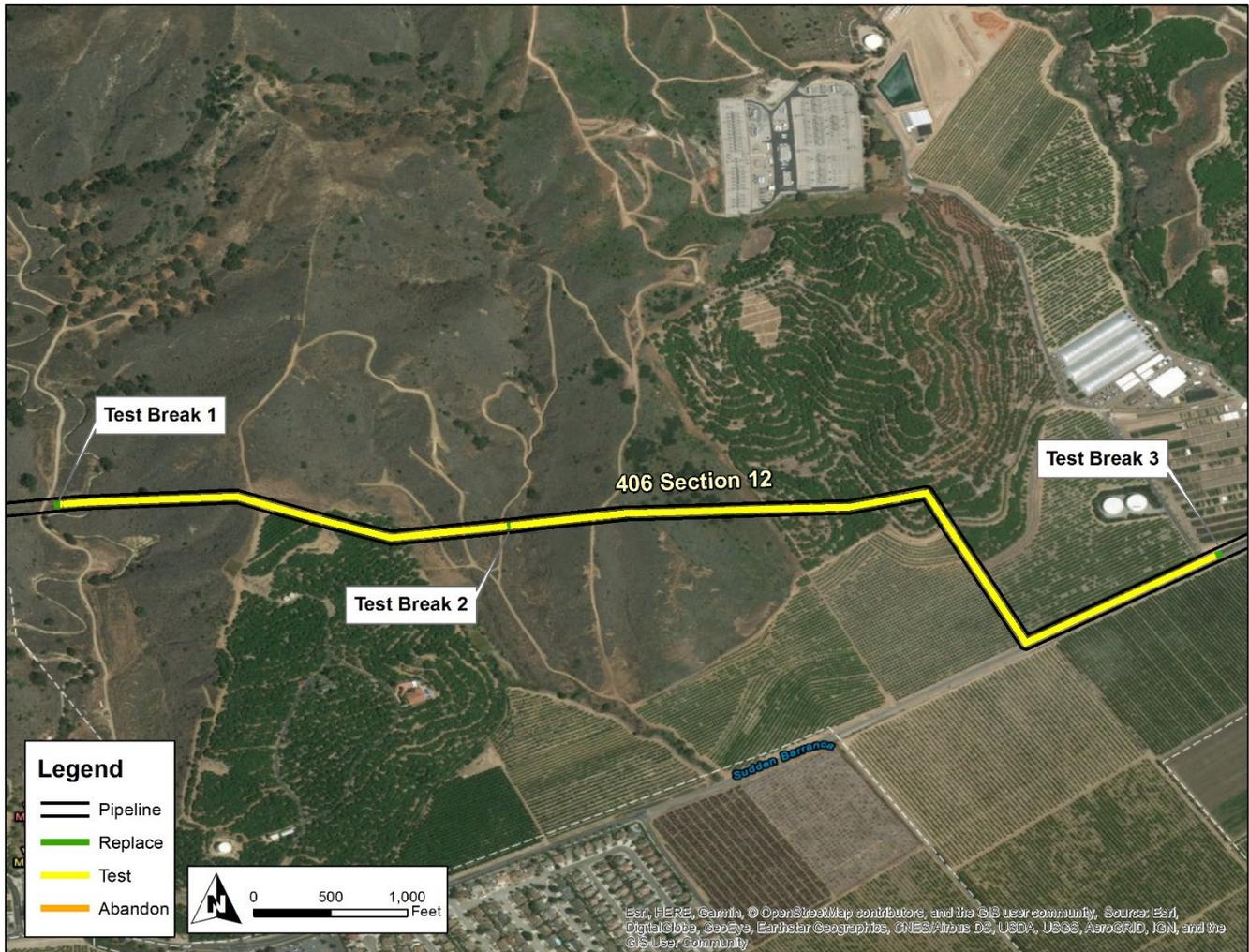
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LINE 406 PHASE 2A HYDROTEST PROJECTS

Figure 3: Satellite Map for Line 406 Section 11 Phase 2A Hydrotest Project



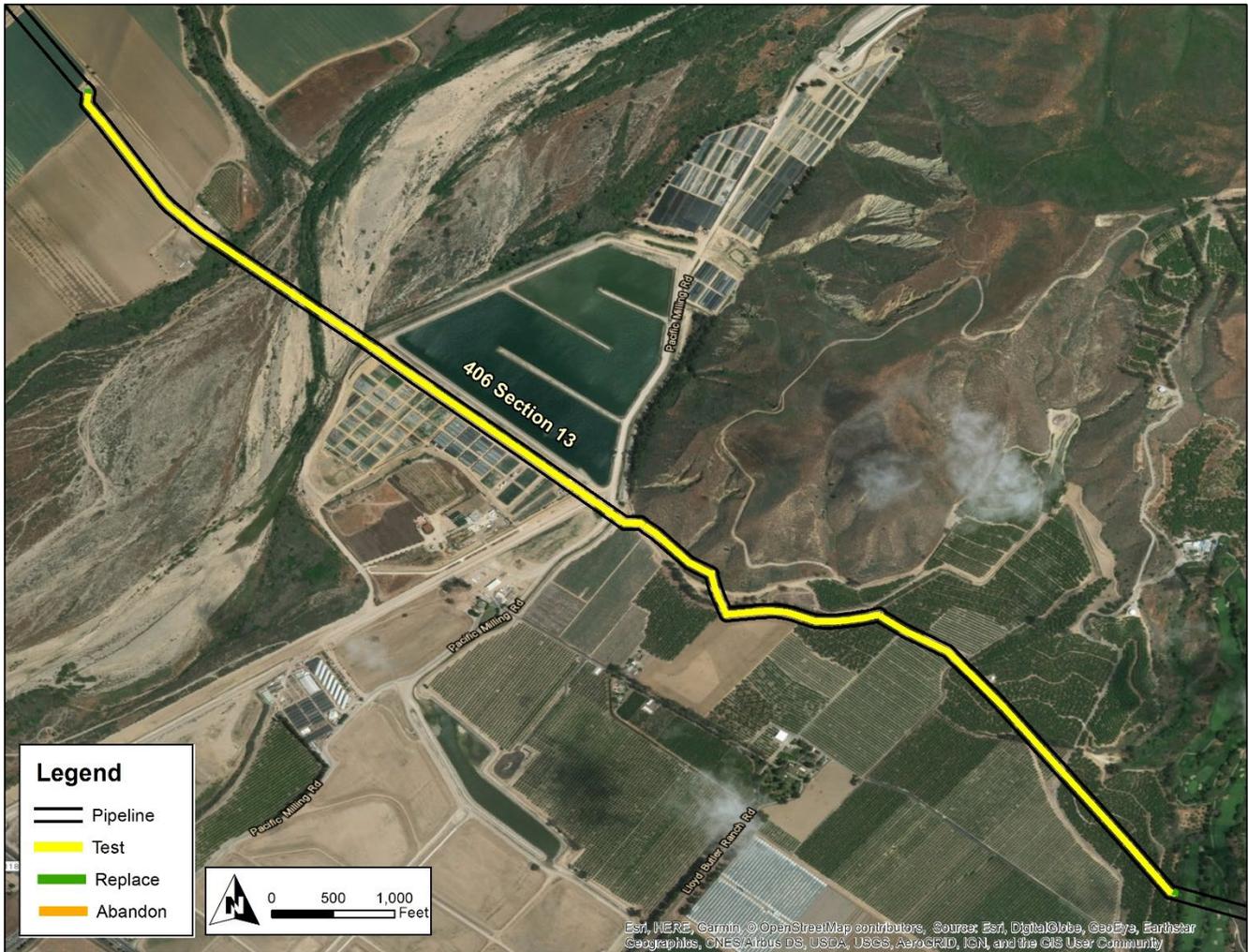
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LINE 406 PHASE 2A HYDROTEST PROJECTS

Figure 4: Satellite Map for Line 406 Section 12 Phase 2A Hydrotest Project



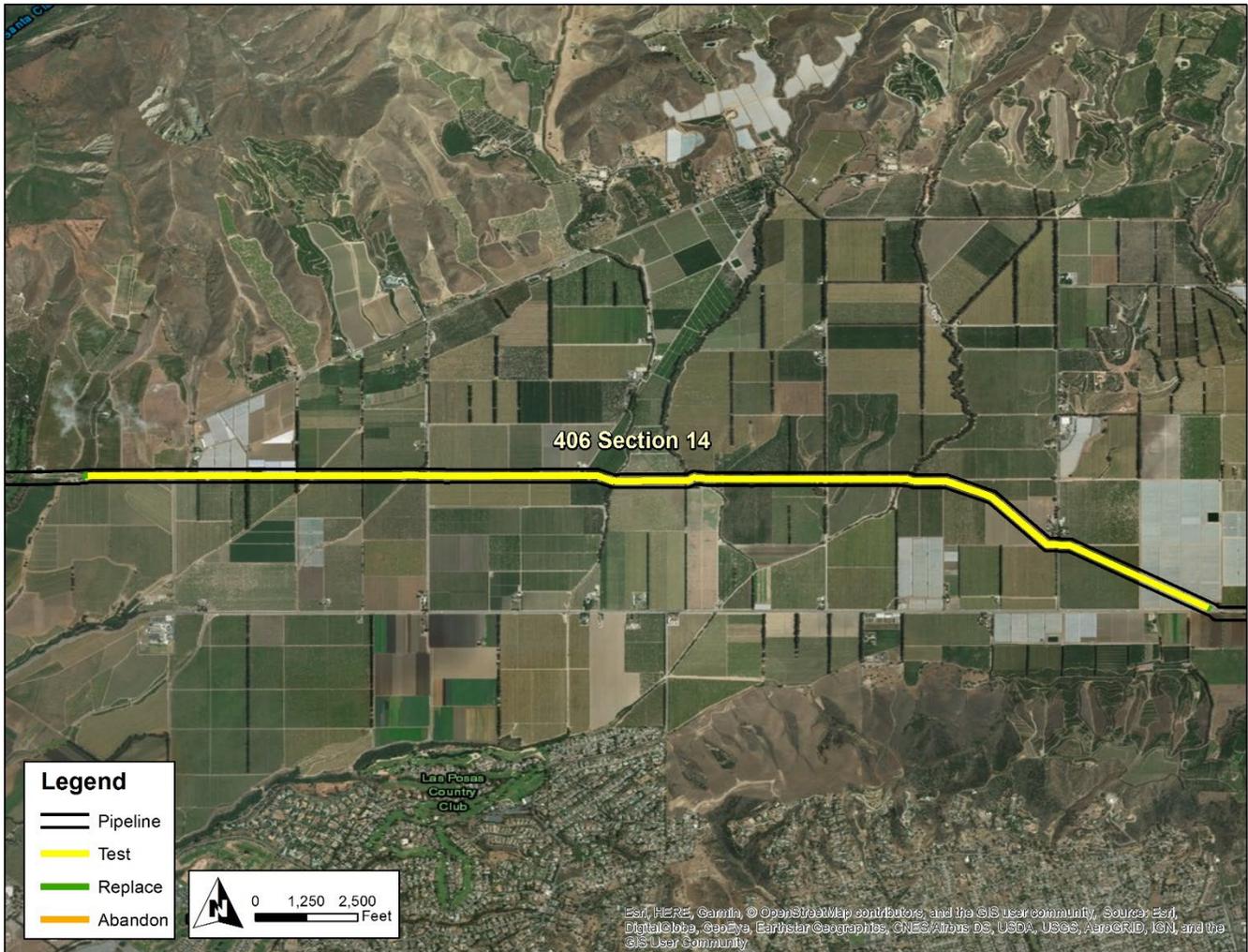
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LINE 406 PHASE 2A HYDROTEST PROJECTS

Figure 5: Satellite Map for Line 406 Section 13 Phase 2A Hydrotest Project



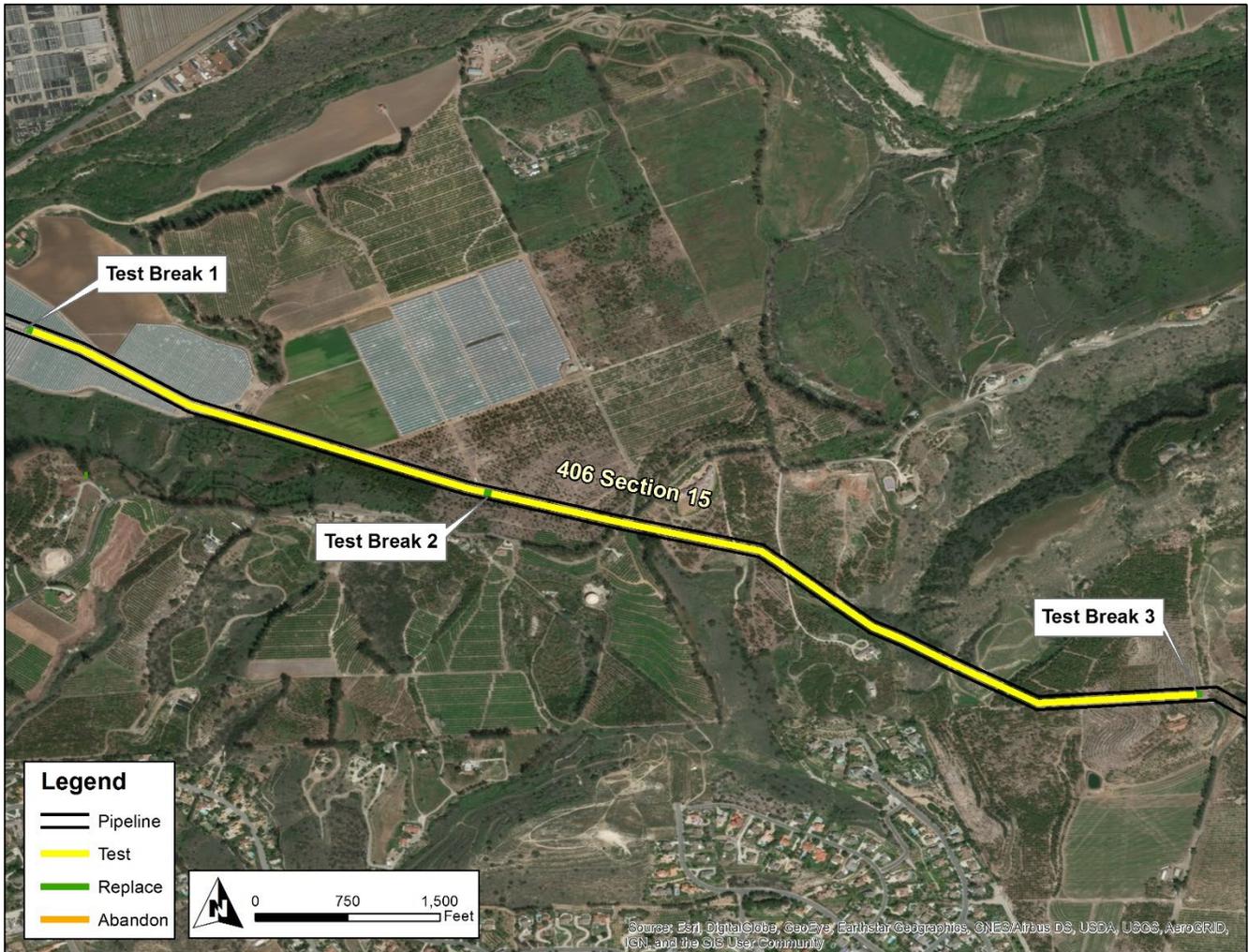
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LINE 406 PHASE 2A HYDROTEST PROJECTS

Figure 6: Satellite Map for Line 406 Section 14 Phase 2A Hydrotest Project



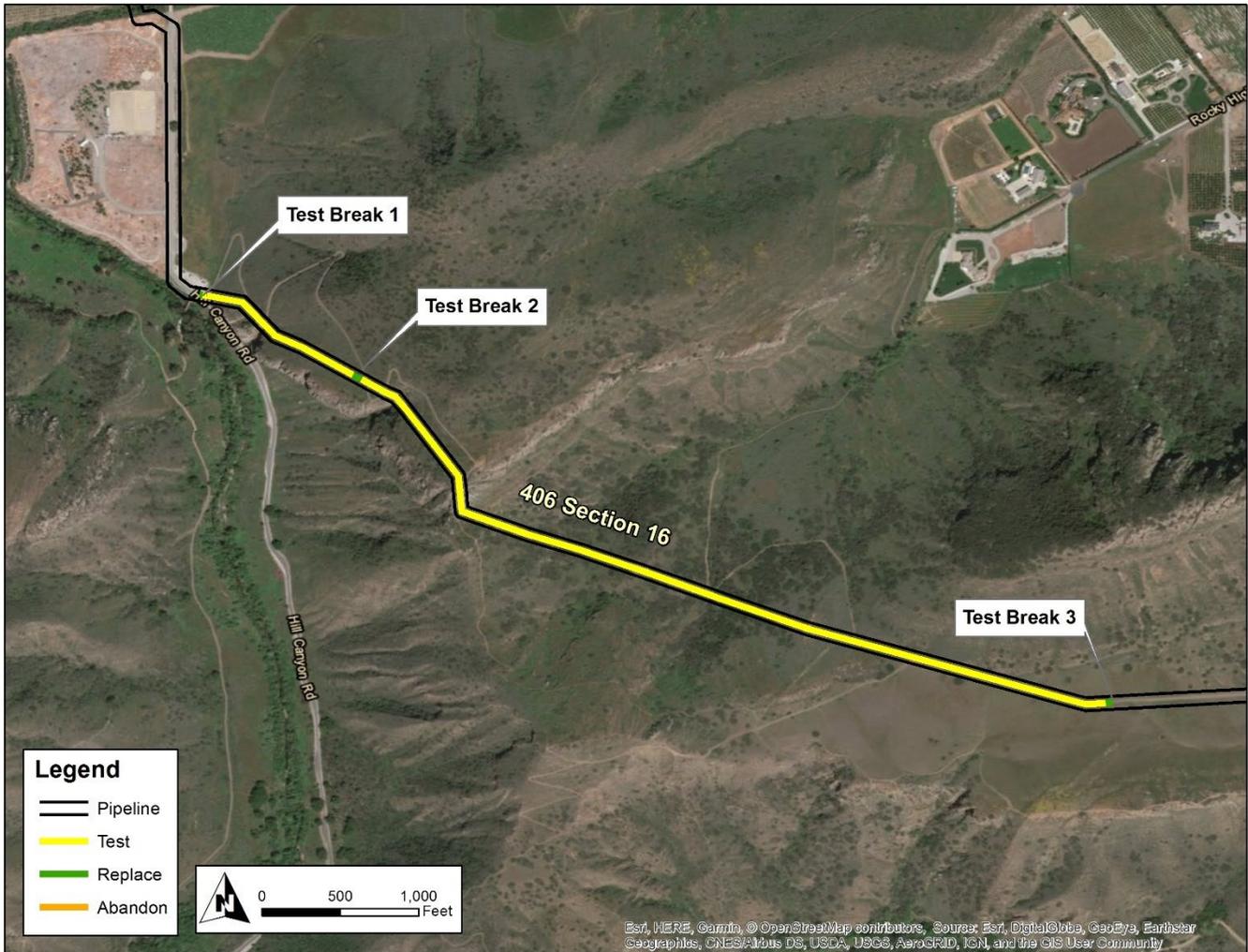
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LINE 406 PHASE 2A HYDROTEST PROJECTS

Figure 7: Satellite Map for Line 406 Section 15 Phase 2A Hydrotest Project



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LINE 406 PHASE 2A HYDROTEST PROJECTS

Figure 8: Satellite Map for Line 406 Section 16 Phase 2A Hydrotest Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 406 PHASE 2A HYDROTEST PROJECTS

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	12.691
PHASE 2B	1.353
INCIDENTAL	0.280
TOTAL MILEAGE	14.324

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁸
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$831,784	\$930,228	\$0	\$0	\$1,762,013
TOTAL DIRECT COSTS	\$0	\$831,784	\$930,228	\$0	\$0	\$1,762,013

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- Section 11
 - 760 feet of [REDACTED] pipe.
- Section 12
 - 280 feet of [REDACTED] pipe.
- Section 13
 - 80 feet of [REDACTED] pipe.
- Section 14
 - 200 feet of [REDACTED] pipe.
- Section 15
 - 280 feet of [REDACTED] pipe.
- Section 16
 - 240 feet of [REDACTED] pipe.

⁸ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 406 PHASE 2A HYDROTEST PROJECTS

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁹
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$8,521	\$0	\$0	\$15,193,517	\$0	\$15,202,039
TOTAL DIRECT COSTS	\$8,521	\$0	\$0	\$15,193,517	\$0	\$15,202,039

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization per Project section.
- Contractor work has been scheduled using a ten hour per day, five day work week calendar.
- All materials will be received at the laydown yard.
- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two foot zone.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.

Section 11

- 15 water tanks will be used for hydrotesting.
- All materials will be received at the laydown yard.
- 14 test heads with the associated 6-inch transfer piping will be fabricated and pre-tested.
- One pipeline feature will be replaced.
- Six pipeline segments will be hydrotested at a rate of two segments per day.
- Final tie-ins have been assumed for a 24 hour continuous duration.
- Hydrotest water will be hauled off and disposed.

Section 12

- Seven water tanks will be used for hydrotesting.
- Four test heads with the associated 8-inch transfer piping will be fabricated and pre-tested.
- The pipeline will be tested in two separate test segments.
- A single final tie-in will be performed.
- Isolation and final tie-ins have been assumed for a 24 hour continuous duration.
- Hydrotest water will be hauled off and disposed.

⁹ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 406 PHASE 2A HYDROTEST PROJECTS

Section 13

- Ten water tanks will be used for hydrotesting.
- Two test heads with the associated 6-inch transfer piping will be fabricated and pre-tested.
- Two existing taps will be isolated during the hydrotest.
- The pipeline will be tested in one test segment.
- Taps will be fabricated and then reconnected after line is brought back into service.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.
- Line taps will be fabricated and then reconnected after line is brought back into service.

Section 14

- Tie-ins will be performed during a single 24 hour shift.
- Hydroseeding has been included for site restoration activities.
- Laydown yards will be restored to original condition at the end of the project.

Section 15

- Nine water tanks will be used for hydrotesting.
- Four test heads with the associated 8-inch transfer piping will be fabricated and pre-tested.
- The pipeline will be tested in two separate test segments, testing one per day.
- A single final tie-in will be performed.
- Isolation and final tie-ins have been assumed for a 24 hour continuous duration.
- Hydrotest water will be hauled off and disposed.

Section 16

- Six water tanks will be used for hydrotesting.
- Four test heads with the associated 8-inch transfer piping will be fabricated and pre-tested.
- Four existing taps will be isolated during the hydrotest.
- No anomalies have been assumed in the estimate.
- A single final tie-in will be performed.
- Isolation and final tie-ins have been assumed for a 24 hour continuous duration.
- Line taps will be fabricated and then reconnected after line is brought back into service.
- Temporary support for one pipe span during hydrotest.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 406 PHASE 2A HYDROTEST PROJECTS

Additional Construction Information

- **Site Mobilization / Site Facilities**

- One mobilization and one demobilization.
- Two office Trailers for management and inspection personnel at various laydown yards across the project.
- Site facility costs cover for three month duration for Section 11 and two month duration for Section 12, Section 13, Section 14, Section 15, and Section 16.
- Temporary fencing for laydown yards, test break sites, and any open excavations.
- Crushed rock for the laydown yards and water tank pad stabilization.

- **Site Preparation**

- Preparation activities and grading of access roads include ten days for Section 11, two days for Section 12, two days for Section 13, one day for Section 14, and two days for Section 16.

Section 15

- Pipe support for one existing pipeline span.
- Grading of approximately 10,560 Linear Feet (LF) of temporary access roads.

- **Site Management / Best Management Practices (BMPs)**

- Silt fencing has been included at each of the hydrotest break and anomaly excavations, nine each.
- BMP materials have been included for all spoil piles, laydown yards, and work sites.

- **Material Handling**

- Two loads of material will be unloaded at laydown yards and transported as needed for Section 11.
- One load of material will be unloaded at laydown yards and transported as needed for Section 12.
- One load of material will be unloaded at laydown yards and transported as needed for Section 13.
- One load of material will be unloaded at laydown yards and transported as needed for Section 14
- Two loads of material will be unloaded at laydown yards and transported as needed for Section 15.
- Two loads of material will be unloaded at laydown yards and transported as needed for Section 16.

- **Traffic Control**

- Standard traffic control signage and delineators for Section 16.

- **Utility Locates**

- Utility locates have been included in order to verify coating and pipe integrity prior to installing testing manifolds.

- **Site Excavation**

- All excavation work to expose existing piping will be performed mechanically with the exception of areas within two feet of pipe, which will be performed by hand.

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LINE 406 PHASE 2A HYDROTEST PROJECTS

- **Isolate Existing Pipeline**
 - One 24 hour shift to isolate pipeline for each Project Section.
 - Four taps will be isolated prior to hydrotesting for Section 16.
- **Hydrotest / Pressure Test Pipeline**
 - Six hydrotests total with two hydrotests per day.
 - A total of three test breaks sites will be excavated for test head manifold installation.
 - Ten hours for filling for each Project Section.
 - 12 hours for testing for each Project Section.
 - Ten hours for dewatering for each Project Section.
 - Ten hours for drying for each Project Section.
- **Fabricate New Features**
 - This estimate assumes the use of a fabrication crew to fabricate piping onsite/in fab yard.
 - All fittings over 12" (if applicable) will have pups installed and will be backwelded.
 - Cost to fabricate two test heads and four isolation caps have been included.
- **Tie-In Pipeline**
 - Tie-ins will be performed in one continuous 24-hour shift for each Project Section.
 - All tie-in welds will be x-rayed.
- **Site Restoration**
 - All work site locations will be restored to original condition. Some worksites will utilize hydroseeding or jute matting.
- **Site Demobilization**
 - All site facilities will be demobilized.
 - One load of excess piping will be hauled to SCG designated yard.
 - Crew and Equipment will be demobilized.
- **Field Overhead**
 - Full-time Superintendent for each Project Section.
 - Full-time Project Engineer for each Project Section.
 - Full-time Cost Controller for each Project Section.
 - Full-time Timekeeper for each Project Section.
 - Full-time Safety Personnel for each Project Section.
 - Full-time security personnel for each Project Section during all non-working hours.

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LINE 406 PHASE 2A HYDROTEST PROJECTS

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total¹⁰
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$78,425	\$180,684	\$542,052	\$1,084,103	\$0	\$1,885,263
TOTAL DIRECT COSTS	\$78,425	\$180,684	\$542,052	\$1,084,103	\$0	\$1,885,263

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
- Document Preparation and Project Management.
- SoCalGas Environmental Services support in addition to consultant support throughout duration of project (planning, permitting and construction).
- Document Production anticipated:
 - Waters delineation.
 - Biological Reports.
 - Agency (401/404/SAA) applications and notifications.
 - Cultural survey report, testing plan, and testing/evaluation report.
 - Rare plant survey report.
 - Worker Environmental Awareness Procedure (WEAP) document.
 - Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Preconstruction Clearance.
 - Environmental Clearance.
- **Preconstruction Surveys**
 - Preconstruction wildlife survey reports.
 - Rare plant survey and topsoil flagging.
 - Cultural survey.

¹⁰ Values may not add to total due to rounding.

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LINE 406 PHASE 2A HYDROTEST PROJECTS

- **Construction Monitoring**

Section 11

- One monitor for duration of project.
- One archaeological monitor for three days.

Section 12

- One monitor for 17 days during excavation and restoration activities.

Section 13

- One monitor for 15 days during excavation and restoration activities.

Section 14

- One monitor for four days during excavation and restoration activities.

Section 15

- One monitor for 15 days during excavation and restoration activities.

Section 16

- One monitor for duration of project.

- **Project Closeout Activities**

- Permit reporting and closeout

- **Abatement**

- 16 days for ACM abatement for Section 11.
- 12 days for ACM abatement for Section 12.
- Four days for ACM abatement for Section 13.
- Six days for ACM abatement for Section 14
- Nine days for ACM abatement for Section 15.
- Nine days for ACM abatement for Section 16.

- **Water Treatment and Hazardous Materials**

- Hydrotest water disposal to offsite disposal (coastal area 0 to 200 miles roundtrip plus disposal fee) for each Project Section.
- Hydrotest standby support for each Project Section.
- Waste sampling and profiling anticipated to support disposal of wastes generated during construction for each Project Section.
- Hazardous and non-hazardous waste transport and disposal anticipated for various wastes (e.g. lead paint waste, pigs used to dry the pipeline post hydrotest, asbestos containing material, etc.) for each Project Section.

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LINE 406 PHASE 2A HYDROTEST PROJECTS

• **Permit Fees**

- SWPPP fee (fees are set by the agency and are subject to change).
- California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt.
- Exempt from National Environmental Quality Act (NEPA).
- Assumes formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Sections 7 or 10 of the Endangered Species Act (ESA) or California Endangered Species Act § 2081 will not be required.
- California Department of Fish and Wildlife (CDFW) Section 1600 for span support (fees are determined by the agency and are subject to change).
- Los Angeles Regional Water Quality Control Board (RWQCB) Section 401 (fees are determined by the agency and are subject to change).
- U.S. Army Corps of Engineers (USACE) Section 404 Nationwide Permits (e.g., NWP 12 [Utility Line Activities] and/or NWP 3 [Maintenance], and/or NWP 33 [Temporary Construction, Access and Dewatering]).

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total ¹¹
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$4,047	\$12,142	\$0	\$0	\$16,189
TOTAL DIRECT COSTS	\$0	\$4,047	\$12,142	\$0	\$0	\$16,189

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total ¹²
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$15,675	\$354,828	\$1,064,485	\$0	\$0	\$1,434,988
TOTAL DIRECT COSTS	\$15,675	\$354,828	\$1,064,485	\$0	\$0	\$1,434,988

Assumptions

In generating for the total estimated cost for each Project the following items were considered:

- **Labor**
 - One contract land agent and support for duration of each Project Section.

¹¹ Values may not add to total due to rounding.

¹² Ibid

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LINE 406 PHASE 2A HYDROTEST PROJECTS

- **Permitting Fees**
 - Encroachment permit from Caltrans and Ventura County will be required for Section 14.
- **Temporary Right of Entry (TRE)**
 - TREs for construction laydown yards and workspace at for each Project Section.
- **Crop Damage**
 - Cost estimated for 15 avocado trees for Section 13.
 - Cost estimated for 16 avocado trees for Section 14.
 - Cost estimated for approximate 22,500 square feet (sqft) of table crops for Section 14.
 - Cost estimated for approximate 15,000 sqft of table crops for Section 15.
 - Cost estimated for 35 avocado trees for Section 15.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry permits.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$32,597	\$665,988	\$665,988	\$1,165,917	\$777,557	\$3,308,046
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$32,597	\$665,988	\$665,988	\$1,165,917	\$777,557	\$3,308,046

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

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LINE 406 PHASE 2A HYDROTEST PROJECTS

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$566,001	\$2,412,851	\$1,725,285	\$3,683,669	\$2,102,717	\$10,490,523
TOTAL DIRECT COSTS	\$566,001	\$2,412,851	\$1,725,285	\$3,683,669	\$2,102,717	\$10,490,523

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Line 406 Phase 2A Hydrotest Projects includes 280 feet of Category 4 pipe, located in Section 13, installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$138,576. The final value of the Line 406 Phase 2A Hydrotest Projects cost disallowance will be adjusted once the project is placed in service.

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LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$98,328	\$177,856	\$177,856	\$287,297	\$204,699	\$946,035
DIRECT NON-LABOR	\$853,715	\$842,663	\$4,938,322	\$17,761,411	\$411,826	\$24,807,938
TOTAL DIRECT CAPITAL COSTS	\$952,042	\$1,020,519	\$5,116,178	\$18,048,709	\$616,525	\$25,753,973

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$98,328	\$177,856	\$177,856	\$287,297	\$204,699	\$946,035
DIRECT NON-LABOR	\$853,715	\$842,663	\$4,938,322	\$17,761,411	\$411,826	\$24,807,938
TOTAL COSTS	\$952,042	\$1,020,519	\$5,116,178	\$18,048,709	\$616,525	\$25,753,973

Project Description

The Line 1004 Section 2 Phase 1B Replacement Section 2 project will replace and reroute approximately 2.3 miles of [REDACTED] pipeline. The project is located in unincorporated Ventura County. The Project will replace and reroute this pipeline with the use of two horizontal directional drills (HDDs) totaling 0.568 miles, open trench installation between the two HDDs and the removal of seven catenary spans. The primary considerations for this route selection are to reduce the risk of susceptibility to landslides and limiting the maintenance constraints associated with environmental resources within the canyons of this region. A HDD allows the route to achieve a greater depth below the ground surface of landslide zones opposed to open trench methods. The replacement will be completed in one mobilization and one demobilization.

Alternatives Considered

Line 1004 and Line 1005 provide critical redundancy for the coastal communities between Ventura and Santa Barbara, and are required to fully utilize the Goleta Storage Field. To maintain system capacity, these pipelines cannot be abandoned, derated, or reduced in diameter.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 176 days.

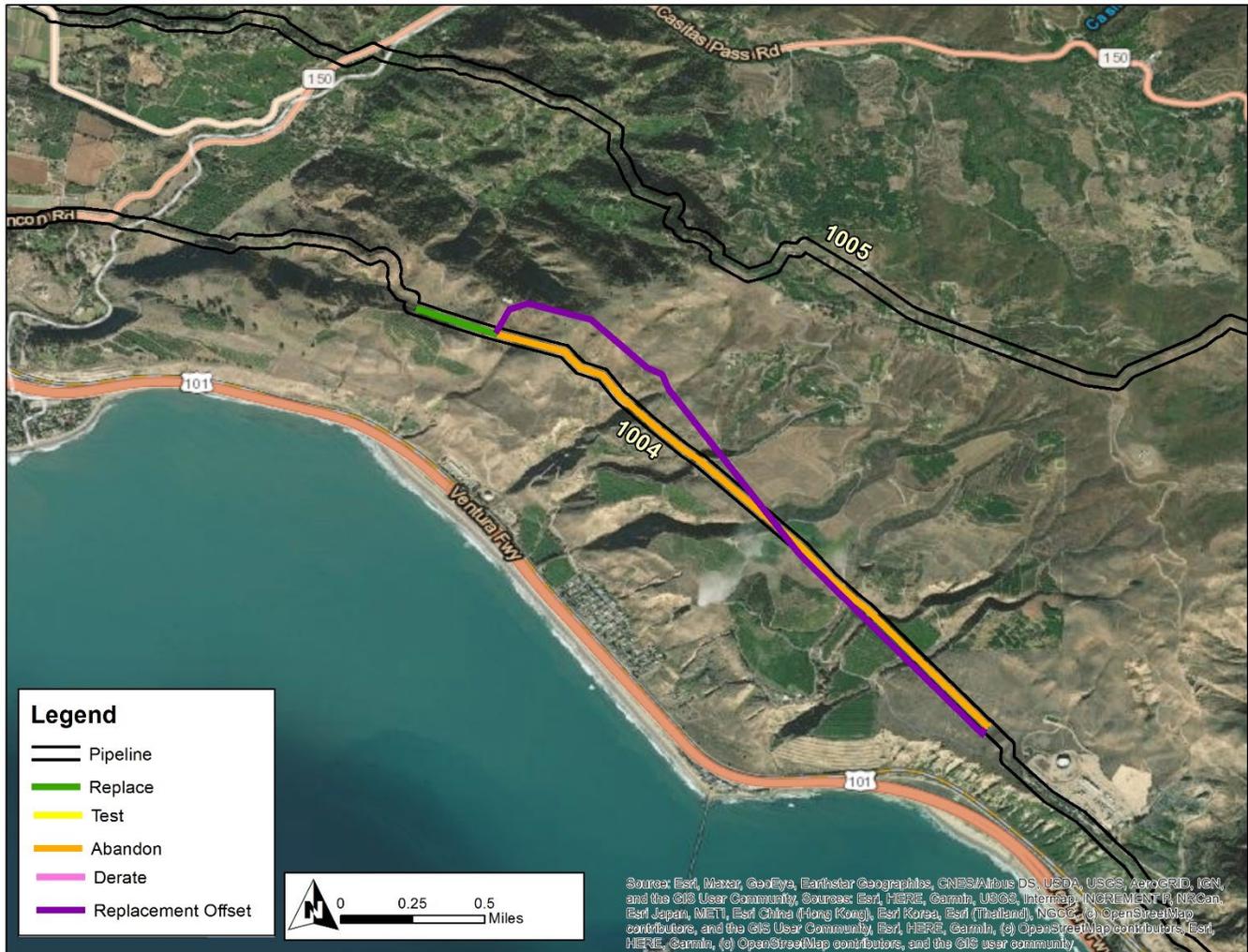
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08 LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

Figure 1: Overview Map for Line 1004 Section 2 Phase 1B Replacement Project



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LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

Figure 2: Satellite Map for Line 1004 Section 2 Phase 1B Replacement Project



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LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 1B	2.273
PHASE 2A	0.001
PHASE 2B	0.031
INCIDENTAL	0.005
REPLACEMENT OFFSET	0.194
TOTAL MILEAGE	2.502

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$21,633	\$2,728,422	\$0	\$0	\$2,750,054
TOTAL DIRECT COSTS	\$0	\$21,633	\$2,728,422	\$0	\$0	\$2,750,054

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 1.515 miles of [redacted] pipe.
- 800 feet of [redacted] pipe.
- One [redacted] ball valve.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$15,123,426	\$0	\$15,123,426
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$15,123,426	\$0	\$15,123,426

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08**LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT**

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Contractor work has been scheduled using a 10 hour day, 5 day work week.
- All materials will be received at the laydown yard.
- Two test heads will be fabricated and pretested.
- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two foot zone.
- Restoration will include hydroseeding and slope stabilization (jute matting).
- Trench breakers for steep slope installations.
- Rock excavation / trenching is not anticipated.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.
- This project assumes no tap isolations.
- Pretesting of HDD piping.
- HDD failure or frac out is not included.
- Assumes a 30 day duration will be allowable from the day of the initial fill until the drying of each pipeline section.
- A single final tie-in will be performed.
- Intermittent gas ups have not been included.
- Three days for line seasoning.
- Local access of water which can be piped to water tanks for hydrotesting.
- Hydrotest water will be hauled off and disposed.
- Abatement in place.
- Restoration of trees.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers will be placed at the laydown yard.
 - Site facility costs cover a six month duration.
 - Crushed rock for water tank installations.
 - 500 linear feet (LF) of temporary fill piping will be installed from the lake tank to the test head.
 - Temporary fencing to delineate the laydown yard.
- **Site Preparation**
 - Two weeks for a clearing / grubbing / grading crew to clean access roads and clear the ROW for construction work space.
- **Site Management / Best Management Practices (BMPs)**
 - Environmental protective fencing for slopes and around laydown yard.
 - BMP materials for all spoil piles, laydown yards, and work sites.

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LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

- **Material Handling**
 - 25 loads of material will be unloaded at laydown yard and transported as needed.

- **Utility Locates**
 - Utility locates to verify coating and pipe integrity prior to installing new pipe. This project does not assume any foreign line crossings or utility conflicts.

- **Pipeline Installation**
 - Assuming open cut installation of 11,665 LF of pipe.
 - Equipment tie-offs will be utilized only for installation of pipe in slopes in excess of 30%.
 - Padding material will be sand equivalent and shading of pipe will utilize zero sack slurry.
 - Remainder of trench will be backfilled to 85% compaction with native backfill.
 - Excess material will be hauled off and disposed.

- **HDD Installation**
 - Two HDDs of lengths 3,325 LF and 2,720 LF.
 - HDD No. 1 at 3,325 LF assumes HDD support for 27 shifts.
 - HDD No. 2 at 2,720 LF assumes HDD support for 25 shifts.

- **Isolate Existing Pipeline**
 - Pipeline will be only be isolated prior to tie-ins.
 - Two shifts with a fabrication crew with three one ton welding trucks and pipelayer to support cross compression and purging activities.

- **Pressure Test Pipeline**
 - HDD Piping will receive a standard four hour pretest prior to pull back.
 - New pipeline, including HDD section, will be tested for an eight hour period prior to tie-ins.
 - Hydrotest activities:
 - One 10 hour day for filling.
 - One 12 hour day for testing.
 - One 10 hour day for dewatering.
 - One 10 hour day for drying.
 - Test head fabrication will be performed by the contractor.
 - Fill piping shall not exceed 500 LF.

- **Tie-In Pipeline**
 - Assuming one tie-in will occur at either end of the project and will be performed as a single hot tie-in during a 24 hour period.
 - Construction contractor costs to support 10 hour close in and blowdown/purge.
 - All tie-in welds will be x-rayed.

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LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

• **Retire / Abandon Existing Pipeline**

- Removal of seven catenary spans with a total length of approximately 0.484 miles.
- Adequate space identified for crane support services to assist in the removal of the large catenary spans.
- Dozer with winch equipment to support the cut span as it is removed on opposite side of ravine.
- Remaining pipe will be abandoned in place and not removed with the exception of portions of pipe removed for tie-ins.
- Excavation crew to dig 3,168 cubic yards (CY) in 38 shifts, of which 757 CY will be hand excavated. Accounts for shoring and bell hole examination support.
- Pipe demolition crew to cut and remove the 6,144 LF of existing pipeline in 11 shifts.
- Support crew to complete abatement in place in 17 shifts.
- Fabrication crew to install 14 abandonment caps in seven shifts.
- Backfill crew to backfill the excavated 3,168 CY in three shifts.

• **Site Restoration**

- All work site locations will be restored to original condition.
- Hillsides will be restabilized using jute matting and hydroseed.

• **Site Demobilization**

- All site facilities will be demobilized.
- One load of excess piping will be hauled to SCG designated yard.
- Crew and Equipment will be demobilized.

• **Field Overhead**

- One Full-Time Project Manager.
- One Full-Time Superintendent.
- One Full-Time Cost Controller.
- One Full-Time safety personnel.
- One Full-Time water truck and driver for dust suppression.
- One low bed truck to assist with equipment move arounds.
- Two site security personnel for all non working hours.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$88,651	\$241,965	\$725,895	\$1,451,790	\$0	\$2,508,300
TOTAL DIRECT COSTS	\$88,651	\$241,965	\$725,895	\$1,451,790	\$0	\$2,508,300

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LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP).
 - Document production for CDFW Streambed Alteration Agreement.
- **Construction Monitoring**
 - Two Full-Time Biological Monitors.
- **Project Closeout Activities**
 - Site restoration, permit reporting, and closeout.
- **Abatement**
 - 75 days for abatement of ACMs.
- **Water Treatment and Hazardous Materials**
 - Hydrostatic test water, estimated at 120,000 gallons, to be acquired by the pipeline contractor.
 - Hydrostatic test water will be potable water disposed to land.
 - Groundwater is not anticipated for this project.
 - No water treatment is anticipated.
 - Contaminated soil is not anticipated.
- **Permit Fees**
 - Environmental discharge permits, dust control plan, and ITP.
 - Ventura County Planned Development Permit.
 - Span Removal Crossings Permit.
- **Mitigation Fees**
 - CDFW Compensatory Mitigation.

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LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$22,318	\$37,095	\$111,284	\$0	\$0	\$170,697
TOTAL DIRECT COSTS	\$22,318	\$37,095	\$111,284	\$0	\$0	\$170,697

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$78,372	\$402,713	\$1,208,140	\$0	\$0	\$1,689,225
TOTAL DIRECT COSTS	\$78,372	\$402,713	\$1,208,140	\$0	\$0	\$1,689,225

Assumptions

In generating for the total estimated cost for Line 1004 Section 2 Phase 1B Replacement Project the following items were considered:

- **Crop Damage**
 - Cost for replacement of avocado trees.
- **Labor**
 - One contract land agent, administrative support, and document control specialist.
- **Legal Services**
 - Local, state, and federal permitting costs.
- **Temporary Right of Entry**
 - Laydown yard.
 - Construction work space.
 - Work space for the HDD equipment, HDD pipe string, and pullback equipment spacing.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

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LINE 1004 SECTION 2 PHASE 1B REPLACEMENT PROJECT

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$98,328	\$177,856	\$177,856	\$287,297	\$204,699	\$946,035
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$98,328	\$177,856	\$177,856	\$287,297	\$204,699	\$946,035

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$664,374	\$139,258	\$164,582	\$1,186,196	\$411,826	\$2,566,236
TOTAL DIRECT COSTS	\$664,374	\$139,258	\$164,582	\$1,186,196	\$411,826	\$2,566,236

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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LINE 1005 PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$34,249	\$89,222	\$89,222	\$295,753	\$102,691	\$611,138
DIRECT NON-LABOR	\$154,218	\$1,071,695	\$1,068,704	\$10,384,760	\$503,372	\$13,182,748
TOTAL DIRECT O&M COSTS	\$188,468	\$1,160,917	\$1,157,926	\$10,680,513	\$606,063	\$13,793,886

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$44,782	\$44,782	\$122,309	\$52,052	\$263,924
DIRECT NON-LABOR	\$0	\$256,908	\$637,743	\$3,968,040	\$194,021	\$5,056,712
TOTAL DIRECT CAPITAL COSTS	\$0	\$301,690	\$682,525	\$4,090,349	\$246,072	\$5,320,636

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$34,249	\$134,003	\$134,003	\$418,063	\$154,743	\$875,062
DIRECT NON-LABOR	\$154,218	\$1,328,603	\$1,706,447	\$14,352,800	\$697,392	\$18,239,461
TOTAL COSTS	\$188,468	\$1,462,607	\$1,840,451	\$14,770,862	\$852,135	\$19,114,522

Project Description

The Line 1005 Phase 2A Hydrotest Project will hydrotest approximately 15.2 miles of [REDACTED] pipeline. The Line 1005 Phase 2A Hydrotest Project starts [REDACTED] of [REDACTED] in unincorporated Santa Barbara County and ends in unincorporated Ventura County, [REDACTED] of the [REDACTED] of [REDACTED] and [REDACTED]. The hydrotest will be completed in 14 hydrotest segments and the Project will be completed in one mobilization. To facilitate water management, the Project will use approximately 0.981 miles of existing pipeline as a conduit for water transfer and

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 1005 PHASE 2A HYDROTEST PROJECT

this segment of existing pipeline will not be hydrotested.

Alternatives Considered

Line 1004 and Line 1005 provide critical system redundancy for the coastal communities between Ventura and Santa Barbara, and are required to fully utilize the Goleta Storage Field. To maintain system capacity, these pipelines cannot be abandoned, derated, or reduced in diameter.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 89 days.

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LINE 1005 PHASE 2A HYDROTEST PROJECT

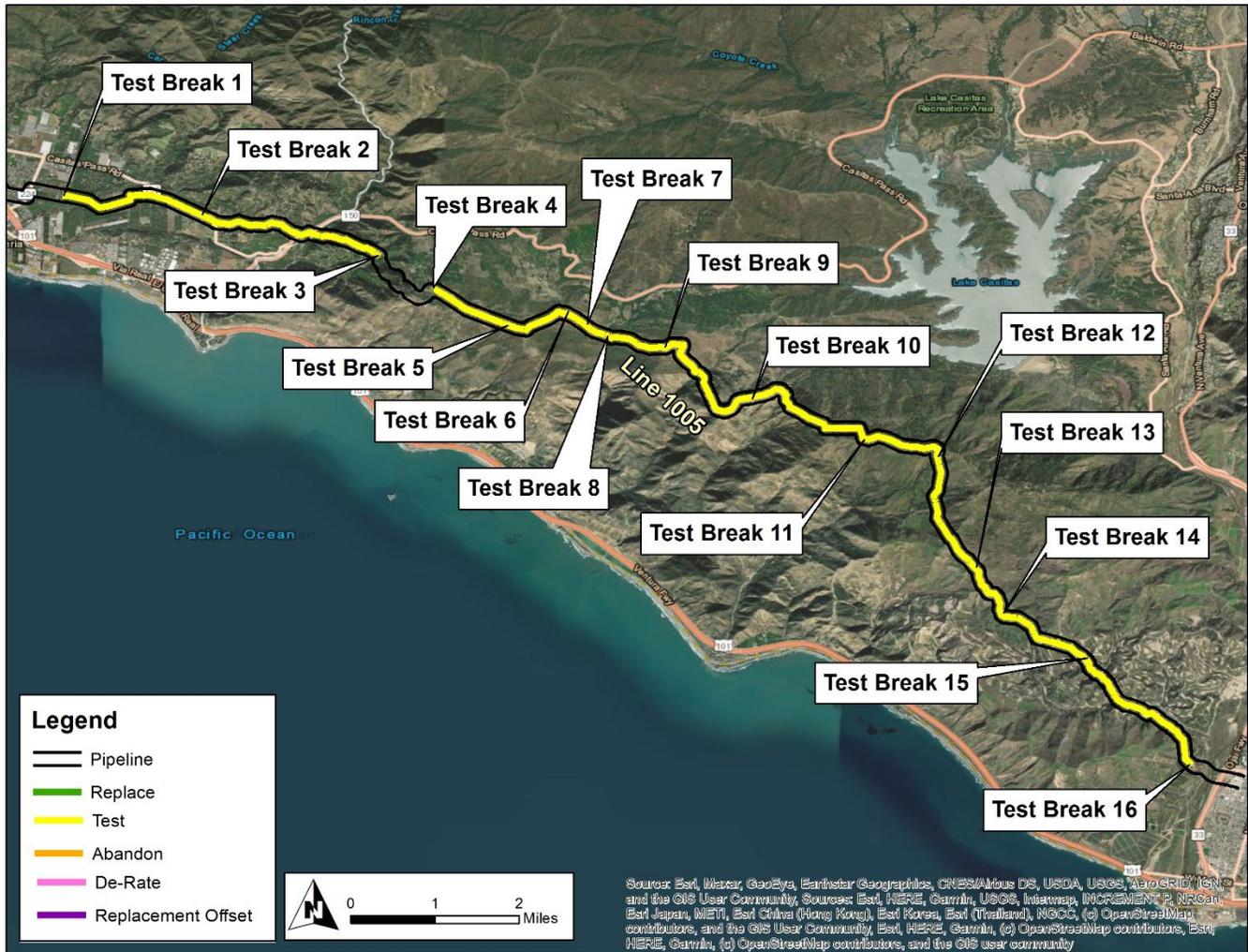
Figure 1: Overview Map for Line 1005 Phase 2A Hydrotest Project



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LINE 1005 PHASE 2A HYDROTEST PROJECT

Figure 2: Overview Map for Line 1005 Phase 2A Hydrotest Project



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LINE 1005 PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	12.111
PHASE 2B	2.688
INCIDENTAL	0.445
TOTAL MILEAGE	15.244

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$405,166	\$404,825	\$0	\$0	\$809,991
TOTAL DIRECT COSTS	\$0	\$405,166	\$404,825	\$0	\$0	\$809,991

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 840 feet of [REDACTED] pipe.
- 22 [REDACTED] ball valves.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$10,213,320	\$0	\$10,213,320
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$10,213,320	\$0	\$10,213,320

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- One lake tank will be installed to store hydrotesting water.
- 30 test heads with the associated [REDACTED] transfer piping will be fabricated and pretested.

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LINE 1005 PHASE 2A HYDROTEST PROJECT

- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two foot zone.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will utilize native soil.
- 11 existing taps will be isolated prior to hydrotesting.
- The pipeline will be hydrotested in 14 segments with two hydrotests per day.
- One final tie-in will be completed.
- Isolation and final tie-in have been assumed for a 24 hour continuous duration.
- Hydrotest water will be hauled off and disposed.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers for management and inspection personnel at the primary laydown yard.
 - Four months of site duration is anticipated.
 - Placement of 300 tons of crushed rock for laydown yards.
 - Sand for lake tank pad stabilization.
 - 300 linear feet (LF) of temporary fill piping will be installed from the lake tank to the first test head at Site 2 and 300 LF of temporary dewatering piping will be installed at Site 15.
 - Temporary fencing for laydown yard, hydrotest break sites, and open excavations.
- **Site Preparation**
 - Eight days for preparation of existing access roads for a grading crew and to develop access to Sites 4, 5, and 7.
- **Site Management / Best Management Practices (BMPs)**
 - Environmental protective fencing at each of the hydrotest and tap excavations.
 - BMP materials for all spoil piles, laydown yards, and work sites.
- **Material Handling**
 - Five loads of material will be unloaded at laydown yards and transported as needed.
- **Traffic Control**
 - Installation of signage on existing fire roads for project duration.
- **Utility Locates**
 - 27 utility locates in order to verify coating and pipe integrity prior to installing hydrotesting manifolds.

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LINE 1005 PHASE 2A HYDROTEST PROJECT

- **Isolate Existing Pipeline**
 - 11 taps will be isolated prior to hydrotesting.
 - One 24 hour shift to isolate the pipeline.

- **Hydrotest / Pressure Test Pipeline**
 - 16 sites for hydrotest breaks will be excavated for test head manifold installation.
 - 14 individual hydrotest segments will be hydrotested.
 - Two hydrotest sections will be tested per day except for Test Section 2 and Test Section 13.
 - Test heads will be installed below grade.
 - Eight 12 hour shifts for hydrotesting the pipeline.

- **Tie-In Pipeline**
 - Once pipe segments have been hydrotested and dewatered, the hydrotest breaks will have pipe reinstalled prior to drying of hydrotest segments.
 - Two hot tie-ins will be completed (Test Break 16 and Test Break 1).
 - All of tie-in welds will be x-rayed.

- **Site Restoration**
 - All work site locations will be restored to original condition.
 - Hillsides will be restabilized using jute matting and hydroseed.

- **Site Demobilization**
 - All site facilities will be demobilized.
 - Two loads of excess piping will be hauled to SoCalGas designated yard.
 - Crew and equipment will be demobilized.

- **Field Overhead**
 - Full-Time Superintendent.
 - Full-Time Cost Controller.
 - Full-Time Timekeeper.
 - Two Full-Time Safety Personnel.
 - One Part-Time Scheduler.
 - Three Full-Time Water Trucks and Drivers for dust suppression.
 - Two low bed trucks to assist with equipment move arounds.
 - Three site security personnel for non-working hours.

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LINE 1005 PHASE 2A HYDROTEST PROJECT

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$7,337	\$97,022	\$291,067	\$582,134	\$0	\$977,561
TOTAL DIRECT COSTS	\$7,337	\$97,022	\$291,067	\$582,134	\$0	\$977,561

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Worker Environmental Awareness Procedure (WEAP).
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Preconstruction Clearance.
 - Document production for Environmental Clearance.
 - Document production for Habitat Mitigation and Monitoring Plan (HMMP).
 - Document production for Coastal Development Permit (CDP) Application.
 - Document production for Caltrans Road Encroachment Permit Application.
 - Document production for Aerially Deposited Lead (ADL) Plan.
- **Preconstruction Surveys**
 - Preconstruction wildlife survey report.
 - Cultural survey.
- **Construction Monitoring**
 - 111 days full time monitoring.

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LINE 1005 PHASE 2A HYDROTEST PROJECT

- **Project Closeout Activities**
 - Site restoration support, permit reporting, and closeout.

- **Abatement**
 - 30 days for abatement of ACMs.

- **Water Treatment and Hazardous Materials**
 - Hydrotest water, estimated at 424,000 gallons, to be acquired by the pipeline contractor.
 - No water delivery required as water will be sourced from Lake Tank.
 - Disposal of water up to 140 miles roundtrip plus disposal fee.
 - Hydrotest standby support.
 - Groundwater is not anticipated for this project.
 - Assumed potential for contaminated soil: Estimated 1,410 tons requiring up to 200 miles round trip for transport and disposal, and 26 tons requiring greater than 200 miles round trip for transport and disposal.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction and disposal of potentially hydrocarbon and ADL contaminated soil.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes (e.g. lead paint waste, pigs used to dry the pipeline post hydrotest, asbestos containing material, etc.).

- **Permit Fees**
 - SWPPP fee.
 - Ventura County Air Pollution Control District (VCAPCD) and Santa Barbara County Air Pollution Control District (SBAPCD) Asbestos Notification fee.
 - California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt.
 - Assumes formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Sections 7 or 10 of the Endangered Species Act (ESA) or California Endangered Species Act § 2081 will not be required.
 - Santa Barbara County CDP in the coastal zone.

- **Mitigation Fees**
 - Estimated temporary impacts to Edison Santa Barbara County Reliability Project (SBCRP) restoration areas.

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$3,735	\$11,206	\$0	\$0	\$14,941
TOTAL DIRECT COSTS	\$0	\$3,735	\$11,206	\$0	\$0	\$14,941

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LINE 1005 PHASE 2A HYDROTEST PROJECT

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$8,321	\$170,556	\$511,669	\$0	\$0	\$690,546
TOTAL DIRECT COSTS	\$8,321	\$170,556	\$511,669	\$0	\$0	\$690,546

Assumptions

In generating for the total estimated cost for Line 1005 the following items were considered:

- **Labor**
 - One contract land agent for duration of project.
- **Legal Services**
 - Appraisal Reports.
 - Title Reports.
- **Permitting Fees**
 - Caltrans Encroachment.
- **Temporary Right of Entry**
 - Construction yards.
 - Workspaces.
 - Access roads.
 - Laydown yard.
- **Crops**
 - Approximately 75,000 SF of truck crops will be impacted.
 - Approximately 75 avocado trees will be replaced.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

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LINE 1005 PHASE 2A HYDROTEST PROJECT

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$34,249	\$134,003	\$134,003	\$418,063	\$154,743	\$875,062
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$34,249	\$134,003	\$134,003	\$418,063	\$154,743	\$875,062

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$138,560	\$652,123	\$487,680	\$3,557,346	\$697,392	\$5,533,102
TOTAL DIRECT COSTS	\$138,560	\$652,123	\$487,680	\$3,557,346	\$697,392	\$5,533,102

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1¹	Stage 2²	Stage 3³	Stage 4⁴	Stage 5⁵	Total
DIRECT LABOR	\$95,119	\$468,965	\$468,965	\$1,182,350	\$544,313	\$2,759,711
DIRECT NON-LABOR	\$861,390	\$3,423,829	\$6,277,044	\$60,919,323	\$1,509,601	\$72,991,187
TOTAL DIRECT O&M COSTS	\$956,509	\$3,892,794	\$6,746,008	\$62,101,673	\$2,053,914	\$75,750,898

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$16,475	\$266,033	\$266,033	\$623,723	\$309,867	\$1,482,131
DIRECT NON-LABOR	\$35,513	\$1,219,524	\$4,170,769	\$31,670,745	\$770,841	\$37,867,392
TOTAL DIRECT CAPITAL COSTS	\$51,987	\$1,485,557	\$4,436,802	\$32,294,468	\$1,080,708	\$39,349,523

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total⁷
DIRECT LABOR	\$111,594	\$734,998	\$734,998	\$1,806,073	\$854,180	\$4,241,842
DIRECT NON-LABOR	\$896,903	\$4,643,353	\$10,447,812	\$92,590,068	\$2,280,442	\$110,858,579
TOTAL COSTS	\$1,008,496	\$5,378,351	\$11,182,810	\$94,396,141	\$3,134,622	\$115,100,421

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

Project Description

The Line 3000 East Phase 2A Hydrotest project will hydrotest approximately 115 miles of [REDACTED] pipe. The Project is located in San Bernardino County, starting in the City of Needles and traveling near [REDACTED] to [REDACTED]. The Project will be divided into 49 hydrotest sections to address limitations due to elevation changes. The hydrotest sections will be executed in four separate hydrotest bundles: Hydrotest Bundle 1 (Needles #1) will complete 13 hydrotest sections, Hydrotest Bundle 2 (Needles #2) will complete 13 hydrotest sections, Hydrotest Bundle 3 (Newberry #1) will complete 13 hydrotest sections, and Hydrotest Bundle 4 (Newberry #2) will complete 10 hydrotest sections. Project activities described below will identify cumulative estimating assumptions for all hydrotest bundles and will also separately identify any estimating assumptions unique to one or more of the hydrotest bundles.

Alternatives Considered

Line 3000 East is a backbone pipeline that plays a critical role in meeting the operation needs of the SoCalGas transmission system between Needles and Newberry Springs. The abandonment of this section of Line 3000 East would result in a substantial loss in capacity to the area and is not a viable option. Derating the pipeline would reduce the capacity of the pipeline, resulting in an inability to meet customer demand and also is not an option.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

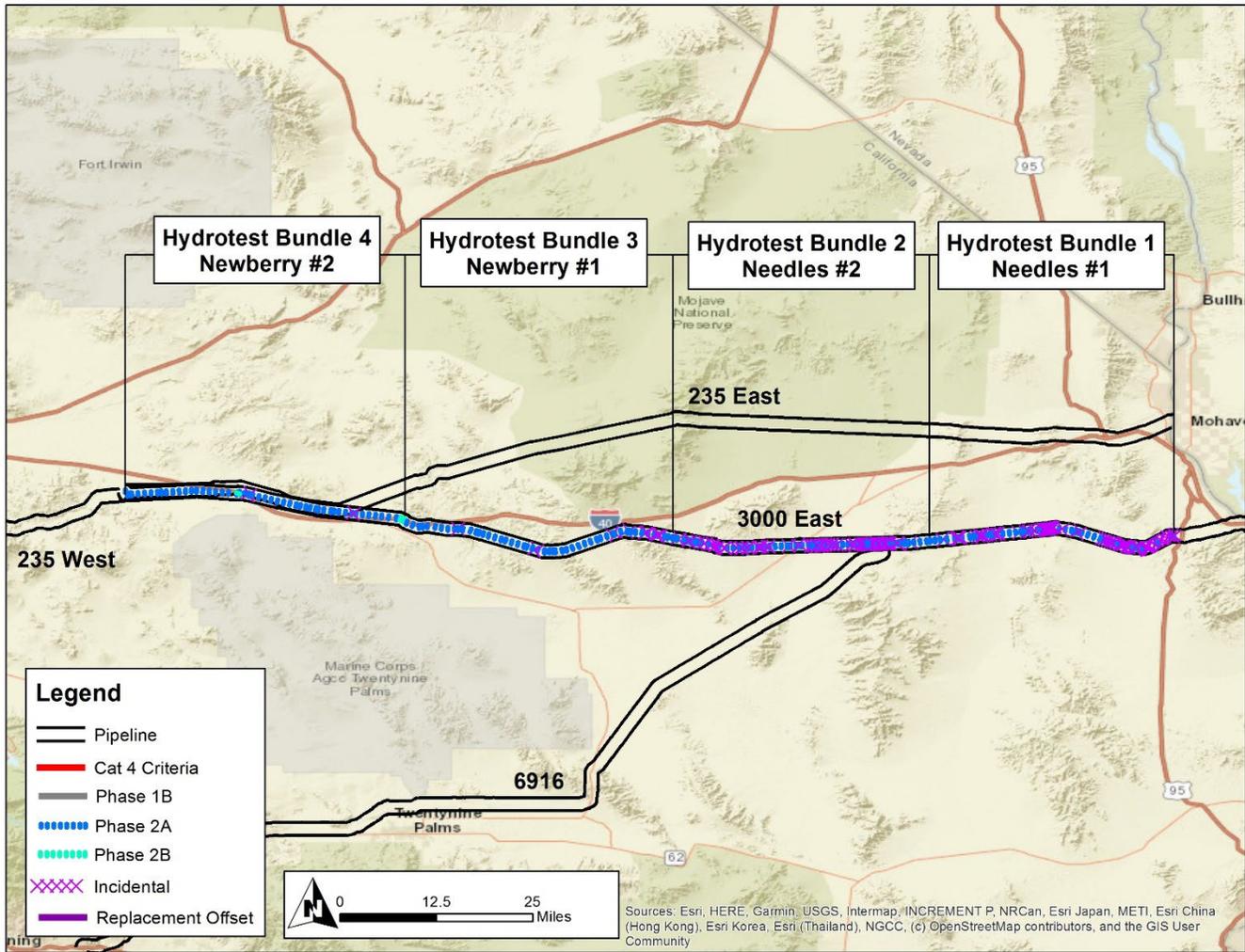
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be: 99 days for Hydrotest Bundle 1, 116 days for Hydrotest Bundle 2, 111 days for Hydrotest Bundle 3, and 94 days for Hydrotest Bundle 4.

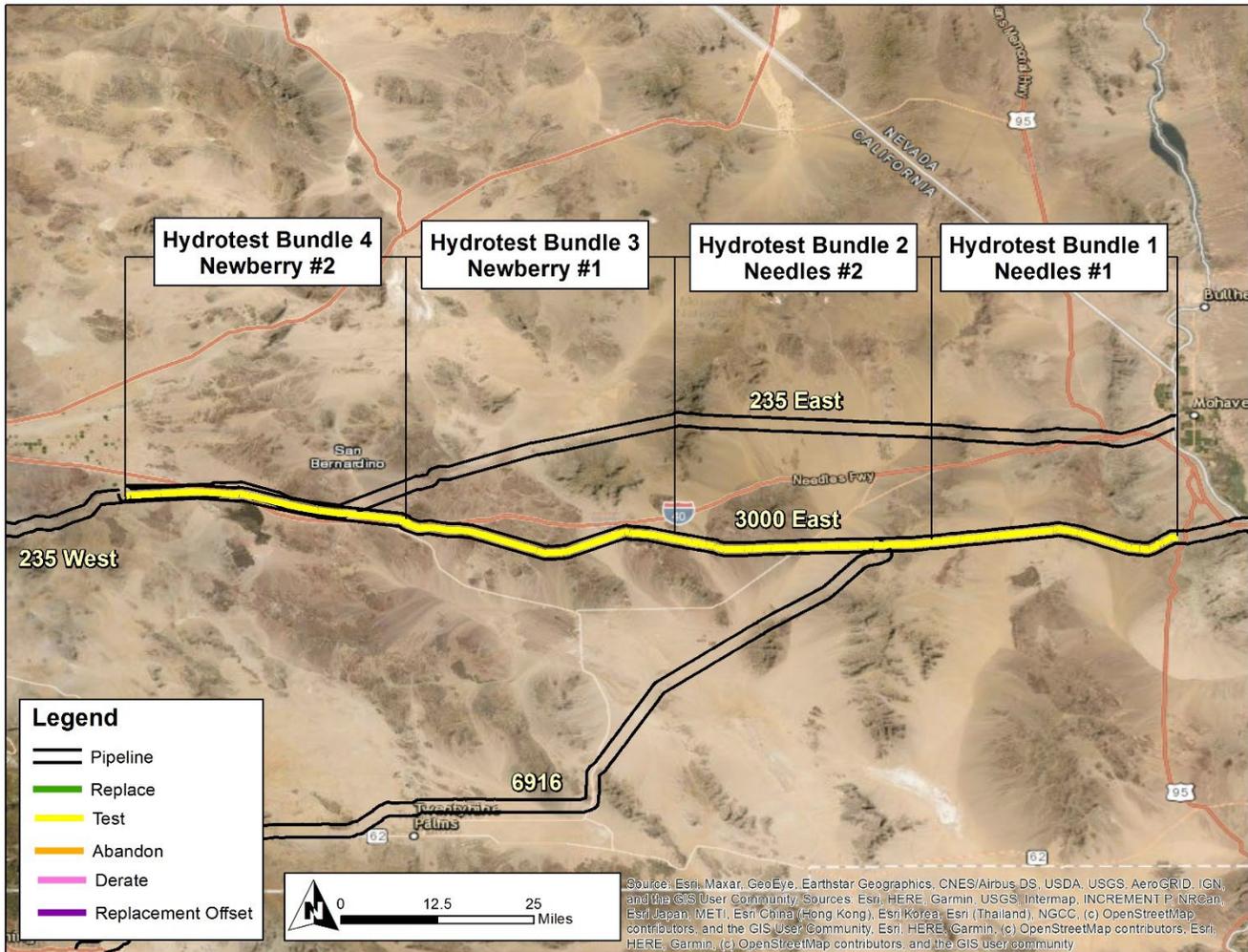
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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

Figure 1: Overview Map for Line 3000 East Phase 2A Hydrotest Project



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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

Figure 2: Satellite Map for Line 3000 East Phase 2A Hydrotest Project



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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	99.219
PHASE 2B	0.369
INCIDENTAL	15.563
TOTAL MILEAGE	115.151

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$1,039,323	\$2,529,349	\$0	\$0	\$3,568,672
TOTAL DIRECT COSTS	\$0	\$1,039,323	\$2,529,349	\$0	\$0	\$3,568,672

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

Hydrotest Bundles 1 to 4

- 0.489 miles of [redacted] pipe.
- 0.239 miles of [redacted] pipe.
- 140 [redacted] caps.
- 72 [redacted] elbows.
- 54 [redacted] ball valves.

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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$60,479,945	\$0	\$60,479,945
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$60,479,945	\$0	\$60,479,945

Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization per hydrotest bundle.
- Work has been scheduled using a 12 hour per day, six day work week.
- Work will be scheduled Monday through Saturday.
- The pipeline will be tested in 49 separate test sections.
- 20 lake tanks will be installed.
 - Four tanks for Hydrotest Bundle 1, six tanks for Hydrotest Bundle 2, six tanks for Hydrotest Bundle 3, and four tanks for Hydrotest Bundle 4.
- A total of 36 test heads with the associated [REDACTED] transfer piping will be fabricated and pre-tested.
- Mechanical excavation will be authorized up to within two feet of the existing pipeline. Hand excavation will be required within the two foot zone.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native soil.
- Slower productivity has been assumed due to tough terrain during excavation, hydrotesting, and tie-in activities.
- Access roads and work sites will be cleared and graded.
- Two taps isolations.
- Additional time has been included for construction crew move arounds in between hydrotests.
- Two construction crews will be used for mainline excavation, fabrication, and testing. Additional crews will complete site preparations and utility locate.
- 17 spans require additional support for the water weight inside the pipeline during hydrotesting.
- Setup of ten laydown yards.
- Ten [REDACTED] blowoff stacks need to be replaced including new foundations and strut pads.

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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

Additional Construction Information

- **Site Mobilization / Preparation / Site Facilities**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- One mobilization and one demobilization per hydrotest bundle.
- 56,700 linear feet (LF) of temporary fencing.
 - 8,000 LF for ten laydown yards.
 - 27,500 LF for 55 test break sites to secure open excavations.
 - 4,000 LF for ten [REDACTED] blowoff stacks.
 - 16,000 LF for 20 lake tanks.
 - 1,700 LF for 17 spans.
 - 200 LF for two tap sites.
- 36 days for preparation of access roads with a grading crew for 30 miles.
- Temporary supports for 17 pipeline spans.
- Preparatory work for grubbing and grading the 20 tank stage areas in eight shifts with a six person grading crew.
- Two office trailers will be placed at the laydown yard.
- Three light towers with one generator for the duration of the project.
- Site facilities for 18 month duration.

- **Site Management / Best Management Practices (BMPs)**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- 240 tons of crushed rock, 2,296 fiber rolls, 400 straw bales, 2000 sandbags, and 9,050 sy of poly sheeting.
- 57,400 LF of silt fencing.
- 40 8ft x 10ft rumble plates.

- **Material Handling**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- 35 loads of material will be unloaded at laydown yard and transported as needed.

Hydrotest Bundles 2 to 4

- 25 loads of prefabricated test heads and water transfer pipe from previous Hydrotest Bundle will be unloaded at laydown yard and transported as needed.

- **Site ROW Clearing**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- Grading for 55 test breaks, 17 spans, 10 blowoffs, and 2 taps.
- 65 tons of cleared material disposal.

- **Utility Locates**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- Utility locates for 55 test breaks, 10 blowoffs, and 2 taps.

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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

- **Site Excavation and Shoring**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- Excavation costs included for 55 test breaks and 10 blowoff stacks by two excavation crews.
- 19 months rental shoring.

- **Remove Existing / Install New Features**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- 100 fiber rolls, 300 straw bales, 800 sandbags, 4,800 sy of poly sheeting, 2,000 LF of silt fencing, four ecology blocks, and 240,000 gallons of water use.
- 15,090 LB of sand blasting media.
- 1,351 LB of weld rod.
- Fabrication for 36 [REDACTED] test heads, two [REDACTED] isolation caps, and eight [REDACTED] isolation caps.
- Five shifts for testing of test heads and isolation caps.
- Fabrication included for 55 test break replacement piping, ten blowoff stack piping, and two taps.
- Ten blowoff foundations and 20 strut pads.
- Included disconnection of 74 cathodic protection (CP) taps.
- Disconnect and cap ten blowoff stacks.
- Two taps will be disconnected and capped for testing activities.

- **Isolate Existing Pipeline**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- 16 nitrogen trucks.
- Four line shut-ins.
- Costs for abatement of 110 cuts for test breaks, 148 cuts for CP engines, ten cuts for blowoff stacks, and four cuts for taps.
- 110 cuts and pipe removal at test breaks.
- Install eight isolation caps.
- 16 shifts to support gas capture.

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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

- **Pressure Test Pipeline**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- 10,000,000 gallons of water.
- 160 shoring plates.
- 100 [REDACTED] Test Heads and associated [REDACTED] water transfer piping.
- Installation of two [REDACTED] test heads for dewatering.
- 37 shifts for two laborers to support lake tank fills.
- Four pipe clearing runs prior to hydrotest activities.
- 14 mainline hydrotest fills with two shifts per fill.
- 49 [REDACTED] mainline Hydrotests, two tests per day, 30 shifts total.
- 13 testing crew move arounds.
- Eight shifts for final dewatering activities.
- Additional eight shifts included for water filter and discharge after final dewater into the lake tanks.
- Support for all dewatering activities.

- **Tie-In Pipeline**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- Removal of 100 test heads and associated water piping from mainline hydrotests.
- Preparation of pipeline for 55 [REDACTED] tie-ins.
- Installation of ten [REDACTED] blowoff stacks.
- Reconnection of 74 CP Engines.

- **Backfill Excavations**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- 12,405 CY of 0-sack slurry for pipe cover.
- 6,000 tons washed sand bedding.
- Coating for 110 [REDACTED] fab welds, 74 [REDACTED] fab welds, 110 [REDACTED] Tie-in welds, 12 [REDACTED] Tie-in welds, and 148 [REDACTED] welds for CP Engine tap.
- Native soil backfill included for 55 test breaks and ten blowoff stacks.

- **Site Restoration**

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- Remove 57,400 LF of temporary fencing.
- Cost included for BMP removal and final cleanup.
- Included work to remove 20 lake tank pads.

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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

• Site Demobilization

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- All site facilities will be demobilized.
- Four loads of excess piping will be hauled to SCG designated yard.
- 25 test heads and water transfer piping will be hauled and stored for use in each project sections and future projects.

• Field Overhead

Cumulative Assumptions for Hydrotest Bundles 1 to 4

- One Full-Time Project Manager.
- One Full-Time Superintendent.
- One Full-Time Cost Controller.
- Two Full-Time Safety Personnel.
- One Part-Time Scheduler.
- Three Full-Time water trucks for dust suppression.
- Three Full-Time site security personnel for all non-working hours.

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$140,405	\$2,063,478	\$6,190,433	\$12,380,866	\$0	\$20,775,182
TOTAL DIRECT COSTS	\$140,405	\$2,063,478	\$6,190,433	\$12,380,866	\$0	\$20,775,182

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

- **Document Preparation and Project Management**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Preconstruction Environmental Clearance.
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Worker Environmental Awareness Program (WEAP) development.
 - Document production for Cultural report for consultation with Bureau of Land Management (BLM).
- **Preconstruction Surveys**
 - Preconstruction wildlife and nesting bird survey reports.
 - Rare plant survey and topsoil flagging.
 - Habitat and impact assessment during planning phase.
 - Waters delineation and permitting.
 - Biological Opinion Clearance Surveys four surveys for burrowing owls.
 - Cultural survey for consultation with BLM including 18 day field survey with two archaeologists.
- **Construction Monitoring**
 - Total of 16 monitors including two biologists per crew with six crews working at one time, two floating/lead monitors, plus two monitors during ground disturbance.
- **Project Closeout Activities**
 - Restoration support, permit reporting and closeout.
- **Abatement**
 - 124 days for abatement of ACMs.
- **Water Treatment and Hazardous Materials**
 - 2,500,000 gallons of water will be trucked in for hydrotests and discharged following the completion of the hydrotest segments.
 - Eight days for water delivery to project site.
 - Hydrotest Water Disposal with water treatment.
 - Hydrotest standby support including one vacuum truck for each test.
 - Soil contamination is not anticipated.
 - Groundwater is not anticipated for this project.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes (e.g. lead paint waste, pigs used to dry the pipeline post hydrotest, asbestos containing material, etc.).
- **Mitigation Fees**
 - Estimated fees per BLM/Desert Wildlife Management Area (DWMA) requirements for impacted Hydrotest Bundles.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$974	\$111,920	\$335,760	\$0	\$0	\$448,654
TOTAL DIRECT COSTS	\$974	\$111,920	\$335,760	\$0	\$0	\$448,654

Assumptions

In generating for the total estimated cost for Line 3000 East Phase 2A Hydrotest Project the following items were considered:

- **Temporary Right of Entry**
 - Temporary Revocable Easements (TREs) and Temporary Use Permits (TUPs) as necessary to complete the Project.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$111,594	\$734,998	\$734,998	\$1,806,073	\$854,180	\$4,241,842
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$111,594	\$734,998	\$734,998	\$1,806,073	\$854,180	\$4,241,842

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

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LINE 3000 EAST PHASE 2A HYDROTEST PROJECT

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$755,523	\$1,396,398	\$1,295,569	\$19,729,257	\$2,280,442	\$25,457,190
TOTAL DIRECT COSTS	\$755,523	\$1,396,398	\$1,295,569	\$19,729,257	\$2,280,442	\$25,457,190

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Line 3000 East Phase 2A Hydrotest Project includes 5,449 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$678,955. The final value of the Line 3000 East Phase 2A Hydrotest Project cost disallowance will be adjusted once the project is placed in service.

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LINE 4000 PHASE 2A HYDROTEST PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$23,525	\$515,148	\$515,148	\$1,258,008	\$591,354	\$2,903,183
DIRECT NON-LABOR	\$443,350	\$3,384,964	\$6,469,891	\$57,525,194	\$1,779,273	\$69,602,671
TOTAL DIRECT O&M COSTS	\$466,875	\$3,900,112	\$6,985,039	\$58,783,202	\$2,370,626	\$72,505,854

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$104,893	\$253,825	\$253,825	\$576,940	\$292,847	\$1,482,330
DIRECT NON-LABOR	\$289,006	\$1,564,961	\$4,850,494	\$24,954,958	\$787,835	\$32,447,254
TOTAL DIRECT CAPITAL COSTS	\$393,899	\$1,818,786	\$5,104,319	\$25,531,899	\$1,080,682	\$33,929,585

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$128,418	\$768,974	\$768,974	\$1,834,948	\$884,200	\$4,385,513
DIRECT NON-LABOR	\$732,356	\$4,949,924	\$11,320,384	\$82,480,152	\$2,567,108	\$102,049,925
TOTAL COSTS	\$860,774	\$5,718,898	\$12,089,358	\$84,315,100	\$3,451,308	\$106,435,439

Project Description

The Line 4000 Phase 2A Hydrotest project will hydrotest approximately 45.667 miles of [REDACTED] pipe and replace 787 feet of [REDACTED] station pipe. The Project is located in San Bernardino County between [REDACTED] and [REDACTED]. The Project starts [REDACTED] of [REDACTED], traversing through [REDACTED], [REDACTED], the [REDACTED], and follows [REDACTED] ending at [REDACTED] in [REDACTED]. The Project will be divided into 45 hydrotest sections to address limitations due to elevation changes. The hydrotest sections will be executed in five separate groups: Hydrotest Group 1 (Newberry Springs #1) will complete 13 hydrotest sections, Group 2 (Newberry

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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Springs #2) will complete 12 hydrotest sections, Group 3 (Apple Valley) will complete 13 hydrotest sections, Group 4 (Hesperia) will complete 14 hydrotest sections, and Group 5 (Fontana) will complete one hydrotest sections. Project activities described below will identify cumulative estimating assumptions for all hydrotest bundles and will also separately identify any estimating assumptions unique to one or more of the hydrotest bundles.

Alternatives Considered

Line 4000 is a backbone pipeline that plays a critical role in meeting the operation needs of the SoCalGas transmission system between Newberry Springs and Fontana. The abandonment of this section of Line 4000 would result in a substantial loss in capacity to the area and is not a viable option. Derating the pipeline would reduce the capacity of the pipeline, resulting in an inability to meet customer demand and also is not an option.

Shut-In Analysis

The line sections can be temporarily taken out of service to perform the hydrotests during the summer conditions. The line will be isolated through the shut-in of mainline valves. During the outage, customers served by regulator stations within the isolated section will be supplied by Line 4002 which is bridled to Line 4000 at those locations.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

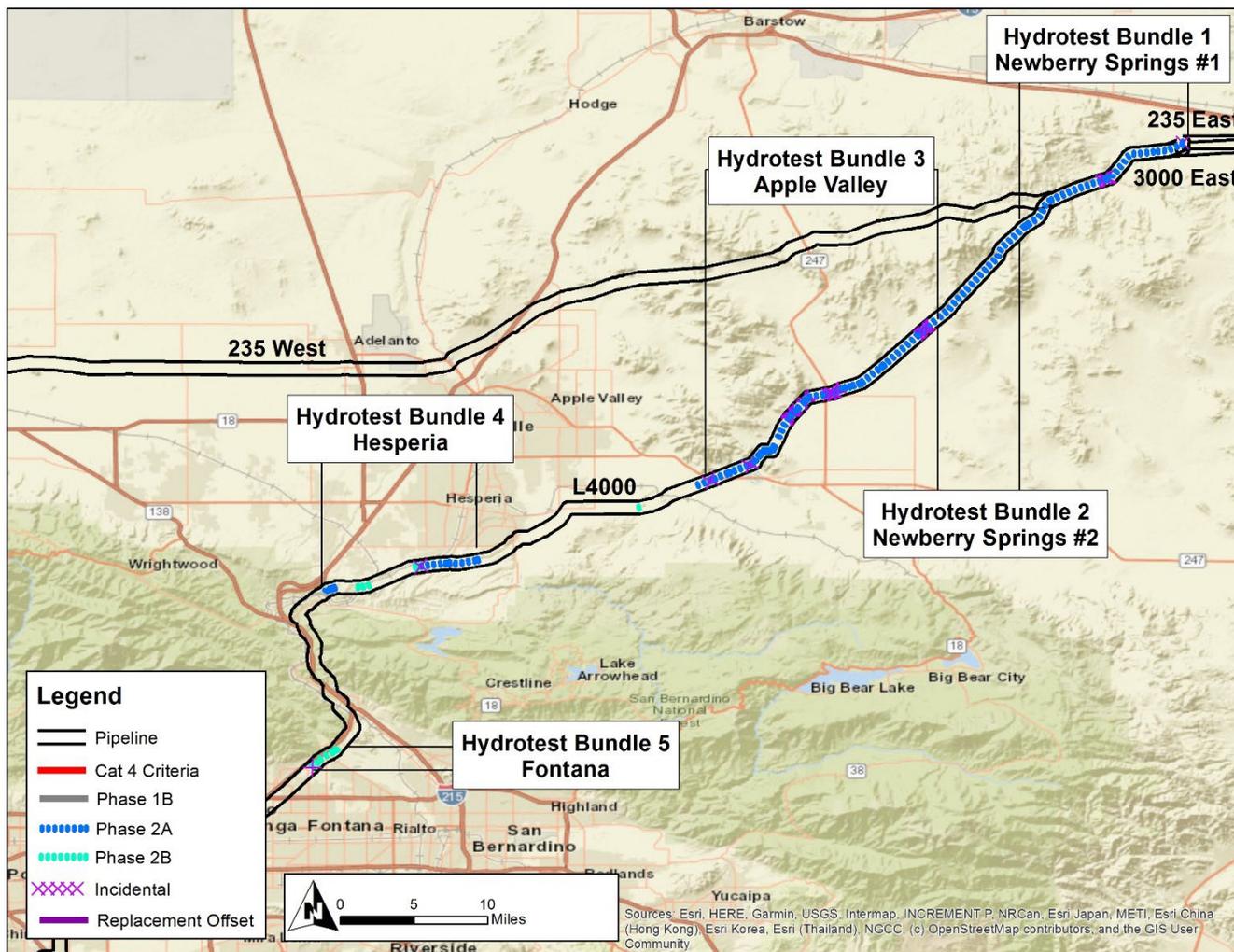
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be: 79 days for Group 1, 77 days for Group 2, 77 days for Group 3, 83 days for Group 4, and 49 days for Group 5.

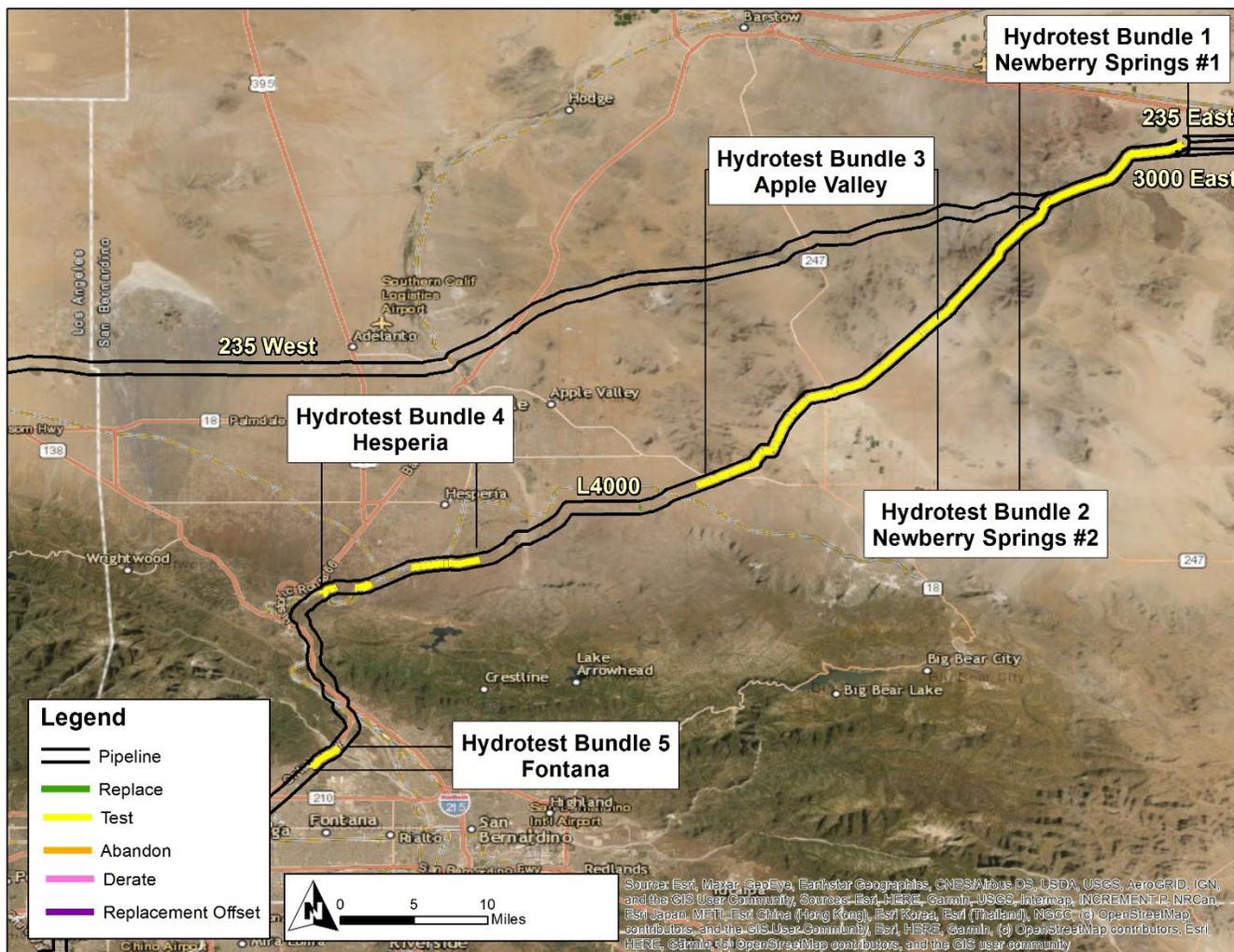
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LINE 4000 PHASE 2A HYDROTEST PROJECT

Figure 1: Overview Map for Line 4000 Phase 2A Hydrotest Project



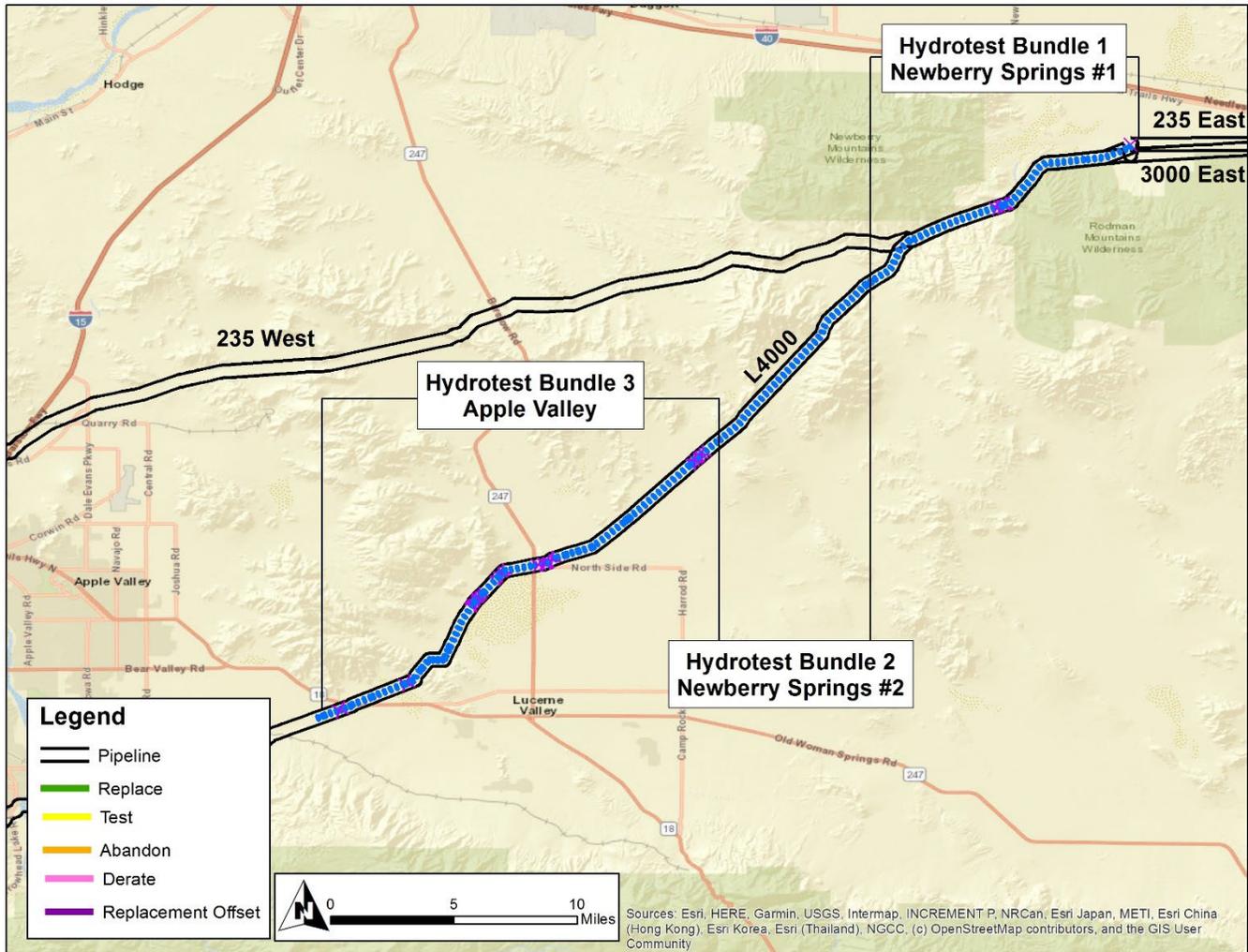
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Figure 2: Satellite Map for Line 4000 Phase 2A Hydrotest Project



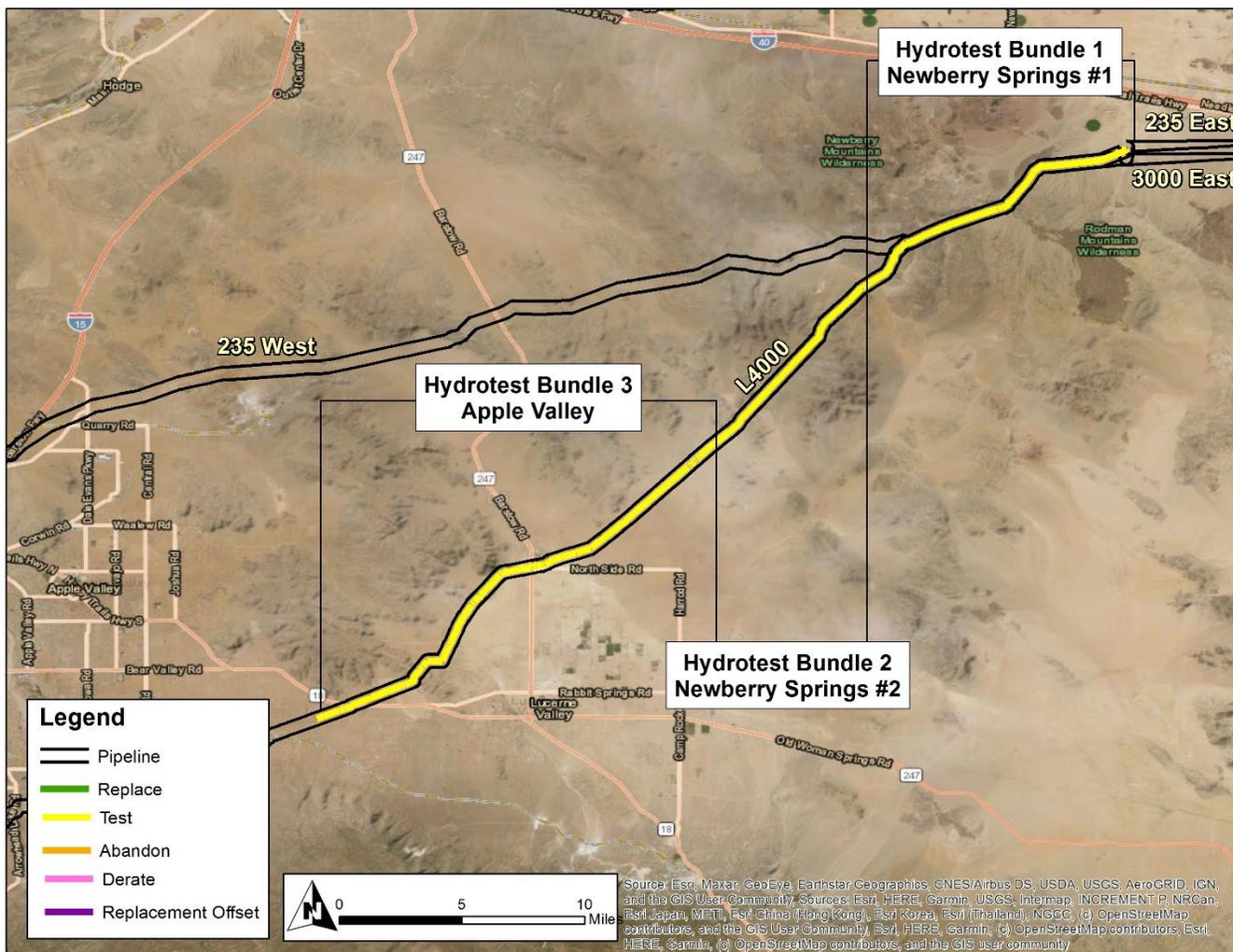
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Figure 3: Overview Map for Hydrotest Bundles 1, 2, and 3



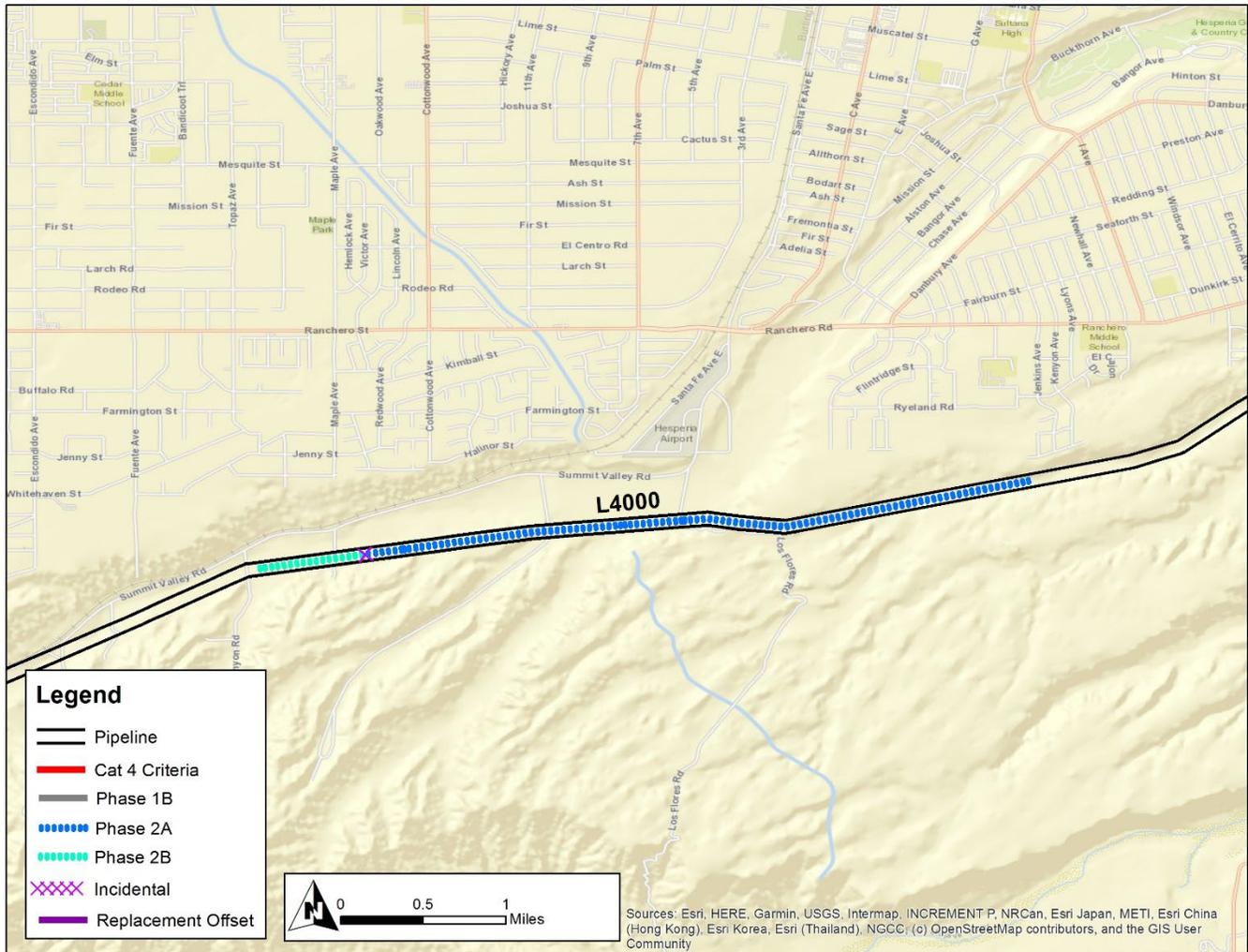
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Figure 4: Satellite Map for Hydrotest Bundles 1, 2, and 3



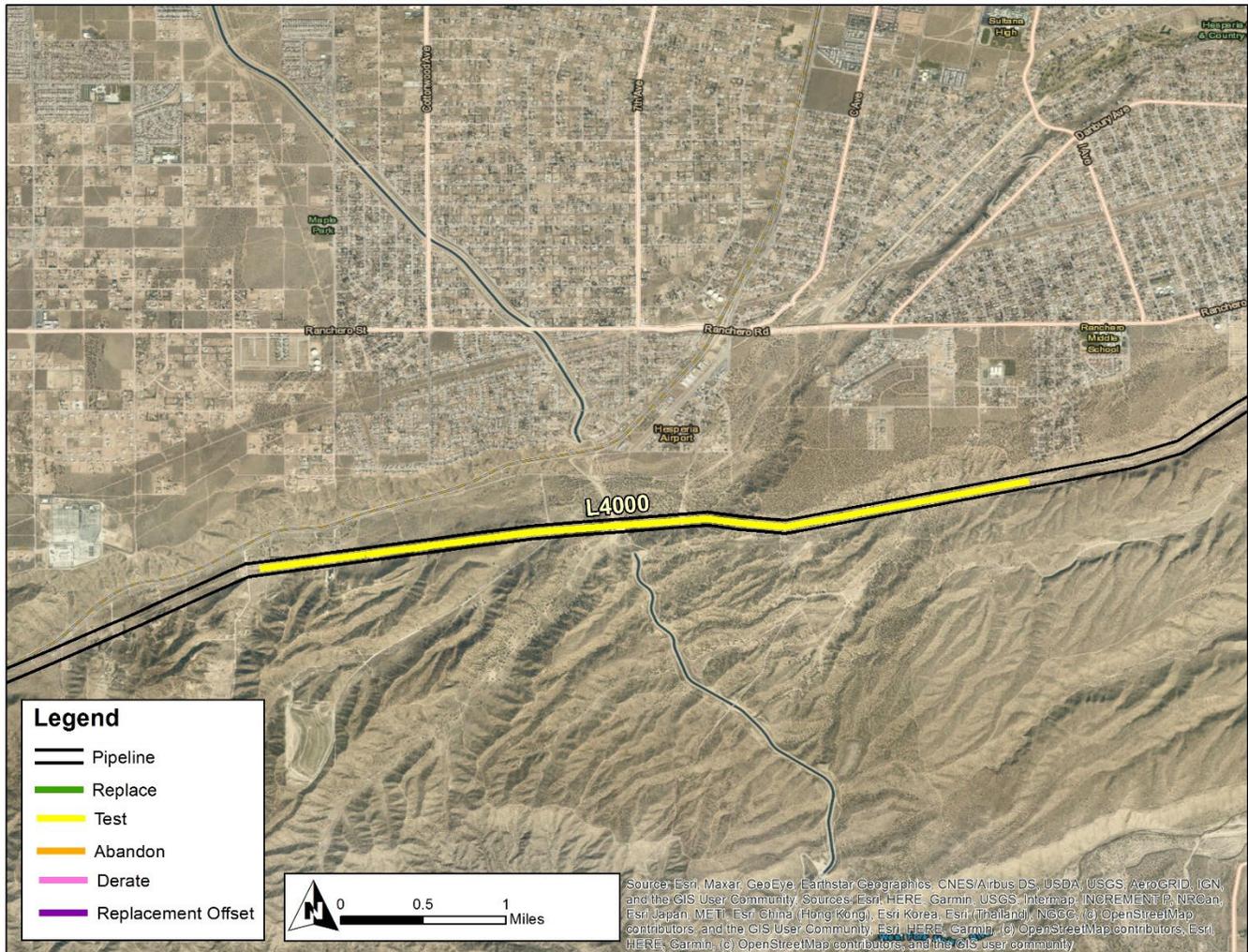
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08 LINE 4000 PHASE 2A HYDROTEST PROJECT

Figure 5: Overview Map for Hydrotest Bundle 4



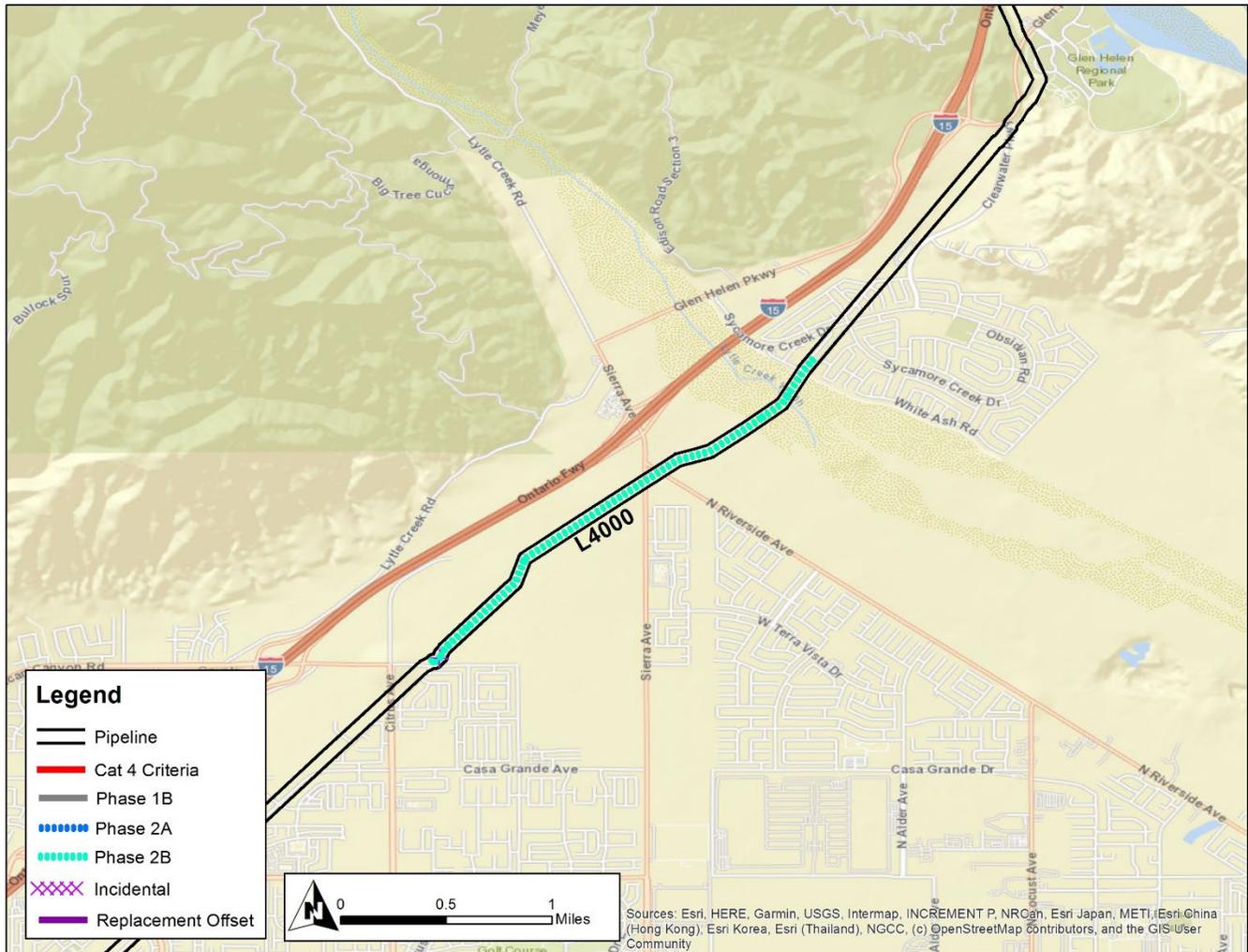
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LINE 4000 PHASE 2A HYDROTEST PROJECT

Figure 6: Satellite Map for Hydrotest Bundle 4



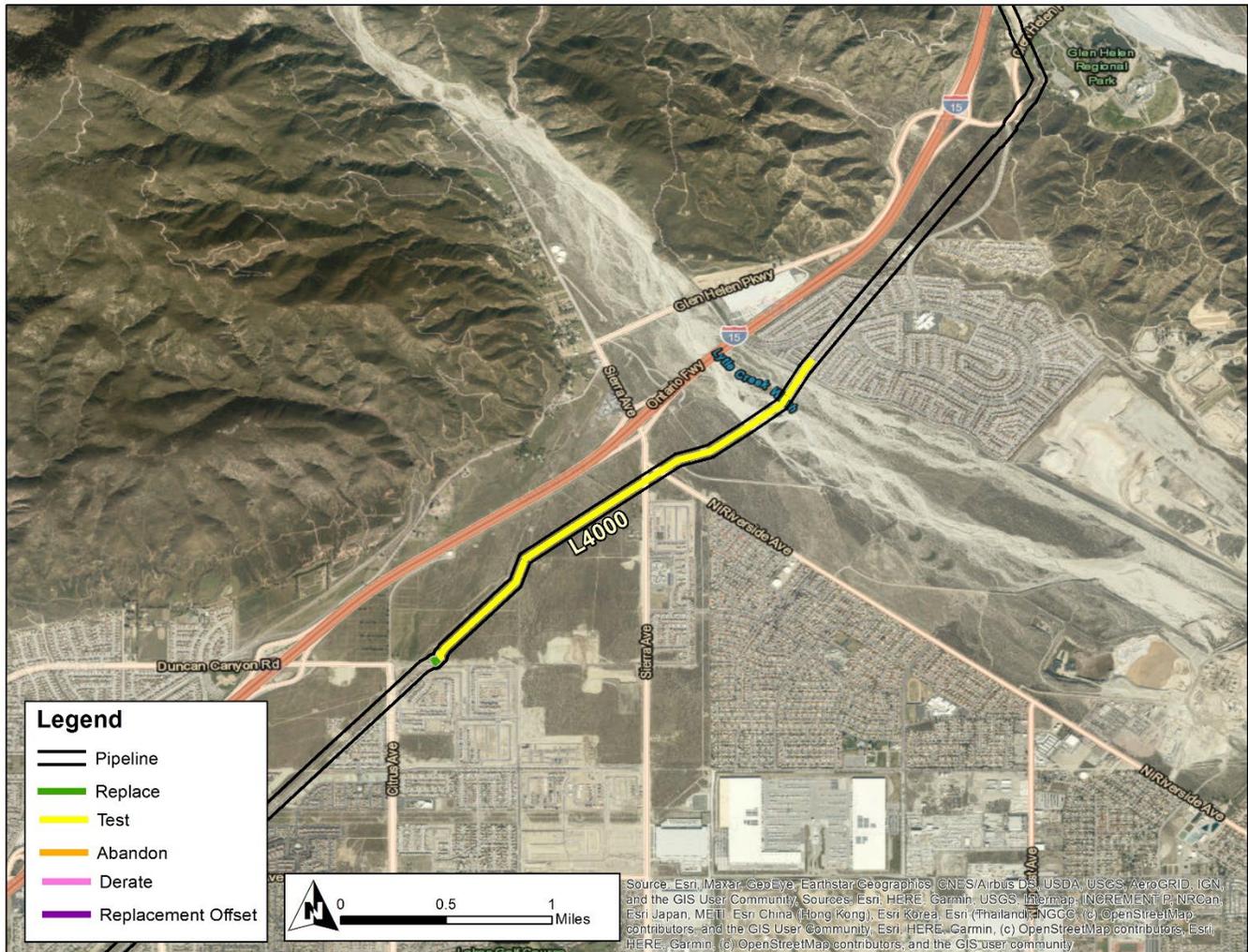
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Figure 7: Overview Map for Hydrotest Bundle 5



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Figure 8: Satellite Map for Hydrotest Bundle 5



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LINE 4000 PHASE 2A HYDROTEST PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	41.635
PHASE 2B	3.910
INCIDENTAL	0.301
TOTAL MILEAGE	45.846

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$725,370	\$3,457,395	\$0	\$0	\$4,182,764
TOTAL DIRECT COSTS	\$0	\$725,370	\$3,457,395	\$0	\$0	\$4,182,764

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

Cumulative Assumptions for Hydrotest Groups 1 to 5

- 0.784 miles of [redacted] pipe.
- 70 [redacted] elbow fittings.
- 118 [redacted] wedding bands.

Hydrotest Bundles 4 and 5

- 240 feet of [redacted] pipe.
- 34 [redacted] caps.
- 34 [redacted] ball valves, three [redacted] ball valves, 204 [redacted] ball valves, three [redacted] ball valves, and four [redacted] ball valves.

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Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$53,142,378	\$0	\$53,142,378
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$53,142,378	\$0	\$53,142,378

Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization per hydrotest bundle.
- Work has been scheduled using a 12 hour per day, six day work week.
- 34 test heads with the associated 8-inch transfer piping will be fabricated and pretested for use in all 5 Groups.
- Ten lake tanks will be installed.
 - Two tanks for Group 1, two tanks for Group 2, four tanks for Group 3, one tank for Group 4, and one tank for Group 5.
- All materials will be received at the laydown yard.
- Mechanical excavation will be authorized up to within two foot of the existing pipeline. Hand excavation will be required within the two foot zone.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will be performed using native. One sack slurry will be utilized.
- Isolation of 19 existing taps.
 - Three taps for Group 1, two taps for Group 2, six taps for Group 3, seven taps for Group 4, and one tap for Group 5.
- Two crews for fabrication and testing.
- 14 day or less duration will be allowable from the day of the initial fill until the drying of each pipeline section.
- A single final hot tie-in will be performed.
- 12 hour continuous duration for isolation and cold tie-ins.
- 24 hour continuous duration for final hot tie-in.
- Line taps will be fabricated and then reconnected after line is brought back into service.
- Line seasoning will be required.
- Hydrotest water will be discharged into ground and/or utilized for dust control.
- No additional access roads required besides existing, however include for road maintenance with input from environmental regarding timeframe limitations.
- Corrosion inhibitor will allow water in pipeline up to 60 days.
- Seven day limitation to dry and nitrogen purge pipeline after dewatering.
- Satellite phones for construction crew in rural areas.
- Materials will be transported using side booms.
- Dust control for construction sites.

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- 15 MPH Speed Limit along access roads.
- Five feet of cover to top of pipeline.
- Nitrogen test of isolation caps.
- Hydrotests for tie-in spool pieces.
- 16 hour days for gas capture activities.

Additional Construction Information**• Site Mobilization / Preparation / Site Facilities**

Cumulative Assumptions for Hydrotest Groups 1 to 5

- One mobilization and one demobilization per hydrotest bundle.
- Grading for 10 lake tanks.
- Nine laydown yards.
- 24,882 LF of temporary fencing to delineate the laydown yards, bell holes, test break & tap excavations.
- Two office trailers.
- Two Light towers for three months and one generator to run the units.
- Site facility costs cover a 3-month duration, including COVID-related cleanings and safety inspector.

• Site Management / Best Management Practices (BMPs)

Cumulative Assumptions for Hydrotest Groups 1 to 5

- 230 Tons of crushed rock, 475 fiber rolls, 1,375 sandbags, 17 spill kits, and 4,500 SY of poly sheeting.
- 24,882 LF of silt fencing.
- 44 rumble plates.
- A general crew for setup and maintain BMP measures in 44 shifts.

• Material Handling

Cumulative Assumptions for Hydrotest Groups 1 to 5

- 47 loads of material will be unloaded at laydown yard and transported as needed.
- An additional 37 loads of spools will be transferred to site specific locations.

• Site ROW Clearing

Cumulative Assumptions for Hydrotest Groups 1 to 5

- A grading crew will grade and clear to access 55 test breaks in 55 shifts.

• Utility Locates

Cumulative Assumptions for Hydrotest Groups 1 to 5

- 75 utility locates within 26 shifts with a potholing crew to determine gas line positions related to cut points and tap.

• Site Excavation and Shoring

Cumulative Assumptions for Hydrotest Groups 1 to 5

- Excavation for test breaks and taps scope in 79 shifts with an excavation crew.

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Group 4 (Hesperia)

- Shoring of two spans.

- **Remove Existing / Install New Features**

Cumulative Assumptions for Hydrotest Groups 1 to 5

- 13,320 lb of weld rod.
- 32 shifts of a welding crew for fabrication related to the test heads and isolation caps.
- 25 shifts of a welding crew for testing related to the test heads and isolation caps.
- 76 shifts of a welding crew for fabrication related to the tie-in pieces and taps, including testing for these items.
- 17 shifts of a welding crew for supporting the tap disconnects and capping.
- 16 shifts for fabricating 30 sets of water transfer piping.
- Replacement of four features.

Group 4 (Hesperia)

- Two shifts for install of two blowoffs.

- **Isolate Existing Pipeline**

Cumulative Assumptions for Hydrotest Groups 1 to 5

- Seven nitrogen trucks and 485 lb of weld rod.
- Approximately 28 shifts with a three person crew to abate 20 taps and 55 test breaks.
- Approximately 13 shifts with a welding crew for isolation, cutting out, and capping of 19 taps.
- 20 shifts with a welding crew for cutting the test break piping.
- 15 shifts with a welding crew to support valve closures and purging the existing line.

- **Pressure Test Pipeline**

Cumulative Assumptions for Hydrotest Groups 1 to 5

- 14 nitrogen trucks, 3,077 lb of weld rod, and 3,682,310 gallons of water use.
- 41 shifts with a welding crew along with use of a bulldozer for installation of the test heads and manifolds.
- 2,787 LF of hard fill and drain piping will be fabricated and installed within approximately seven shifts of a welding crew.
- 30 shifts with a welding crew and bulldozer to fill pipeline with water.
- 30 shifts with a welding crew and bulldozer to test the pipeline.
- 27 shifts with a welding crew for dewatering purposes.
- 32 shifts with a welding crew and bulldozer to dry the pipeline.
- 29 shifts with a welding crew to fill the pipeline with nitrogen.

Group 1

- Two shifts with a welding crew to test blowoff piping at MLV.
- One shifts to leak test the associated blowoff piping with a fabrication crew.

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Group 3 (Apple Valley)

- Four shifts with a welding crew to test blowoff piping at MLV 11 and 12.
- Two shifts to leak test the associated blowoff piping with a fabrication crew.

• Tie-In Pipeline

Cumulative Assumptions for Hydrotest Groups 1 to 5

- 12,150 lb of weld rod.
- 54 shifts included to tie-in intermediate 45 tie-ins.
- Nine shifts with a welding crew, excavator, and bulldozer to prepare and perform final tie-in connections.
- 11 shifts with a welding crew and bulldozer to reconnect gas connections.

Group 2 (Newberry Springs)

- Two shifts to tie-in two taps.

• Site Restoration

Cumulative Assumptions for Hydrotest Groups 1 to 5

- All work site locations will be restored to original condition in 15 shifts.
- Removal of temporary fencing, BMPs, and general cleanup will be assumed to be completed in 32 shifts.

• Site Demobilization

Cumulative Assumptions for Hydrotest Groups 1 to 5

- All site facilities will be demobilized.
- 34 test heads will be transported to designated yard.
- One load of excess piping will be hauled to designated yard.
- Crew and Equipment will be demobilized and completed within approximately 25 shifts, including loading and breakdown of the yards.

• Field Overhead

Cumulative Assumptions for Hydrotest Groups 1 to 5

- One Full-Time Project Manager.
- One Full-Time Superintendent.
- One Full-Time Cost Controller.
- Two Full-Time Safety Personnel.
- One Part-Time Scheduler.
- One aerial man lift and one axle trailer.
- Full-Time General Assistance Team to operate vehicles and perform general labor.
- Three Full-Time Water Trucks and Drivers for dust suppression.
- One hauler to assist with equipment move arounds.
- Three site security personnel for all non-working hours.

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LINE 4000 PHASE 2A HYDROTEST PROJECT

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$48,021	\$1,917,784	\$5,753,351	\$11,506,703	\$0	\$19,225,859
TOTAL DIRECT COSTS	\$48,021	\$1,917,784	\$5,753,351	\$11,506,703	\$0	\$19,225,859

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting, surveys, and monitoring).
- Abatement (asbestos and lead).
- Hazardous and Non-hazardous Waste Containment/ Disposal (including hydrotest water hauling, treatment, and/or disposal).
- Permit fees.
- Mitigation.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Document Preparation and Project Management**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Preconstruction Clearance.
 - Document production for Environmental Clearance.
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Worker Environmental Awareness Program (WEAP).
 - Document production for Cultural Report for consultation with Bureau of Land Management (BLM).

- **Preconstruction Surveys**
 - Preconstruction wildlife and nesting bird survey reports.
 - Rare plant survey and topsoil flagging.
 - Protocol surveys for gnatcatcher and San Bernardino kangaroo rat show absence.
 - Gnatcatcher Surveys are to be performed between March 15th and June 30th.
 - Habitat and impact assessment during planning phase.
 - Waters delineation and permitting.
 - Biological Opinion Clearance Surveys four surveys for burrowing owls.
 - Cultural survey for consultation with BLM (18 day field survey with two archaeologists).

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LINE 4000 PHASE 2A HYDROTEST PROJECT

- **Construction Monitoring**
 - Total of 16 monitors (Two biologists per crew with six crews working at one time, two floating/lead monitors, plus two monitors during ground disturbance).

- **Project Closeout Activities**
 - Restoration support, permit reporting and closeout.

- **Abatement**
 - 124 days for abatement of ACMs.

- **Water Treatment and Hazardous Materials**
 - Hydrostatic Test Water, estimated at 11,995,300 gallons, from hydrant and obtained by pipeline contractor
 - Eight days for water delivery to project site.
 - Hydrotest Water Disposal with water treatment included.
 - Hydrotest standby support included with one vacuum truck for each test.
 - Soil contamination is not anticipated.
 - Groundwater is not anticipated for this project.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes (e.g. lead paint waste, pigs used to dry the pipeline post hydrotest, asbestos containing material, etc.).

- **Mitigation Fees**
 - Estimated fees per BLM/Desert Wildlife Management Area (DWMA) requirements for impacted Hydrotest Bundles.

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$20,683	\$108,882	\$326,645	\$0	\$0	\$456,210
TOTAL DIRECT COSTS	\$20,683	\$108,882	\$326,645	\$0	\$0	\$456,210

Assumptions

In generating for the total estimated cost for Line 4000 Phase 2A Hydrotest Project the following items were considered:

- **Temporary Right of Entry**
 - Temporary Revocable Easements (TREs) and Temporary Use Permits (TUPs) as necessary to complete the Project.

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LINE 4000 PHASE 2A HYDROTEST PROJECT

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$128,418	\$768,974	\$768,974	\$1,834,948	\$884,200	\$4,385,513
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$128,418	\$768,974	\$768,974	\$1,834,948	\$884,200	\$4,385,513

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$663,652	\$2,181,572	\$1,734,042	\$17,831,071	\$2,567,108	\$24,977,445
TOTAL DIRECT COSTS	\$663,652	\$2,181,572	\$1,734,042	\$17,831,071	\$2,567,108	\$24,977,445

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08**LINE 4000 PHASE 2A HYDROTEST PROJECT**

- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E's PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Line 4000 Phase 2A Hydrotest Project includes 1.602 miles of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$2,541,201. The final value of the Line 4000 Phase 2A Hydrotest Project cost disallowance will be adjusted once the project is placed in service.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 36-9-09 NORTH PHASE 2A HYDROTEST AND REPLACEMENT PROJECTS

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$2,132	\$6,752	\$8,885	\$26,299	\$9,240	\$53,308
DIRECT NON-LABOR	\$6,575	\$32,255	\$101,254	\$336,296	\$23,145	\$499,524
TOTAL DIRECT O&M COSTS	\$8,707	\$39,007	\$110,139	\$362,595	\$32,385	\$552,832

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$6,397	\$20,257	\$20,864	\$78,896	\$27,720	\$159,925
DIRECT NON-LABOR	\$19,724	\$96,764	\$303,762	\$1,008,887	\$69,434	\$1,498,572
TOTAL DIRECT CAPITAL COSTS	\$26,121	\$117,021	\$330,416	\$1,087,784	\$97,154	\$1,658,497

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$8,529	\$27,009	\$35,539	\$105,195	\$36,960	\$213,232
DIRECT NON-LABOR	\$26,299	\$129,019	\$405,015	\$1,345,184	\$92,578	\$1,998,095
TOTAL COSTS	\$34,828	\$156,029	\$440,554	\$1,450,378	\$129,539	\$2,211,327

Project Description

The Supply Line 36-9-09 North Phase 2A Hydrotest and Replacement Projects will remove and replace approximately 0.40 miles of [REDACTED] and [REDACTED] pipeline and hydrotest approximately 664 feet (ft) of [REDACTED] pipeline in two Project Sections. Supply Line 36-9-09 North Section 11 Phase 2A Hydrotest Project is located west of Highway 101, this section will hydrotest approximately 664 ft of pipeline and install one mainline valve (MLV). Supply Line 36-9-09 North Section 13 Phase 2A Replacement Project is located east of Highway 101 in San Luis Obispo County, this section will remove and replace approximately 0.40 miles of existing pipeline within the existing right of way (ROW).

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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SUPPLY LINE 36-9-09 NORTH PHASE 2A HYDROTEST AND REPLACEMENT PROJECTS

Alternatives Considered

Abandonment of this section of Supply Line 36-9-09 is not a viable option as it is a critical line within the coastal distribution system and is the major supply line for customers in the area. Abandonment would result in an inability to meet customer needs. Derating this section of Supply Line 36-9-09 North to [REDACTED] of SMYS is not a viable option since the resultant impact to system capacity would affect customers during peak seasons.

Forecast Methodology

SoCalGas developed a Class 4 Estimate⁸ to implement the above scope of work. The Class 4 Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

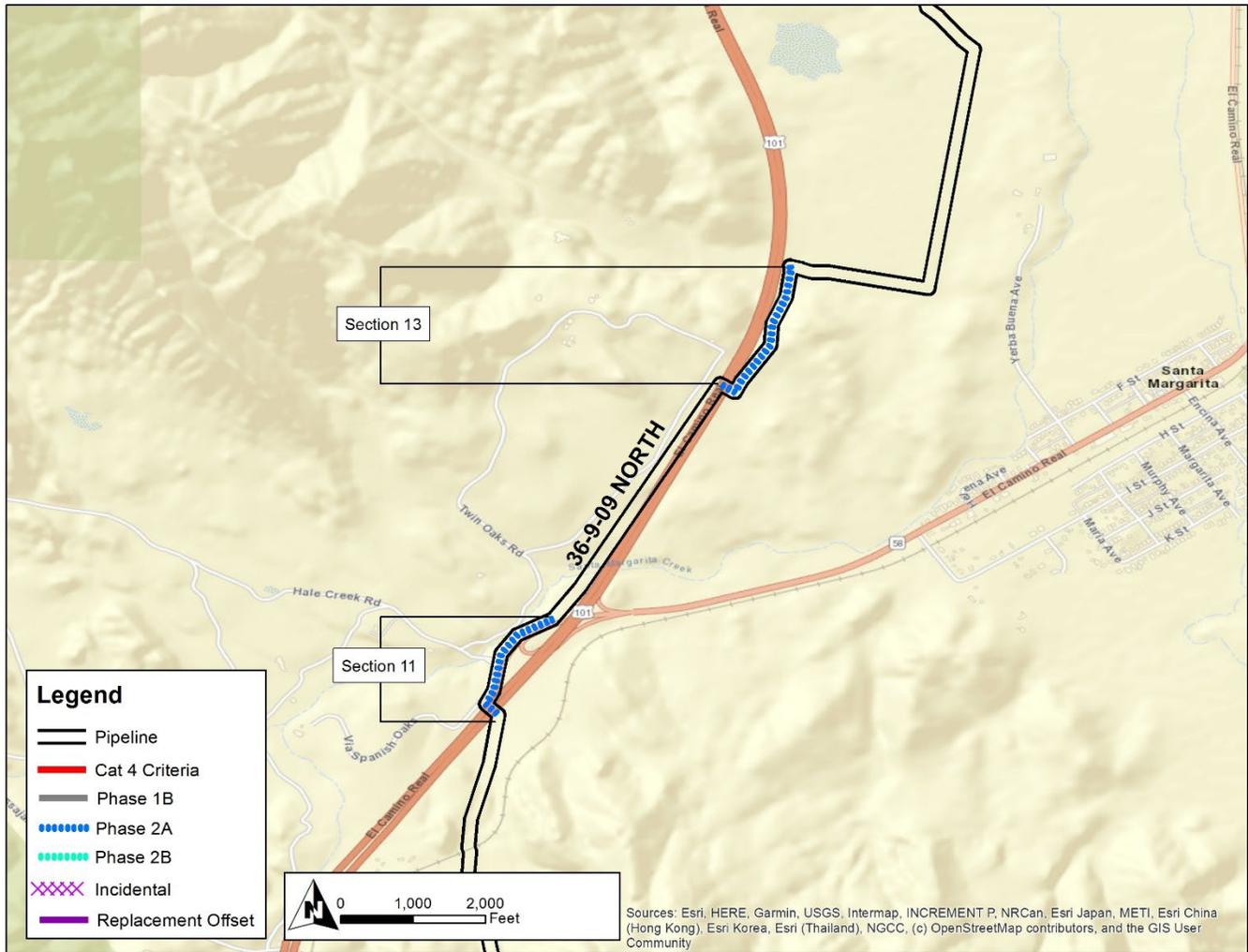
The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 51 days.

⁸According to AACE International Recommended Practice No. 97R-18, a Class 4 estimate is based on 1-15% project definition and typically results in final project costs that are within +50% to -30% of the estimated cost. In contrast, Class 3 estimates are based on 10-40% project definition and typically result in final project costs that are within +30% to -20% of the estimated amount.

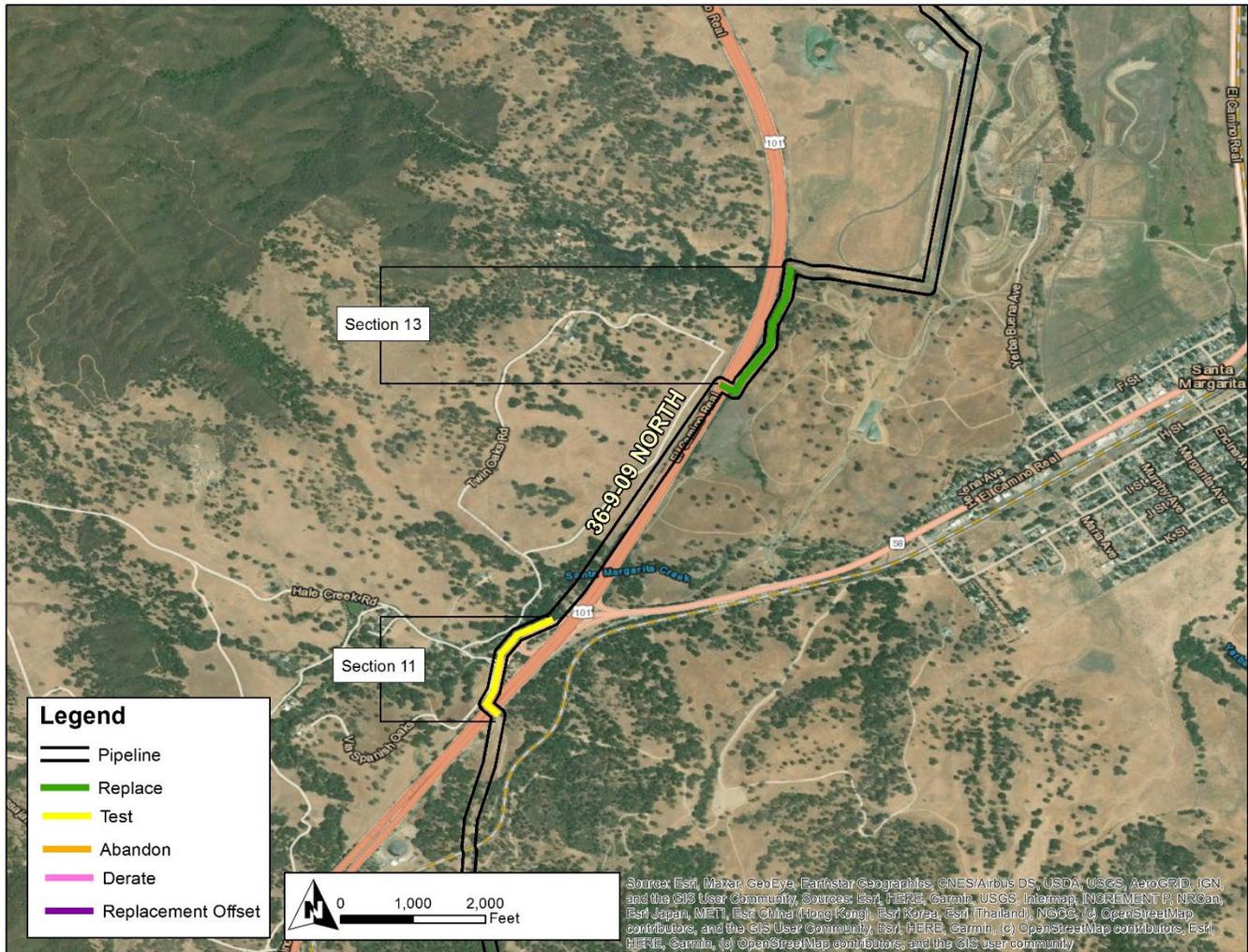
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 36-9-09 NORTH PHASE 2A HYDROTEST AND REPLACEMENT PROJECTS

Figure 1: Overview Map for Supply Line 36-9-09 North Phase 2A Hydrotest and Replacement Projects



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SUPPLY LINE 36-9-09 NORTH PHASE 2A HYDROTEST AND REPLACEMENT PROJECTS

Figure 2: Satellite Map for Supply Line 36-9-09 North Phase 2A Hydrotest and Replacement Projects



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SUPPLY LINE 36-9-09 NORTH PHASE 2A HYDROTEST AND REPLACEMENT PROJECTS

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	0.516
PHASE 2B	0.000
INCIDENTAL	0.000
TOTAL MILEAGE	0.516

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$17,250	\$246,868	\$0	\$0	\$264,118
TOTAL DIRECT COSTS	\$0	\$17,250	\$246,868	\$0	\$0	\$264,118

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 0.379 miles of [REDACTED] pipe.
- One [REDACTED] ball valve.
- One [REDACTED] pressure control fitting (PCF).

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$1,048,080	\$0	\$1,048,080
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$1,048,080	\$0	\$1,048,080

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SUPPLY LINE 36-9-09 NORTH PHASE 2A HYDROTEST AND REPLACEMENT PROJECTS

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- One customer will require CNG support in Section 13.
- Installation of 664 ft of [REDACTED] pipe.
- Installation of one [REDACTED] MLV.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Assumes five eight hour work days.
 - One office trailer.
- **Site Preparation**
 - Clear, grade, and install temporary fencing at laydown yard.
 - Assume clear and grade of ROW and trimming of trees.
- **Site Management / Best Management Practices (BMPs)**
 - Environmentally sensitive area- assume extra BMP measures.
- **Material Handling**
 - Three loads of material will be unloaded at laydown yards and transported as needed.
- **Traffic Control**
 - Traffic control during Section 13 installation.
- **Utility Locates**
 - Utility locate (UL) required every 100 ft plus one at every bell hole.
 - Five ULs per day.
- **Hydrotest / Pressure Test Pipeline**
 - One post-completion hydrotest for Section 11.
 - One hydrotest for Section 13.
- **Tie-In Pipeline**
 - One cold tie-in for Section 11.
 - One hot tie in for Section 13.

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SUPPLY LINE 36-9-09 NORTH PHASE 2A HYDROTEST AND REPLACEMENT PROJECTS

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$6,397	\$12,794	\$31,985	\$76,764	\$0	\$127,939
TOTAL DIRECT COSTS	\$6,397	\$12,794	\$31,985	\$76,764	\$0	\$127,939

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

Additional Assumptions

- The identification of a critical habitat for seasonal species, which include red legged frog, steelhead trout, and fairy shrimp. These species can limit the construction window.
- Species survey is required up to a year prior to construction.
- Potential impacts to existing vegetation due to soil boring excavation, potholing, and trenching.

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$7,108	\$21,323	\$0	\$0	\$28,431
TOTAL DIRECT COSTS	\$0	\$7,108	\$21,323	\$0	\$0	\$28,431

Assumptions

Permit costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

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SUPPLY LINE 36-9-09 NORTH PHASE 2A HYDROTEST AND REPLACEMENT PROJECTS

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$2,843	\$5,686	\$19,902	\$0	\$0	\$28,431
TOTAL DIRECT COSTS	\$2,843	\$5,686	\$19,902	\$0	\$0	\$28,431

Assumptions

Land & Right-of-Way costs were developed based on top down estimating approach consistent with an ACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Contract Labor.
- Legal Services.
- Temporary Right of Entry.
- New Easement Costs.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$8,259	\$27,009	\$35,539	\$105,195	\$36,960	\$213,232
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$8,529	\$27,009	\$35,539	\$105,195	\$36,960	\$213,232

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union costs were developed based on top down estimating approach consistent with an ACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.

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SUPPLY LINE 36-9-09 NORTH PHASE 2A HYDROTEST AND REPLACEMENT PROJECTS

- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$17,059	\$86,181	\$84,937	\$220,340	\$92,578	\$501,096
TOTAL DIRECT COSTS	\$17,059	\$86,181	\$84,937	\$220,340	\$92,578	\$501,096

Assumptions

Other Costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

Table 1: Total Direct O&M Cost

PROJECT COSTS – O&M	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$33,917	\$33,917	\$93,846	\$39,347	\$201,028
DIRECT NON-LABOR	\$0	\$173,404	\$688,699	\$3,749,137	\$147,982	\$4,759,221
TOTAL DIRECT O&M COSTS	\$0	\$207,321	\$722,616	\$3,842,983	\$187,329	\$4,960,249

Table 2: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$126,067	\$126,067	\$333,974	\$146,551	\$732,658
DIRECT NON-LABOR	\$161,165	\$697,818	\$2,810,285	\$12,768,652	\$517,105	\$16,955,024
TOTAL DIRECT CAPITAL COSTS	\$161,165	\$823,885	\$2,936,352	\$13,102,626	\$663,656	\$17,687,682

Table 3: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$0	\$159,984	\$159,984	\$427,820	\$185,897	\$933,685
DIRECT NON-LABOR	\$161,165	\$871,222	\$3,498,983	\$16,517,788	\$665,087	\$21,714,246
TOTAL DIRECT COSTS	\$161,165	\$1,031,206	\$3,658,968	\$16,945,608	\$850,984	\$22,647,931

Project Description

The Supply Line 38-952 Phase 2A Hydrotest and Replacement Project will hydrotest approximately 6.594 miles and replace approximately 2.489 miles of [REDACTED] pipeline. The Project is located in Kern County, beginning approximately 2.75 miles [REDACTED] of the [REDACTED] of [REDACTED] and [REDACTED] and ends approximately 0.82 miles [REDACTED] of [REDACTED]. The Project was divided into three sections; Section 1 and Section 3 will be hydrotested and Section 2 will be replaced and rerouted. Section 2 will be replaced in order to

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

make the pipeline piggable which includes the removal of two existing pipeline spans over aqueducts, one aboveground span that is approximately 600 feet and one submerged span that is approximately 35 feet. The new Section 2 pipeline will be rerouted from the existing pipeline alignment to avoid an oil field, orchards, private properties and roads where practical, by installing it along public roadways thus enhancing the safety of the pipeline. The Project will be completed in one mobilization and one demobilization.

Alternatives Considered

Abandonment of Supply Line 38-952 is not feasible since there is no alternate feed for the customers on the pipeline. Derating the pipeline would reduce the capacity of the system resulting in an inability to meet customer demand.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

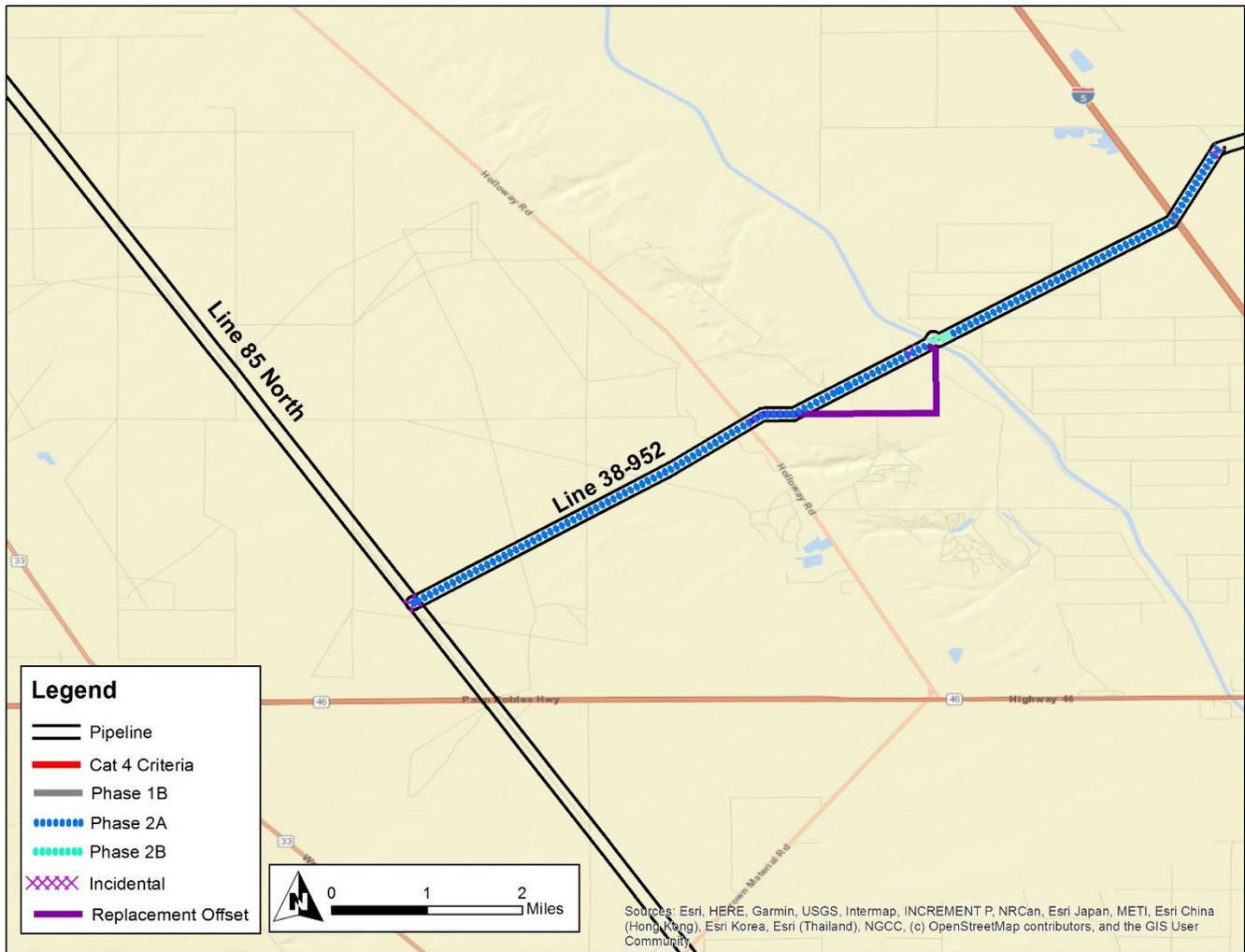
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 83 days.

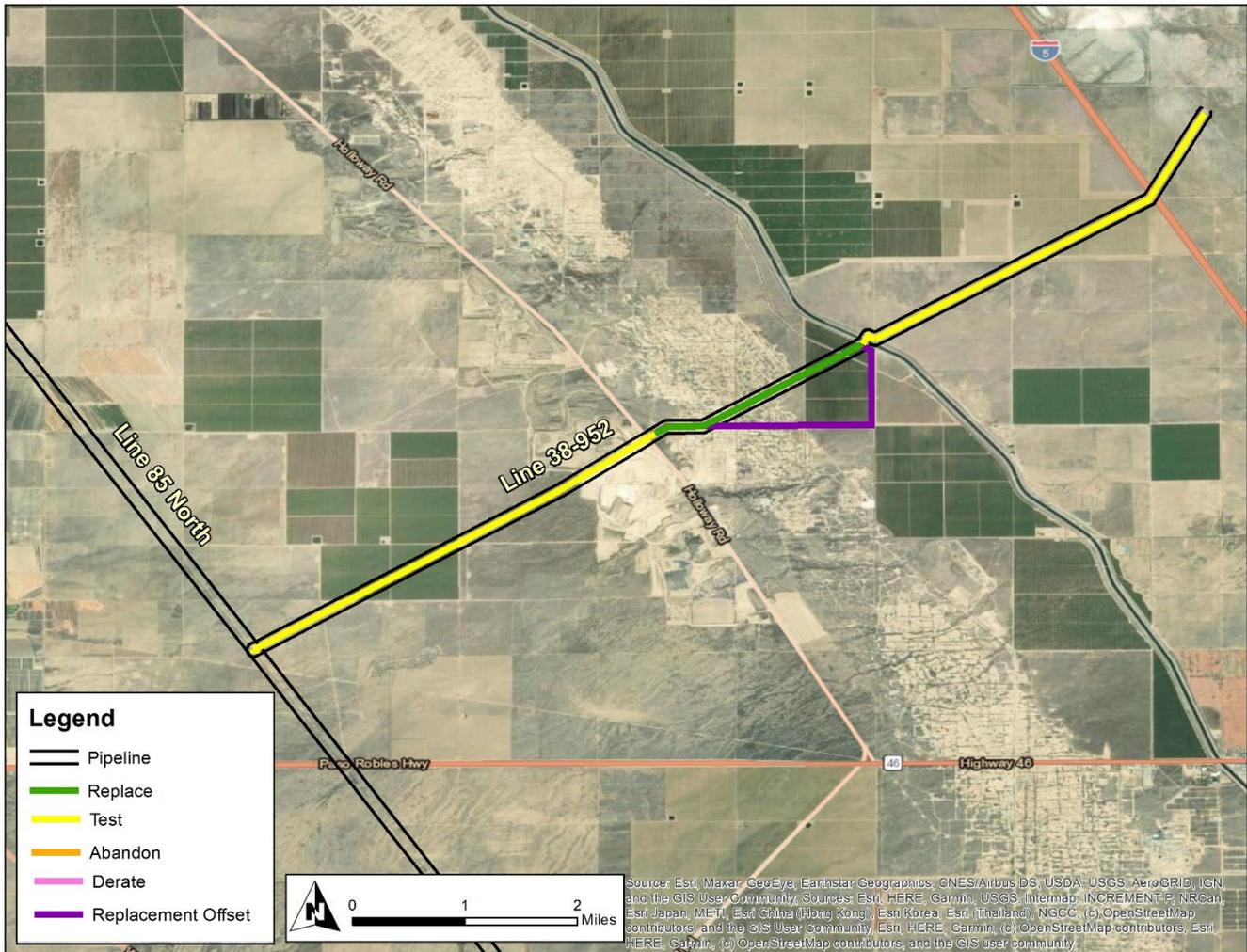
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SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

Figure 1: Overview Map for Supply Line 38-952 Phase 2A Hydrotest and Replacement Project



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SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

Figure 2: Satellite Map for Supply Line 38-952 Phase 2A Hydrotest and Replacement Project



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SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	8.266
PHASE 2B	0.136
INCIDENTAL	0.021
REPLACEMENT OFFSET	0.796
TOTAL MILEAGE	9.220

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$91,878	\$2,099,354	\$0	\$0	\$2,191,232
TOTAL DIRECT COSTS	\$0	\$91,878	\$2,099,354	\$0	\$0	\$2,191,232

Assumptions

Materials for this Project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 12,823 feet of [REDACTED] pipe.
- Three [REDACTED] ball valves.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$9,525,557	\$0	\$9,525,557
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$9,525,557	\$0	\$9,525,557

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- Environmental protection fencing is included for all workspaces including along the new replacement installation.

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SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

- Two laydown yards.
- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will utilize native soil.
- Contaminated soil has been assumed for the new installation through a oilfield and will be hauled off site.
- Two construction crews will be utilized for a portion of the Project.
- Tie-ins are performed during a 24 hour continuous shift.
- Laydown yard will be restored to original condition at the end of the Project.
- Restoration of grade along ROW will be performed at the end of the Project.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers for management and inspection personnel at one laydown yard for the Project.
 - Site facility for a four month duration.
 - Temporary fencing for laydown yards.
- **Site Preparation**
 - Installation of temporary silt fencing to secure open excavations.
- **Site Management / Best Management Practices (BMPs)**
 - Fiber rolls, sand bags, reinforced poly sheeting, and silt fencing will be procured and installed for BMPs.
 - BMP materials for spoil piles, laydown yards, and work sites.
- **Material Handling**
 - 16 loads of material will be unloaded at laydown yard and transported as needed.
- **Utility Locates**
 - Utility locate crew to identify substructures along the project route.
- **Isolate Existing Pipeline**
 - Three days of support for stopple installation.
 - Two days of stopple tapping support.
 - One 10 hour shift for cut and cap of pipeline.
- **Pressure Test Pipeline**
 - Hard piping will be installed from the test head to the water source.
 - Two test heads will be fabricated.
 - The pipeline will be hydrotested in three individual segments.

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SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

- **Tie-In Pipeline**
 - The existing pipeline will be tied in during a 24 hour continuous shift.
 - Five existing taps will be tied over following the gas up of the new pipeline.

- **Retire / Abandon Existing Pipeline**
 - Two pipe spans totaling approximately 635 LF will be removed.
 - All other piping sections will be abandoned using nitrogen.

- **Site Restoration**
 - All laydown yards disturbed areas will be restored to their pre-construction condition.

- **Site Demobilization**
 - One load of excess piping will be hauled to SoCalGas designated yard.
 - All crews and equipment will be demobilized.

- **Field Overhead**
 - One Full-Time Project Engineer.
 - One Full-Time Superintendent.
 - One Full-Time Time Keeper.
 - Two Full-Time Safety Personnel.
 - One Part-Time Scheduler.
 - Two site security personnel for all non-working hours.

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$130,102	\$390,306	\$780,612	\$0	\$1,301,019
TOTAL DIRECT COSTS	\$0	\$130,102	\$390,306	\$780,612	\$0	\$1,301,019

Assumptions

In calculating the estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

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SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

The high-level assumptions and specific level of effort to provide environmental support for this Project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Worker Environmental Awareness Procedure (WEAP) document.
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Preconstruction Clearance.
 - Document production for Environmental Clearance.
 - Document production for Rare Plant Survey Report.
 - Document production for Cultural Report.
- **Preconstruction Surveys**
 - Preconstruction wildlife and nesting bird survey reports.
 - Rare plant survey and topsoil flagging.
- **Construction Monitoring**
 - One full time monitor for duration of project.
- **Project Closeout activities**
 - Restoration support, permit reporting and closeout.
- **Abatement**
 - 20 days for abatement of ACMs.
- **Water Treatment and Hazardous Materials**
 - Hydrotest water, estimated at 296,952 gallons, from hydrant for hydrotesting of existing pipeline.
 - 12 days for water delivery to Project site for 101 to 250 miles roundtrip plus disposal fee.
 - Hydrotest standby support for three days.
 - Approximately 3,885 tons of contaminated soil requiring up to 100 miles round trip for transport and disposal.
 - Groundwater is not anticipated for this project.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes.

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SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$21,803	\$65,409	\$0	\$0	\$87,212
TOTAL DIRECT COSTS	\$0	\$21,803	\$65,409	\$0	\$0	\$87,212

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.
- Bureau of Land Management (BLM) Category Four.
- U.S. Army Corps of Engineers (USACE) Section 404 Nationwide Permits for span removal and for potential frac out during horizontal directional drilling.
- Estimate based on BLM temporary impact to 2.5 acres.

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$5,668	\$204,885	\$614,655	\$0	\$0	\$825,208
TOTAL DIRECT COSTS	\$5,668	\$204,885	\$614,655	\$0	\$0	\$825,208

Assumptions

In generating the cost estimate, the following items were considered:

- **Labor**
 - One contract land agent.
- **Legal Services**
 - Appraisal Reports.
 - Title Reports.
- **Permitting Fees**
 - BLM.
 - Department of Water Resources.
- **New Easement Costs**
 - New Facilities.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

- **Temporary Right of Entry (TRE)**
 - Two laydown yards.
 - Workspace.

- **Crops**
 - Restoration of 84 almond trees.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$159,984	\$159,984	\$427,820	\$185,897	\$933,685
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$0	\$159,984	\$159,984	\$427,820	\$185,897	\$933,685

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Project Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$155,497	\$422,555	\$329,259	\$6,211,620	\$665,087	\$7,784,018
TOTAL DIRECT COSTS	\$155,497	\$422,555	\$329,259	\$6,211,620	\$665,087	\$7,784,018

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 38-952 PHASE 2A HYDROTEST AND REPLACEMENT PROJECT

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E's PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Supply Line 38-952 Phase 2A Hydrotest And Replacement Project includes 40 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$5,514. The final value of the Supply Line 38-952 Phase 2A Hydrotest And Replacement Project cost disallowance will be adjusted once the project is placed in service.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1¹	Stage 2²	Stage 3³	Stage 4⁴	Stage 5⁵	Total
DIRECT LABOR	\$903,294	\$587,967	\$593,040	\$1,406,421	\$696,538	\$4,187,262
DIRECT NON-LABOR	\$7,697,626	\$6,386,042	\$11,955,168	\$65,553,020	\$2,547,122	\$94,138,978
TOTAL DIRECT CAPITAL COSTS	\$8,600,920	\$6,974,009	\$12,548,209	\$66,959,441	\$3,243,660	\$98,326,239

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total⁷
DIRECT LABOR	\$903,294	\$587,967	\$593,040	\$1,406,421	\$696,538	\$4,187,262
DIRECT NON-LABOR	\$7,697,626	\$6,386,042	\$11,955,168	\$65,553,020	\$2,547,122	\$94,138,978
TOTAL COSTS	\$8,600,920	\$6,974,009	\$12,548,209	\$66,959,441	\$3,243,660	\$98,326,239

Project Description

Supply Line 44-306 / Supply Line 44-307 is a 70 mile pipeline between Morro Bay and Kettleman City in Central California.⁸ The Supply Line 44-306 / Supply Line 44-307 Retrofit Project will replace approximately 4.58 miles of [REDACTED] pipeline with 6.96 miles of [REDACTED] pipeline in multiple segments along the pipeline. Replacements of some segments will require an offset from the existing alignment in order to provide adequate space for construction and to improve safety when accessing the pipeline for routine maintenance. The Project will be completed in multiple phases, focusing on each pipeline individually. The Supply Line 44-306 Retrofit Project will replace approximately 0.65 miles [REDACTED] pipeline and the Supply Line 44-307 Retrofit Project will replace approximately 3.93 miles of [REDACTED] pipeline. The Supply Line 44-1008 Derate and Abandonment Project will derate approximately 21 miles of existing [REDACTED] pipeline and abandon approximately 30 miles of existing [REDACTED] pipeline.

The Supply Line 44-306 Retrofit Project will replace 106 pipeline features, replace and automate three mainline valves (MLVs), replace Kettleman Pressure Station, replace two existing pipeline spans using horizontal directional drill (HDD) installation, replace five rectifier stations, and replace one customer tap.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

⁸ Demarcation of Supply Line 44-306 and Supply Line 44-307 is at Estrella Limiting Station near Paso Robles.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08**SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT**

The Supply Line 44-307 Retrofit Project will replace the Estrella Pressure Limiting Station, replace five segments of pipeline using HDD installation and 14 segments via open cut trench installation, replace 37 pipeline features, replace six customer taps, install and automate three MLVs, replace three rectifier stations, and replace one receiver.

The Supply Line 44-1008 Derate and Abandonment Project will derate approximately 21 miles of existing [REDACTED] pipeline from Shandon to Atascadero, install one new regulator station near the connection of Supply Line 44-1008 and Supply Line 36-9-21, and abandon approximately 30 miles of existing [REDACTED] pipeline from Avenal to Shandon.

Alternatives Considered

Supply Line 44-1008 is a 50 mile pipeline that was scheduled for replacement during Phase 1B. As stated in testimony, on April 30, 2021, SoCalGas finalized the purchase of Line 306 from PG&E in lieu of replacing Supply Line 44-1008. SoCalGas has previously stated that PG&E's Line 306 (now called Supply Line 44-306 / Supply Line 44-307) could be used to provide service to customers in the region at a lower cost and with fewer environmental impacts compared to the replacement of Supply Line 44-1008.

Since replacement of Supply Line 44-1008 will no longer be required due to SoCalGas' purchase and retrofit of Supply Line 44-306 / Supply Line 44-307, SoCalGas has also included in this Project the abandonment and derating of Supply Line 44-1008.

Supply Line 44-306 / Supply Line 44-307 will be the primary feed for the area and is critical in supporting customers in the region. Abandoning Supply Line 44-1008 without purchasing and retrofitting Supply Line 44-306 / Supply Line 44-307 would result in a substantial loss in capacity to Kings, Kern and San Luis Obispo Counties and an inability to meet the needs of customers in the area. Derating Supply Line 44-1008 to less than 20% SMYS would reduce the capacity of the system resulting in an inability to meet customer demand and also is not an option.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

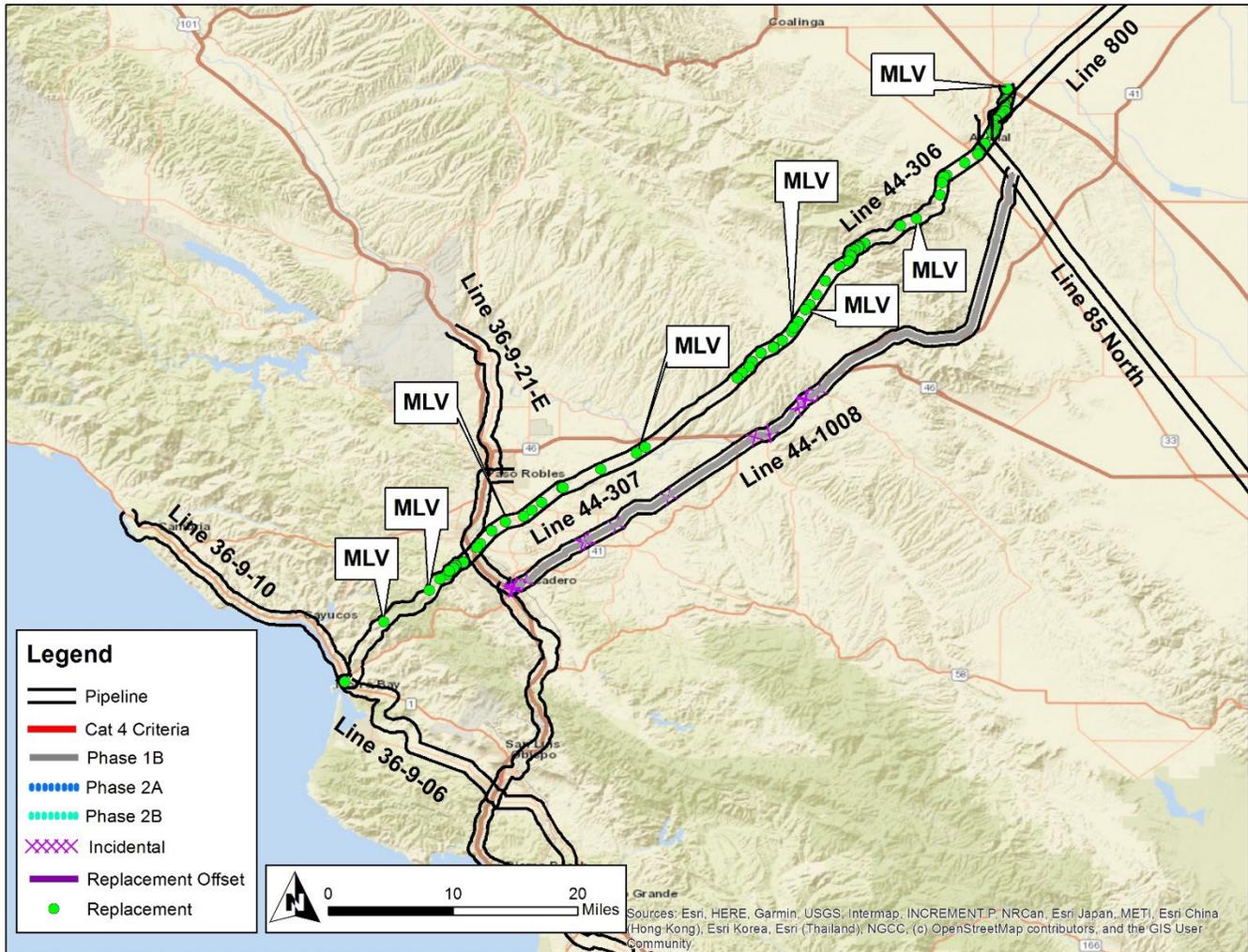
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 117 days for the Supply Line 44-306 Retrofit Project and 92 days for the Supply Line 44-307 Retrofit Project.

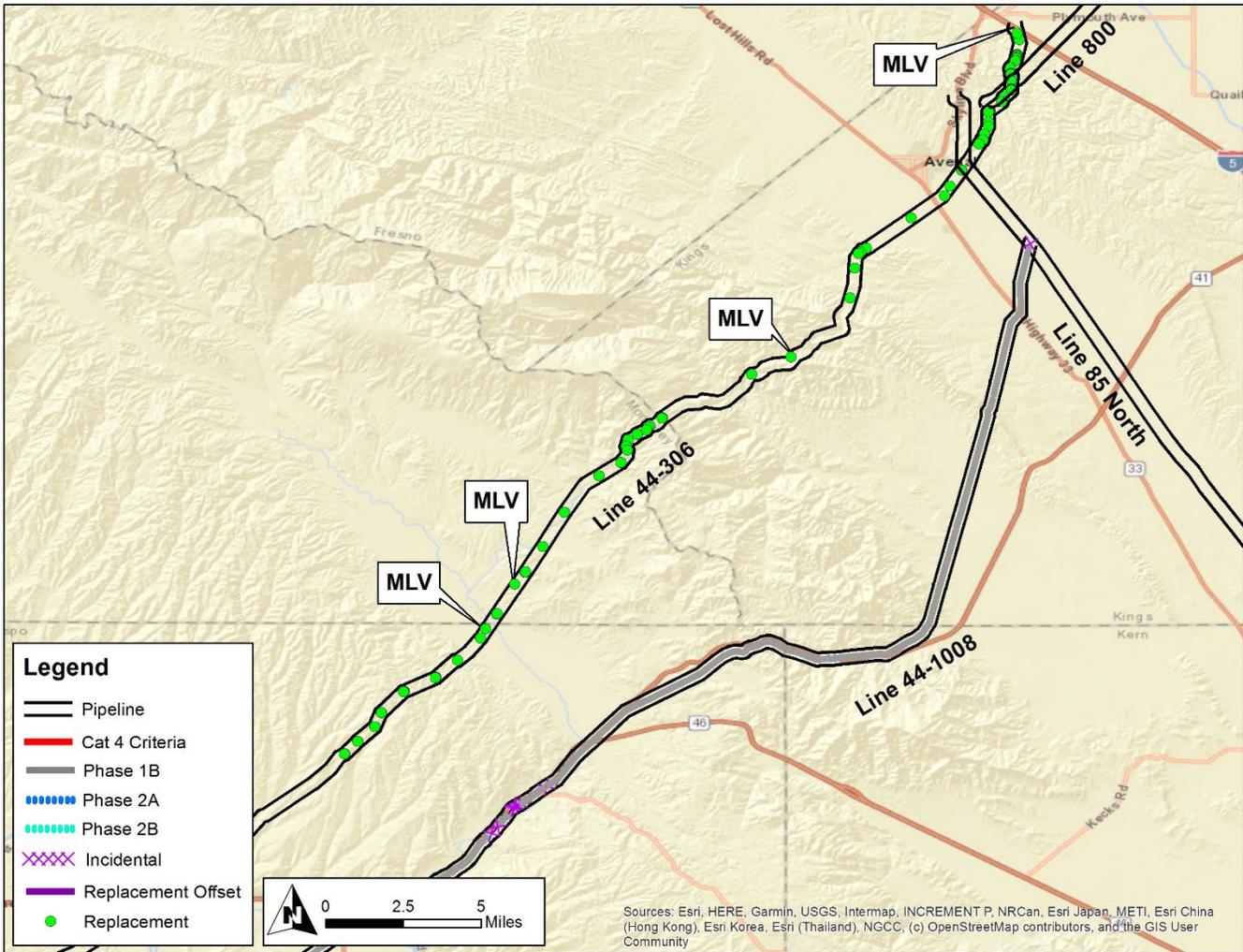
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08 SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

Figure 1: Overview Map for Supply Line 44-306 / Supply Line 44-307 Retrofit Project



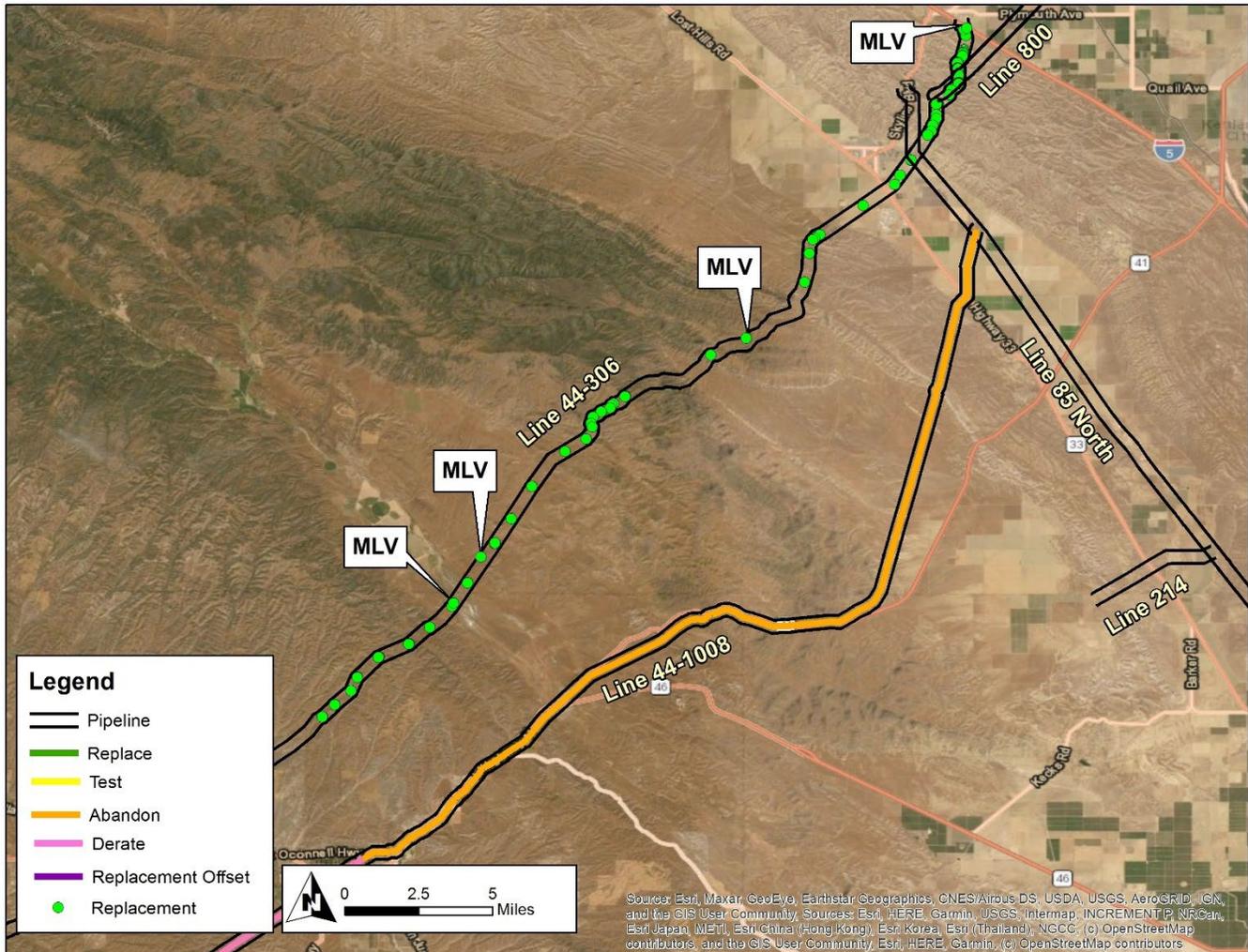
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08 SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

Figure 3: Overview Map for Supply Line 44-306 Retrofit Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

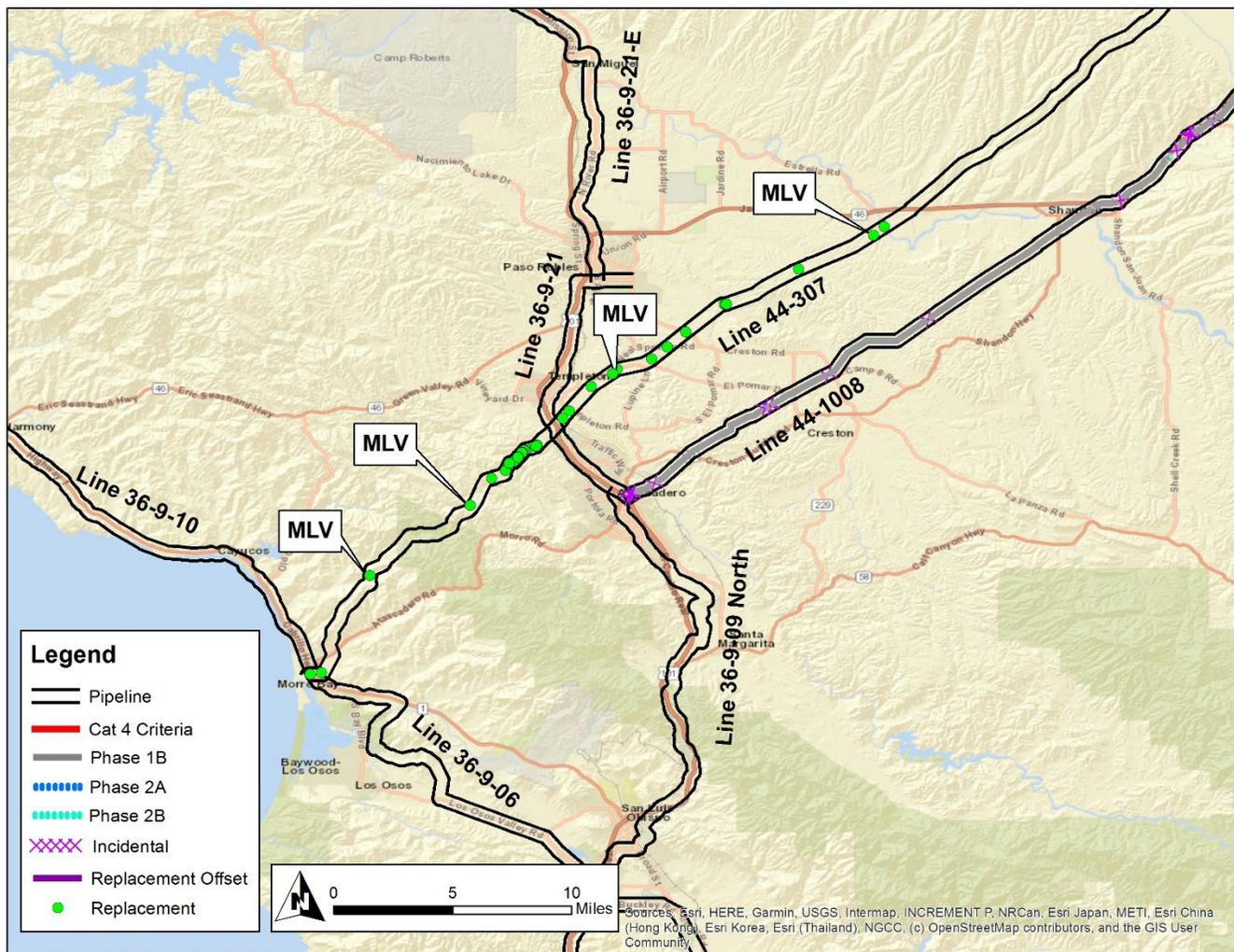
Figure 4: Satellite Map Supply Line 44-306 Retrofit Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

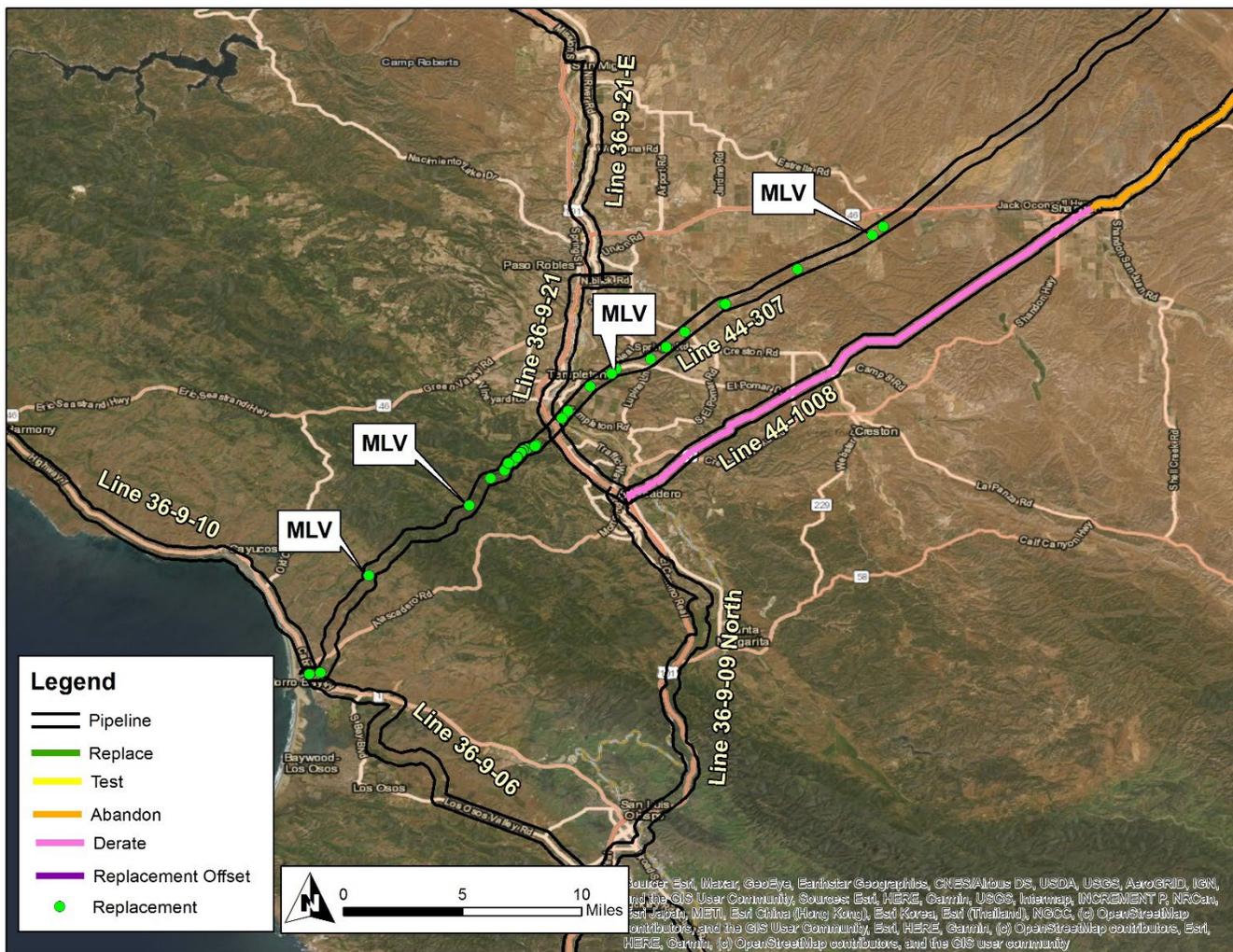
Figure 5: Overview Map for Supply Line 44-307 Retrofit Project



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SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

Figure 6: Satellite Map for Supply Line 44-307 Retrofit Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

Table 3: Project Mileage for Supply Line 44-306 / Supply Line 44-307 Retrofit

PHASE	MILEAGE
COORDINATED ⁹	0.041
PHASE 2A	0.006
PHASE 2B	0.000
INCIDENTAL	4.535
REPLACEMENT OFFSET	2.380
TOTAL MILEAGE	6.962

Table 4: Project Mileage for Supply Line 44-1008 Derate and Abandonment

PHASE	MILEAGE
PHASE 1B	49.786
PHASE 2A	0.008
PHASE 2B	0.118
INCIDENTAL	1.387
TOTAL MILEAGE	51.299

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$26,055	\$2,797,638	\$6,410,571	\$0	\$0	\$9,234,262
TOTAL DIRECT COSTS	\$26,055	\$2,797,638	\$6,410,571	\$0	\$0	\$9,234,262

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

Supply Line 44-306

- 0.824 miles of [redacted] pipe.
- 526 feet of [redacted] pipe.
- 106 [redacted] elbows.
- 13 [redacted] ball valves.
- Six [redacted] ball valves.

⁹ Lacks documentation of a post-construction strength test in a Class 3 or 4 HCA.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

- Five [redacted] ball valves.
- Four [redacted] stopple fittings.
- Two linebreak control cabinets.
- Two SCADA control cabinets.

Supply Line 44-307

- 2.871 miles of [redacted] pipe.
- 49 [redacted] elbow fittings.
- Eight [redacted] ball valves.
- Ten [redacted] ball valves.
- Eight [redacted] ball valves.
- 12 [redacted] ball valves.
- Two linebreak control cabinets.
- Two SCADA control cabinets.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$53,875,957	\$0	\$53,875,957
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$53,875,957	\$0	\$53,875,957

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

Supply Line 44-306

- 0.65 miles of [redacted] pipe will be replaced. One mobilizations and one demobilization. Contractor work has been scheduled using a 10 hour per day, six day work week calendar.
- One shift per day.
- Total construction schedule assumed at 106 days.
- Work will be scheduled Monday through Saturday.
- Five laydown yards will require clearing and grading followed by laying of crushed aggregate.
- Hand excavation assumed for all required excavation within the stations. Hand excavation assumed within 2-foot of pipeline.
- All excavations will be backfilled with washed bedding sand and filled with native for the rest. All work in stations to be backfilled with 0-Sack Slurry.
- Five new cathodic protection (CP) systems will be installed.
- Five new deep well rectifiers will be installed.
- Launcher will be installed at the Kettleman Station.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08**SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT**

- Two new Automated MLV Stations will be installed.
- Line will be taken down in three isolations.
- Individual hydrotests will be performed for one fitting replacement under 60lf, 11 fitting replacements over 60lf, two Mainline Valve Stations, and one test for Kettleman Station.
- Iso-Cap strength test will be a single strength test.
- 10 hour shifts to complete post completion hydrotests.
- 12 hour shifts for one hot tie-in and 12 cold tie-ins for the mainline pipe.
- 24 hour security at each site.
- Installation of two flowmeters included at Kettleman Station.
- Support for pipeline isolation and tie-ins.
- Hydrotest water will be treated and discharged to land and used for dust control environmental.
- 22.5 miles of access roads for grading and preparation.

Supply Line 44-307

- 3.93 miles of [REDACTED] pipe will be replaced.
- 2.021 miles of pipe will be replaced using HDD methods at five different locations.
- One mobilization and one demobilization.
- Contractor work has been scheduled using a 10 hour per day, 6 day work week calendar.
- One shift per day.
- Work will be scheduled Monday through Saturday.
- Five laydown yard will require clearing and grading followed by laying of crushed aggregate.
- Hand excavation assumed for all required excavation within the stations. Hand excavation assumed within 2-foot of pipeline.
- All excavations will be backfilled with washed bedding sand and filled with native for the rest. All work in stations to be backfilled with 0-Sack Slurry.
- Three new CP systems will be installed.
- Three new deep well rectifiers will be installed.
- Retrofitting at the Estrella and Morro Bay Stations.
- Installation of one launcher and receiver at the Estrella Station.
- Installation of one receiver at Morro Bay.
- Three shifts for support during station commissioning.
- Installation of three new Automated MLV Stations.
- 5.8 miles of access roads for grading and preparation.
- 67 utility locates for demarcation of existing gas lines.
- 12 cold tie-ins considered with 12-hour work shift.
- 15 days to isolate and purge the existing line and three separate isolations.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08**SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT**

Additional Construction Information**• Site Mobilization / Site Facilities**

Supply Line 44-306

- One mobilization and demobilization.
- Two office trailers will be placed at the laydown yard.
- One generator and six light towers.
- Site facility costs cover a 5-month duration.

Supply Line 44-307

- One mobilization and demobilization.
- One office trailer will be placed at the laydown yard.
- One generator and six light towers.
- Site facility costs cover a 4-month duration.

• Site Preparation

Supply Line 44-306

- Installation of 1,500 lf of temporary fencing for five laydown yards
- 1500 tons of crushed rock for five laydown yards.
- Clearing, grading, and spread of crushed rock for five laydown yards.

Supply Line 44-307

- Installation of 1,500 LF of temporary fencing for five laydown yards
- 1,500 tons of crushed rock for five laydown yards.
- Clearing, grading, and spread of crushed rock for five laydown yards.

• Site Management / Best Management Practices (BMPs)

Supply Line 44-306

- 500 fiber rolls, 300 hay bales, 2,000 sandbags, 4,444 SY of reinforced poly sheet, 15,000 LF of silt fence with wooden stakes, 2,500 LF of nylon rope, and 5,000 LF of Orange Snow Fence.

Supply Line 44-307

- 500 fiber rolls, 300 Hay Bales, 2,000 sandbags, 4,444 SY of reinforced polysheet, 15,000 LF of silt fence with wooden stakes, 2,500 LF of nylon rope, and 5,000 LF of Orange Snow Fence.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08**SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT**

• Material Handling

Supply Line 44-306

- 33 loads of material will be unloaded at the laydown yard.
- 400 wood pipe dunnage and 40 pallets for pipe transportation.

Supply Line 44-307

- 31 loads of material will be unloaded at the laydown yard.
- 400 wood pipe dunnage and 40 pallets for pipe transportation.

• Traffic Control

Supply Line 44-307

- Two person traffic control crew for 30 days of support at San Gregorio Road.

• Utility Locates

Supply Line 44-306

- 63 potholes for existing pipelines locates.

Supply Line 44-307

- 67 potholes for existing pipelines locates.

• Isolate Existing Pipeline

Supply Line 44-306

- Support for three separate isolations.
- Support for nitrogen purging.
- Support for 15 shifts pipeline isolation.
- Support for three shifts during cut and cap.

Supply Line 44-307

- Support or three separate isolations.
- Support for nitrogen purging.
- Support for 15 shifts during pipeline isolation.
- Support for three shifts during cut and cap.

• Hydrotest / Pressure Test Pipeline

Supply Line 44-306

- 50 wood fiber roll, 75 hay bales, 250 sandbags, 2,000 sy of geotextile, one spill kit, four 10,000 lb rated strap, one backflow preventer deposit, one hydrant permit, 65,275 gallons of water use, two fire hose connection materials.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08**SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT**

- Install 34 Test Heads and Caps.
- Three shifts to fabricate and install hard fill piping for all tests.
- Total of 15 hydrotests over 45 shifts each to fill, test, dewater and dry.

Supply Line 44-307

- 50 wood fiber roll, 75 hay bales, 250 sandbags, 2,000 sy of geotextile, one spill kit, four 10,000lb rated strap, one backflow preventer deposit, one hydrant permit, 55,000 gallons of water use, one fire hose connection materials.
- Install 31 Test Heads and Caps.
- Five shifts to fabricate and install hard fill piping for all tests.
- Total of 13 hydrotests over 28 shifts each to fill, test, dewater and dry.

• **Tie-In Pipeline**

Supply Line 44-306

- One hot tie-in and 12 cold tie-ins included at 12 hour shifts for each.
- Ten Shifts for removing test heads and fill piping.
- 31 shifts for supporting the soap testing of the new installation.

Supply Line 44-307

- Two hot tie-ins and ten cold tie-ins included at 12 hour shifts for each.
- Seven shifts for removing test heads and fill piping.
- 24 shifts for supporting the soap testing of the new installation.

• **Retire / Abandon Existing Pipeline**

Supply Line 44-1008

- Derate approximately 21 miles of existing [REDACTED] pipeline from Shandon to Atascadero.
- One new regulator station will be installed near the connection between Supply Line 44-1008 and Supply Line 36-9-21 to maintain customer service.
- Abandon approximately 30 miles of existing [REDACTED] pipeline between Avenal and Shandon.

Supply Line 44-306

- Three gallons of 2-part epoxy, 260 lb of mixed media for sandblast, one 6-Pack of Nitrogen, 40 lb of weld rod.
- Three Shifts for abandoning piping at Kettleman Station.
- Seven Shifts for demolition of pipe at the MLV Stations.
- 51 Shifts for demolition of pipe at Elbow Replacements.
- Two Shifts for abandonment of pipe at HDDs.
- Nine Shifts for abandonment of pipe at MLV 26.68.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08**SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT**

Supply Line 44-307

- Three gallons of 2-part epoxy, 260 lb of mixed media for sandblast, four 6-Pack of Nitrogen, 40 lb of weld rod.
- Nine Shifts for abandoning piping at Estrella and Morro Bay Stations.
- 15 Shifts for demolition of pipe at the MLV Stations.
- 29 Shifts for demolition of pipe at elbow replacements.
- Ten Shifts for abandonment of pipe at HDDs.
- 15 Shifts for abandonment for span removals.

• **Site Restoration**

Supply Line 44-306

- Seven Acres of light topsoil restoration at 1,882 cy over six Shifts.
- 1,568,160 sf of hydroseeding restoration via subcontractor.
- 13 Shifts for site cleanup.

Supply Line 44-307

- Ten Acres of light topsoil restoration at 2,689 cy over six shifts.
- 981,345 sf of hydroseeding restoration via subcontractor.
- 13 shifts for site cleanup.

• **Site Demobilization**

Supply Line 44-306

- Four loads of excess materials will be transported to nearest SoCalGas facility.
- Eight shifts for ILI work and validation digs.

Supply Line 44-307

- Four loads of excess materials will be transported to nearest SoCalGas facility.
- Eight shifts for ILI work and validation digs.

• **Field Overhead**

Supply Line 44-306

- One full-time Project Manager.
- Two full-time Superintendents.
- One full-time Cost Controller.
- One full-time Timekeeper.
- Two full-time Safety Personnel.
- One full-time Project Engineer.
- Site Security support.

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SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

Supply Line 44-307

- One full-time Project Manager.
- Two full-time Superintendents.
- One full-time Cost Controller.
- One full-time Timekeeper.
- Two full-time Safety Personnel.
- One full-time Project Engineer.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$704,004	\$560,755	\$1,675,396	\$3,364,530	\$0	\$6,304,685
TOTAL DIRECT COSTS	\$704,004	\$560,755	\$1,675,396	\$3,364,530	\$0	\$6,304,685

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

Supply Line 44-306 Retrofit Project

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
- **Preconstruction Surveys**
 - 115 weeks preconstruction planning.
- **Project Closeout Activities**
 - Restoration support, permit reporting, and closeout.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

- **Abatement**
 - Seven days for abatement of ACMs.
- **Construction Monitoring**
 - Four monitors for 159 days, six days a week for 32 weeks.
- **Water Treatment and Hazardous Materials**
 - Hydrotest water will be reused for onsite dust control and disposal.

Supply Line 44-307 Retrofit Project

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
- **Project Closeout Activities**
 - Restoration support, permit reporting, and closeout.
- **Construction Monitoring**
 - Four monitors for 159 days, six days a week for 32 weeks.
- **Water Treatment and Hazardous Materials**
 - Hydrotest water will be reused for onsite dust control and disposal.

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$1,447	\$307,885	\$927,995	\$0	\$0	\$1,237,328
TOTAL DIRECT COSTS	\$1,447	\$307,885	\$927,995	\$0	\$0	\$1,237,328

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs for each Project.
- Permitting fees for three counties/municipalities and Caltrans for each Project.

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$335,487	\$321,298	\$963,894	\$0	\$0	\$1,620,678
TOTAL DIRECT COSTS	\$335,487	\$321,298	\$963,894	\$0	\$0	\$1,620,678

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

Assumptions

In generating for the total estimated cost for Supply Line 44-306 and Supply Line 44-307 Retrofit Project the following items were considered:

- **Temporary Right of Entry**

Supply Line 44-306 Retrofit Project

- Laydown yard TRE for 8 months.

Supply Line 44-307 Retrofit Project

- 28 TREs for laydown yards and worksites.
- Two easements for pipeline offsets.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$903,294	\$587,967	\$593,040	\$1,406,421	\$696,538	\$4,187,262
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$903,294	\$587,967	\$593,040	\$1,406,421	\$696,538	\$4,187,262

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

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SUPPLY LINE 44-306 / SUPPLY LINE 44-307 RETROFIT PROJECT

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$6,630,633	\$2,398,466	\$1,977,313	\$8,312,533	\$2,547,122	\$21,866,067
TOTAL DIRECT COSTS	\$6,630,633	\$2,398,466	\$1,977,313	\$8,312,533	\$2,547,122	\$21,866,067

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Supply Line 44-306 / Supply Line 307 Retrofit Project includes 214 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$58,830. The final value of the Supply Line 44-306 / Supply Line 307 Retrofit Project cost disallowance will be adjusted once the project is placed in service.

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SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$92,788	\$123,048	\$123,048	\$253,920	\$144,327	\$737,132
DIRECT NON-LABOR	\$662,413	\$621,805	\$1,287,120	\$5,726,233	\$493,279	\$8,790,850
TOTAL DIRECT CAPITAL COSTS	\$755,202	\$744,853	\$1,410,168	\$5,980,154	\$637,607	\$9,527,983

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$92,788	\$123,048	\$123,048	\$253,920	\$144,327	\$737,132
DIRECT NON-LABOR	\$662,413	\$621,805	\$1,287,120	\$5,726,233	\$493,279	\$8,790,850
TOTAL DIRECT PROJECT COSTS	\$755,202	\$744,853	\$1,410,168	\$5,980,154	\$637,607	\$9,527,983

Project Description

The Supply Line 41-6000-1 Phase 2A Abandonment Project will abandon approximately 7.4 miles of [REDACTED] pipeline, between the cities of [REDACTED] and [REDACTED] in Imperial County. The segment of abandoned pipeline begins at the [REDACTED] and ends at the [REDACTED] to the south. A service tap off Supply Line 41-6000-1 will be switched over to the adjacent Supply Line 41-6001-2 to continue service, facilitated by the installation of a new distribution line and regulator station.

Alternatives Considered

Analysis of the pipeline system determined that system capacity and customer service will be uninterrupted following the completion of abandonment. The PSEP Supply Line 41-6000-2 Replacement Project was submitted for reasonableness review in A.18-11-010 and authorized in D.20-08-034. The PSEP Supply Line 41-6000-2 Abandonment Project is being submitted for reasonableness review concurrently with the PSEP Supply Line 41-6000-1 Phase 2A Abandonment Project.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

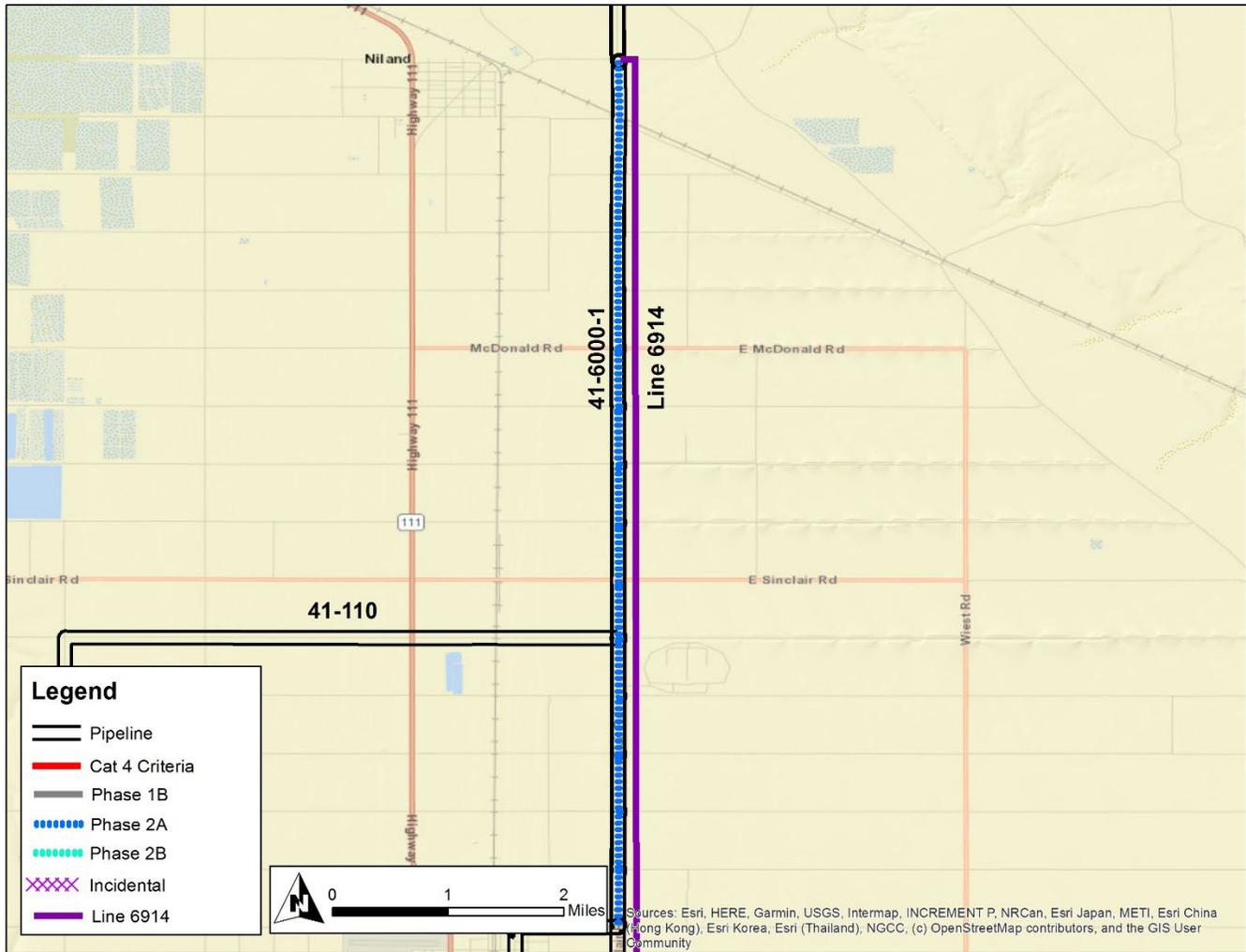
The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 89 days.

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SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

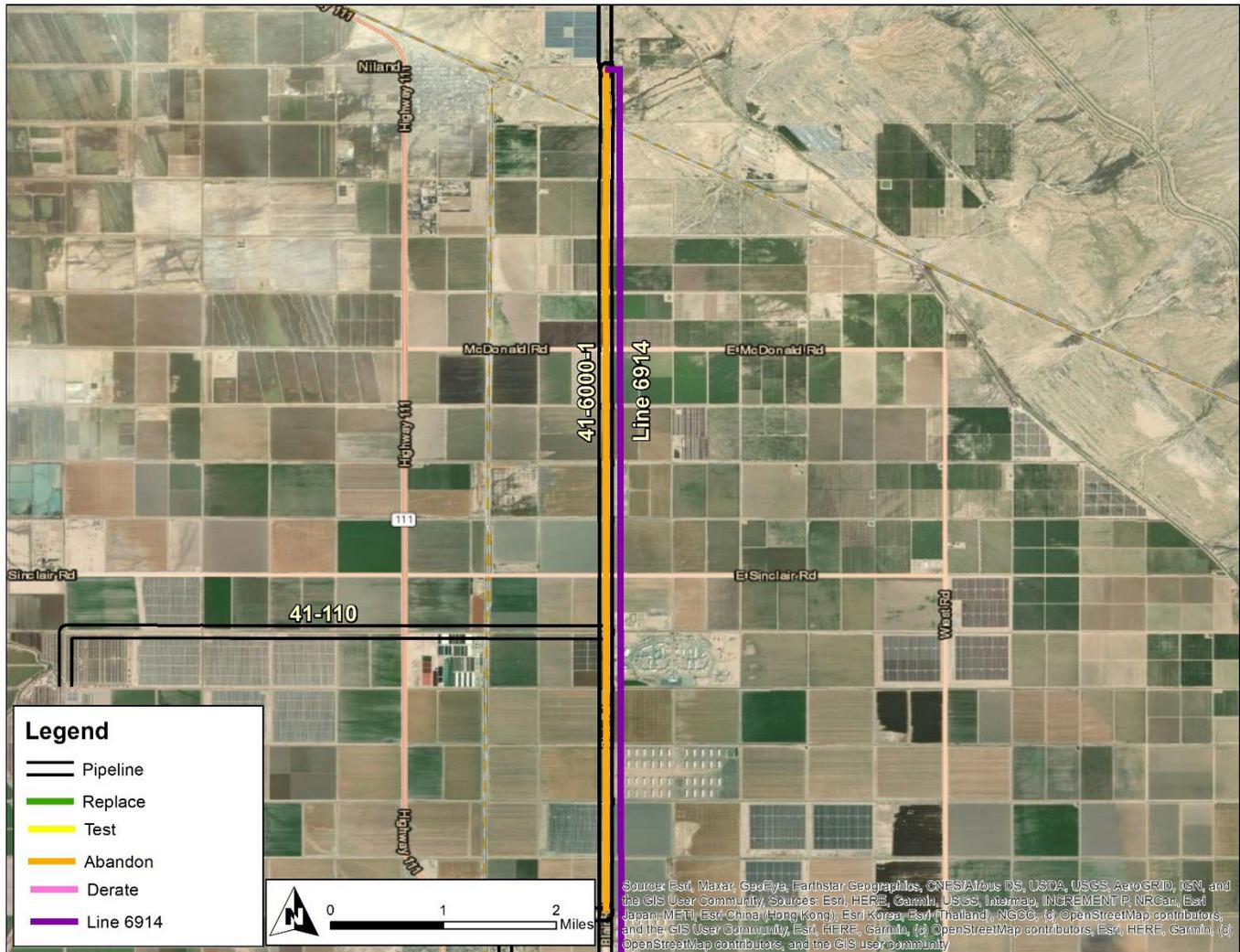
Figure 1: Overview Map for Supply Line 41-6000-1 Phase 2A Abandonment Project



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SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

Figure 2: Satellite Map for Supply Line 41-6000-1 Phase 2A Abandonment Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

Table 4: Project Mileage

PHASE	MILEAGE
PHASE 2A	7.434
PHASE 2B	0.000
INCIDENTAL	0.000
TOTAL MILEAGE	7.434

The direct costs for each area are summarized below.

Table 5: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$86,691	\$570,617	\$0	\$0	\$657,308
TOTAL DIRECT COSTS	\$0	\$86,691	\$570,617	\$0	\$0	\$657,308

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected, and delivered to coincide with the anticipated construction start date. Primary components include:

- One [REDACTED] stopple fitting.
- 0.379 miles of [REDACTED] pipe.

Table 6: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$4,175,923	\$0	\$4,175,923
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$4,175,923	\$0	\$4,175,923

Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- Pipeline can be abandoned along right of way (ROW) without restriction.
- Two laydown yards will be utilized within existing SoCalGas easements at Niland and Calipatria Station.

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SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

- A survey crew will be utilized to locate coordinates of all as-built components.
- Existing pipeline casing will be slurry filled, capped, and abandoned.
- New pipeline segments can be backfilled with slurry and/or soil. Padding and shading material shall be zero-sack and topped with native soil. Excess spoils will be hauled off and disposed.
- Assumes one spread will be utilized during abandonment and/or construction.
- Contaminated soil has not been anticipated.
- Tie-ins will be performed during a three day span.
- The new pipeline sections are assumed to be part of prefabricated assemblies that will be pre-tested within the laydown yard(s) and hydrotested in three sections relating to the Niland Station, Blair & Young, and the MLV at the State Prison.
- Laydown yards will be restored to original condition at the end of the project.
- Restoration of grade along ROW will be performed at the end of the project.
- Three shifts included for the installation of three stopples for isolation.
- Excavation within station boundaries assumed to be performed by hand.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers have been included for management and inspection personnel at the northern and southern station laydown yards.
 - Site facility costs cover a three month duration.
 - 500 linear feet (LF) of temporary fencing for all laydown yards.
 - Four track out plates have been included at street access points.
- **Site Management / Best Management Practices (BMPs)**
 - Fiber rolls, sandbags, reinforced poly sheeting, and silt fencing will be procured and installed for BMP measures.
- **Material Handling**
 - Three loads of material will be unloaded at laydown yard and transported as needed.
- **Traffic Control**
 - Two person crew for 29 shifts will be used for traffic control which includes all devices necessary to complete the project within Imperial County.
- **Utility Locates**
 - Included two shifts for utility locates.

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SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

- **Isolate Existing Pipeline**
 - Pipeline will be isolated and blown down in conjunction with tie-in activities.
 - Pipeline will not be separately isolated or brought down until new pipeline has been installed and tested.
 - Three stopples will be installed for isolation purposes.

- **Pressure Test Pipeline**
 - Preparatory work prior to the setup of one hydrotest.
 - Hard piping will be installed from the test head to the lake tank pumps.
 - The pipeline will be tested in three individual segments in a subsequent fashion and will be tested in the laydown yard.
 - Following the dewatering of pipe, it will be intermittently dried and then filled with nitrogen until tie-in.

- **Tie In Pipeline**
 - The existing pipeline will be tied in during a three day period.
 - One existing service will be tied over following the gas up.

- **Retire / Abandon Existing Pipeline**
 - Approximately 39,250 LF of Line 41-6001 pipeline will be abandoned, including cut and remove all spans at the Niland Station and to slurry fill the neighboring railroad crossing section.
 - All piping beneath highways, railroads, and waterways will be grouted.
 - Approximately 212 LF of pipe and casing removal at the railroad crossing.
 - All other piping sections will be abandoned with nitrogen.

- **Site Restoration**
 - 162 square feet (SF) of base paving will be performed up to six inches thick in Imperial County sections where the pipeline is installed in paved zones.
 - Approximately 20 LF of new striping is included where paving is disturbed.

- **Site Demobilization**
 - Removal of all office trailers and breakdown of all laydown yards has been included in the estimate.
 - One load of excess piping will be hauled to SCG designated yard.
 - All crews and equipment will be demobilized.

- **Field Overhead**
 - One Full-Time Project Manager.
 - One Full-Time Superintendent.
 - One Full-Time Safety Personnel.
 - One Full-Time Cost Controller.
 - One Full-Time Timekeeper.
 - One site security guard has been employed for all non-working hours.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

Table 7: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$73,382	\$99,665	\$298,995	\$597,989	\$0	\$1,070,030
TOTAL DIRECT COSTS	\$73,382	\$99,665	\$298,995	\$597,989	\$0	\$1,070,030

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Environmental Monitors include biological monitoring only.
- **Abatement**
 - Eight days for abatement of ACMs.
- **Water Treatment and Hazardous Materials**
 - Water to be hauled to approved disposal facility.
 - Contaminated Soil Allowance.
- **Permit Fees**
 - Environmental dust control permit.
 - Storm Water Pollution and Prevention Plan (SWPPP) permit.

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SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

Table 8: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$500	\$3,716	\$11,147	\$0	\$0	\$15,363
TOTAL DIRECT COSTS	\$500	\$3,716	\$11,147	\$0	\$0	\$15,363

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 9: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$25,026	\$26,739	\$80,217	\$0	\$0	\$131,982
TOTAL DIRECT COSTS	\$25,026	\$26,739	\$80,217	\$0	\$0	\$131,982

Assumptions

In generating the cost estimate, the following items were considered:

- **Labor**
 - One contract permit coordinator.

- **Temporary Right of Entry**

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

Table 10: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$92,788	\$123,048	\$123,048	\$253,920	\$144,327	\$737,132
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$92,788	\$123,048	\$123,048	\$253,920	\$144,327	\$737,132

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SUPPLY LINE 41-6000-1 PHASE 2A ABANDONMENT PROJECT

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 11: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$563,506	\$404,994	\$326,144	\$952,321	\$493,279	\$2,740,244
TOTAL DIRECT COSTS	\$563,506	\$404,994	\$326,144	\$952,321	\$493,279	\$2,740,244

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$816,868
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$8,241,682
TOTAL DIRECT CAPITAL COSTS	\$0	\$0	\$0	\$0	\$0	\$9,058,550

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$816,868
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$8,241,682
TOTAL COSTS	\$0	\$0	\$0	\$0	\$0	\$9,058,550

Project Description

The Supply Line 38-101 Section 3 Phase 1B Derate Project will derate approximately 7.17 miles of [REDACTED], [REDACTED], and [REDACTED] pipeline between Wheeler Ridge and Lakeview in Kern County. In order to derate the pipeline and maintain customer service, additional distribution work will be required as part of the project scope to allow for existing customers to be served from Supply Line 38-101. Associated distribution work includes the replacement and upsize of 0.60 miles of pipeline on Supply Line 38-7027 from [REDACTED] to [REDACTED], replacement and upsize of 0.23 miles of pipeline on Supply Line 38-7027-A from [REDACTED] to [REDACTED], and the installation of 1.01 miles of new [REDACTED] pipeline to connect Supply Line 38-101 to Wheeler Ridge Station. The Project will be completed in one mobilization and coordinate construction phasing with the Line 85 North Phase 1B Lake Station to Grapevine Replacement Project to sequence the abandonment activities for Line 85.

Alternatives Considered

Supply Line 38-101 is critical for system operational needs. Complete abandonment of the line is not feasible since it would create a substantial loss in capacity and would result in an inability to meet the needs of customers in the area.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

Forecast Methodology

SoCalGas developed a Class 4 Estimate⁸ to implement the above scope of work. The Class 4 Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction

Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

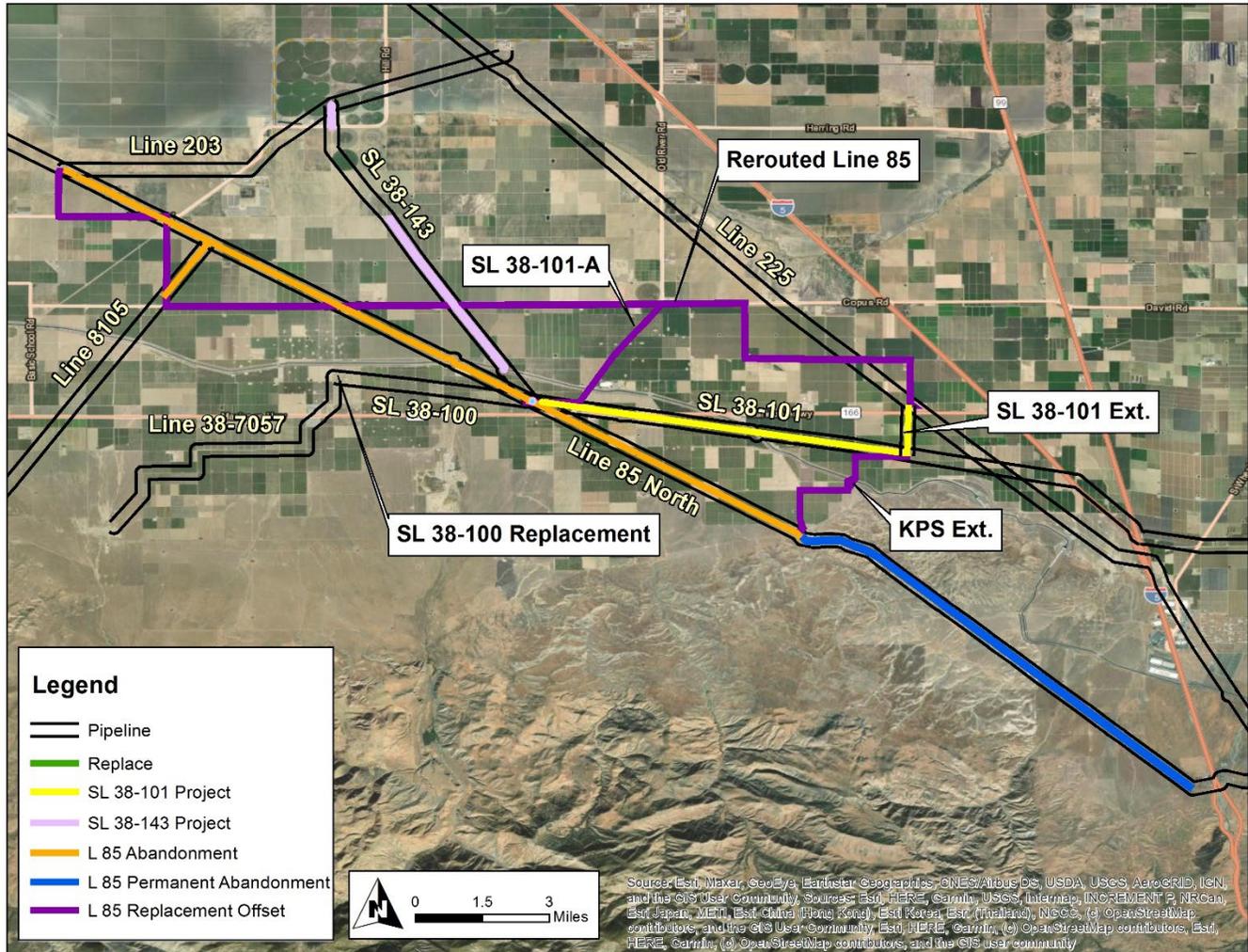
The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 79 days.

⁸According to AACE International Recommended Practice No. 97R-18, a Class 4 estimate is based on 1-15% project definition and typically results in final project costs that are within +50% to -30% of the estimated cost. In contrast, Class 3 estimates are based on 10-40% project definition and typically result in final project costs that are within +30% to -20% of the estimated amount.

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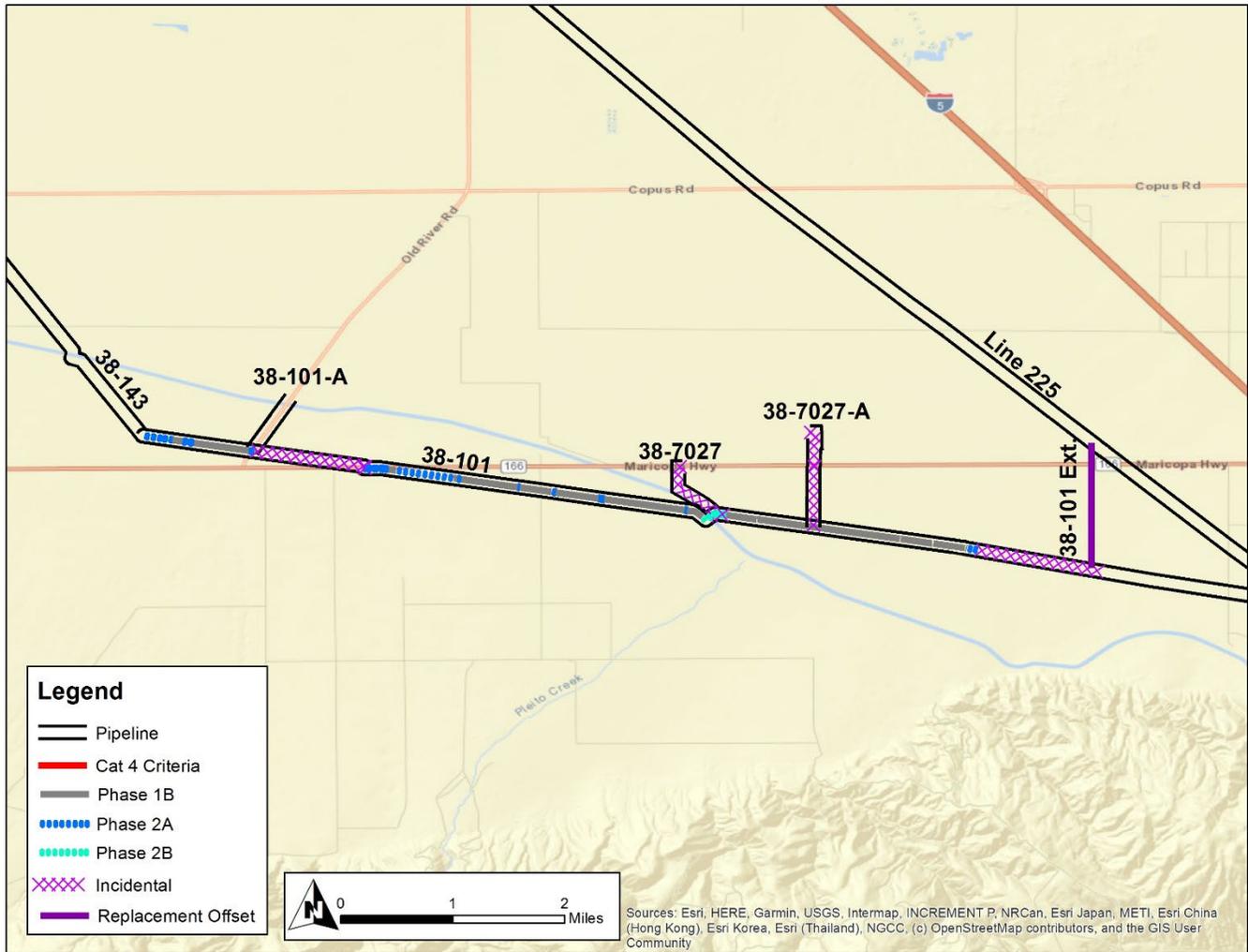
SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

Figure 1: Overview Map for Line 85 North Phase 1B Lake Station to Grapevine Road Replacement Project and Abandonment Project and Supply Line 38-101 Section 3 Phase 1B Derate Project



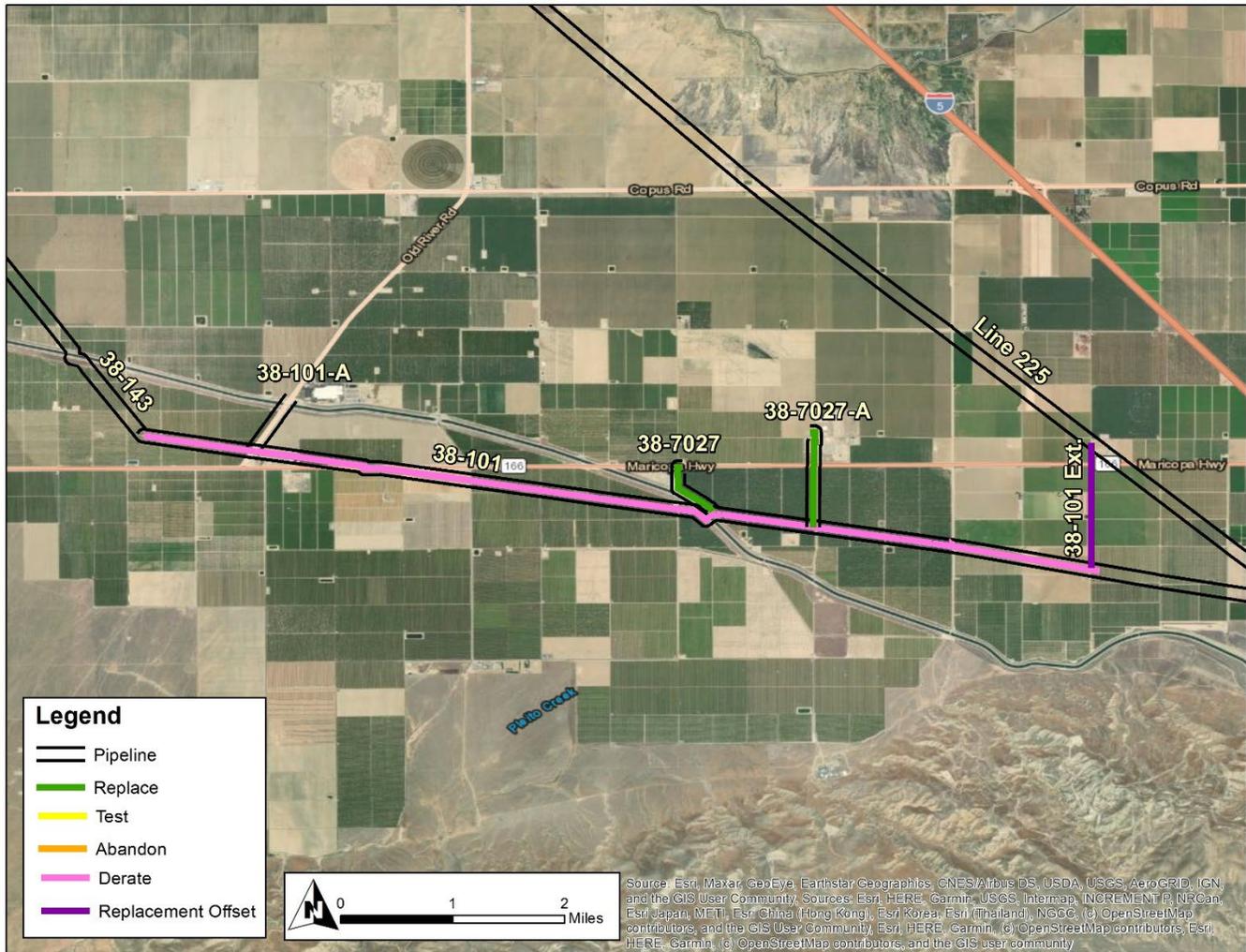
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SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

Figure 2: Overview Map for Supply Line 38-101 Section 3 Phase 1B Derate Project



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SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

Figure 3: Satellite Map for Supply Line 38-101 Section 3 Phase 1B Derate Project



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SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 1B	4.097
PHASE 2A	2.060
PHASE 2B	0.000
INCIDENTAL	0.946
MILEAGE OFFSET	1.110
TOTAL MILEAGE	8.213

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$947,779
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$947,779

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 1.11 miles of [REDACTED] pipe.
- 0.60 miles of [REDACTED] pipe.
- 0.24 miles of [REDACTED] pipe.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$5,585,419
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$5,585,419

Assumptions

Construction costs were developed using an estimating approach consistent with an ACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

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SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

The major components in this category include:

- Site Mobilization / Site Facilities.
- Site Preparation.
- Site Management / Best Management Practices (BMPs).
- Material Handling.
- Isolate Existing Pipeline.
- Pipeline Replacement.
- New Pipeline Installation.
- Pressure Test Pipeline.
- Pipeline Abandonment.
- Tie-In Pipeline.
- Site Restoration.

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Two hydrotests will be required.
- Pressure test to be nitrogen.
- Gas will be gas captured or cross compressed.
- Silt fencing at all excavations.
- Pipeline will be installed in the Roadway.
- Project support costs based on historical factors from past project history.
- Contractor will restore laydown and work sites to original condition.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$618,632
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$618,632

Assumptions

Environmental costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

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SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

The major components in this category include:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$90,763
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$90,763

Assumptions

Permit costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$242,035
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$242,035

Assumptions

Land & Right-of-Way Acquisition costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Contract Labor.
- Legal Services.

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SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

- Temporary Right of Entry.
- New Easement Costs.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$816,868
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$816,868

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$1,462,798
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$1,462,798

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 38-101 SECTION 3 PHASE 1B DERATE PROJECT

Assumptions

Other Costs were developed based on top down estimating approach consistent with an ACEC Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$81,503	\$81,503	\$120,376	\$95,118	\$378,501
DIRECT NON-LABOR	\$95,175	\$207,192	\$270,412	\$1,731,886	\$151,405	\$2,456,070
TOTAL DIRECT CAPITAL COSTS	\$95,175	\$288,696	\$351,915	\$1,852,262	\$246,523	\$2,834,571

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$-	\$81,503	\$81,503	\$120,376	\$95,118	\$378,501
DIRECT NON-LABOR	\$95,175	\$207,192	\$270,412	\$1,731,886	\$151,405	\$2,456,070
TOTAL COSTS	\$95,175	\$288,696	\$351,915	\$1,852,262	\$246,523	\$2,834,571

Project Description

The Supply Line 38-2101 Phase 2A Derate Project will derate approximately 9.004 miles of [REDACTED] pipeline and abandon 1.011 miles of [REDACTED] pipeline. The Project is located in Kern County beginning at the [REDACTED] at the [REDACTED] of [REDACTED] and [REDACTED] and ends near the [REDACTED] of [REDACTED] and [REDACTED]. In order to derate the line, a new pressure limiting station will be installed at Delano Station.

Alternatives Considered

Supply Line 38-2101 is the sole supply to Supply Line 38-7021, Supply Line 38-406, and Supply Line 38-407 and is critical for system operational needs. Complete abandonment of the pipeline is not feasible since it would create a substantial loss in capacity and would result in an inability to meet the needs of customers in the area.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

Forecast Methodology

SoCalGas developed a Class 4 Estimate⁸ to implement the above scope of work. The Class 4 Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

Schedule

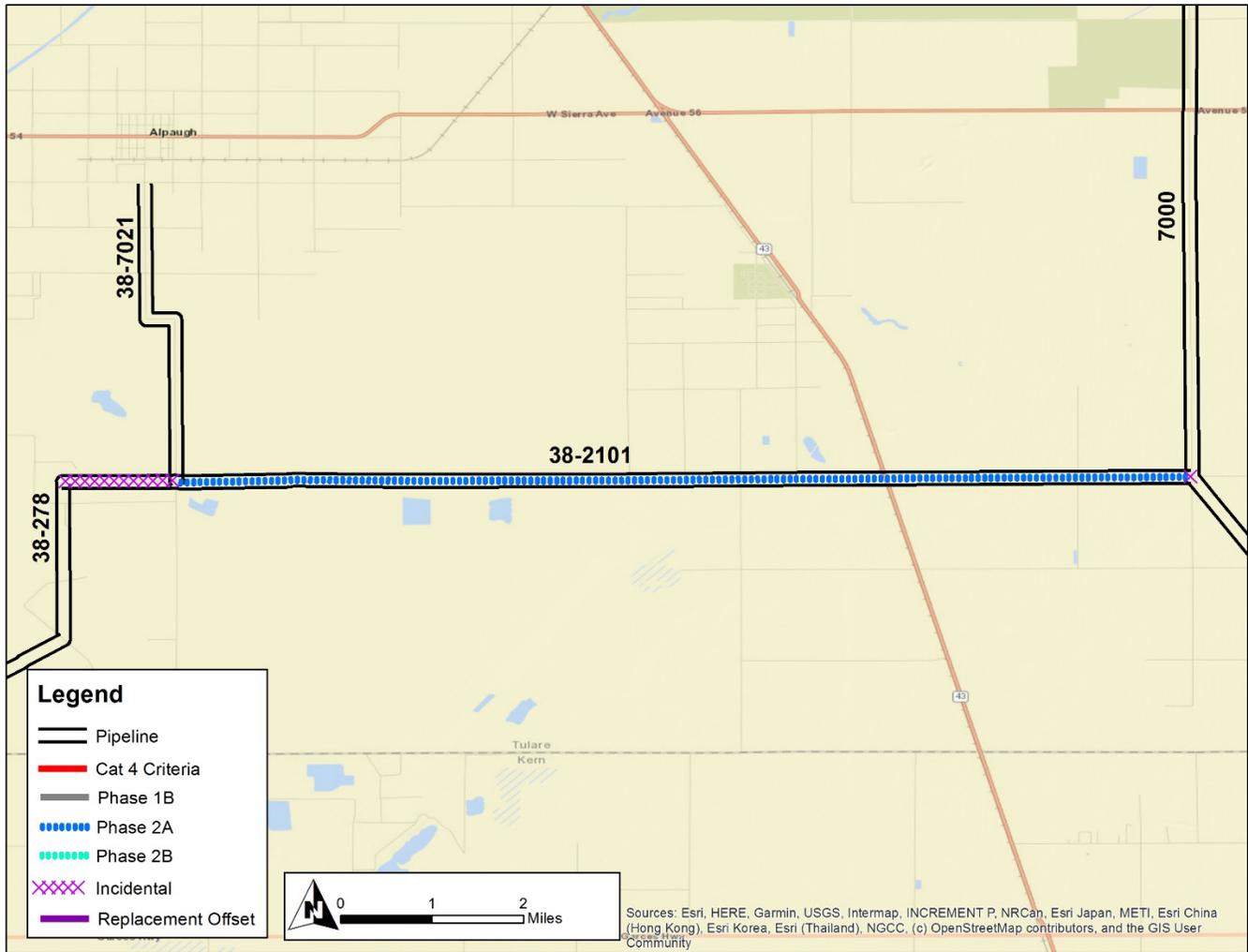
The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 38 days.

⁸According to AACE International Recommended Practice No. 97R-18, a Class 4 estimate is based on 1-15% project definition and typically results in final project costs that are within +50% to -30% of the estimated cost. In contrast, Class 3 estimates are based on 10-40% project definition and typically result in final project costs that are within +30% to -20% of the estimated amount.

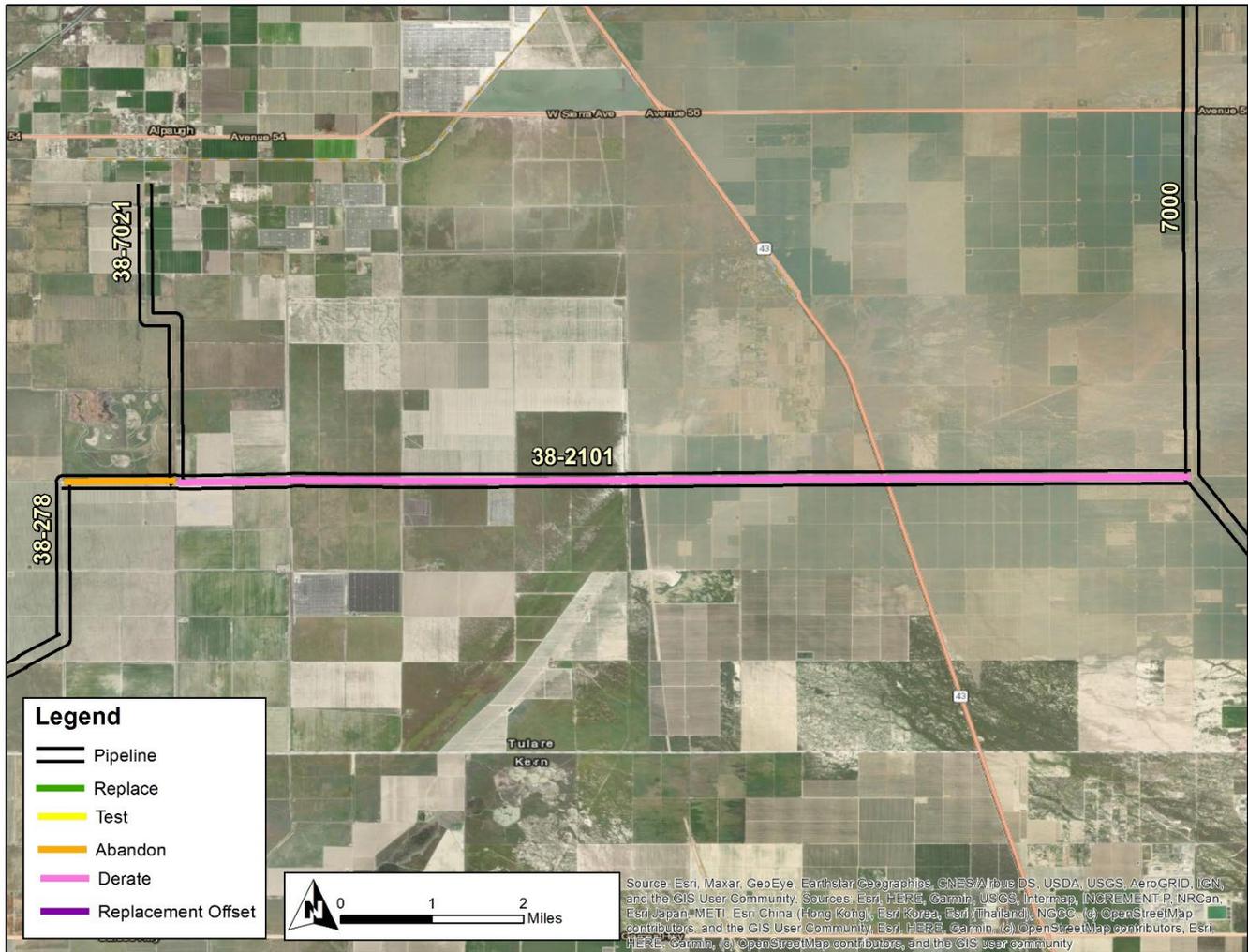
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SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

Figure 1: Overview Map for Supply Line 38-2101 Phase 2A Derate Project



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SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

Figure 2: Satellite Map for Supply Line 38-2101 Phase 2A Derate Project



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SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 2A	8.994
PHASE 2B	0.010
INCIDENTAL	1.011
TOTAL MILEAGE	10.015

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$18,344	\$19,424	\$0	\$0	\$37,768
TOTAL DIRECT COSTS	\$0	\$18,344	\$19,424	\$0	\$0	\$37,768

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 80 feet of [REDACTED] pipe.
- 25 feet of [REDACTED] pipe.
- One [REDACTED] ball valve.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$1,002	\$0	\$0	\$1,342,610	\$0	\$1,343,613
TOTAL DIRECT COSTS	\$1,002	\$0	\$0	\$1,342,610	\$0	\$1,343,613

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SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using eight hours per day, five days per week.
- One shift per day.
- Access to work site shall be continuous once project commences.
- Silt fencing to and other BMPs.
- A part time utility locate crew will be utilized to account for unidentified utilities and existing pipeline crossings.
- All piping will be bedded with washed bedding sand and remainder of trench zone will receive zero sack slurry. Excess spoils will be hauled off and disposed.
- Abandonment holes to be backfilled with native soil.
- One crew during construction.
- Tie-ins will be performed during a 16 hour continuous shift.
- Laydown yard will be restored to original condition at the end of the project.
- Restoration of worksites for all work spaces will be performed at the end of the project.

Additional Construction Information

- **Site Mobilization / Preparation / Site Facilities**
 - One mobilization and one demobilization.
 - Placement of two office trailers at the laydown yard.
 - Site facility costs cover a two-month duration.
 - 500 Linear Feet (LF) of temporary fencing has been included for laydown yard.
- **Site Management / Best Management Practices (BMPs)**
 - BMP materials for spoil piles, laydown yards, and work sites.
- **Material Handling**
 - One load of material at the laydown yard.
- **Utility Locates**
 - Two utility locates at two hours each with vac truck.
- **Isolate Existing Pipeline**
 - Support line shut-in at Delano station with one 12-hour shift.
 - Fabricate and install 30 LF of [REDACTED] temporary by-pass line.
 - Support of two [REDACTED] stopples.

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SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

- **Pipeline Installation**
 - One new pressure limiting station.

- **Pressure Test Pipeline**
 - One pressure test for new piping and components.

- **Tie-In Pipeline**
 - The existing pipeline will be tied-in during a 16 hour continuous shift.

- **Retire / Abandon Existing Pipeline**
 - One mile of pipe abandoned with nitrogen.
 - Installation of four [REDACTED] abandonment caps.

- **Site Restoration**
 - Restoration of work site locations to original condition.

- **Site Demobilization**
 - Demobilization of site facilities, crew, and equipment.
 - Hauling of one load of excess piping to SoCalGas designated yard.

- **Field Overhead**
 - One part-time Project Manager.
 - One Superintendent.
 - One Safety Personnel.
 - One Cost Controller.
 - One part-time Scheduler.
 - One site security guard for all non-working hours.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$7,916	\$32,688	\$98,064	\$196,127	\$0	\$334,794
TOTAL DIRECT COSTS	\$7,916	\$32,688	\$98,064	\$196,127	\$0	\$334,794

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SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

- **Document Preparation and Project Management**
 - SoCalGas Environmental Services support in addition to consultant support throughout duration of project (planning, permitting, construction, and closeout).
 - Document production anticipated:
 - Protocol Survey Reports.
 - Preconstruction Clearance.
 - Worker Environmental Awareness Procedure (WEAP) document.
 - Environmental Clearance.
- **Preconstruction Surveys**
 - Pre-construction wildlife and nesting bird survey reports.
 - Rare plant survey and topsoil flagging.
- **Construction Monitoring**
 - One full-time monitor for duration of project.
- **Project Closeout activities**
 - Restoration support, permit reporting and closeout.
- **Abatement**
 - Six days for asbestos and lead abatement.
- **Water Treatment and Hazardous Materials**
 - One day of test standby support.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes (e.g. lead paint waste, asbestos containing material, etc.).

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SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

Permit Fees

- San Joaquin Valley Air Pollution Control District (SJVAPCD) Dust Control Plan notification.
- California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt.
- Assumed no state or federally-listed species will be observed during protocol surveys and no listed species will be impacted by project activities.
- The project will be eligible for coverage under the SoCalGas programmatic San Joaquin Valley Habitat Conservation Plan (SJVHCP). Any required authorization will be covered under this habitat conservation plan.

Table 7: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$2,162	\$14,509	\$43,528	\$0	\$0	\$60,199
TOTAL DIRECT COSTS	\$2,162	\$14,509	\$43,528	\$0	\$0	\$60,199

Assumptions

Land & Right-of-Way Acquisition costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Contract Labor.
- Legal Services.
- Temporary Right of Entry.
- New Easement Costs.

Table 8: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$81,503	\$81,503	\$120,376	\$95,118	\$378,501
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$0	\$81,503	\$81,503	\$120,376	\$95,118	\$378,501

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

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SUPPLY LINE 38-2101 PHASE 2A DERATE PROJECT

The major components in this category include:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Table 9: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$84,095	\$141,651	\$109,395	\$193,148	\$151,405	\$679,695
TOTAL DIRECT COSTS	\$84,095	\$141,651	\$109,395	\$193,148	\$151,405	\$679,695

Assumptions

Other Costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 133 PHASE 2A DERATE PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$0	\$80,909	\$80,909	\$156,950	\$94,179	\$412,946
DIRECT NON-LABOR	\$111,116	\$354,131	\$1,055,432	\$2,303,220	\$409,637	\$4,233,536
TOTAL DIRECT CAPITAL COSTS	\$111,116	\$435,040	\$1,136,341	\$2,460,170	\$503,816	\$4,646,482

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$0	\$80,909	\$80,909	\$156,950	\$94,179	\$412,946
DIRECT NON-LABOR	\$111,116	\$354,131	\$1,055,432	\$2,303,220	\$409,637	\$4,233,536
TOTAL COSTS	\$111,116	\$435,040	\$1,136,341	\$2,460,170	\$503,816	\$4,646,482

Project Description

The Line 133 Phase 2A Derate Project will derate approximately 3.218 miles of [REDACTED] pipeline. The Line 133 Phase 2A Derate Project starts approximately 1.2 miles southwest of [REDACTED] and ends approximately 1.17 miles [REDACTED] of [REDACTED] and [REDACTED] in Kern County. The derate will be completed in one mobilization. In order to derate the pipeline, one regulator station will be installed off of the Line 85 North tap connection.

Alternatives Considered

Abandonment of Line 133 is not feasible to maintain service to an existing customer.

Forecast Methodology

SoCalGas developed a Total Installed Cost (TIC) estimate to implement the above scope of work. The TIC Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

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LINE 133 PHASE 2A DERATE PROJECT

Schedule

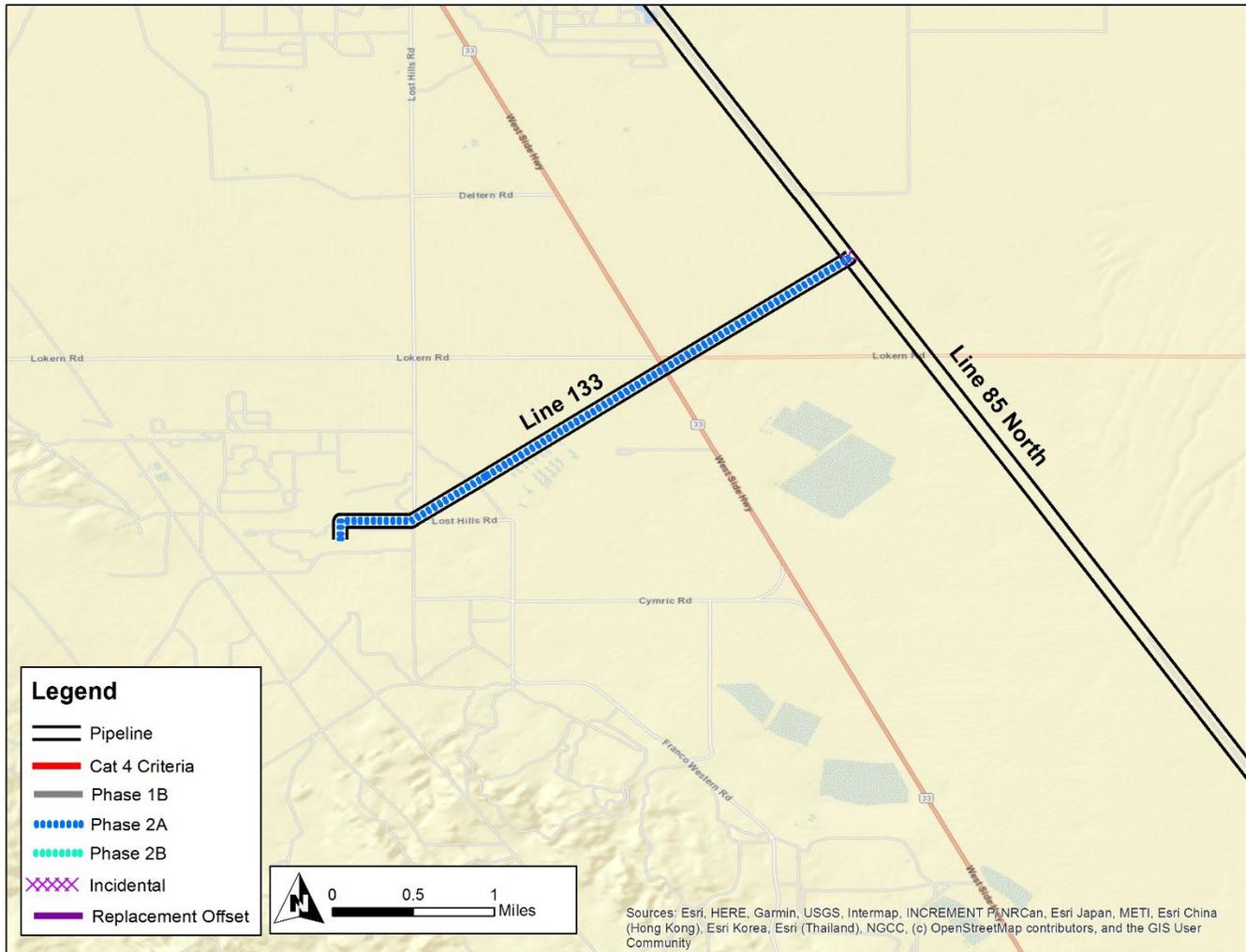
The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 43 days.

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LINE 133 PHASE 2A DERATE PROJECT

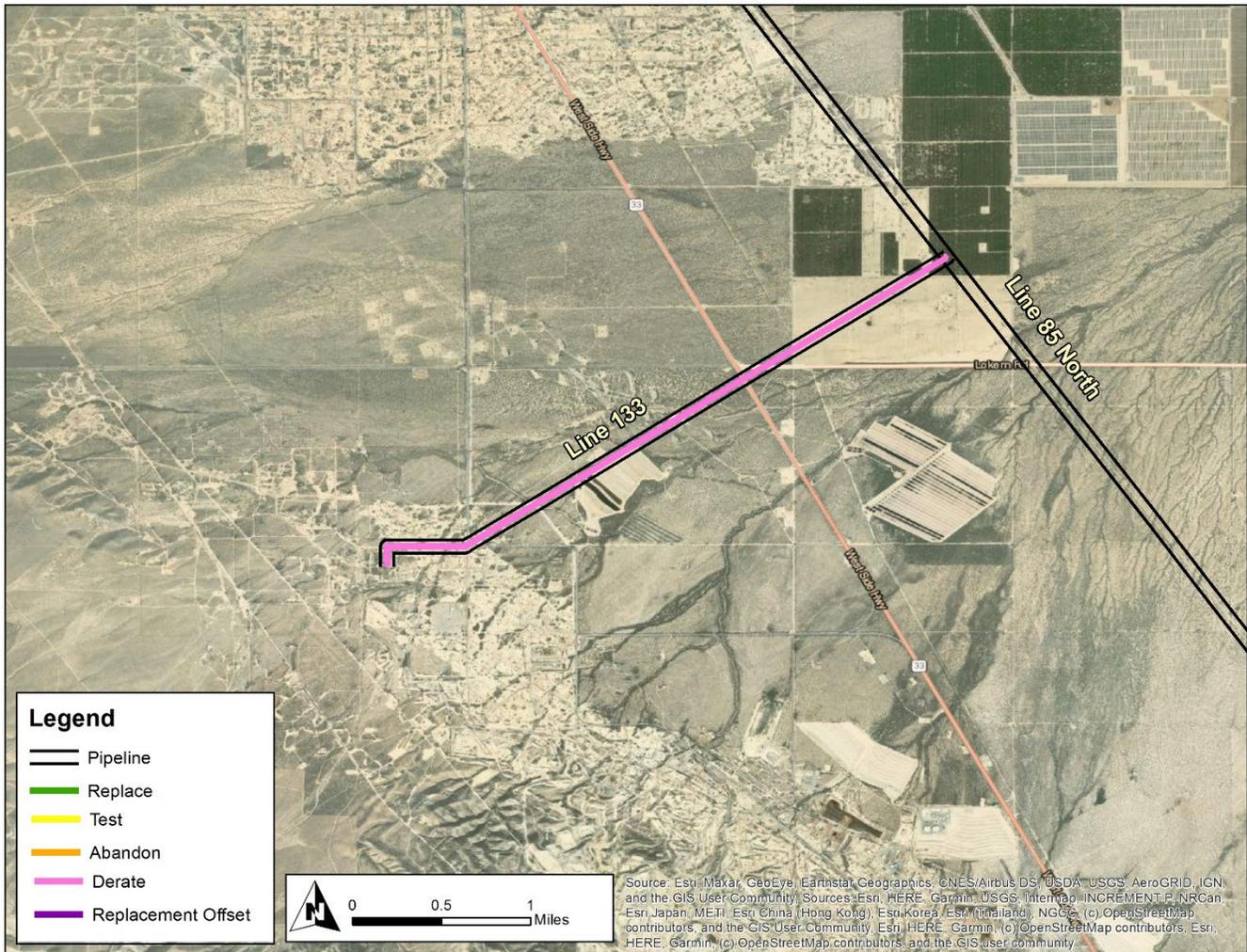
Figure 1: Overview Map for Line 133 Phase 2A Derate Project



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LINE 133 PHASE 2A DERATE PROJECT

Figure 2: Satellite Map for Line 133 Phase 2A Derate Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

LINE 133 PHASE 2A DERATE PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 2A	3.212
PHASE 2B	0.000
INCIDENTAL	0.009
TOTAL MILEAGE	3.221

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$68,422	\$547,025	\$0	\$0	\$615,447
TOTAL DIRECT COSTS	\$0	\$68,422	\$547,025	\$0	\$0	\$615,447

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- Two [redacted] stopple fittings.
- 52 feet of [redacted] pipe.
- Three [redacted] ball valves.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$1,649,904	\$0	\$1,649,904
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$1,649,904	\$0	\$1,649,904

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- Work has been scheduled using a 10 hour per day, five day work week.
- One laydown yard.

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LINE 133 PHASE 2A DERATE PROJECT

- All excavations will be backfilled with zero sack slurry or sand padding to one foot above pipeline. Remainder of backfill will utilize native soil.
- Contaminated soil has not been anticipated.
- Isolation and tie-ins are a continuous operation.
- Hydroseeding has been assumed for cleared right of way (ROW).
- Laydown yard will be restored to original condition at the end of the project.
- Restoration of grade along ROW will be performed at the end of the project.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization and one demobilization.
 - Two office trailers at the laydown yard.
 - Site facility costs to cover a two month duration.
 - Track out plates at street access point.
- **Site Preparation**
 - Temporary fencing for laydown yard.
 - Installation of additional temporary fencing to secure open excavations.
- **Site Management / Best Management Practices (BMPs)**
 - BMP materials for spoil piles, laydown yards, and work sites.
- **Material Handling**
 - One load of material will be unloaded at laydown yard and transported as needed.
- **Utility Locates**
 - Not required, all excavations will be hand excavations.
- **Isolate Existing Pipeline**
 - Pipeline will be isolated with the use of a stopple bypass.
- **Pressure Test Pipeline**
 - Contractor will assist with the preparatory work for water contractor.
 - Test heads will be fabricated by onsite contractor.
 - The pipeline will be tested in three individual segments: isolation caps, bypass, and new pipe.
- **Tie-In Pipeline**
 - The existing pipeline will be tied in during a 24 hour continuous shift.
 - X-ray of all welds.

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LINE 133 PHASE 2A DERATE PROJECT

- **Retire / Abandon Existing Pipeline**
 - Piping past the customer tap will be abandoned with nitrogen.

- **Site Restoration**
 - Hydroseeding of disturbed areas.
 - Restoration of work site locations to original condition.

- **Site Demobilization**
 - Demobilization of site facilities, crew, and equipment.
 - Hauling of one load of excess piping to SoCalGas designated yard.

- **Field Overhead**
 - Full-Time Project Engineer.
 - Full-Time Superintendent.
 - Full-Time Cost Controller.
 - Full-Time Safety Person.
 - One site security personnel for non-working hours.
 - Lodging and expenses for field personnel and project management team for full project duration.

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$42,675	\$128,025	\$256,050	\$0	\$426,750
TOTAL DIRECT COSTS	\$0	\$42,675	\$128,025	\$256,050	\$0	\$426,750

Assumptions

In calculating the total estimated environmental cost, the following items were considered:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

The high-level assumptions and specific level of effort to provide environmental support for this project are described in more detail below.

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LINE 133 PHASE 2A DERATE PROJECT

- **Environmental Labor**
 - Environmental Consultants for preconstruction assessments, construction monitoring, and environmental closeout support.
 - Document production for Protocol Survey Reports.
 - Document production for Preconstruction Clearance.
 - Document production for Storm Water Pollution and Prevention Plan (SWPPP) and Notice of Intent (NOI).
 - Document production for Worker Environmental Awareness Procedure (WEAP).
 - Document production for Environmental Clearance.
- **Preconstruction Surveys**
 - Preconstruction wildlife and nesting bird survey reports.
 - Rare plant survey and topsoil flagging.
- **Construction Monitoring**
 - One full time monitor for duration of project.
- **Project Closeout Activities**
 - Restoration support, permit reporting, and closeout.
- **Abatement**
 - 17 days for abatement of ACMs.
- **Water Treatment and Hazardous Materials**
 - Hydrotest water, estimated at 2,900 gallons, from hydrant and obtained by pipeline contractor.
 - Water delivery for four days to project site.
 - Water disposal from 101 to 250 miles roundtrip plus disposal fee.
 - Two days for hydrotest standby support.
 - Soil contamination is not anticipated.
 - Groundwater is not anticipated.
 - Waste sampling and profiling anticipated to support disposal of wastes generated during construction.
 - Hazardous and non-hazardous waste transport and disposal anticipated for various wastes.
- **Permit Fees**
 - San Joaquin Valley Air Pollution Control District (SJVAPCD) Dust Control Plan notification.
 - California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) exempt.
 - The Project will be eligible for coverage under the SoCalGas programmatic San Joaquin Valley Habitat Conservation Plan (SJVHCP). Any required take authorization will be covered under this habitat conservation plan.
 - SWPPP fee.

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LINE 133 PHASE 2A DERATE PROJECT

• **Mitigation Fees**

- Restoration of 2.25 acres of sensitive habitat anticipated to be required by the HCP to offset temporary impacts.

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$173	\$519	\$0	\$0	\$692
TOTAL DIRECT COSTS	\$0	\$173	\$519	\$0	\$0	\$692

Assumptions

In generating the cost estimate, the following items were considered:

- Permitting fees related to encroachment permit and traffic control plan costs.

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$7,671	\$85,072	\$255,217	\$0	\$0	\$347,961
TOTAL DIRECT COSTS	\$7,671	\$85,072	\$255,217	\$0	\$0	\$347,961

Assumptions

In generating for the total estimated cost for Line 133 Phase 2A Derate Project the following items were considered:

- **Labor**
 - One contract land agent.
 - Administrative support and document control specialist.
- **Temporary Right of Entry**
 - Laydown yard.
 - Workspace.
 - Access road.

Factors such as location, zoning, current market price and square footage are considered to determine a final estimated value specific to easements and temporary rights of entry.

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LINE 133 PHASE 2A DERATE PROJECT

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$80,909	\$80,909	\$156,950	\$94,179	\$412,946
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$0	\$80,909	\$80,909	\$156,950	\$94,179	\$412,946

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union Labor is estimated based upon activity level of effort and is divided into the following categories:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed with the guidance of SoCalGas Construction Management and whose costs are duration dependent and activity specific.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$103,444	\$157,788	\$124,646	\$397,266	\$409,637	\$1,192,781
TOTAL DIRECT COSTS	\$103,444	\$157,788	\$124,646	\$397,266	\$409,637	\$1,192,781

Assumptions

Other costs assume use of contracted Project Management, Engineering, Survey and Design service.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

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SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

Table 1: Total Direct Capital Cost

PROJECT COSTS – CAPITAL	Stage 1 ¹	Stage 2 ²	Stage 3 ³	Stage 4 ⁴	Stage 5 ⁵	Total
DIRECT LABOR	\$11,798	\$76,232	\$76,232	\$208,069	\$87,891	\$460,222
DIRECT NON-LABOR	\$632,633	\$334,248	\$771,180	\$3,500,157	\$172,867	\$5,411,086
TOTAL DIRECT CAPITAL COSTS	\$644,431	\$410,480	\$847,412	\$3,708,226	\$260,759	\$5,871,308

Table 2: Total Direct Project Cost

TOTAL PROJECT COSTS	Stage 1 ⁶	Stage 2	Stage 3	Stage 4	Stage 5	Total ⁷
DIRECT LABOR	\$11,798	\$76,232	\$76,232	\$208,069	\$87,891	\$460,222
DIRECT NON-LABOR	\$632,633	\$334,248	\$771,180	\$3,500,157	\$172,867	\$5,411,086
TOTAL COSTS	\$644,431	\$410,480	\$847,412	\$3,708,226	\$260,759	\$5,871,308

Project Description

The Supply Line 38-143 Phase 1B Replacement and Derate Project will replace approximately 0.431 miles of [REDACTED] pipeline and derate approximately 4.96 miles of existing pipeline located in Kern County. One regulator station will be installed southeast of Paloma Station to complete the derate. The replacement and derate will be completed in one mobilization. In order to maintain customer service, each tap will require installation of Meter Set Assemblies (MSAs). Additionally, 0.431 miles of [REDACTED] pipeline will be abandoned in place.

Alternatives Considered

Abandonment of Supply Line 38-143 is not feasible to maintain service to existing customers.

Forecast Methodology

SoCalGas developed a Class 4 Estimate⁸ to implement the above scope of work. The Class 4 Estimate includes direct costs associated with project management, engineering and design, environmental permitting, land acquisition, material and equipment procurement, and construction.

¹ Project Initiation.

² Preliminary Design.

³ Detailed Design.

⁴ Construction.

⁵ Closeout.

⁶ Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

⁷ Values may not add to total due to rounding.

⁸According to AACE International Recommended Practice No. 97R-18, a Class 4 estimate is based on 1-15% project definition and typically results in final project costs that are within +50% to -30% of the estimated cost. In contrast, Class 3 estimates are based on 10-40% project definition and typically result in final project costs that are within +30% to -20% of the estimated amount.

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SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

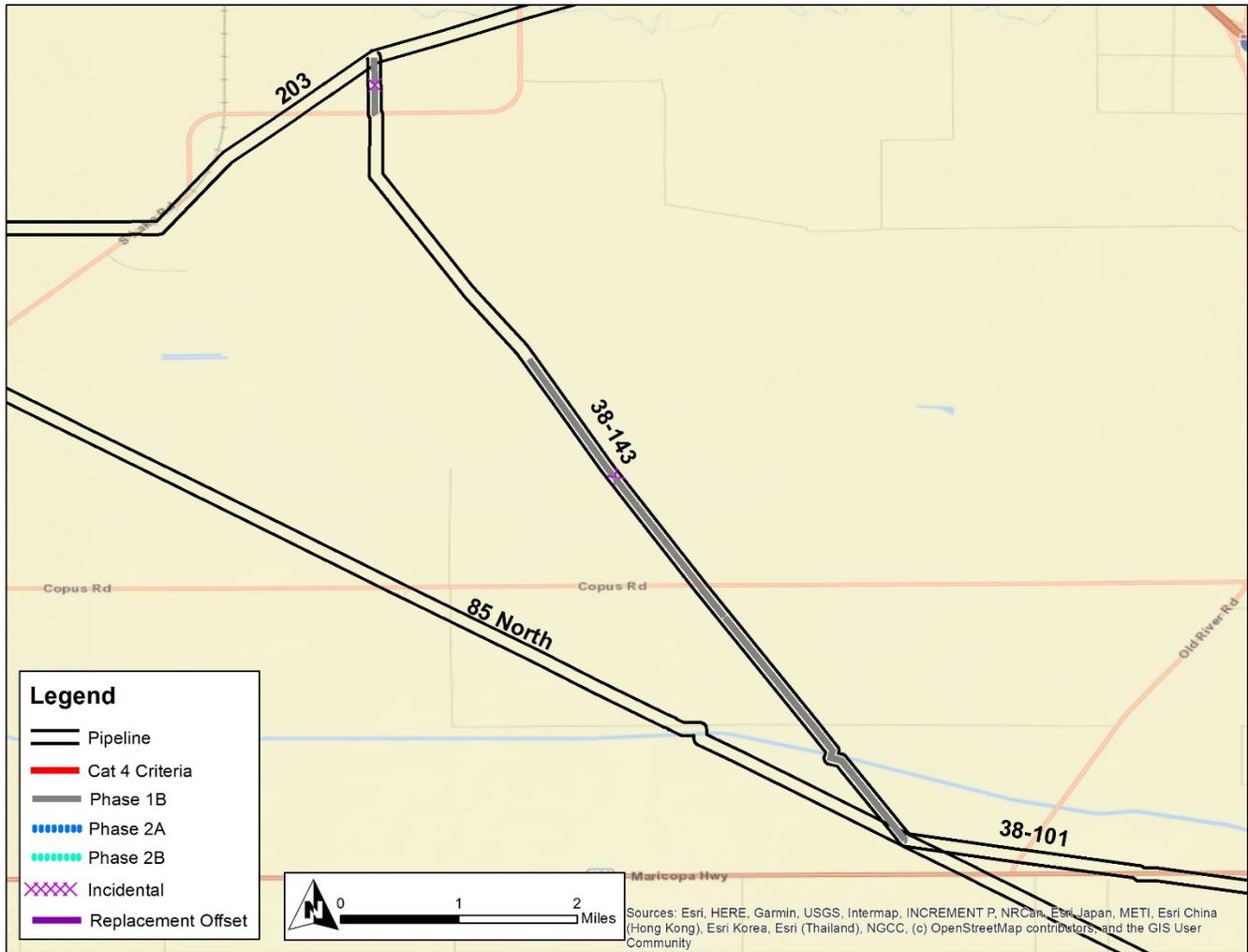
Schedule

The schedule was developed based on the five stage project life cycle as defined by PSEP. The key project deliverables were identified and incorporated into a work breakdown structure. This work breakdown structure was then sequenced, and predecessor and successor tasks were linked to each task. Finally, durations were added to each task to provide a total project duration.

The preliminary Stage 4 Construction Schedule received additional planning and stakeholder input considering that typically 50% of the project costs are expended during the construction phase. The construction schedule is assumed to be 72 days.

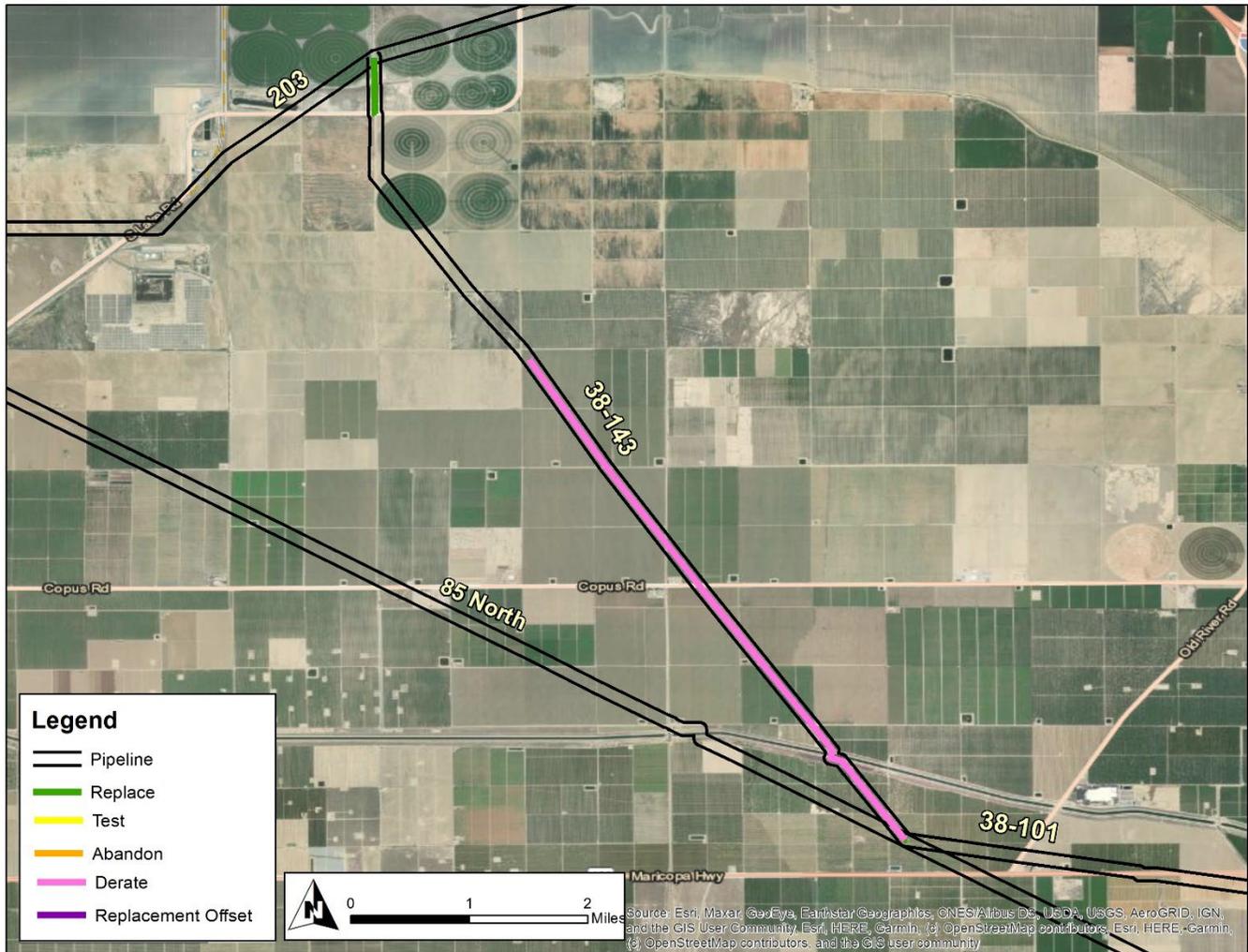
Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

Figure 1: Overview Map for Supply Line 38-143 Phase 1B Replacement and Derate Project



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

Figure 2: Satellite Map for Supply Line 38-143 Phase 1B Replacement and Derate Project



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SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

Table 3: Project Mileage

PHASE	MILEAGE
PHASE 1B	4.379
PHASE 2A	0.011
PHASE 2B	0.000
INCIDENTAL	0.033
TOTAL MILEAGE	4.422

The direct costs for each area are summarized below.

Table 4: Material

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$77,077	\$359,078	\$0	\$0	\$436,155
TOTAL DIRECT COSTS	\$0	\$77,077	\$359,078	\$0	\$0	\$436,155

Assumptions

Materials for this project will not be purchased until final internal authorization has been granted to purchase long lead time material. This will allow for material to be procured, inspected and delivered to coincide with the anticipated construction start date.

- 0.436 miles of [REDACTED] pipe.

Table 5: Construction

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$2,875,284	\$0	\$2,875,284
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$2,875,284	\$0	\$2,875,284

Assumptions

Construction costs were developed using an estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

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SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

General Assumptions

In the development of the construction estimate, the following assumptions and clarifications have been made:

- One mobilization and one demobilization.
- All materials will be received at the one laydown yard.
- Two tie-ins.
- One hydrotest.
- Install of one regulator station.

Additional Construction Information

- **Site Mobilization / Site Facilities**
 - One mobilization.
 - Site facility costs cover a four month duration.
- **Site Preparation**
 - Installation of 2,402 linear feet (LF) of temporary fencing.
 - Installation of five laydown yards in three shifts.
- **Site Management / Best Management Practices (BMPs)**
- **Material Handling**
- **Traffic Control**
- **Site Right of Way (ROW) Clearing**
 - Clearing of five laydown yards in two shifts.
 - Clearing of three worksite areas in one shift.
 - Light access road grading for 44,360 square yard (SY) in two shifts.
- **Utility Locates**
- **Pipeline Installation – Unimproved Area**
 - Bell hole excavation volume of 2,408 cubic yards (CY)
 - Installation of 2,303 LF of [REDACTED] pipeline in two shifts.
 - Installation of 100 LF of [REDACTED] pipeline in one shift.
 - Fabrication and installation of of H-M Regulator Station in 10 shifts.
 - Installation of two meter station assemblies.
 - Testing of test heads / isolation caps in two shifts.
- **Cathodic Protection**
 - Cathodic protection scope of work.

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SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

- **Pipeline Markers**
 - Installation of eight pipeline markers.

- **Isolate Existing Pipeline**
 - Purging support and valve-related isolation in four shifts.
 - Isolation of two taps in two shifts.

- **Pressure Test Pipeline**
 - Testing of 2,303 LF of pipeline.
 - Two hydrotests in eight shifts.
 - Fabrication of two test heads / isolation caps.

- **Tie-In Pipeline**
 - Removal of two test head / isolation caps.
 - Hard fill of 200 LF of pipeline.
 - Preparation for one tie-in.
 - Two cold tie-ins.
 - Reconnection of two taps.

- **Retire / Abandon Existing Pipeline**
 - Backfilling of 2,408 CY.
 - Abandonment in place of 2,280 LF of [REDACTED] pipeline.

- **Site Restoration**
 - Restoration of five laydown yards in four shifts.
 - Worksite restoration in two shifts.
 - Restoration for one regulator station.

- **Site Demobilization**
 - One demobilization in four shifts.

- **Field Overhead**

Table 6: Environmental Survey/Permitting/Monitoring/Abatement

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$38,321	\$21,524	\$64,573	\$129,146	\$0	\$253,564
TOTAL DIRECT COSTS	\$38,321	\$21,524	\$64,573	\$129,146	\$0	\$253,564

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SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

Assumptions

Environmental costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Environmental Services (permitting support, surveys and monitoring).
- Non-hazardous waste containment/disposal.
- Abatement of Asbestos Containing Material (ACM).
- Water Treatment and Hazardous Materials.
- Permit Fees.
- Mitigation Fees.

Table 7: Permits

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$17,937	\$53,811	\$0	\$0	\$71,748
TOTAL DIRECT COSTS	\$0	\$17,937	\$53,811	\$0	\$0	\$71,748

Assumptions

Permit costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Permitting fees related to encroachment permit and traffic control plan costs.

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SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

Table 8: Land & Right-of-Way Acquisition

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$22,601	\$53,811	\$161,433	\$0	\$0	\$237,845
TOTAL DIRECT COSTS	\$22,601	\$53,811	\$161,433	\$0	\$0	\$237,845

Assumptions

In generating the cost estimate, non-construction and non-material costs are based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Contract Labor.
- Legal Services.
- Temporary Right of Entry.
- New Easement Costs.

Table 9: Company Labor

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$11,798	\$76,232	\$76,232	\$208,069	\$87,891	\$460,222
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$11,798	\$76,232	\$76,232	\$208,069	\$87,891	\$460,222

Assumptions

SoCalGas Labor - Management, Engineering, and Non-Union Labor

SoCalGas Non-Union costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Project Management.
- Project Field Management.
- Project Engineers.
- Construction Management.
- Environmental Services.
- Other Departments.

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SUPPLY LINE 38-143 PHASE 1B REPLACEMENT AND DERATE PROJECT

SoCalGas Field Labor – Distribution, Transmission, Pipeline Integrity, and Other Field Departments

SoCalGas Union Labor costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

Table 10: Other Costs

PROJECT COST	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$571,712	\$163,899	\$132,285	\$495,727	\$172,867	\$1,536,490
TOTAL DIRECT COSTS	\$571,712	\$163,899	\$132,285	\$495,727	\$172,867	\$1,536,490

Assumptions

Other Costs were developed based on top down estimating approach consistent with an AACE Class 4 estimate. Cost ranges development are based on considerations of historical cost estimate ranges and/or similar size and scope projects.

The major components in this category include:

- Engineering and Design Services.
- Project Management Services.
- Construction Management and Inspection Services.
- Surveying and As-builts.

Disallowance

In D.14-06-007, the Commission approved implementation of SoCalGas and SDG&E’s PSEP, and disallowed recovery of specified costs associated with pressure testing or replacing pipeline segments installed after July 1, 1961. This decision was later modified by D.15-12-020 to include pipe installed from January 1, 1956 to July 1, 1961. The Supply Line 38-143 Phase 1B Replacement and Derate Project includes 57 feet of Category 4 pipe installed in 1965 that does not have test records to demonstrate compliance with the then-applicable industry or regulatory strength testing and record keeping standards. This resulted in an anticipated cost disallowance of \$15,684. The final value of the Supply Line 38-143 Phase 1B Replacement and Derate Project cost disallowance will be adjusted once the project is placed in service.

SUPPLEMENTAL WORKPAPER SUMMARY 2024 GRC APPLICATION
VALVE ENHANCEMENT PLAN COSTS

Project Line	O&M Costs	Capital Costs	Total Cost
Valve Enhancement Plan	\$0	\$8,339,168	\$8,339,168
TOTAL	\$0	\$8,339,168	\$8,339,168

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

VALVE ENHANCEMENT PLAN PROJECTS

Table 1: Total Direct Project Cost

PROJECT COSTS – CAPITAL	Stage 1¹²	Stage 2³	Stage 3⁴	Stage 4⁵	Stage 5⁶	Total⁷
DIRECT LABOR	\$31,780	\$127,121	\$158,901	\$693,887	\$190,681	\$1,202,369
DIRECT NON-LABOR	\$100,478	\$503,884	\$637,928	\$5,198,646	\$695,863	\$7,136,799
TOTAL DIRECT CAPITAL COSTS	\$132,258	\$631,004	\$796,829	\$5,892,533	\$886,544	\$8,339,168
TOTAL COSTS	\$132,258	\$631,004	\$796,829	\$5,892,533	\$886,544	\$8,339,168

Project Description

In D.14-06-007, the Commission approved SoCalGas and SDG&E’s Pipeline Safety Enhancement Plan (PSEP), which included a proposed plan to enhance its transmission pipeline valve infrastructure to support backflow prevention as well as automatic and remote isolation of their transmission pipelines operated in more populated areas within 30 minutes or less in the event of a pipeline rupture. The remaining Valve Enhancement Plan (VEP) scope of work consists of the following:

Planned Enhancement	Total Count
Installation of new backflow prevention devices, either with check valve installations or through modifications to existing regulator stations	18
Total	18

The total direct cost forecast to complete this valve enhancement work is approximately \$8.3 million.

Forecast Methodology

The cost estimates for BFP2 installations were derived by averaging installed costs for recent valve enhancement projects of similar scope. SoCalGas generated a work breakdown structure for BFP2 valve enhancement projects that include installation of new check valves on an existing pipeline to prevent backflow (BFP2).

Similarly, material cost estimates were prepared based on recent purchase orders and release costs. Construction Management (Company and Inspector) and Union Labor costs were estimated based on typical project durations and detailed activity check lists. Other elements included in the estimates are Environmental, Engineering, Survey,

¹ Project Initiation.

² Actual costs incurred associated with planning and engineering design work are included in the project cost estimates.

³ Preliminary Design.

⁴ Detailed Design.

⁵ Construction.

⁶ Closeout.

⁷ Values may not add to total due to rounding.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
VALVE ENHANCEMENT PLAN PROJECTS

Company/Contractor Project Management Labor, Outreach, Public Affairs, and Land. These elements were assigned percentage values, as a proportion of the total direct construction cost, based on typical averages for similar projects.

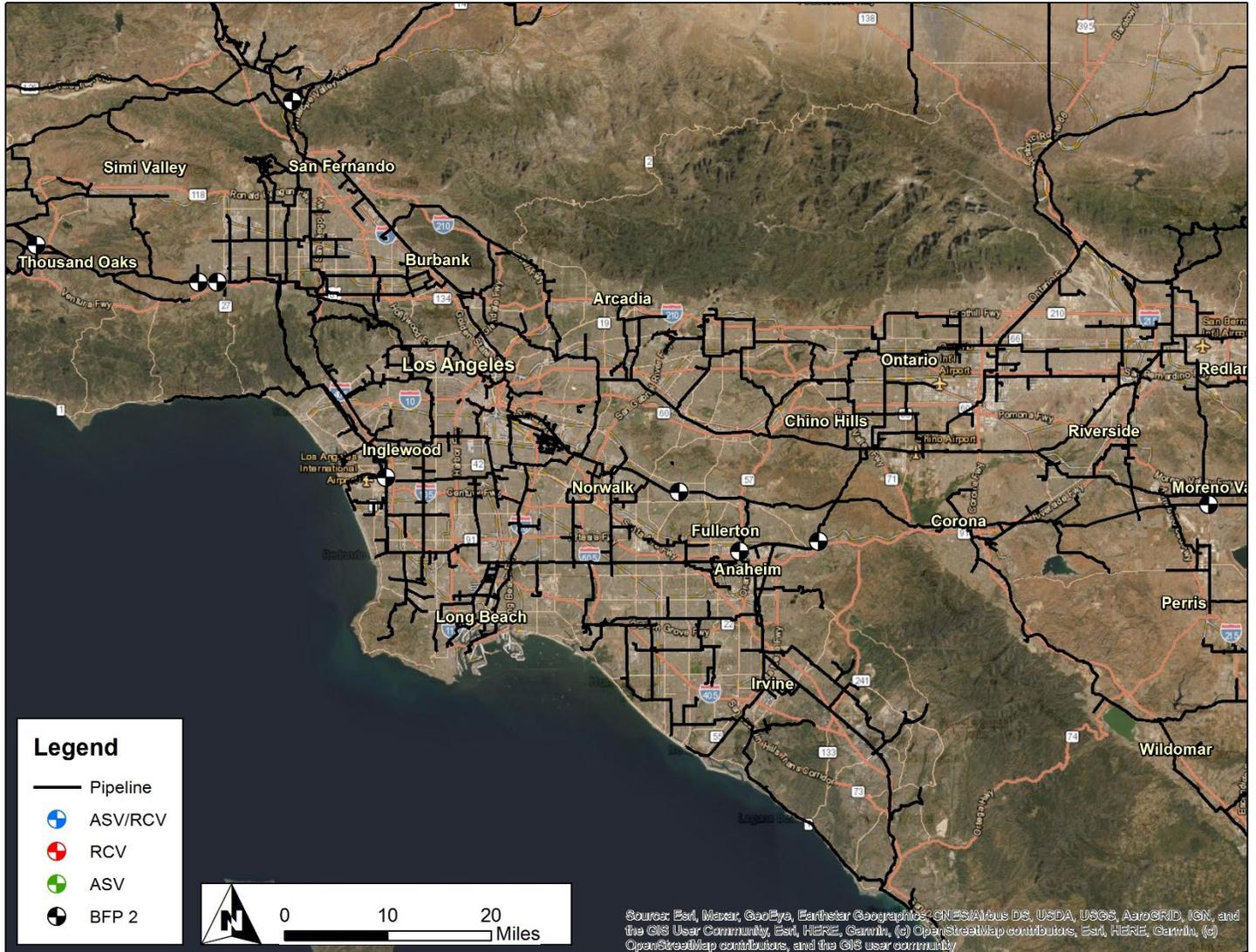
Table 2: Valve Project List

Multiple valves installed at a particular location have the same pipeline number and milepost location, and are therefore denoted in the table by unique valve identification numbers in the third column.

Line	Mile	Valve ID #	Valve Size (in.)	Project Type	Modification Cost (\$000)
404	30.48	3	8	8 – BFP2	\$ 463
404	30.48	4	8	8 – BFP2	\$ 463
404	45.10	0	8	8 – BFP2	\$ 463
404	46.16	0	8	8 – BFP2	\$ 463
406	45.10	1	8	8 – BFP2	\$ 463
406	46.15	0	8	8 – BFP2	\$ 463
1013	4.30	0	8	8 – BFP2	\$ 463
1016	0.03	0	8	8 – BFP2	\$ 463
2000	161.14	7	8	8 – BFP2	\$ 463
2000	161.14	8	8	8 – BFP2	\$ 463
2000	206.33	1	8	8 – BFP2	\$ 463
2000	206.33	2	8	8 – BFP2	\$ 463
2003	18.48	0	8	8 – BFP2	\$ 463
3000	243.16	0	8	8 – BFP2	\$ 463
3007	4.18	0	8	8 – BFP2	\$ 463
3008	0.86	0	8	8 – BFP2	\$ 463
4000	111.16	0	8	8 – BFP2	\$ 463
4000	117.91	0	8	8 – BFP2	\$ 463

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08
VALVE ENHANCEMENT PLAN PROJECTS

Figure 1: Overview Map of Valve Enhancement Plan Projects



Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

VALVE ENHANCEMENT PLAN PROJECTS

The direct costs are summarized below.

Table 2: Material

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$31,050	\$22,770	\$0	\$0	\$53,820
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$53,820

Assumptions

Materials costs are based on historical averages from SoCalGas purchase orders and contract release orders. Materials purchased by the contractor are not included in the Materials cost category because those are included as part of construction contractor costs and reflected in the Construction cost category.

Materials included in the estimates include, check valve(s), associated pipe, and fittings.

Table 3: Construction

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$0	\$0	\$0	\$3,908,922	\$0	\$3,908,922
TOTAL DIRECT COSTS	\$0	\$0	\$0	\$0	\$0	\$3,908,922

Assumptions

Construction cost estimates include estimated costs for the construction contractor. The construction contractor performs the mechanical and civil valve enhancement construction activities.

A list of work activities, or work breakdown structure, was generated for the construction contractor. Activities included in the work breakdown structure include but are not limited to:

Mobilization, facilities setup, site preparation, BMP setup, receipt of materials, potholing, traffic control, pipe excavation, bridle excavation, valve assembly fabrication, pressure testing of valve assembly, isolation, demolition of pipe, tie-in of valve assembly, coating, installation of pipe supports, backfilling, site restoration, breakdown of yard, yard restoration, demobilization, field overhead.

Pipeline Safety Enhancement Plan Workpaper Supporting Exhibit SCG-08

VALVE ENHANCEMENT PLAN PROJECTS

Table 4: Environmental Survey/Permitting/Monitoring/Abatement

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$29,317	\$58,634	\$146,585	\$351,803	\$0	\$586,338
TOTAL DIRECT COSTS	\$29,317	\$58,634	\$146,585	\$351,803	\$0	\$586,338

Assumptions

Costs for Environmental Services, Permitting and Monitoring, including, but not limited to, permitting, monitoring, and abatement activities, were assumed to be fifteen percent of the total construction contractor cost.

Table 5: Company Labor

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$31,780	\$127,121	\$158,901	\$693,887	\$190,681	\$1,202,369
DIRECT NON-LABOR	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS	\$31,780	\$127,121	\$158,901	\$693,887	\$190,681	\$1,202,369

Assumptions

Company labor encompasses three elements of project implementation – project management, construction management, and union labor. Historical construction timelines with similar activity lists for each installation type were used to derive labor-hour estimates for construction management company labor. Finally, union company labor was derived using an estimating tool with appropriate work activities, by installation type. For example, union company labor for new valve installations includes union company labor for pipe isolation and tie-in work.

Table 6: Other Capital Costs

Project Costs	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Total
DIRECT LABOR	\$0	\$0	\$0	\$0	\$0	\$0
DIRECT NON-LABOR	\$71,161	\$414,200	\$468,573	\$937,921	\$695,863	\$2,587,719
TOTAL DIRECT COSTS	\$71,161	\$414,200	\$468,573	\$937,921	\$695,863	\$2,587,719

Assumptions

Other Capital costs include contracted project management, engineering, survey, design services, and other costs. Capital costs, similar to company labor construction management, uses historical construction timelines to derive labor-hour estimates. The labor-hour estimates were prepared for the construction manager, inspectors, and field engineers.