

Appendix IX-1-D

SDG&E Distribution

Cost Estimates for Pipeline Replacements and Pressure Tests

**CHAPTER IX PIPELINE WORKPAPER
APPENDIX IX-1-D**

SDG&E Distribution

| Line | Workpaper Page | Line | Workpaper Page | Line | Workpaper Page |
|-------------|---------------------------|-------------|---------------------------|-------------|---------------------------|
| 49-11 | WP-IX-1-D1 | 49-17 | WP-IX-1-D21 | 49-25 | WP-IX-1-D34 |
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San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|-----------------------|-------|----------------------------|--------------------|--------------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 | | |
| | | Criteria | Accelerated | Total |
| Line Number | 49-11 | 0.344 | - | 0.344 |
| Diameter (in.) | 20 | | | |

Cost Detail

| | | | |
|-----------------------------|---------------------|-----------------------------|-------------|
| Capital | | O&M | |
| Direct Labor | \$ 57,900 | Direct Labor | \$ - |
| Direct Non Labor | \$ 1,684,900 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 1,742,800 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX**

Existing Segments

| Category | Station Start | Station Stop | Criteria Miles | Diameter | Action | Decision Tree Box | Comments |
|----------|---------------|--------------|----------------|----------|------------|-------------------|--|
| Cat 4 | 0 | 153 | 0.0290 | 20 | Replace | 2 | Nesting site, coastal sage. |
| Cat 1 | 153 | 685 | 0.1008 | 20 | Keep As Is | | |
| Cat 4 | 685 | 735.74 | 0.0096 | 20 | Replace | 2 | Nesting site, coastal sage. |
| Cat 1 | 735.74 | 1666.7 | 0.1763 | 20 | Keep As Is | | |
| Cat 1 | 1666.7 | 3037.1 | 0.2595 | 20 | Keep As Is | | |
| Cat 1 | 3037.1 | 3084.7 | 0.0090 | 20 | Keep As Is | | |
| Cat 1 | 3084.7 | 3366.70 | 0.0534 | 20 | Keep As Is | | |
| Cat 1 | 3366.70 | 6946.89 | 0.6792 | 20 | Keep As Is | | |
| Cat 2 | 6946.89 | 7103.89 | 0.0297 | 20 | Keep As Is | | |
| Cat 1 | 7103.89 | 8264.8 | 0.2199 | 20 | Keep As Is | | |
| Cat 4 | 8264.8 | 8864.8 | 0.1136 | 20 | Replace | 2 | |
| Cat 1 | 8864.8 | 11071.2 | 0.4179 | 20 | Keep As Is | | |
| Cat 4 | 11071.2 | 11188 | 0.0221 | 20 | Replace | 2 | Freeway off-ramp, night work required. |
| Cat 1 | 11188 | 12132.63 | 0.1789 | 20 | Keep As Is | | |
| Cat 4 | 12132.63 | 12158.63 | 0.0049 | 20 | Replace | 2 | Very busy street, night work required. |
| Cat 1 | 12158.63 | 13237.6 | 0.2044 | 20 | Keep As Is | | |
| Cat 4 | 13237.6 | 14108.18 | 0.1649 | 20 | Replace | 2 | Very busy street, night work required. |
| Cat 1 | 14108.18 | 25032 | 2.0689 | 20 | Keep As Is | | |
| Cat 1 | 25032 | 27155 | 0.4021 | 20 | Keep As Is | | |

New Segments

| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|---------------|--------------|----------|----------------|-------|---|
| 0 | 153 | 20 | 0.312 | X-65 | Install parallel main to maintain loop feed. Abandon existing main after new main is energized. |
| 685 | 735.74 | 20 | 0.312 | X-65 | |
| 11071.2 | 11188 | 20 | 0.312 | X-65 | |
| 12132.63 | 12158.63 | 20 | 0.312 | X-65 | |
| 13237.6 | 14108.18 | 20 | 0.312 | X-65 | |

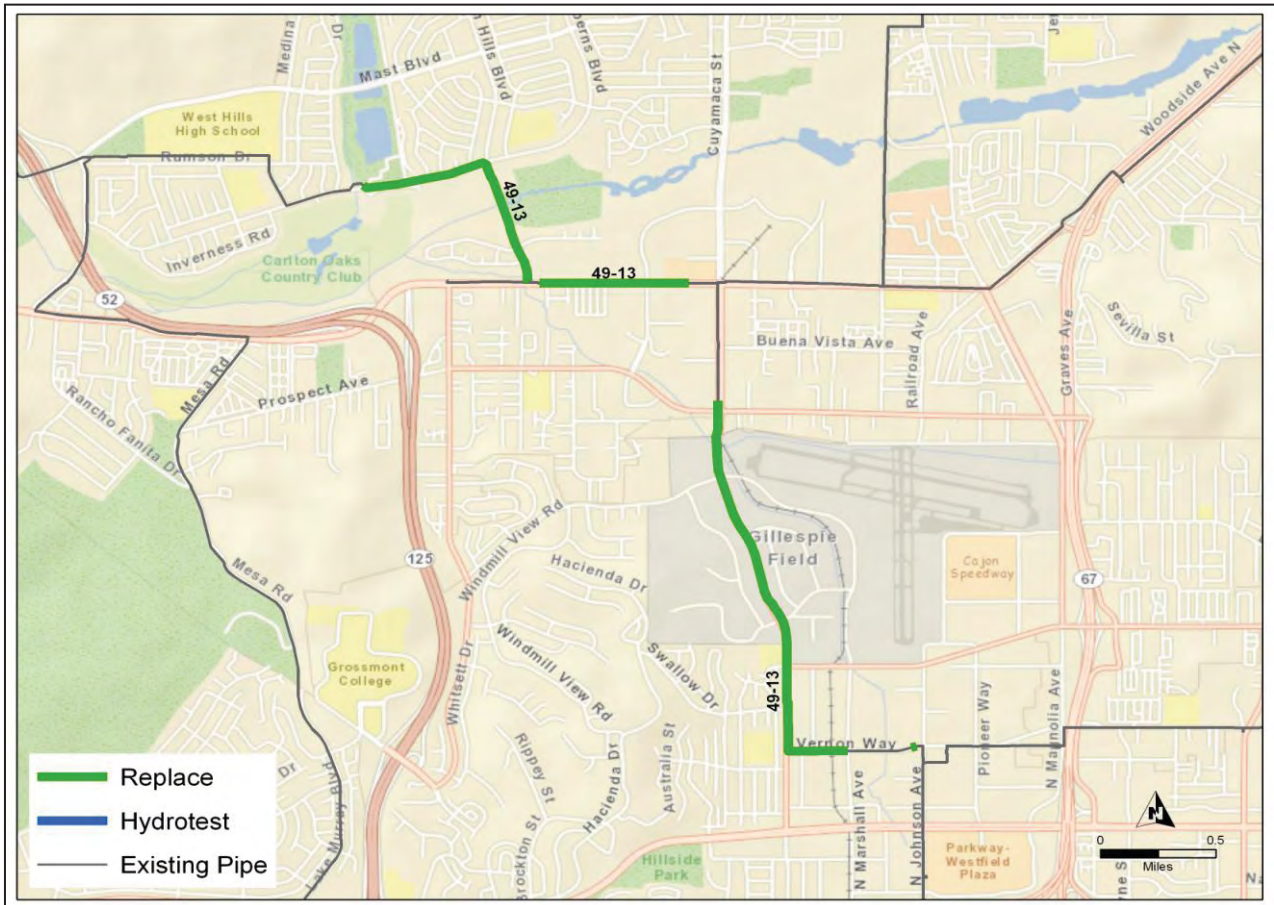
| ACTIVITY AND LOCATION: | | SPECIFICATION NO. | A/E FIRM NAME | SHEET | | | | | |
|---|--|-------------------|---------------------|---------------|-----------|------------|------------|--------------|------------|
| Line 49-11 | | | SPC SERVICES | Sheet 1 of 1 | | | | | |
| PROJECT TITLE AND CLIENT: | | ESTIMATED BY: | DATE: | | | | | | |
| SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | | SPEC | August 12, 2011 | | | | | | |
| | | STATUS OF DESIGN | SPEC Project Number | | | | | | |
| | | Complete | 5057 | | | | | | |
| DESCRIPTION | | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST | Comments |
| | | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL | |
| INPUT IN ALL GREEN CELLS | | | | | | | | | |
| 1 MATERIALS | | | | | | | | | |
| Pipe 20 inch, .312 WT X-65 | | | | | | | | | |
| | | 1013 | Feet | \$ 76 | \$ 77,029 | | | \$ 77,029 | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 8 | Each | \$ 5,679 | \$ 45,429 | | | \$ 45,429 | |
| | Pressure Rating 400 lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ 278,662 | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | | \$ 5.32 | \$ 5,389 | | | \$ 5,389 | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ 6,123 | |
| | Freight / Tax | 12.5 | % | | | | | \$ 16,746 | |
| Pipe n/a | | | | | | | | | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | | \$ - | |
| | Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| Pipe n/a | | | | | | | | | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 0 | Feet | \$ - | \$ - | | | \$ - | |
| | Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| Casing n/a | | | | | | | | | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| | Total length | 0.2 | Miles | | | | | | |
| Total Material Cost | | | | | | | | \$ 150,800 | |
| 2 CONSTRUCTION (See Appendix for construction type definitions) | | | | | | | | | |
| 20 inch pipe | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | | \$ 225 | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | | \$ 360 | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | | \$ 540 | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | | \$ 850 | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | | \$ 800 | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 1013 | Feet | | | \$ 702 | \$ 711,126 | \$ 711,126 | Night Work |
| n/a | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| n/a | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Tie-ins Crew Rates | | | | | | | | | |
| | | 4 | Each | | | \$ 35,000 | \$ 140,000 | \$ 140,000 | |
| | Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | 8844 | SCF | \$ 0.19 | \$ 1,680 | | | \$ 1,680 | |
| | Purging Labor | 1 | LS | | | \$ 25,000 | \$ 25,000 | \$ 25,000 | |
| | 95% Abandonment of Existing Pipeline (\$50/CY) | 78 | CY | | | \$ 95 | \$ 7,410 | \$ 7,410 | |
| | 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | 75 | % | | | | | \$ 26,667 | |
| | Mobilization / Demobilization | 3 | Each | | | \$ 30,000 | \$ 90,000 | \$ 90,000 | |
| | Contaminated Soil | 0 | CY | | | \$ - | \$ - | \$ - | |
| | Asbestos Abatement | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Radiographic Inspection | 5 | Days | \$ 150 | \$ 750 | \$ 600 | \$ 3,000 | \$ 3,750 | |
| | Construction period | 13 | days | | | | | | |
| Total Construction Cost | | | | | | | | \$ 1,005,700 | |
| 3 SCG LABOR / INSPECTION | | | | | | | | | |
| | Projects < \$1 million - company labor is 10% | 10 | % | | | | \$ - | \$ - | |
| | \$1 million < Projects < \$10 million - company labor is 5% | 5 | % | | | | \$ 57,825 | \$ 57,825 | |
| | Projects > \$10 million - company labor is 2.5% | 2.5 | % | | | | \$ - | \$ - | |
| Total SCG Labor / Inspection Cost | | | | | | | | \$ 57,900 | |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | | | |
| | Planning / Design / Eng / Coord / Procurement | 10 | % | | | | \$ 115,650 | \$ 115,650 | |
| | Construction Stake, As-Built Survey (2 man crew) | 5 | Days | \$ 100 | \$ 500 | \$ 1,400 | \$ 7,000 | \$ 7,500 | |
| | ROW Acquisition | 0 | LS | | | | \$ - | \$ - | |
| | Construction Permits | 0 | LS | | | | \$ - | \$ - | |
| | Environmental Permits | 0 | LS | | | | \$ - | \$ - | |
| | Environmental Monitoring | 0 | LS | | | | \$ - | \$ - | |
| | As-Built Drawings (\$2000+\$1/ft) | 1 | LS | | | | \$ 3,013 | \$ 3,013 | |
| Total Design / Engineering / Construction Cost | | | | | | | | \$ 126,200 | |
| 5 CONTINGENCY | | | | | | | | | |
| | Projects < \$2 million - Contingency is 30% | 30 | % | | | | \$ 402,180 | \$ 402,180 | |
| | Projects > \$2 million - Contingency is 20% | 20 | % | | | | \$ - | \$ - | |
| TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | | \$ 1,742,800 | |

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|-----------------------|--------------|----------------------------|--------------------|--------------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 | | |
| | | Criteria | Accelerated | Total |
| Line Number | 49-13 | 3.464 | - | 3.464 |
| Diameter (in.) | 10.75, 12.75 | | | |

Cost Detail

| | | | |
|-----------------------------|----------------------|-----------------------------|-------------|
| Capital | | O&M | |
| Direct Labor | \$ 443,300 | Direct Labor | \$ - |
| Direct Non Labor | \$ 11,931,300 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 12,374,600 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workshop Supporting Chapter IX**

Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision Tree Box | Comments |
|----------|---------|-------|-------------------|----------|------------|----------------------|---|
| | Start | Stop | | | | | |
| Cat 4 | 0 | 2463 | 0.4665 | 12.75 | Replace | 2 | |
| Cat 4 | 2463 | 2475 | 0.0023 | 10.75 | Replace | 2 | Carlton Hills and Carlton Oaks intersection busy. |
| Cat 4 | 2475 | 4111 | 0.3098 | 10.75 | Replace | 2 | Bore 1,100' feet under riverbed, environmental issues. |
| Cat 4 | 4111 | 5040 | 0.1759 | 10.75 | Replace | 2 | Carlton Hills and Mission Gorge very busy intersection. |
| Cat 2 | 5040 | 5316 | 0.0523 | 10.75 | Keep As Is | | |
| Cat 4 | 5316 | 8803 | 0.6604 | 10.75 | Replace | 2 | Mission Gorge Rd very busy, resurfacing moratorium until 2014. Busy intersections at Town Center and Cuyamaca St. |
| Cat 2 | 8803 | 11783 | 0.5644 | 10.75 | Keep As Is | | |
| Cat 4 | 11783 | 20388 | 1.6297 | 10.75 | Replace | 2 | Bore 500' feet under concrete culvert. Cuyamaca and Bradley and Cuyamaca and Vermom busy intersections. Bore 100' feet under railroad in Vernon Wy. |
| Cat 4 | 21461 | 21552 | 0.0172 | 10.75 | Replace | 2 | |

New Segments

| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|------------------|-----------------|----------|-------------------|-------|--|
| | | | | | |
| 2463 | 2475 | 10 | 0.365 | X-52 | Install 10" main line valve |
| 2475 | 4111 | 10 | 0.365 | X-52 | |
| 4111 | 5040 | 10 | 0.365 | X-52 | |
| 5316 | 8803 | 10 | 0.365 | X-52 | Regulator station ball valve inlet tap |
| 11783 | 20388 | 10 | 0.365 | X-52 | Install 10" main line valve |
| 21461 | 21552 | 10 | 0.365 | X-52 | Install 10" main line valve |

| | | | |
|---|--------------------------------|--------------------------------------|-----------------------------|
| ACTIVITY AND LOCATION: Line 49-13 | SPECIFICATION NO. | A/E FIRM NAME SPC SERVICES | SHEET Sheet 1 of 1 |
| PROJECT TITLE AND CLIENT: SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | ESTIMATED BY: SPEC | | DATE: July 12, 2011 |
| | STATUS OF DESIGN Conceptual | | SPEC Project Number 5057 |

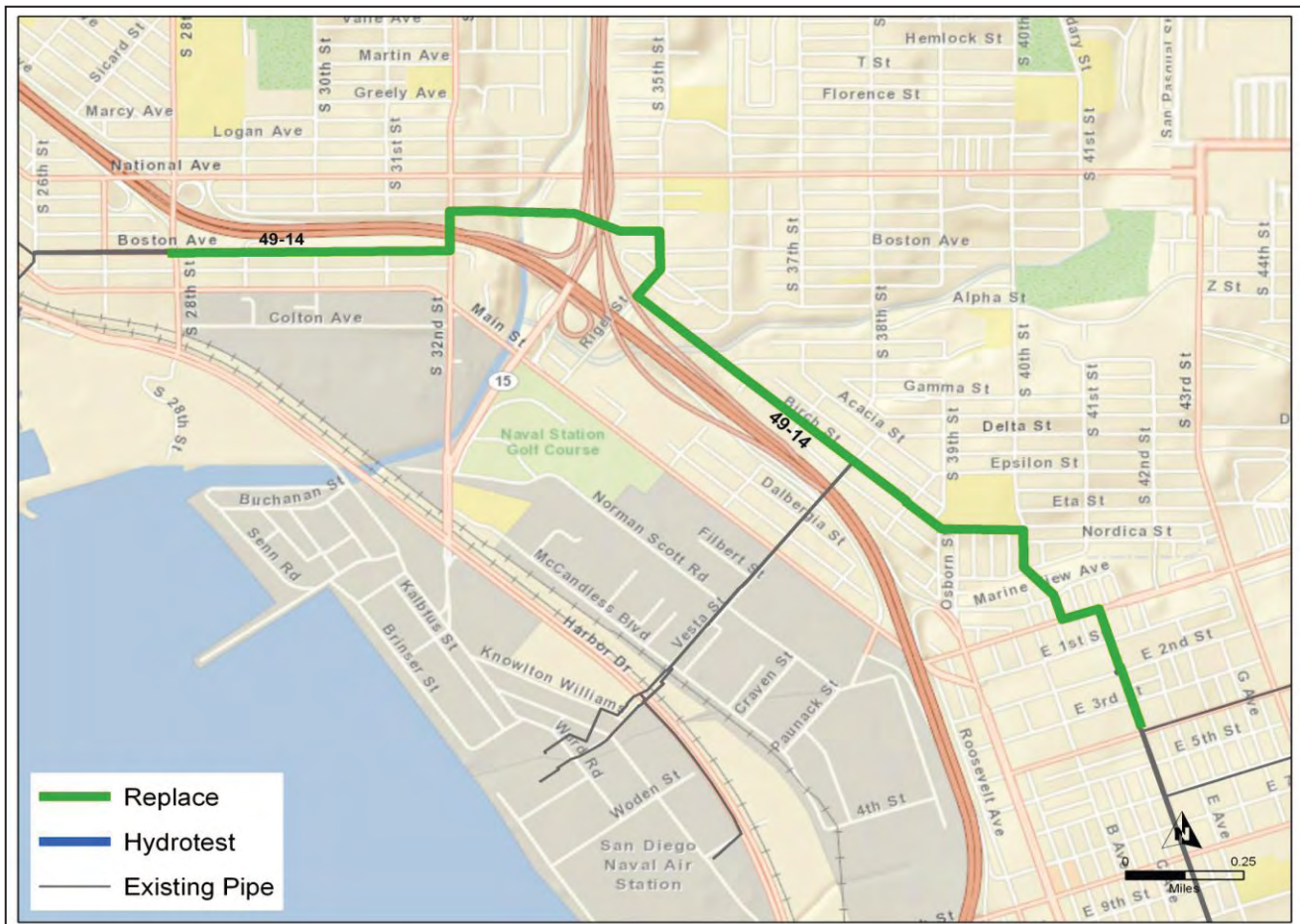
| DESCRIPTION | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST | Comments |
|--|----------|-------|---------------|------------|--------------|--------------|---------------|----------|
| | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL | |
| INPUT IN ALL GREEN CELLS | | | | | | | | |
| 1 MATERIALS | | | | | | | | |
| 12 inch pipe | 2463 | Feet | \$ 44 | \$ 109,062 | | | \$ 109,062 | |
| Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 13 | Each | \$ 1,833 | \$ 23,833 | | | \$ 23,833 | |
| Pressure Rating 300 lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ 36,010 | \$ - | | | \$ - | |
| FBE Coating (5/ft) | | | \$ 3.26 | \$ 8,029 | | | \$ 8,029 | |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ 6,645 | |
| Freight / Tax | 12.5 | % | | | | | \$ 18,446 | |
| 10 inch pipe | 14760 | Feet | \$ 36 | \$ 534,164 | | | \$ 534,164 | |
| Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 63 | Each | \$ 1,408 | \$ 88,704 | | | \$ 88,704 | |
| Pressure Rating 300 lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ 28,405 | \$ - | | | \$ - | |
| FBE Coating (5/ft) | | | \$ 2.86 | \$ 42,214 | | | \$ 42,214 | |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ 31,143 | |
| Freight / Tax | 12.5 | % | | | | | \$ 87,028 | |
| n/a | 0 | Feet | \$ - | \$ - | | | \$ - | |
| Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | | \$ - | |
| Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| FBE Coating (5/ft) | | | \$ - | \$ - | | | \$ - | |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| Freight / Tax | 12.5 | % | | | | | \$ - | |
| Casing 14 inch, STD. WT X-52 | 100 | Feet | \$ 55 | \$ 5,548 | | | \$ 5,548 | |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ 277.40 | |
| Freight / Tax | 12.5 | % | | | | | \$ 728 | |
| Total length | 3.3 | Miles | | | | | | |
| Total Material Cost | | | | | | | \$ 955,900 | |
| 2 CONSTRUCTION (See Appendix for construction type definitions) | | | | | | | | |
| 12 inch pipe | | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | \$ 175 | \$ - | \$ - | \$ - | |
| Pipe Install - Type 2 | 2463 | Feet | | \$ 280 | \$ 689,640 | \$ - | \$ 689,640 | |
| Pipe Install - Type 3 | 0 | Feet | | \$ 450 | \$ - | \$ - | \$ - | |
| Pipe Install - Type 4 | 0 | Feet | | \$ 600 | \$ - | \$ - | \$ - | |
| Pipe Install - Type 5 | 0 | Feet | | \$ 400 | \$ - | \$ - | \$ - | |
| Pipe Install - Type 6 | 0 | Feet | | \$ 400 | \$ - | \$ - | \$ - | |
| Pipe Install - Type 7 | 0 | Feet | | \$ 585 | \$ - | \$ - | \$ - | |
| 10 inch pipe | | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | \$ 175 | \$ - | \$ - | \$ - | |
| Pipe Install - Type 2 | 639 | Feet | | \$ 280 | \$ 178,920 | \$ - | \$ 178,920 | |
| Pipe Install - Type 3 | 12421 | Feet | | \$ 450 | \$ 5,589,450 | \$ - | \$ 5,589,450 | |
| Pipe Install - Type 4 | 1600 | Feet | | \$ 600 | \$ 960,000 | \$ - | \$ 960,000 | |
| Pipe Install - Type 5 | 100 | Feet | | \$ 400 | \$ 40,000 | \$ - | \$ 40,000 | |
| Pipe Install - Type 6 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| Pipe Install - Type 7 | 0 | Feet | | \$ 585 | \$ - | \$ - | \$ - | |
| n/a | | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| Pipe Install - Type 2 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| Pipe Install - Type 3 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| Pipe Install - Type 4 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| Pipe Install - Type 5 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| Pipe Install - Type 7 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| Pipe Install - Type 6 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| Tie-ins Crew Rates | 1 | Each | | \$ 25,000 | \$ 25,000 | \$ - | \$ 25,000 | |
| Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | 39940 | SCF | \$ 0.19 | \$ 7,589 | | | \$ 7,589 | |
| Purging Labor | 1 | LS | | \$ 25,000 | \$ 25,000 | \$ - | \$ 25,000 | |
| 95% Abandonment of Existing Pipeline (\$50/CY) | 351 | CY | | \$ 95 | \$ 33,345 | \$ - | \$ 33,345 | |
| 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | 75 | % | | | | | \$ 279,675 | |
| Mobilization / Demobilization | 1 | Each | | \$ 30,000 | \$ 30,000 | \$ - | \$ 30,000 | |
| Contaminated Soil | 0 | CY | | \$ - | \$ - | \$ - | \$ - | |
| Asbestos Abatement | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| Radiographic Inspection | 66 | Days | \$ 150 | \$ 9,900 | \$ 600 | \$ 39,600 | \$ 49,500 | |
| Construction period | 74 | days | | | | | | |
| Total Construction Cost | | | | | | | \$ 7,908,200 | |
| 3 SCG LABOR / INSPECTION | | | | | | | | |
| Projects < \$1 million - company labor is 10% | 10 | % | | | | \$ - | \$ - | |
| \$1 million < Projects < \$10 million - company labor is 5% | 5 | % | | | | \$ 443,205 | \$ 443,205 | |
| Projects > \$10 million - company labor is 2.5% | 2.5 | % | | | | \$ - | \$ - | |
| Total SCG Labor / Inspection Cost | | | | | | | \$ 443,300 | |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | | |
| Planning / Design / Eng / Coord / Procurement | 10 | % | | | | \$ 886,410 | \$ 886,410 | |
| Construction Stake, As-Built Survey (2 man crew) | 66 | Days | \$ 100 | \$ 6,600 | \$ 1,400 | \$ 92,400 | \$ 99,000 | |
| ROW Acquisition | 0 | LS | | | | \$ - | \$ - | |
| Construction Permits | 0 | LS | | | | \$ - | \$ - | |
| Environmental Permits | 0 | LS | | | | \$ - | \$ - | |
| Environmental Monitoring | 0 | LS | | | | \$ - | \$ - | |
| As-Built Drawings (\$2000+\$1/ft) | 1 | LS | | | | \$ 19,223 | \$ 19,223 | |
| Total Design / Engineering / Construction Cost | | | | | | | \$ 1,004,700 | |
| 5 CONTINGENCY | | | | | | | | |
| Projects < \$2 million - Contingency is 30% | 30 | % | | | | \$ - | \$ - | |
| Projects > \$2 million - Contingency is 20% | 20 | % | | | | \$ 2,062,420 | \$ 2,062,420 | |
| TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | \$ 12,374,600 | |

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|-----------------------|----------|----------------------------|--------------------|--------------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 | | |
| | | Criteria | Accelerated | Total |
| Line Number | 49-14 | 0.316 | 2.134 | 2.450 |
| Diameter (in.) | 10.75 16 | | | |

Cost Detail

| Capital | | O&M | |
|-----------------------------|---------------------|-----------------------------|-------------|
| Direct Labor | \$ 256,100 | Direct Labor | \$ - |
| Direct Non Labor | \$ 6,875,100 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 7,131,200 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
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Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision | |
|----------|---------|-------|-------------------|----------|---------|----------|---|
| | Start | Stop | | | | Tree Box | Comments |
| Cat 1 | 0 | 1278 | 0.2420 | 16 | Replace | | |
| Cat 1 | 1278 | 2221 | 0.1786 | 16 | Replace | | |
| Cat 4 | 2221 | 2318 | 0.0184 | 16 | Replace | | |
| Cat 1 | 2318 | 7160 | 0.9170 | 16 | Replace | | |
| Cat 4 | 7160 | 8733 | 0.2979 | 10.75 | Replace | | Reduced to 10 inch in 16 inch conduit for Caltrans Freeway crossing |
| Cat 1 | 8733 | 10302 | 0.2972 | 16 | Replace | | Bridge Crossing Conduit, crosses Chollas Creek Environmentally Sensitive Area |
| Cat 1 | 10302 | 12935 | 0.4987 | 16 | Replace | | |

New Segments

| Station Start | Station | | Wall Thickness | Diameter | Grade | Comments |
|------------------|---------|----------|-------------------|----------|-------|----------|
| | Stop | Diameter | | | | |
| 0 | 1278 | 16 | 0.312 | 16 | X-65 | |
| 1278 | 2221 | 16 | 0.312 | 16 | X-65 | |
| 2221 | 2318 | 16 | 0.312 | 16 | X-65 | |
| 2318 | 7160 | 16 | 0.312 | 16 | X-65 | |
| 7160 | 8733 | 16 | 0.312 | 16 | X-65 | |
| 8733 | 10302 | 16 | 0.312 | 16 | X-65 | |
| 10302 | 12935 | 16 | 0.312 | 16 | X-65 | |

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

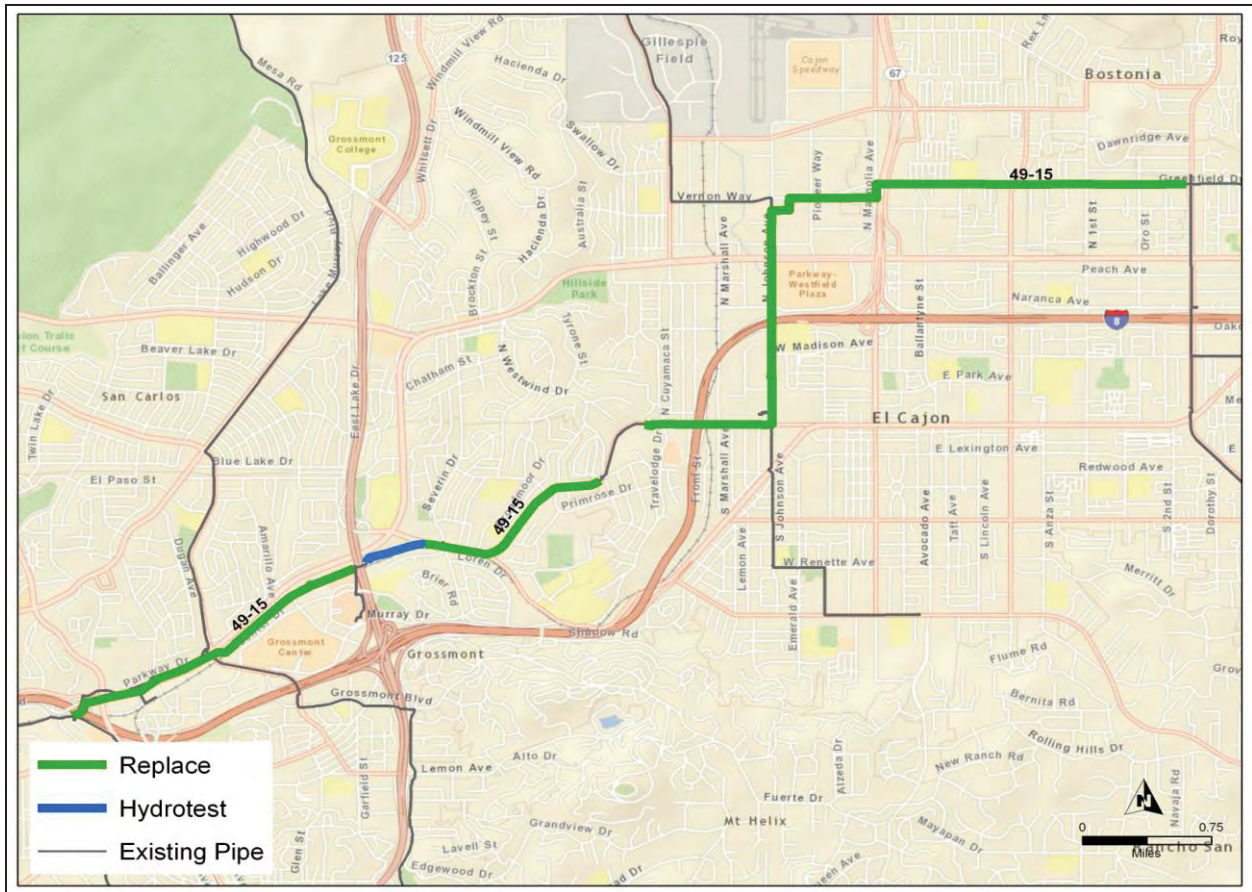
| | |
|----------------|-------|
| Company | SDG&E |
| Plant Category | Dist |
| Line Number | 49-15 |
| Diameter (in.) | 10.75 |

| Replacement Mileage | | |
|------------------------|-------------|-------|
| Category 4 Criteria | Accelerated | Total |
| 1.978 | 4.626 | 6.604 |

| Hydrotest Mileage | | |
|------------------------|-------------|-------|
| Category 4 Criteria | Accelerated | Total |
| - | 0.306 | 0.306 |

Cost Detail

| Capital | | O&M | |
|-----------------------------|----------------------|------------------------|-------------------|
| Direct Labor | \$ 372,900 | Hydrotest | |
| Direct Non Labor | \$ 19,966,400 | Direct Labor | \$ 7,700 |
| Total Direct Capital | \$ 20,339,300 | Direct Non Labor | \$ 202,300 |
| | | Total Hydrotest | \$ 210,000 |
| | | Repairs | |
| | | Direct Labor | \$ 5,000 |
| | | Direct Non Labor | \$ 45,000 |
| | | Total Repairs | \$ 50,000 |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workshop Supporting Chapter IX**

Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision Tree Box | Comments |
|----------|---------|-------|-------------------|----------|------------|----------------------|--|
| | Start | Stop | | | | | |
| Cat 4 | 0 | 512 | 0.0970 | 10.75 | Replace | 2 | Bore 500' feet under Highway 8 and drainage channel. Will require CalTrans permits. |
| Cat 4 | 512 | 782 | 0.0511 | 10.75 | Replace | 2 | Fletcher Pkwy very busy, nightwork |
| Cat 4 | 782 | 810 | 0.0053 | 10.75 | Replace | 2 | Fletcher Pkwy very busy, nightwork |
| Cat 4 | 810 | 4234 | 0.6485 | 10.75 | Replace | 2 | Fletcher Pkwy and Baltimore, Fletcher Pkwy and Marengo Ave very busy intersections, nightwork. |
| Cat 4 | 4234 | 4811 | 0.0004 | 10.75 | Replace | 2 | Fletcher Pkwy very busy, nightwork |
| Cat 4 | 4811 | 7235 | 0.4248 | 10.75 | Replace | 2 | Fletcher Pkwy and Grossmont Center very busy intersection, night work. |
| Cat 4 | 7235 | 7307 | 0.0136 | 10.75 | Replace | 2 | Fletcher Pkwy very busy, nightwork |
| Cat 4 | 7307 | 7396 | 0.0169 | 10.75 | Replace | 2 | Fletcher Pkwy very busy, nightwork |
| Cat 4 | 7396 | 8452 | 0.2000 | 10.75 | Replace | 2 | Fletcher Pkwy very busy, go under SR125 overpass, nightwork |
| Cat 2 | 8452 | 8915 | 0.0506 | 10.75 | Keep As Is | | |
| Cat 4 | 8915 | 10529 | - | 10.75 | Hydrotest | | |
| Cat 4 | 10529 | 12141 | - | 10.75 | Replace | | |
| Cat 2 | 12141 | 12168 | - | 10.75 | Replace | | |
| Cat 4 | 12168 | 16033 | - | 10.75 | Replace | | |
| Cat 4 | 16033 | 16087 | - | 10.75 | Replace | | |
| Cat 2 | 16087 | 18209 | - | 10.75 | Keep As Is | | |
| Cat 4 | 18209 | 18933 | 0.1123 | 10.75 | Replace | 2 | |
| Cat 4 | 18933 | 19735 | 0.1519 | 10.75 | Replace | 2 | Install pipe under Hwy 8 and trolley overpasses. |
| Cat 4 | 19735 | 21036 | 0.2464 | 10.75 | Replace | 2 | |
| Cat 1 | 21036 | 25700 | 0.2876 | 10.75 | Replace | | Install pipe under Hwy 8 overpass. |
| Cat 1 | 25700 | 25850 | 0.0284 | 10.75 | Replace | | 271+40 to 280+00 in private property |
| Cat 1 | 25850 | 27836 | 0.3761 | 10.75 | Replace | | 271+40 to 280+00 in private property |
| Cat 2 | 27836 | 27923 | 0.0165 | 10.75 | Replace | | 271+40 to 280+00 in private property |
| Cat 1 | 27923 | 32813 | 0.9261 | 10.75 | Replace | | Bore 1,000' feet under SR67, CalTrans permits, culvert crossing at Vernon Way and N Magnolia |
| Cat 2 | 32813 | 32840 | 0.0051 | 10.75 | Replace | | |

| | | | | | |
|-------|-------|-------|--------|-------|-----------|
| Cat 1 | 32840 | 34215 | 0.0155 | 10.75 | Replace |
| Cat 2 | 34215 | 34245 | - | 10.75 | Replace |
| Cat 1 | 34245 | 38705 | 0.0030 | 10.75 | Replace |
| Cat 4 | 38705 | 38800 | 0.0098 | 10.75 | Replace 2 |
| Cat 1 | 38800 | 38850 | - | 10.75 | Replace |
| Cat 4 | 38850 | 39068 | - | 10.75 | Replace 2 |

New Segments

| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|---------------|--------------|----------|----------------|-------|--|
| 0 | 512 | 10.75 | 0.365 | X-52 | |
| 512 | 782 | 10.75 | 0.365 | X-52 | |
| 782 | 810 | 10.75 | 0.365 | X-52 | |
| 810 | 4234 | 10.75 | 0.365 | X-52 | Two regulator station inlet ball valve taps |
| 4234 | 4811 | 10.75 | 0.365 | X-52 | |
| 4811 | 7235 | 10.75 | 0.365 | X-52 | |
| 7235 | 7307 | 10.75 | 0.365 | X-52 | |
| 7307 | 7396 | 10.75 | 0.365 | X-52 | |
| 7396 | 8452 | 10.75 | 0.365 | X-52 | |
| 10529 | 12141 | 10.75 | 0.365 | X-52 | Regulator station inlet ball valve tap |
| 12141 | 12168 | 10.75 | 0.365 | X-52 | |
| 12168 | 16033 | 10.75 | 0.365 | X-52 | 10" Main line valve and bridal ball valve tap for regulator station inlet |
| 16033 | 16087 | 10.75 | 0.365 | X-52 | |
| 18209 | 18933 | 10.75 | 0.365 | X-52 | Regulator station inlet ball valve tap |
| 18933 | 19735 | 10.75 | 0.365 | X-52 | |
| 19735 | 21036 | 10.75 | 0.365 | X-52 | 10" Main line valve and bridal ball valve tap for regulator station inlet |
| 21036 | 25700 | 10.75 | 0.365 | X-52 | Regulator station inlet ball valve tap |
| 25700 | 25850 | 10.75 | 0.365 | X-52 | |
| 25850 | 27836 | 10.75 | 0.365 | X-52 | |
| 27836 | 27923 | 10.75 | 0.365 | X-52 | |
| 27923 | 32813 | 10.75 | 0.365 | X-52 | 10" Main line valve and bridal ball valve tap for regulator station inlet at Vernon Way and N Magnolia |
| 32813 | 32840 | 10.75 | 0.365 | X-52 | |

| | | | | | |
|-------|-------|-------|-------|------|--|
| 32840 | 34215 | 10.75 | 0.365 | X-52 | Regulator station inlet ball valve tap |
| 34215 | 34245 | 10.75 | 0.365 | X-52 | |
| 34245 | 38705 | 10.75 | 0.365 | X-52 | |
| 38705 | 38800 | 10.75 | 0.365 | X-52 | |
| 38800 | 38850 | 10.75 | 0.365 | X-52 | |
| 38850 | 39068 | 10.75 | 0.365 | X-52 | |

10" Main line valve

| ACTIVITY AND LOCATION: | | SPECIFICATION NO. | A/E FIRM NAME | | SHEET | | | |
|---|----------|--|-----------------|-----------|---------------------|--------------|--------------|--------------|
| Line L 49-15 | | | SPC SERVICES | | Sheet 1 of 1 | | | |
| PROJECT TITLE AND CLIENT: | | ESTIMATED BY: | DATE: | | SPEC Project Number | | | |
| SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | | SPEC | August 12, 2011 | | 5057 | | | |
| | | STATUS OF DESIGN | | | | | | |
| | | Conceptual | | | | | | |
| DESCRIPTION | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST | Comments |
| | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL | |
| INPUT IN ALL GREEN CELLS | | | | | | | | |
| 1 MATERIALS | | | | | | | | |
| Pipe | 10 | inch, STD. WT X-52 | 34119 | Feet | \$ 36 | \$ 1,234,767 | \$ | 1,234,767 |
| Bends, 3R-Forged | 140 | (minimum of 4, plus 1 bend/250 feet) | 140 | Each | \$ 1,408 | \$ 197,120 | \$ | 197,120 |
| Pressure Rating | 150 | lb Block Valve w/Electric Actuator (one per 4 miles) | 1 | Each | \$ 26,508 | \$ 26,508 | \$ | 26,508 |
| FBE Coating (5/ft) | | | | | \$ 2.86 | \$ 97,580 | \$ | 97,580 |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ | 72,920 |
| Freight / Tax | 12.5 | % | | | | | \$ | 203,612 |
| Pipe | n/a | | 0 | Feet | \$ - | \$ - | \$ | - |
| Bends, 3R-Forged | 4 | (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | \$ | - |
| Pressure Rating | n/a | lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | \$ | - |
| FBE Coating (5/ft) | | | | | \$ - | \$ - | \$ | - |
| Miscellaneous Materials (5%) | 1 | Lot | | | \$ - | \$ - | \$ | - |
| Freight / Tax | 12.5 | % | | | \$ - | \$ - | \$ | - |
| Pipe | n/a | | 0 | Feet | \$ - | \$ - | \$ | - |
| Bends, 3R-Forged | 4 | (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | \$ | - |
| Pressure Rating | n/a | lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | \$ | - |
| FBE Coating (5/ft) | | | | | \$ - | \$ - | \$ | - |
| Miscellaneous Materials (5%) | 1 | Lot | | | \$ - | \$ - | \$ | - |
| Freight / Tax | 12.5 | % | | | \$ - | \$ - | \$ | - |
| Casing | n/a | | 0 | Feet | \$ - | \$ - | \$ | - |
| Miscellaneous Materials (5%) | 1 | Lot | | | \$ - | \$ - | \$ | - |
| Freight / Tax | 12.5 | % | | | \$ - | \$ - | \$ | - |
| Total length | | | 6.5 | Miles | | | | |
| Total Material Cost | | | | | | | \$ | 1,832,600 |
| 2 CONSTRUCTION (See Appendix for construction type definitions) | | | | | | | | |
| 10 inch pipe | | | | | | | | |
| Pipe Install - Type 1 | 3755 | Feet | | | \$ | 175 | \$ 657,125 | \$ 657,125 |
| Pipe Install - Type 2 | 18962 | Feet | | | \$ | 280 | \$ 5,309,360 | \$ 5,309,360 |
| Pipe Install - Type 3 | 2500 | Feet | | | \$ | 450 | \$ 1,125,000 | \$ 1,125,000 |
| Pipe Install - Type 4 | 1500 | Feet | | | \$ | 600 | \$ 900,000 | \$ 900,000 |
| Pipe Install - Type 5 | 200 | Feet | | | \$ | 400 | \$ 80,000 | \$ 80,000 |
| Pipe Install - Type 6 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 7 | 7202 | Feet | | | \$ | 585 | \$ 4,213,170 | \$ 4,213,170 |
| n/a | | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 2 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 3 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 4 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 5 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 6 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 7 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| n/a | | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 2 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 3 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 4 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 5 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 7 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Pipe Install - Type 6 | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Tie-ins Crew Rates | 3 | Each | | | \$ | 25,000 | \$ 75,000 | \$ 75,000 |
| Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | 74440 | SCF | \$ 0.19 | \$ 14,144 | | | \$ | 14,144 |
| Purging Labor | 1 | LS | | | \$ | 25,000 | \$ 25,000 | \$ 25,000 |
| 95% Abandonment of Existing Pipeline (\$50/CY) | 655 | CY | | | \$ | 95 | \$ 62,225 | \$ 62,225 |
| 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | 75 | % | | | | | \$ | 460,675 |
| Mobilization / Demobilization | 3 | Each | | | \$ | 30,000 | \$ 90,000 | \$ 90,000 |
| Contaminated Soil | 0 | CY | | | \$ | - | \$ - | \$ - |
| Asbestos Abatement | 0 | Feet | | | \$ | - | \$ - | \$ - |
| Radiographic Inspection | 91 | Days | \$ 150 | \$ 13,650 | \$ | 600 | \$ 54,600 | \$ 68,250 |
| Construction period | 99 | days | | | | | | |
| Total Construction Cost | | | | | | | \$ | 13,080,000 |
| 3 SCG LABOR / INSPECTION | | | | | | | | |
| Projects < \$1 million - company labor is 10% | 10 | % | | | | | \$ | - |
| \$1million <Projects < \$10 million - company labor is 5% | 5 | % | | | | | \$ | - |
| Projects >\$10 million - company labor is 2.5% | 2.5 | % | | | | | \$ | 372,815 |
| Total SCG Labor / Inspection Cost | | | | | | | \$ | 372,900 |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | | |
| Planning / Design / Eng / Coord / Procurement | 10 | % | | | | | \$ | 1,491,260 |
| Construction Stake, As-Built Survey (2 man crew) | 91 | Days | \$ 100 | \$ 9,100 | \$ | 1,400 | \$ 127,400 | \$ 136,500 |
| ROW Acquisition | 0 | LS | | | | | \$ | - |
| Construction Permits | 0 | LS | | | | | \$ | - |
| Environmental Permits | 0 | LS | | | | | \$ | - |
| Environmental Monitoring | 0 | LS | | | | | \$ | - |
| As-Built Drawings (\$2000*\$/ft) | 1 | LS | | | | | \$ | 36,119 |
| Total Design / Engineering / Construction Cost | | | | | | | \$ | 1,663,900 |
| 5 CONTINGENCY | | | | | | | | |
| Projects < \$2 million - Contingency is 30% | 30 | % | | | | | \$ | - |
| Projects>\$2 million - Contingency is 20% | 20 | % | | | | | \$ | 3,389,880 |
| TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | \$ | 20,339,300 |



PROJECT TITLE AND CLIENT: **SOUTHERN CALIFORNIA GAS COMPANY
PIPE HYDROTEST COST ESTIMATE**

| DESCRIPTION | QUANTITY | | UNIT | MATERIAL COST | | LABOR COST | | TOTAL COST | | Comments |
|--|----------|---------------------|--------|---------------|-------|------------|-------|------------|-------|-----------|
| | NUMBER | QTY | | UNIT COST | TOTAL | UNIT COST | TOTAL | UNIT COST | TOTAL | |
| 1 MATERIALS | | | | | | | | | | |
| INPUT IN ALL BLUE CELLS | | | | | | | | | | |
| Pipe | 10.75 | Actual OD (in) | | | | | | | | |
| | 0.219 | Wall Thickness (in) | | | | | | | | |
| | 1614 | Length (FT) | | | | | | | | |
| | 1 | QTY | | | | | | | | |
| Hydrotest Test Segment | | | | | | | | | | |
| Pipe | n/a | Actual OD (in) | | | | | | | | |
| | 0.000 | Wall Thickness (in) | | | | | | | | |
| | 0 | Length (FT) | | | | | | | | |
| | 0 | QTY | | | | | | | | |
| Hydrotest Test Segment | | | | | | | | | | |
| Pipe | n/a | Actual OD (in) | | | | | | | | |
| | 0.000 | Wall Thickness (in) | | | | | | | | |
| | 0 | Length (FT) | | | | | | | | |
| | 0 | QTY | | | | | | | | |
| Hydrotest Test Segment | | | | | | | | | | |
| Total Hydrotest Length 0.3 Miles | | | | | | | | | | |
| Total Hydrotest Segment(s) | 1 | QTY | | | | | | | | |
| Purging - Volume of Nitrogen [to obtain 3 atm (44 psig) on line], minimum 4 miles per test segment | 36,748 | | SCF | 0.19 | \$ | 6,982 | | | | \$ 6,982 |
| Temporary Pig Launcher/Receiver (one/ OD change) | 1 | | LS | 25,000 | \$ | 25,000 | | | | \$ 25,000 |
| Water Injection Pump & Filter (capacity 1200 gpm) | 1 | | day(s) | 486 | \$ | 486 | | | | \$ 486 |
| On-Site Vacuum Truck(s) (minimum one per/ test segment) | 1 | | each | 5,000 | \$ | 5,000 | | | | \$ 5,000 |
| Baker Tank(s) =X | 1 | | each | | \$ | | | | | |
| Total Baker Tank(s) Rental days (\$/day per tank) =>X*Z | 7 | | day(s) | 1,600 | \$ | 11,200 | | | | \$ 11,200 |
| Total Hydrotest Water (\$19/bbl) | 167 | | bbl | 19.00 | \$ | 3,168 | | | | \$ 3,168 |
| Water Disposal Vacuum Truck(s) =A | 1 | | each | | \$ | | | | | |
| Vacuum Truck Water Disposal loads (capacity 120 bbl) =B | 2 | | loads | | \$ | | | | | |
| Disposal Time =>C*B/(A*10) | 1 | | day(s) | | \$ | | | | | |
| Total Vacuum Truck(s) Rental days (\$/day per truck) =>D=C*A | 167 | | bbl | 55 | \$ | 9,169 | | | | \$ 9,169 |
| Treated Water Disposal (\$55/bbl) | 5 | | % | | \$ | 3,301 | | | | \$ 3,301 |
| Miscellaneous Materials | | | | | \$ | | | | | |
| SCG Post Estimate Changes | | | | | | | | | | |
| Additional Baker Tanks: | 0 | | QTY | | \$ | | | | | |
| Additional Test Segments: | 0 | | QTY | | \$ | | | | | |
| (due to elevation changes) | | | | | \$ | | | | | |
| Total Material Cost \$ 69,400 | | | | | | | | | | |
| 2 CONSTRUCTION | | | | | | | | | | |
| Construction Labor (25K/ test segment) | 1 | | LS | 25,000 | \$ | 25,000 | | | | \$ 25,000 |
| Hydrotest Labor (10K/ test segment) | 1 | | day(s) | 10,000 | \$ | 10,000 | | | | \$ 10,000 |
| Dewater/ Dry Pipeline (\$15,000/ test segment) | 1 | | LS | 15,000 | \$ | 15,000 | | | | \$ 15,000 |
| Tie-ins Crew Rates (\$25,000/ test segment) | 1 | | Each | 25,000 | \$ | 25,000 | | | | \$ 25,000 |
| 3rd Party Witness (\$2,000/ test segment) | 1 | | Each | 2,000 | \$ | 2,000 | | | | \$ 2,000 |
| Total Construction Cost \$ 77,000 | | | | | | | | | | |
| 3 SCG LABOR / INSPECTION | | | | | | | | | | |
| Projects <\$1 million - company labor is 10% | 10 | | % | | \$ | 7,700 | | | | \$ 7,700 |
| \$1 million < Projects <\$10 million - company labor is 5% | 5 | | % | | \$ | | | | | \$ - |
| Projects >\$10 million - company labor is 2.5% | 2.5 | | % | | \$ | | | | | \$ - |
| Total SCG Labor / Inspection Cost \$ 7,700 | | | | | | | | | | |
| 4 DESIGN / ENG. / CONST. / ENVIRON. | | | | | | | | | | |
| Planning / Design / Eng / Coord / Procurement | 5 | | % | | \$ | 7,320 | | | | \$ 7,320 |
| ROW Acquisition | 0 | | LS | | \$ | | | | | \$ - |
| Construction Permits | 0 | | LS | | \$ | | | | | \$ - |
| Environmental Permits | 0 | | LS | | \$ | | | | | \$ - |
| Environmental Monitoring | 0 | | LS | | \$ | | | | | \$ - |
| Total Design / Engineering / Construction Cost \$ 7,400 | | | | | | | | | | |
| 5 CONTINGENCY | | | | | | | | | | |
| Projects <\$2 million - Contingency is 30% | 30 | | % | | \$ | 48,450 | | | | \$ 48,450 |
| Projects >\$2 million - Contingency is 20% | 20 | | % | | \$ | | | | | \$ - |
| TOTAL PROJECT COST (See Appendix for assumptions/certifications) \$ 210,000 | | | | | | | | | | |

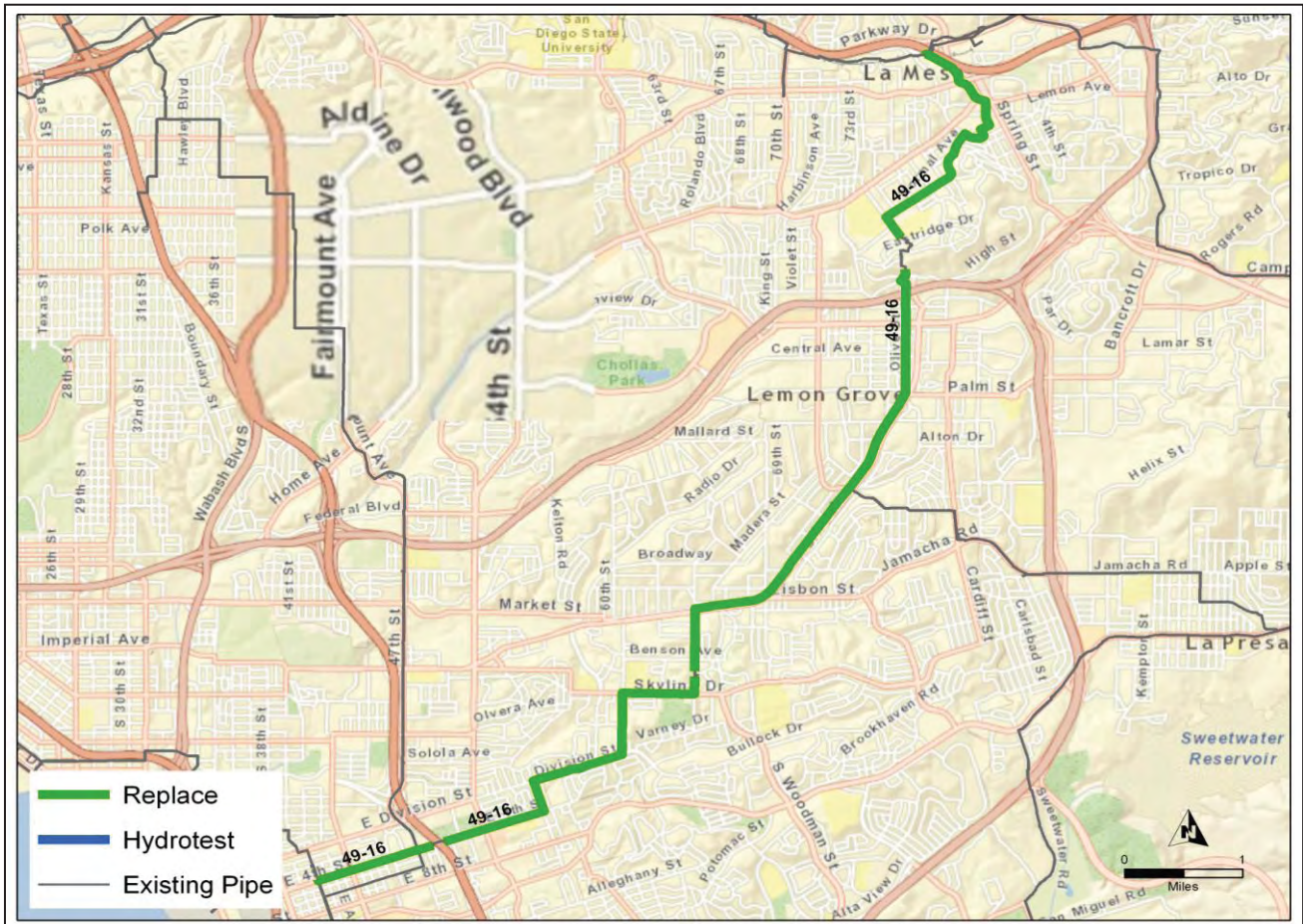
WP-IX-1-D15

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|----------------|-----------|---------------------|-------------|-------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 | Accelerated | Total |
| Line Number | 49-16 | Criteria | | |
| Diameter (in.) | 12.75, 16 | 0.722 | 8.868 | 9.590 |

Cost Detail

| Capital | | O&M | |
|-----------------------------|----------------------|-----------------------------|-------------|
| Direct Labor | \$ 677,500 | Direct Labor | \$ - |
| Direct Non Labor | \$ 36,235,000 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 36,912,500 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workbook Supporting Chapter IX**

Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision | |
|----------|----------|----------|-------------------|----------|------------|----------|--------------------------|
| | Start | Stop | | | | Tree Box | Comments |
| Cat 1 | 0 | 4691.6 | 0.8886 | 16 | Replace | | |
| Cat 2 | 4691.6 | 5211.6 | 0.0985 | 16 | Keep As Is | | Under I-805 |
| Cat 1 | 5211.6 | 19704.26 | 2.7448 | 16 | Replace | | |
| Cat 2 | 19704.26 | 19908.26 | 0.0386 | 16 | Keep As Is | | |
| Cat 1 | 19908.26 | 22403.26 | 0.4725 | 16 | Replace | | |
| Cat 4 | 22403.26 | 22462.26 | 0.0112 | 16 | Replace | 2 | |
| Cat 1 | 22462.26 | 22995.26 | 0.1009 | 16 | Replace | | |
| Cat 1 | 22995.26 | 23348.26 | 0.0669 | 16 | Replace | | |
| Cat 1 | 23348.26 | 25103.26 | 0.3324 | 16 | Replace | | |
| Cat 1 | 25103.26 | 26312.39 | 0.2290 | 16 | Replace | | |
| Cat 1 | 26312.39 | 30054.69 | 0.7088 | 16 | Replace | | |
| Cat 4 | 30054.69 | 30271.44 | 0.0411 | 16 | Replace | 2 | |
| Cat 1 | 30271.44 | 32349.02 | 0.3935 | 16 | Replace | | |
| Cat 4 | 32349.02 | 32365.44 | 0.0031 | 16 | Replace | 2 | |
| Cat 1 | 32365.44 | 35954.75 | 0.6798 | 16 | Replace | | Steep Slope Hard Digging |
| Cat 1 | 35954.75 | 38933.95 | 0.5642 | 16 | Replace | | Under SR-94 |
| Cat 2 | 38933.95 | 39143.95 | 0.0398 | 16 | Replace | | Steep Slope Hard Digging |
| Cat 2 | 39143.95 | 39377.95 | 0.0443 | 16 | Replace | | |
| Cat 2 | 39377.95 | 39499.95 | 0.0231 | 16 | Replace | | |
| Cat 1 | 39499.95 | 39777.95 | 0.0527 | 16 | Replace | | Night Work |
| Cat 2 | 39777.95 | 42010.75 | 0.4229 | 16 | Keep As Is | | |
| Cat 1 | 42010.75 | 43303.01 | 0.2447 | 16 | Replace | | Night work |
| Cat 1 | 43303.01 | 47789.58 | 0.8497 | 16 | Replace | | |
| Cat 2 | 47789.58 | 48892.58 | 0.2089 | 16 | Replace | | |
| Cat 1 | 48892.58 | 49585.68 | 0.1313 | 16 | Replace | | |
| Cat 4 | 49585.68 | 49606.68 | 0.0040 | 16 | Replace | 2 | |
| Cat 4 | 49606.68 | 49867.68 | 0.0494 | 16 | Replace | 2 | |
| Cat 1 | 49867.68 | 49880.18 | 0.0024 | 16 | Replace | | |
| Cat 4 | 49880.18 | 50675.18 | 0.1506 | 16 | Replace | 2 | |

| | | | | | | |
|-------|----------|----------|--------|-------|---------|---|
| Cat 4 | 50675.18 | 50741.18 | 0.0125 | 16 | Replace | 2 |
| Cat 4 | 50741.18 | 51598.88 | 0.1624 | 16 | Replace | 2 |
| Cat 4 | 51598.88 | 51691.88 | 0.0176 | 12.75 | Replace | 2 |
| Cat 4 | 51691.88 | 51940.58 | 0.0471 | 12.75 | Replace | 2 |
| Cat 2 | 51940.58 | 52415.58 | 0.0900 | 16 | Replace | 2 |
| Cat 4 | 52415.58 | 53576.58 | 0.2199 | 16 | Replace | 2 |
| Cat 4 | 53576.58 | 53592 | 0.0029 | 16 | Replace | 2 |

12 inch in 16-inch conduit Caltrans R/w
 12 inch in 16-inch conduit Caltrans R/w
 Very Busy area Night work
 Very Busy area Night work

New Segments

| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|---------------|--------------|----------|----------------|-------|----------|
| 0 | 4691.6 | 16 | 0.312 | X-65 | |
| 5211.6 | 19704.26 | 16 | 0.312 | X-65 | |
| 19908.26 | 22403.26 | 16 | 0.312 | X-65 | |
| 22403.26 | 22462.26 | 16 | 0.312 | X-65 | |
| 22462.26 | 22995.26 | 16 | 0.312 | X-65 | |
| 22995.26 | 23348.26 | 16 | 0.312 | X-65 | |
| 23348.26 | 25103.26 | 16 | 0.312 | X-65 | |
| 25103.26 | 26312.39 | 16 | 0.312 | X-65 | |
| 26312.39 | 30054.69 | 16 | 0.312 | X-65 | |
| 30054.69 | 30271.44 | 16 | 0.312 | X-65 | |
| 30271.44 | 32349.02 | 16 | 0.312 | X-65 | |
| 32349.02 | 32365.44 | 16 | 0.312 | X-65 | |
| 32365.44 | 35954.75 | 16 | 0.312 | X-65 | |
| 35954.75 | 38933.95 | 16 | 0.312 | X-65 | |
| 38933.95 | 39143.95 | 16 | 0.312 | X-65 | |
| 39143.95 | 39377.95 | 16 | 0.312 | X-65 | |
| 39377.95 | 39499.95 | 16 | 0.312 | X-65 | |
| 39499.95 | 39777.95 | 16 | 0.312 | X-65 | |
| 42010.75 | 43303.01 | 16 | 0.312 | X-65 | |
| 43303.01 | 47789.58 | 16 | 0.312 | X-65 | |
| 47789.58 | 48892.58 | 16 | 0.312 | X-65 | |
| 48892.58 | 49585.68 | 16 | 0.312 | X-65 | |
| 49585.68 | 49606.68 | 16 | 0.312 | X-65 | |

| | | | | |
|----------|----------|----|-------|------|
| 49606.68 | 49867.68 | 16 | 0.312 | X-65 |
| 49867.68 | 49880.18 | 16 | 0.312 | X-65 |
| 49880.18 | 50675.18 | 16 | 0.312 | X-65 |
| 50675.18 | 50741.18 | 16 | 0.312 | X-65 |
| 50741.18 | 51598.88 | 16 | 0.312 | X-65 |
| 51598.88 | 51691.88 | 16 | 0.312 | X-65 |
| 51691.88 | 51940.58 | 16 | 0.312 | X-65 |
| 51940.58 | 52415.58 | 16 | 0.312 | X-65 |
| 52415.58 | 53576.58 | 16 | 0.312 | X-65 |
| 53576.58 | 53592 | 16 | 0.312 | X-65 |

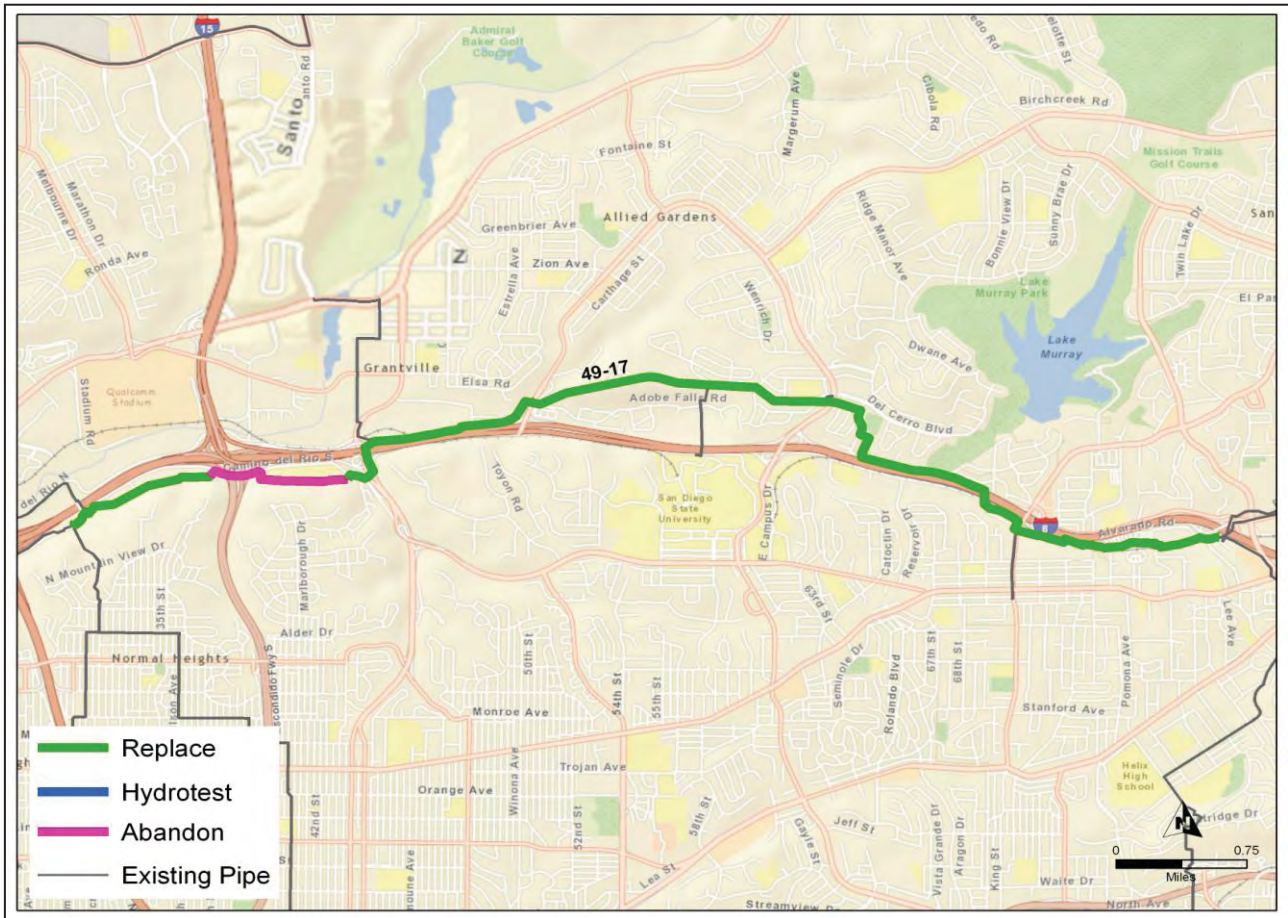
| ACTIVITY AND LOCATION: | | SPECIFICATION NO. | A/E FIRM NAME | SHEET | | | | | |
|---|-----|---|---------------------|---------------|-----------|--------------|---------------|----------------------|--|
| Line 49-16 | | | | Sheet 1 of 1 | | | | | |
| PROJECT TITLE AND CLIENT: | | ESTIMATED BY: | DATE: | | | | | | |
| SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | | SPEC | July 12, 2011 | | | | | | |
| | | STATUS OF DESIGN | SPEC Project Number | | | | | | |
| | | Complete | 5057 | | | | | | |
| DESCRIPTION | | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST | Comments |
| | | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL | |
| INPUT IN ALL GREEN CELLS | | | | | | | | | |
| 1 MATERIALS | | | | | | | | | |
| 16 inch | | | | | | | | | |
| Pipe | 16 | inch, .312 WT X-65 | 50635 | Feet | \$ 57 | \$ 2,904,424 | | \$ 2,904,424 | Replaced segments pipe OD per Remediation Plan |
| | | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 206 | Each | \$ 3,339 | \$ 687,766 | | \$ 687,766 | |
| Pressure Rating | 300 | lb Block Valve w/Electric Actuator (one per 4 miles) | 2 | Each | \$ 94,320 | \$ 188,640 | | \$ 188,640 | |
| | | FBE Coating (5/ft) | | | \$ 4.14 | \$ 209,629 | | \$ 209,629 | |
| | | Miscellaneous Materials (5%) | 1 | Lot | | | | \$ 189,041 | |
| | | Freight / Tax | 12.5 | % | | | | \$ 522,438 | |
| Pipe | n/a | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 0 | Feet | \$ - | \$ - | | \$ - | |
| | | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | \$ - | |
| Pressure Rating | n/a | lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | \$ - | |
| | | FBE Coating (5/ft) | | | \$ - | \$ - | | \$ - | |
| | | Miscellaneous Materials (5%) | 1 | Lot | | | | \$ - | |
| | | Freight / Tax | 12.5 | % | | | | \$ - | |
| Pipe | n/a | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 1 | Feet | \$ - | \$ - | | \$ - | |
| | | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | \$ - | |
| Pressure Rating | n/a | lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | \$ - | |
| | | FBE Coating (5/ft) | | | \$ - | \$ - | | \$ - | |
| | | Miscellaneous Materials (5%) | 1 | Lot | | | | \$ - | |
| | | Freight / Tax | 12.5 | % | | | | \$ - | |
| Casing | n/a | | 0 | Feet | \$ - | \$ - | | \$ - | |
| | | Miscellaneous Materials (5%) | 1 | Lot | | | | \$ - | |
| | | Freight / Tax | 12.5 | % | | | | \$ - | |
| Total length | | | 9.6 | Miles | | | | | |
| Total Material Cost | | | | | | | | \$ 4,702,000 | |
| 2 CONSTRUCTION (See Appendix for construction type definitions) | | | | | | | | | |
| 16 inch pipe | | | | | | | | | |
| Pipe Install - Type 1 | | | 234 | Feet | | \$ 200 | \$ 46,800 | \$ 46,800 | |
| Pipe Install - Type 2 | | | 37102 | Feet | | \$ 320 | \$ 11,872,640 | \$ 11,872,640 | |
| Pipe Install - Type 3 | | | 5952 | Feet | | \$ 500 | \$ 2,976,000 | \$ 2,976,000 | |
| Pipe Install - Type 4 | | | 0 | Feet | | \$ 750 | \$ - | \$ - | |
| Pipe Install - Type 5 | | | 342 | Feet | | \$ 600 | \$ 205,200 | \$ 205,200 | |
| Pipe Install - Type 6 | | | 3799 | Feet | | \$ 1,000 | \$ 3,799,000 | \$ 3,799,000 | |
| Pipe Install - Type 7 | | | 3206 | Feet | | \$ 650 | \$ 2,083,900 | \$ 2,083,900 | Sleep Slope Hard digging Night Work |
| n/a | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 1 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 2 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 3 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 4 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 5 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 6 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 7 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| n/a | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 1 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 2 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 3 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 4 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 5 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 7 | | | 1 | Feet | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 6 | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Tie-ins Crew Rates | | | 4 | Each | | \$ 34,999 | \$ 139,997 | \$ 139,997 | |
| Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | | | 282800 | SCF | \$ 0.19 | \$ 53,732 | | \$ 53,732 | |
| Purging Labor | | | 1 | LS | | \$ 25,000 | \$ 25,000 | \$ 25,000 | |
| 95% Abandonment of Existing Pipeline (\$50/CY) | | | 2486 | CY | | \$ 95 | \$ 236,170 | \$ 236,170 | |
| 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | | | 75 | % | | | | \$ 786,883 | |
| Mobilization / Demobilization | | | 2 | Each | | \$ 30,000 | \$ 60,000 | \$ 60,000 | |
| Contaminated Soil | | | 0 | CY | | \$ - | \$ - | \$ - | |
| Asbestos Abatement | | | 0 | Feet | | \$ - | \$ - | \$ - | |
| Radiographic Inspection | | | 148 | Days | \$ 150 | \$ 22,200 | \$ 600 | \$ 88,800 | \$ 111,000 |
| Construction period | | | 156 | days | | | | | |
| Total Construction Cost | | | | | | | | \$ 22,396,400 | |
| 3 SCG LABOR / INSPECTION | | | | | | | | | |
| Projects < \$1 million - company labor is 10% | | | 10 | % | | | \$ - | \$ - | |
| \$1million <Projects < \$10 million - company labor is 5% | | | 5 | % | | | \$ - | \$ - | |
| Projects >\$10 million - company labor is 2.5% | | | 2.5 | % | | | \$ 677,460 | \$ 677,460 | |
| Total SCG Labor / Inspection Cost | | | | | | | | \$ 677,500 | |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | | | |
| Planning / Design / Eng / Coord / Procurement | | | 10 | % | | | \$ 2,709,840 | \$ 2,709,840 | |
| Construction Stake, As-Built Survey (2 man crew) | | | 148 | Days | \$ 100 | \$ 14,800 | \$ 1,400 | \$ 207,200 | \$ 222,000 |
| ROW Acquisition | | | 0 | LS | | | \$ - | \$ - | |
| Construction Permits | | | 0 | LS | | | \$ - | \$ - | |
| Environmental Permits | | | 0 | LS | | | \$ - | \$ - | |
| Environmental Monitoring | | | 0 | LS | | | \$ - | \$ - | |
| As-Built Drawings (\$2000+\$1/ft) | | | 1 | LS | | | \$ 52,636 | \$ 52,636 | |
| Total Design / Engineering / Construction Cost | | | | | | | | \$ 2,984,500 | |
| 5 CONTINGENCY | | | | | | | | | |
| Projects < \$2 million - Contingency is 30% | | | 30 | % | | | \$ - | \$ - | |
| Projects >\$2 million - Contingency is 20% | | | 20 | % | | | \$ 6,152,080 | \$ 6,152,080 | |
| TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | | \$ 36,912,500 | |

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|-----------------------|-------|----------------------------|--------------------|--------------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 | | |
| | | Criteria | Accelerated | Total |
| Line Number | 49-17 | 5.259 | 0.553 | 5.812 |
| Diameter (in.) | 16 | | | |

Cost Detail

| Capital | | O&M | |
|-----------------------------|----------------------|-----------------------------|-------------|
| Direct Labor | \$ 367,500 | Direct Labor | \$ - |
| Direct Non Labor | \$ 19,645,500 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 20,013,000 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workshop Supporting Chapter IX**

Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision | | Comments |
|----------|---------|-------|-------------------|----------|---------|----------|-----|--|
| | Start | Stop | | | | Tree | Box | |
| Cat 2 | 0 | 370 | 0.0701 | 16 | Replace | | | |
| Cat 4 | 370 | 3986 | 0.6848 | 16 | Replace | 2 | | Fuel oil pipeline crossings in new alignment. |
| Cat 4 | 3986 | 4799 | 0.0850 | 16 | Abandon | 2 | | |
| Cat 2 | 4799 | 4844 | 0.0085 | 16 | Abandon | | | |
| Cat 4 | 4844 | 5728 | 0.1703 | 16 | Abandon | 2 | | |
| Cat 4 | 5728 | 7968 | 0.4242 | 16 | Abandon | 2 | | |
| Cat 2 | 7968 | 8104 | 0.0258 | 16 | Replace | | | Caltrans ROW |
| Cat 4 | 8104 | 8439 | 0.0634 | 16 | Replace | 2 | | Caltrans ROW, Heavy traffic, night work |
| Cat 4 | 8439 | 8774 | 0.0634 | 16 | Replace | 2 | | Caltrans ROW, Heavy traffic, night work |
| Cat 4 | 8774 | 11117 | 0.4438 | 16 | Replace | 2 | | Caltrans ROW, Heavy traffic, night work |
| Cat 4 | 11117 | 11700 | 0.1104 | 16 | Replace | 2 | | |
| Cat 4 | 11700 | 12029 | 0.0623 | 16 | Replace | 2 | | |
| Cat 4 | 12029 | 13899 | 0.3542 | 16 | Replace | 2 | | Large culvert crossing, pipeline may be very deep. Steep slope E/O Waring Rd., paralleled by 24" water main, potential environmental issues. |
| Cat 4 | 13899 | 13927 | 0.0053 | 16 | Replace | 2 | | |
| Cat 4 | 13927 | 13963 | 0.0068 | 16 | Replace | 2 | | |
| Cat 4 | 13963 | 14042 | 0.0150 | 16 | Replace | 2 | | |
| Cat 4 | 14042 | 14068 | 0.0068 | 16 | Replace | 2 | | |
| Cat 4 | 14068 | 14079 | 0.0021 | 16 | Replace | 2 | | |
| Cat 4 | 14079 | 18051 | 0.7523 | 16 | Replace | 2 | | |
| Cat 1 | 18051 | 18494 | 0.0839 | 16 | Replace | | | |
| Cat 4 | 18494 | 21742 | 0.6152 | 16 | Replace | 2 | | |
| Cat 4 | 21742 | 22055 | 0.0593 | 16 | Replace | 2 | | |
| Cat 4 | 22055 | 23228 | 0.2222 | 16 | Replace | 2 | | |
| Cat 4 | 23228 | 23966 | 0.1398 | 16 | Replace | 2 | | |
| Cat 4 | 23966 | 24024 | 0.0110 | 16 | Replace | 2 | | |
| Cat 4 | 24024 | 25397 | 0.2600 | 16 | Replace | 2 | | |
| Cat 4 | 25397 | 28495 | 0.5867 | 16 | Replace | 2 | | |

| | | | | | | | |
|-------|---------|---------|--------|----|---------|---|--------------------------------------|
| Cat 4 | 28495 | 28733 | 0.0451 | 16 | Replace | 2 | New alignment may be in Caltrans ROW |
| Cat 4 | 28733 | 29575 | 0.1595 | 16 | Replace | 2 | New alignment may be in Caltrans ROW |
| Cat 4 | 29575 | 30427 | 0.1614 | 16 | Replace | 2 | New alignment may be in Caltrans ROW |
| Cat 2 | 30427 | 31070 | 0.1218 | 16 | Replace | | New alignment may be in Caltrans ROW |
| Cat 2 | 31070 | 31573 | 0.1136 | 16 | Replace | | New alignment may be in Caltrans ROW |
| Cat 4 | 31573 | 32608.1 | 0.1960 | 16 | Replace | 2 | New alignment may be in Caltrans ROW |
| Cat 2 | 32608.1 | 32808.1 | 0.0379 | 16 | Replace | | New alignment may be in Caltrans ROW |
| Cat 4 | 32808.1 | 33886 | 0.2041 | 16 | Replace | 2 | New alignment may be in Caltrans ROW |
| Cat 4 | 33886 | 33916 | 0.0057 | 16 | Replace | 2 | New alignment may be in Caltrans ROW |
| Cat 2 | 33916 | 34443 | 0.0998 | 16 | Replace | | New alignment may be in Caltrans ROW |
| Cat 4 | 34443 | 34563 | 0.0227 | 16 | Replace | 2 | New alignment may be in Caltrans ROW |

New Segments

| Station Start | Station Stop | Diameter | Wall | | Grade | Comments |
|------------------|-----------------|----------|-----------|-----------|-------|---|
| | | | Thickness | Thickness | | |
| 0 | 370 | 16 | 0.312 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment. |
| 370 | 3986 | 16 | 0.312 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment. |
| 7968 | 8104 | 16 | 0.312 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment. |
| 8104 | 8439 | 16 | 0.312 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment. |
| 8439 | 8774 | 16 | 0.312 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment. |
| 8774 | 11117 | 16 | 0.312 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment. |
| 11117 | 11700 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 11700 | 12029 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 12029 | 13899 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 13899 | 13927 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 13927 | 13963 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 13963 | 14042 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 14042 | 14068 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 14068 | 14079 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 14079 | 18051 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 18051 | 18494 | 16 | 0.312 | 0.312 | X-65 | Replace segment with new 16" pipe in same alignment. |
| 18494 | 21742 | 16 | 0.312 | 0.312 | X-65 | Replace existing segment with new 16" pipe in new alignment. |
| 21742 | 22055 | 16 | 0.312 | 0.312 | X-65 | Replace existing segment with new 16" pipe in new alignment. |
| 22055 | 23228 | 16 | 0.312 | 0.312 | X-65 | Replace existing segment with new 16" pipe in new alignment. |

| | | | | | |
|---------|---------|----|-------|------|--|
| 23228 | 23966 | 16 | 0.312 | X-65 | Replace existing segment with new 16" pipe in new alignment. |
| 23966 | 24024 | 16 | 0.312 | X-65 | Abandon segment in freeway ROW, replace in new alignment. |
| 24024 | 25397 | 16 | 0.312 | X-65 | Abandon segment in freeway ROW, replace in new alignment. |
| 25397 | 28495 | 16 | 0.312 | X-65 | Abandon segment in freeway ROW, replace in new alignment. |
| 28495 | 28733 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 28733 | 29575 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 29575 | 30427 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 30427 | 31070 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 31070 | 31573 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 31573 | 32608.1 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 32608.1 | 32808.1 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 32808.1 | 33886 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 33886 | 33916 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 33916 | 34443 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |
| 34443 | 34563 | 16 | 0.312 | X-65 | Derate existing segment to 55 psig. Replace with new 16" pipe in new alignment |

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

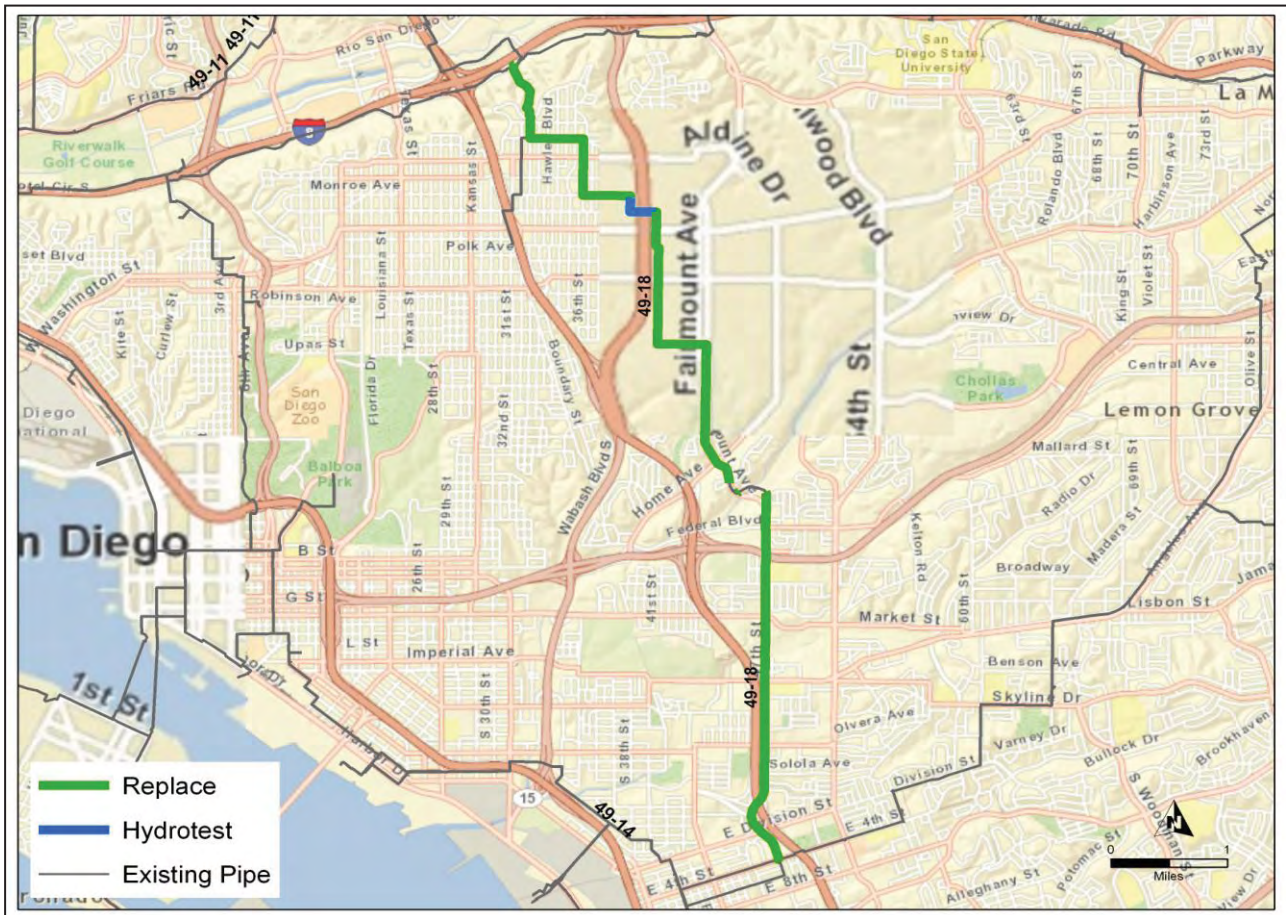
| | |
|----------------|-------|
| Company | SDG&E |
| Plant Category | Dist |
| Line Number | 49-18 |
| Diameter (in.) | 20 |

| Replacement Mileage | | |
|---------------------|-------------|-------|
| Category 4 Criteria | Accelerated | Total |
| 7.197 | 0.115 | 7.312 |

| Hydrotest Mileage | | |
|---------------------|-------------|-------|
| Category 4 Criteria | Accelerated | Total |
| 0.309 | - | 0.309 |

Cost Detail

| Capital | | O&M | |
|-----------------------------|----------------------|-----------------------------|-------------|
| Direct Labor | \$ 609,000 | Direct Labor | \$ - |
| Direct Non Labor | \$ 32,525,700 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 33,134,700 | Total Direct O&M | \$ - |



San Diego (
Pipeline Safety Enhancement Program

Existing Segments

| Category | Station Start | Station Stop | Criteria Miles | Diameter | Action | Decision Tree Box |
|----------|---------------|--------------|----------------|----------|------------|-------------------|
| Cat 4 | 0 | 9777 | 1.8299 | 20 | Replace | 2 |
| Cat 4 | 9777 | 10718 | 0.1782 | 20 | Hydrotest | 4 |
| Cat 4 | 10718 | 11411 | 0.1313 | 20 | Hydrotest | 4 |
| Cat 4 | 11411 | 22546 | 2.1089 | 20 | Replace | 2 |
| Cat 1 | 22546 | 23039 | 0.0934 | 20 | Replace | 2 |
| Cat 4 | 23039 | 24548 | 0.2858 | 20 | Replace | 2 |
| Cat 1 | 24548 | 25112 | 0.1068 | 20 | Keep As Is | 2 |
| Cat 4 | 25112 | 25245 | 0.0252 | 20 | Replace | 2 |
| Cat 2 | 25245 | 26496 | 0.2369 | 20 | Keep As Is | 2 |
| Cat 4 | 26496 | 39689 | 2.4987 | 20 | Replace | 2 |
| Cat 4 | 39689 | 41937 | 0.4258 | 20 | Replace | 2 |
| Cat 4 | 41937 | 42056 | 0.0225 | 20 | Replace | 2 |

New Segments

| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|---------------|--------------|----------|----------------|-------|--------------------------|
| 0 | 9777 | 20 | 0.312 | X-65 | |
| 11411 | 22546 | 20 | 0.312 | X-65 | |
| 22546 | 23039 | 20 | 0.312 | X-65 | Test Records show existi |
| 23039 | 24548 | 20 | 0.312 | X-65 | |
| 25112 | 25245 | 20 | 0.312 | X-65 | |
| 26496 | 39689 | 20 | 0.312 | X-65 | |
| 39689 | 41937 | 20 | 0.312 | X-65 | |
| 41937 | 42056 | 20 | 0.312 | X-65 | |


**Gas & Electric
Item - Workpaper Supporting Chapter IX**

Comments

Leading up to bridge over I-15
Section to be tested is in bridge

Caltrans ROW, I-805 Undercrossing

ing pipe test at 500 psig

| | | | |
|---|--------------------------------|---|-----------------------------|
| ACTIVITY AND LOCATION: Line 49-18 | SPECIFICATION NO. | A/E FIRM NAME SP3C SERVICES | SHEET Sheet 1 of 1 |
| PROJECT TITLE AND CLIENT: SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | ESTIMATED BY: SPEC |  | DATE: August 12, 2011 |
| | STATUS OF DESIGN Conceptual | | SPEC Project Number 5057 |

| DESCRIPTION | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST | Comments |
|--|--|-------|---------------|--------------|------------|---------------|----------------------|--------------|
| | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL | |
| INPUT IN ALL GREEN CELLS | | | | | | | | |
| 1 MATERIALS | | | | | | | | |
| Pipe 20 inch, .312 WT X-65 | 36359 | Feet | \$ 76 | \$ 2,764,738 | | | \$ 2,764,738 | |
| Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 149 | Each | \$ 5,679 | \$ 846,122 | | | \$ 846,122 | |
| Pressure Rating 300 lb Block Valve w/Electric Actuator (one per 4 miles) | 1 | Each | \$ 129,536 | \$ 129,536 | | | \$ 129,536 | |
| FBE Coating (5/ft) | | | \$ 5.32 | \$ 193,430 | | | \$ 193,430 | |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ 187,020 | |
| Freight / Tax | 12.5 | % | | | | | \$ 515,106 | |
| Pipe n/a | 0 | Feet | \$ - | \$ - | | | \$ - | |
| Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | | \$ - | |
| Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| FBE Coating (5/ft) | | | \$ - | \$ - | | | \$ - | |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| Freight / Tax | 12.5 | % | | | | | \$ - | |
| Pipe n/a | 1 | Feet | \$ - | \$ - | | | \$ - | |
| Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | | \$ - | |
| Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| FBE Coating (5/ft) | | | \$ - | \$ - | | | \$ - | |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| Freight / Tax | 12.5 | % | | | | | \$ - | |
| Casing n/a | 0 | Feet | \$ - | \$ - | | | \$ - | |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| Freight / Tax | 12.5 | % | | | | | \$ - | |
| Total length | 6.9 | Miles | | | | | | |
| Total Material Cost | | | | | | | \$ 4,636,000 | |
| 2 CONSTRUCTION | (See Appendix for construction type definitions) | | | | | | | |
| 20 inch pipe | | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | | \$ 225 | \$ - | \$ - | |
| Pipe Install - Type 2 | 7024 | Feet | | | \$ 360 | \$ 2,528,640 | \$ 2,528,640 | |
| Pipe Install - Type 3 | 29335 | Feet | | | \$ 540 | \$ 15,840,900 | \$ 15,840,900 | |
| Pipe Install - Type 4 | 0 | Feet | | | \$ 850 | \$ - | \$ - | |
| Pipe Install - Type 5 | 0 | Feet | | | \$ 800 | \$ - | \$ - | |
| Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 7 | 0 | Feet | | | \$ 702 | \$ - | \$ - | |
| n/a | | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 7 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| n/a | | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 7 | 1 | Feet | | | \$ - | \$ - | \$ - | |
| Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Tie-ins Crew Rates | 4 | Each | | | \$ 34,999 | \$ 139,996 | \$ 139,996 | |
| Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | 317296 | SCF | \$ 0.19 | \$ 60,286 | | | \$ 60,286 | |
| Purging Labor | 1 | LS | | | \$ 25,000 | \$ 25,000 | \$ 25,000 | |
| 95% Abandonment of Existing Pipeline (\$50/CY) | 2789 | CY | | | \$ 95 | \$ 264,955 | \$ 264,955 | |
| 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | 75 | % | | | | | \$ 688,858 | |
| Mobilization / Demobilization | 3 | Each | | | \$ 30,000 | \$ 90,000 | \$ 90,000 | |
| Contaminated Soil | 0 | CY | | | | | \$ - | |
| Asbestos Abatement | 0 | Feet | | | | | \$ - | |
| Radiographic Inspection | 113 | Days | \$ 150 | \$ 16,950 | \$ 600 | \$ 67,800 | \$ 84,750 | |
| Construction period | 121 | days | | | | | | |
| Total Construction Cost | | | | | | | \$ 19,723,400 | |
| 3 SCG LABOR / INSPECTION | | | | | | | | |
| Projects < \$1 million - company labor is 10% | 10 | % | | | | | \$ - | |
| \$1million <Projects < \$10 million - company labor is 5% | 5 | % | | | | | \$ - | |
| Projects >\$10 million - company labor is 2.5% | 2.5 | % | | | | | \$ 608,985 | \$ 608,985 |
| Total SCG Labor / Inspection Cost | | | | | | | \$ 609,000 | |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | | |
| Planning / Design / Eng / Coord / Procurement | 10 | % | | | | | \$ 2,435,940 | \$ 2,435,940 |
| Construction Stake, As-Built Survey (2 man crew) | 113 | Days | \$ 100 | \$ 11,300 | \$ 1,400 | \$ 158,200 | \$ 169,500 | |
| ROW Acquisition | 0 | LS | | | | | \$ - | |
| Construction Permits | 0 | LS | | | | | \$ - | |
| Environmental Permits | 0 | LS | | | | | \$ - | |
| Environmental Monitoring | 0 | LS | | | | | \$ - | |
| As-Built Drawings (\$2000+\$1/ft) | 1 | LS | | | | | \$ 38,360 | \$ 38,360 |
| Total Design / Engineering / Construction Cost | | | | | | | \$ 2,643,800 | |
| 5 CONTINGENCY | | | | | | | | |
| Projects < \$2 million - Contingency is 30% | 30 | % | | | | | \$ - | |
| Projects>\$2 million - Contingency is 20% | 20 | % | | | | | \$ 5,522,440 | \$ 5,522,440 |
| TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | \$ 33,134,700 | |

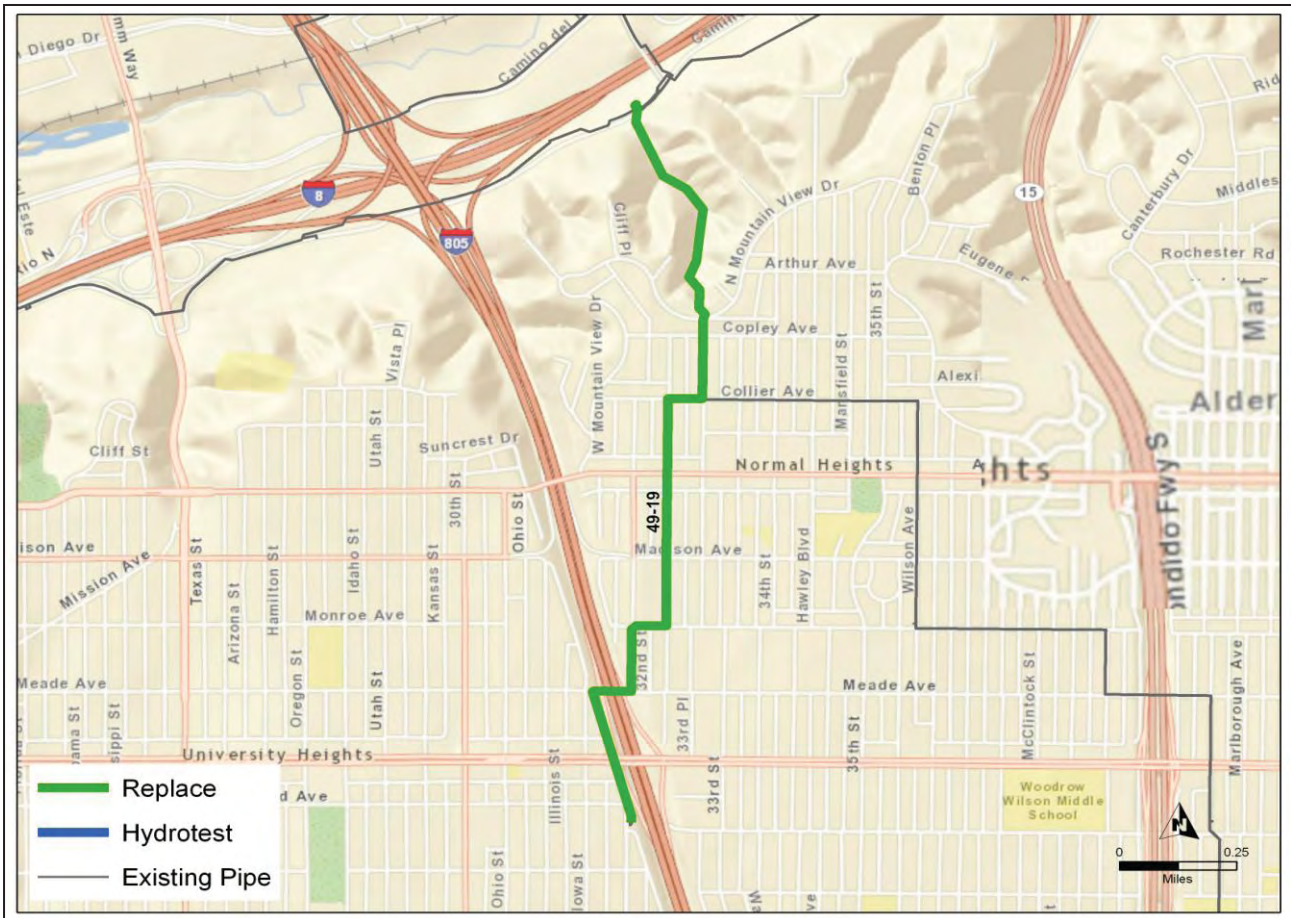
San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|-----------------------|-------|----------------------------|--------------------|--------------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 | | |
| | | Criteria | Accelerated | Total |
| Line Number | 49-19 | 1.306 | 0.357 | 1.663 |
| Diameter (in.) | 16 | | | |

Cost Detail

| | | | |
|-------------------------------|---------------------|-----------------------------|-------------|
| Capital | | O&M | |
| Direct Labor | \$ 194,023 | Direct Labor | \$ - |
| Direct Non Labor | \$ 5,208,862 | Direct Non Labor | \$ - |
| Total Direct Capital * | \$ 5,402,885 | Total Direct O&M | \$ - |

* No cost estimate sheet was provided for this pipeline. Project cost was estimated based on SPEC Services estimates of similarly sized projects in the same general area.



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workbook Supporting Chapter IX**

Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision | |
|----------|---------|---------|-------------------|----------|---------|----------|----------|
| | Start | Stop | | | | Tree Box | Comments |
| Cat 4 | 0 | 7056.94 | 1.3365 | 16 | Replace | | 2 |
| Cat 2 | 7056.94 | 8782.94 | 0.3269 | 16 | Replace | | |

New Segments

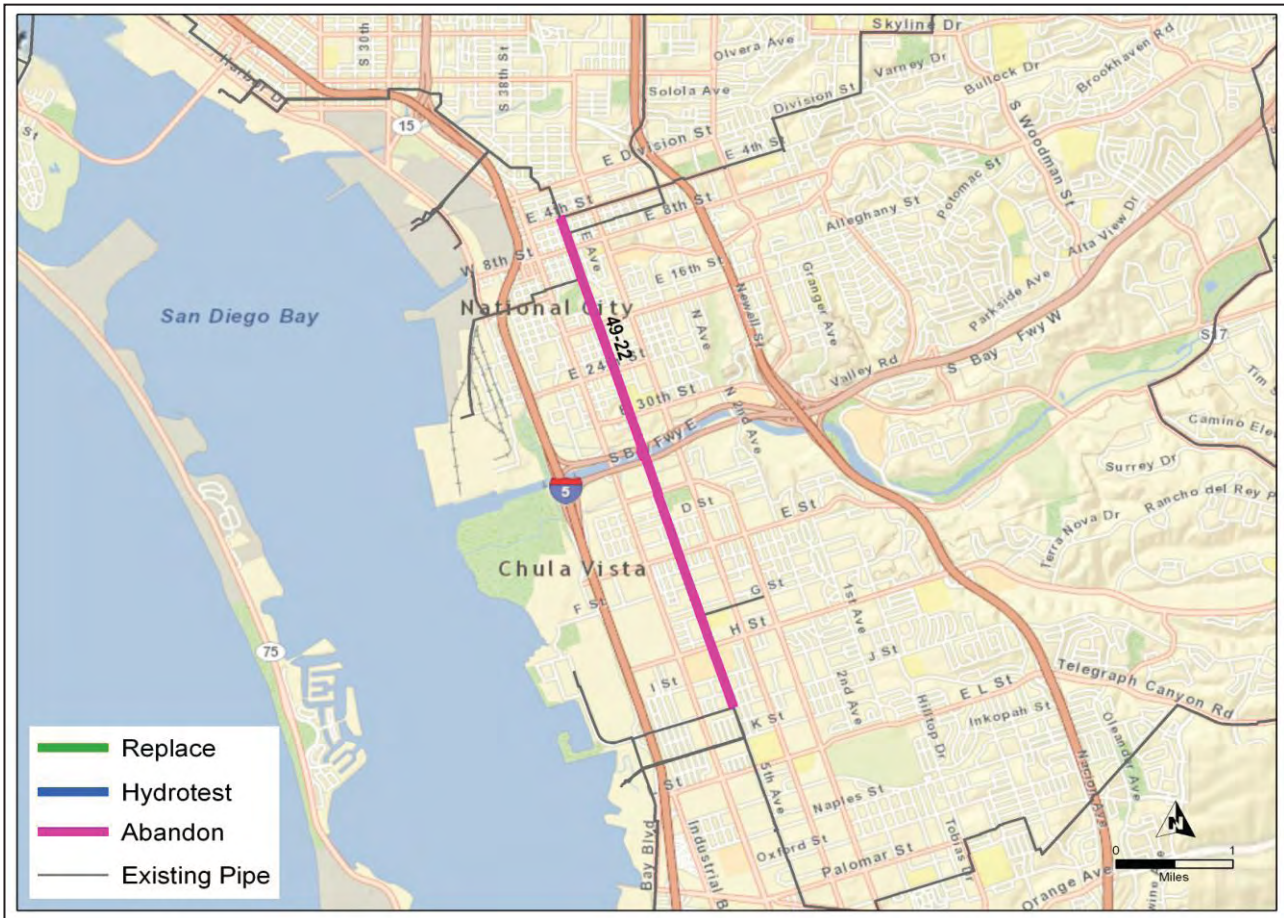
| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|------------------|-----------------|----------|-------------------|-------|----------|
| | | | | | |
| 7056.94 | 8782.94 | 16 | 0.312 | X-65 | |

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|-----------------------|-----------|--------------------------------|--------------------|--------------|
| Company | SDG&E | Abandonment Mileage | | |
| Plant Category | Dist | Category 4 Criteria | Accelerated | Total |
| Line Number | 49-22 | 3.913 | 0.124 | 4.037 |
| Diameter (in.) | 10.75, 16 | | | |

Cost Detail

| Capital | | O&M | |
|-----------------------------|-------------|-----------------------------|-------------|
| Direct Labor | \$ - | Direct Labor | \$ - |
| Direct Non Labor | \$ - | Direct Non Labor | \$ - |
| Total Direct Capital | \$ - | Total Direct O&M | \$ - |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workshop Supporting Chapter IX**

Existing Segments

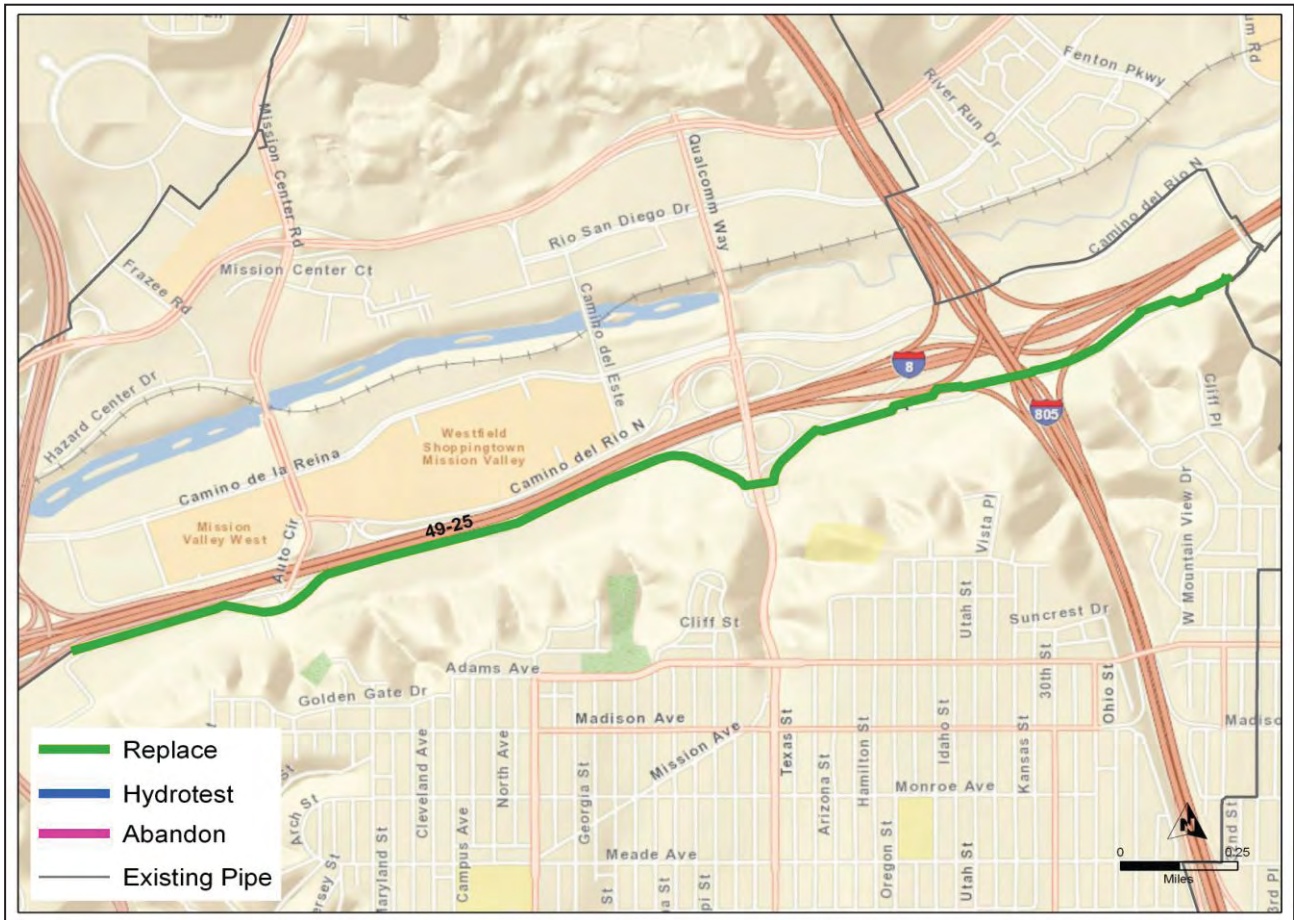
| Category | Station | | Criteria Miles | Diameter | Action | Decision | |
|----------|---------|---------|-------------------|----------|---------|----------|---|
| | Start | Stop | | | | Tree Box | Comments |
| Cat 4 | 0 | 3244.08 | 0.6144 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |
| Cat 1 | 3244 | 3293 | 0.0093 | 10.75 | Abandon | | Pipe to be removed ACS testing required |
| Cat 4 | 3293 | 4033 | 0.1402 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |
| Cat 4 | 4033 | 8525 | 0.8508 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |
| Cat 4 | 8525 | 9993 | 0.2780 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |
| Cat 2 | 9993 | 10529 | 0.1015 | 16 | Abandon | | Pipe to be removed ACS testing required |
| Cat 4 | 10529 | 11678 | 0.2176 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |
| Cat 2 | 11678 | 11714 | 0.0068 | 10.75 | Abandon | | Pipe to be removed ACS testing required |
| Cat 4 | 11714 | 12025 | 0.0589 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |
| Cat 4 | 12025 | 14626 | 0.4926 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |
| Cat 4 | 14626 | 16599 | 0.3737 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |
| Cat 1 | 16599 | 16632 | 0.0063 | 10.75 | Abandon | | Pipe to be removed ACS testing required |
| Cat 4 | 16632 | 21311 | 0.8862 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |
| Cat 4 | 21311 | 21316 | 0.0009 | 10.75 | Abandon | 2 | Pipe to be removed ACS testing required |

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|-----------------------|-------|--------------------------------|--------------------|--------------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 Criteria | Accelerated | Total |
| Line Number | 49-25 | 1.566 | 0.712 | 2.278 |
| Diameter (in.) | 16 | | | |

Cost Detail

| | | | |
|-----------------------------|---------------------|-----------------------------|-------------|
| Capital | | O&M | |
| Direct Labor | \$ 301,600 | Direct Labor | \$ - |
| Direct Non Labor | \$ 8,098,900 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 8,400,500 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
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Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision | | |
|----------|---------|-------|-------------------|----------|---------|----------|-----|-----------------------------------|
| | Start | Stop | | | | Tree | Box | Comments |
| Cat 4 | 0 | 338 | 0.0640 | 16 | Replace | | 2 | |
| Cat 2 | 338 | 625 | 0.0544 | 16 | Replace | | | |
| Cat 4 | 625 | 1014 | 0.0737 | 16 | Replace | | 2 | |
| Cat 1 | 1014 | 2201 | 0.2248 | 16 | Replace | | | |
| Cat 4 | 2201 | 2905 | 0.1333 | 16 | Replace | | 2 | |
| Cat 1 | 2905 | 3241 | 0.0636 | 16 | Replace | | | |
| Cat 4 | 3241 | 3620 | 0.0718 | 16 | Replace | | 2 | |
| Cat 1 | 3620 | 4425 | 0.1525 | 16 | Replace | | | |
| Cat 4 | 4425 | 6822 | 0.4540 | 16 | Replace | | 2 | |
| Cat 4 | 6822 | 9684 | 0.5420 | 16 | Replace | | 2 | New alignment requires night work |
| Cat 4 | 9684 | 9716 | 0.0061 | 16 | Replace | | 2 | New alignment requires night work |
| Cat 1 | 9716 | 9742 | 0.0049 | 16 | Replace | | | New alignment requires night work |
| Cat 4 | 9742 | 10907 | 0.2206 | 16 | Replace | | 2 | New alignment requires night work |
| Cat 2 | 10907 | 12027 | 0.2121 | 16 | Replace | | | New alignment requires night work |

New Segments

| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|------------------|-----------------|----------|-------------------|-------|---|
| 0 | 338 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 338 | 625 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 625 | 1014 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 1014 | 2201 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 2201 | 2905 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 2905 | 3241 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 3241 | 3620 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 3620 | 4425 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |

| | | | | | |
|-------|-------|----|-------|------|---|
| 4425 | 6822 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 6822 | 9684 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 9684 | 9716 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 9716 | 9742 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 9742 | 10907 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 10907 | 12027 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |

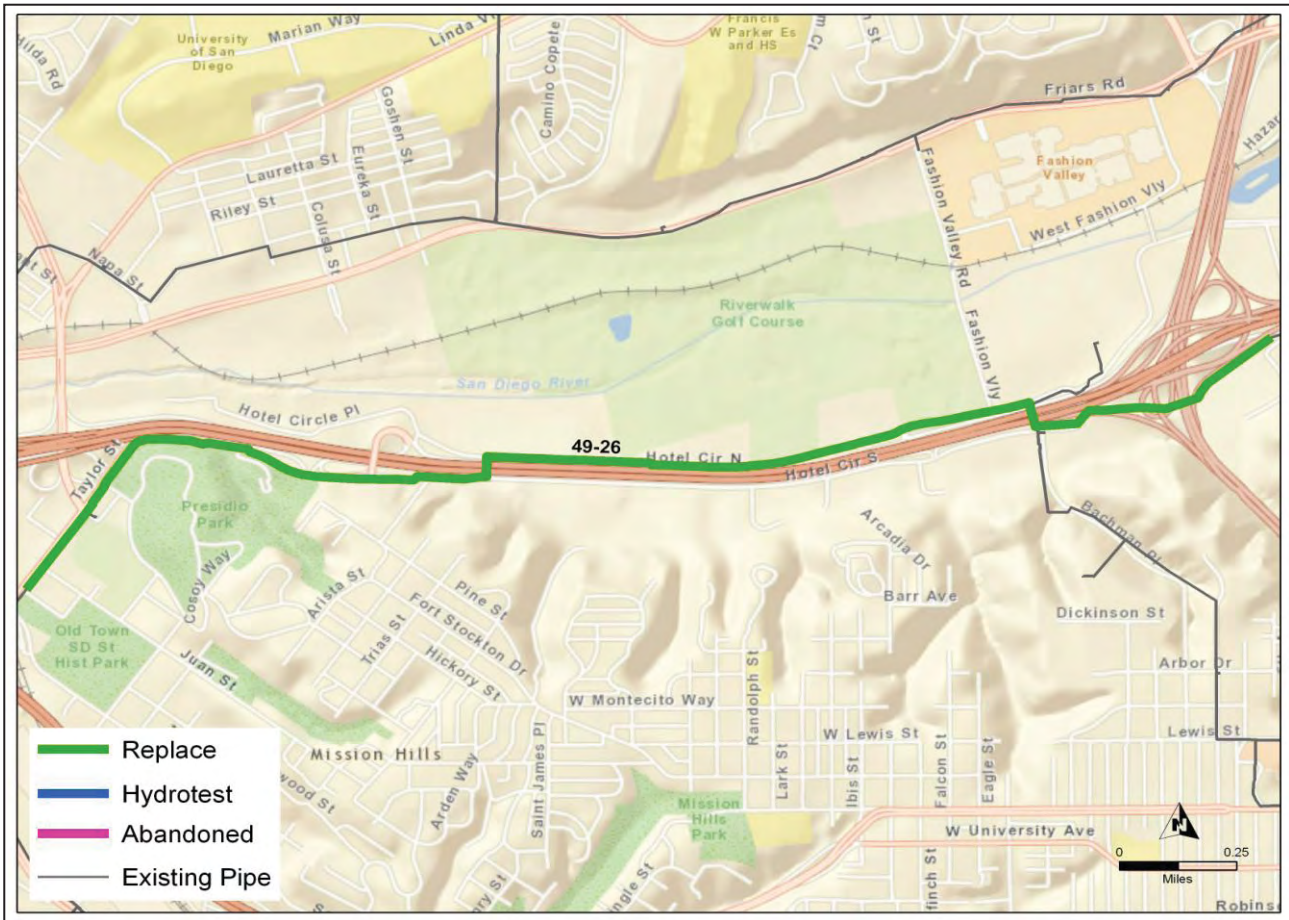
| ACTIVITY AND LOCATION: | | SPECIFICATION NO. | A/E FIRM NAME | SHEET | | | | | |
|---|--|-------------------|---------------------|---------------|------------|------------|--------------|---------------------|---|
| Line 49-25 | | | SPC SERVICES | Sheet 1 of 1 | | | | | |
| PROJECT TITLE AND CLIENT: | | ESTIMATED BY: | DATE: | | | | | | |
| SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | | SPEC | July 11, 2011 | | | | | | |
| | | STATUS OF DESIGN | SPEC Project Number | | | | | | |
| | | Complete | 5057 | | | | | | |
| DESCRIPTION | | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST | Comments |
| | | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL | |
| INPUT IN ALL GREEN CELLS | | | | | | | | | |
| 1 MATERIALS | | | | | | | | | |
| Pipe 12 inch, STD. WT X-52 | | | | | | | | | |
| | | 12024 | Feet | \$ 44 | \$ 532,423 | | | \$ 532,423 | Replaced Segment pipe OD per Remediation Plan |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 52 | Each | \$ 1,833 | \$ 95,334 | | | \$ 95,334 | |
| | Pressure Rating 300 lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ 36,010 | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | | \$ 3.26 | \$ 39,198 | | | \$ 39,198 | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ 31,388 | |
| | Freight / Tax | 12.5 | % | | | | | \$ 87,293 | |
| Pipe n/a | | | | | | | | | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | | \$ - | |
| | Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| Pipe n/a | | | | | | | | | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 0 | Feet | \$ - | \$ - | | | \$ - | |
| | Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 4 | Each | \$ - | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | 0 | | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| Casing n/a | | | | | | | | | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| | Total length | 2.3 | Miles | | | | | | |
| Total Material Cost | | | | | | | | \$ 785,700 | |
| 2 CONSTRUCTION (See Appendix for construction type definitions) | | | | | | | | | |
| 12 inch pipe | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | | \$ 175 | \$ - | \$ - | |
| | Pipe Install - Type 2 | 6822 | Feet | | | \$ 280 | \$ 1,910,160 | \$ 1,910,160 | |
| | Pipe Install - Type 3 | 0 | Feet | | | \$ 450 | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | | \$ 600 | \$ - | \$ - | |
| | Pipe Install - Type 5 | 200 | Feet | | | \$ 400 | \$ 80,000 | \$ 80,000 | |
| | Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 5002 | Feet | | | \$ 585 | \$ 2,926,170 | \$ 2,926,170 | |
| n/a | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| n/a | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Tie-ins Crew Rates | | | | | | | | | |
| | | 1 | Each | | | \$ 25,000 | \$ 25,000 | \$ 25,000 | |
| Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | | | | | | | | | |
| | | 37776 | SCF | \$ 0.19 | \$ 7,177 | | | \$ 7,177 | |
| Purging Labor | | | | | | | | | |
| | | 1 | LS | | | \$ 25,000 | \$ 25,000 | \$ 25,000 | |
| 95% Abandonment of Existing Pipeline (\$50/CY) | | | | | | | | | |
| | | 332 | CY | | | \$ 95 | \$ 31,540 | \$ 31,540 | |
| 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | | | | | | | | | |
| | | 75 | % | | | | | \$ 184,362 | |
| Mobilization / Demobilization | | | | | | | | | |
| | | 1 | Each | | | \$ 30,000 | \$ 30,000 | \$ 30,000 | |
| Contaminated Soil | | | | | | | | | |
| | | 0 | CY | | | \$ - | \$ - | \$ - | |
| Asbestos Abatement | | | | | | | | | |
| | | 0 | Feet | | | \$ - | \$ - | \$ - | |
| Radiographic Inspection | | | | | | | | | |
| | | 34 | Days | \$ 150 | \$ 5,100 | \$ 600 | \$ 20,400 | \$ 25,500 | |
| Construction period | | | | | | | | | |
| | | 42 | days | | | | | | |
| Total Construction Cost | | | | | | | | \$ 5,245,000 | |
| 3 SCG LABOR / INSPECTION | | | | | | | | | |
| | Projects < \$1 million - company labor is 10% | 10 | % | | | | \$ - | \$ - | |
| | \$1 million < Projects < \$10 million - company labor is 5% | 5 | % | | | | \$ 301,535 | \$ 301,535 | |
| | Projects > \$10 million - company labor is 2.5% | 2.5 | % | | | | \$ - | \$ - | |
| Total SCG Labor / Inspection Cost | | | | | | | | \$ 301,600 | |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | | | |
| | Planning / Design / Eng / Coord / Procurement | 10 | % | | | | \$ 603,070 | \$ 603,070 | |
| | Construction Stake, As-Built Survey (2 man crew) | 34 | Days | \$ 100 | \$ 3,400 | \$ 1,400 | \$ 47,600 | \$ 51,000 | |
| | ROW Acquisition | 0 | LS | | | | \$ - | \$ - | |
| | Construction Permits | 0 | LS | | | | \$ - | \$ - | |
| | Environmental Permits | 0 | LS | | | | \$ - | \$ - | |
| | Environmental Monitoring | 0 | LS | | | | \$ - | \$ - | |
| | As-Built Drawings (\$2000+\$1/ft) | 1 | LS | | | | \$ 14,024 | \$ 14,024 | |
| Total Design / Engineering / Construction Cost | | | | | | | | \$ 668,100 | |
| 5 CONTINGENCY | | | | | | | | | |
| | Projects < \$2 million - Contingency is 30% | 30 | % | | | | \$ - | \$ - | |
| | Projects > \$2 million - Contingency is 20% | 20 | % | | | | \$ 1,400,080 | \$ 1,400,080 | |
| TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | | \$ 8,400,500 | |

**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX**

| | | | | |
|-----------------------|-------|--------------------------------|--------------------|--------------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 Criteria | Accelerated | Total |
| Line Number | 49-26 | 2.396 | 0.219 | 2.615 |
| Diameter (in.) | 12.75 | | | |

Cost Detail

| | | | |
|-----------------------------|--------------|-----------------------------|------|
| Capital | | O&M | |
| Direct Labor | \$ 345,100 | Direct Labor | \$ - |
| Direct Non Labor | \$ 9,270,200 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 9,615,300 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workshop Supporting Chapter IX**

Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision | | Comments |
|----------|---------|-------|-------------------|----------|------------|----------|--|--|
| | Start | Stop | | | | Tree Box | | |
| Cat 4 | 0 | 942 | 0.1784 | 12.75 | Replace | 2 | | Crosses freeway, new route requires no freeway crossing, but may require night work. |
| Cat 4 | 942 | 1252 | 0.0587 | 12.75 | Replace | 2 | | Crosses freeway, new route requires no freeway crossing, but may require night work. |
| Cat 4 | 1252 | 1992 | 0.1402 | 12.75 | Replace | 2 | | |
| Cat 4 | 1992 | 2069 | 0.0146 | 12.75 | Replace | 2 | | |
| Cat 1 | 2069 | 2092 | 0.0044 | 12.75 | Replace | 2 | | |
| Cat 4 | 2092 | 2591 | 0.0945 | 12.75 | Replace | 2 | | |
| Cat 4 | 2591 | 2739 | 0.0280 | 12.75 | Replace | 2 | | |
| Cat 4 | 2739 | 5064 | 0.4403 | 12.75 | Replace | 2 | | |
| Cat 4 | 5064 | 5571 | 0.0581 | 12.75 | Replace | 2 | | Freeway off-ramp along new alignment, night work required. |
| Cat 2 | 5571 | 6503 | 0.1765 | 12.75 | Replace | 2 | | |
| Cat 4 | 6503 | 10588 | 0.7737 | 12.75 | Replace | 2 | | Freeway off-ramp along new alignment, night work required. |
| Cat 4 | 10588 | 12380 | 0.3394 | 12.75 | Replace | 2 | | |
| Cat 4 | 12380 | 12555 | 0.0331 | 12.75 | Replace | 2 | | |
| Cat 4 | 12555 | 12569 | 0.0027 | 12.75 | Replace | 2 | | |
| Cat 4 | 12569 | 13012 | 0.0839 | 12.75 | Replace | 2 | | |
| Cat 4 | 13012 | 13499 | 0.0922 | 12.75 | Replace | 2 | | |
| Cat 4 | 13499 | 13511 | 0.0023 | 12.75 | Replace | 2 | | |
| Cat 4 | 13511 | 13808 | 0.0563 | 12.75 | Replace | 2 | | |
| Cat 2 | 13808 | 14142 | 0.0790 | 12.75 | Keep As Is | | | |
| Cat 2 | 14142 | 14225 | 0.0157 | 12.75 | Keep As Is | | | |

New Segments

| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|---------------|--------------|----------|----------------|-------|---|
| 0 | 942 | 12 | 0.375 | X-52 | Moved to north side of I-8 |
| 942 | 1252 | 12 | 0.375 | X-52 | Moved to north side of I-8 |
| 1252 | 1992 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 1992 | 2069 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 2069 | 2092 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 2092 | 2591 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 2591 | 2739 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 2739 | 5064 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 5064 | 5571 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 5571 | 6503 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 6503 | 10588 | 12 | 0.375 | X-52 | Derate entire segment to 55 psig and replace in a new route |
| 10588 | 12380 | 12 | 0.375 | X-52 | Install new 12" pipe |
| 12380 | 12555 | 12 | 0.375 | X-52 | Install new 12" pipe |
| 12555 | 12569 | 12 | 0.375 | X-52 | Install new 12" pipe |
| 12569 | 13012 | 12 | 0.375 | X-52 | Install new 12" pipe |
| 13012 | 13499 | 12 | 0.375 | X-52 | Install new 12" pipe |
| 13499 | 13511 | 12 | 0.375 | X-52 | Install new 12" pipe |
| 13511 | 13808 | 12 | 0.375 | X-52 | Install new 12" pipe |

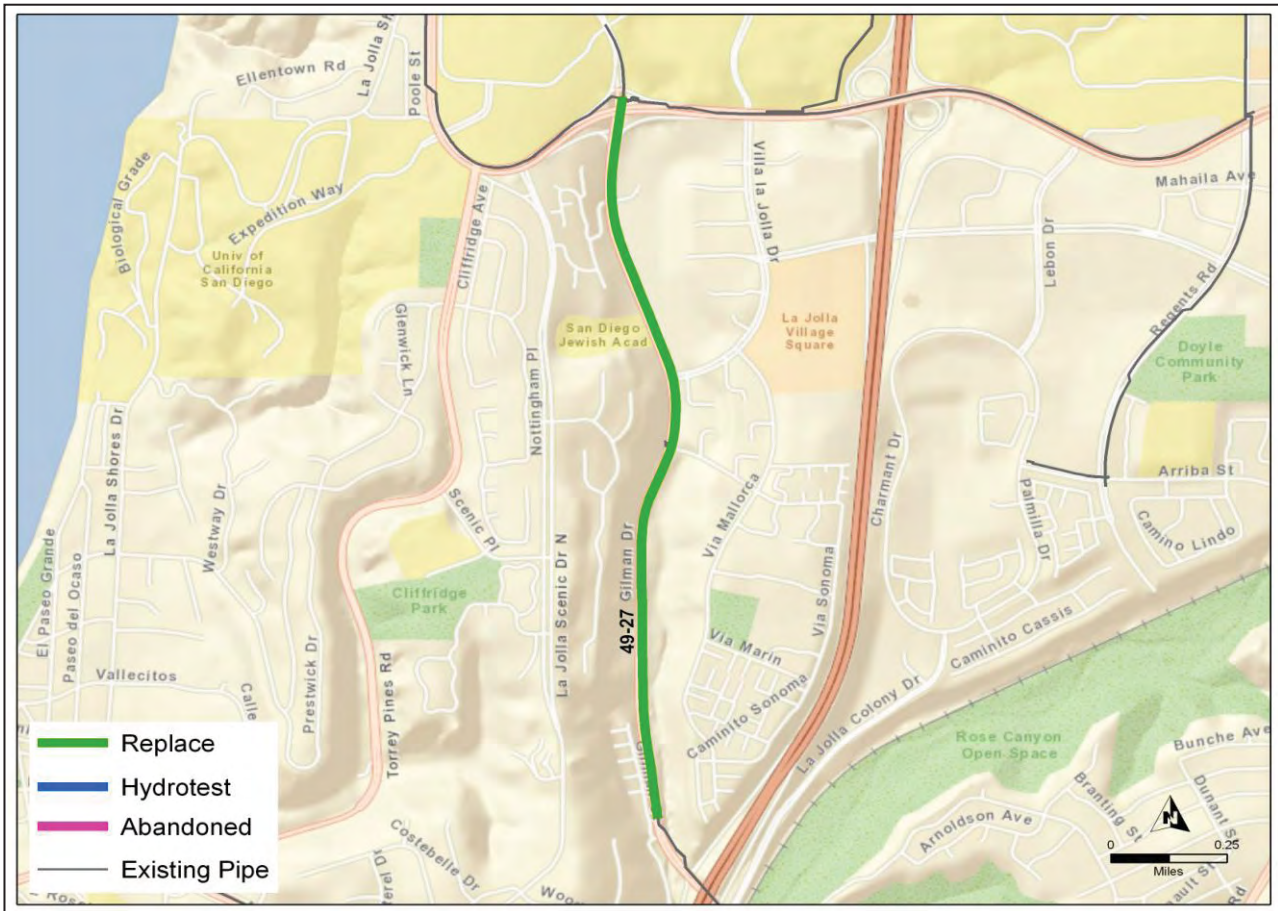
| ACTIVITY AND LOCATION: | | SPECIFICATION NO. | | A/E FIRM NAME | | SHEET | |
|--|----------|-------------------|---------------|---------------------|--------------|--------------|--------------|
| Line 49-26 | | | | SP3C SERVICES | | Sheet 1 of 1 | |
| PROJECT TITLE AND CLIENT: | | ESTIMATED BY: | | DATE: | | | |
| SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | | SPEC | | July 11, 2011 | | | |
| | | STATUS OF DESIGN | | SPEC Project Number | | | |
| | | Conceptual | | 5057 | | | |
| DESCRIPTION | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST |
| | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL |
| INPUT IN ALL GREEN CELLS | | | | | | | |
| 1 MATERIALS | | | | | | | |
| Pipe 12 | 13808 | Feet | \$ 44 | \$ 611,418 | | | \$ 611,418 |
| Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 59 | Each | \$ 1,833 | \$ 108,167 | | | \$ 108,167 |
| Pressure Rating 300 lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ 36,010 | \$ - | | | \$ - |
| FBE Coating (5/ft) | | \$ | \$ 3.26 | \$ 45,014 | | | \$ 45,014 |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ 35,979 |
| Freight / Tax | 12.5 | % | | | | | \$ 100,072 |
| Pipe n/a | 0 | Feet | \$ - | \$ - | | | \$ - |
| Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | | \$ - |
| Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - |
| FBE Coating (5/ft) | | \$ | \$ - | \$ - | | | \$ - |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - |
| Freight / Tax | 12.5 | % | | | | | \$ - |
| Pipe n/a | 0 | Feet | \$ - | \$ - | | | \$ - |
| Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | | \$ - |
| Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - |
| FBE Coating (5/ft) | | \$ | \$ - | \$ - | | | \$ - |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - |
| Freight / Tax | 12.5 | % | | | | | \$ - |
| Casing n/a | 0 | Feet | \$ - | \$ - | | | \$ - |
| Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - |
| Freight / Tax | 12.5 | % | | | | | \$ - |
| Total length | 2.6 | Miles | | | | | |
| Total Material Cost | | | | | | | \$ 900,700 |
| 2 CONSTRUCTION | | | | | | | |
| (See Appendix for construction type definitions) | | | | | | | |
| 12 inch pipe | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | | \$ 175 | \$ - | \$ - |
| Pipe Install - Type 2 | 7694 | Feet | | | \$ 280 | \$ 2,154,320 | \$ 2,154,320 |
| Pipe Install - Type 3 | 0 | Feet | | | \$ 450 | \$ - | \$ - |
| Pipe Install - Type 4 | 0 | Feet | | | \$ 600 | \$ - | \$ - |
| Pipe Install - Type 5 | 530 | Feet | | | \$ 400 | \$ 212,000 | \$ 212,000 |
| Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 7 | 5584 | Feet | | | \$ 585 | \$ 3,266,640 | \$ 3,266,640 |
| n/a | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 7 | 0 | Feet | | | \$ - | \$ - | \$ - |
| n/a | | | | | | | |
| Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Pipe Install - Type 7 | 0 | Feet | | | \$ - | \$ - | \$ - |
| Tie-ins Crew Rates | 1 | Each | | | \$ 25,000 | \$ 25,000 | \$ 25,000 |
| Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | 43380 | SCF | \$ 0.19 | \$ 8,242 | | | \$ 8,242 |
| Purging Labor | 1 | LS | | | \$ 25,000 | \$ 25,000 | \$ 25,000 |
| 95% Abandonment of Existing Pipeline (\$50/CY) | 382 | CY | | | \$ 95 | \$ 36,290 | \$ 36,290 |
| 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | 75 | % | | | | | \$ 211,236 |
| Mobilization / Demobilization | 1 | Each | | | \$ 30,000 | \$ 30,000 | \$ 30,000 |
| Contaminated Soil | 0 | CY | | | \$ - | \$ - | \$ - |
| Asbestos Abatement | 0 | Feet | | | \$ - | \$ - | \$ - |
| Radiographic Inspection | 41 | Days | \$ 150 | \$ 6,150 | \$ 600 | \$ 24,600 | \$ 30,750 |
| Construction period | 49 | days | | | | | |
| Total Construction Cost | | | | | | | \$ 5,999,500 |
| 3 SCG LABOR / INSPECTION | | | | | | | |
| Projects < \$1 million - company labor is 10% | 10 | % | | | \$ - | \$ - | \$ - |
| \$1million <Projects < \$10 million - company labor is 5% | 5 | % | | | \$ - | \$ 345,010 | \$ 345,010 |
| Projects >\$10 million - company labor is 2.5% | 2.5 | % | | | \$ - | \$ - | \$ - |
| Total SCG Labor / Inspection Cost | | | | | | | \$ 345,100 |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | |
| Planning / Design / Eng / Coord / Procurement | 10 | % | | | \$ 690,020 | \$ 690,020 | \$ 690,020 |
| Construction Stake, As-Built Survey (2 man crew) | 41 | Days | \$ 100 | \$ 4,100 | \$ 1,400 | \$ 57,400 | \$ 61,500 |
| ROW Acquisition | 0 | LS | | | \$ - | \$ - | \$ - |
| Construction Permits | 0 | LS | | | \$ - | \$ - | \$ - |
| Environmental Permits | 0 | LS | | | \$ - | \$ - | \$ - |
| Environmental Monitoring | 0 | LS | | | \$ - | \$ - | \$ - |
| As-Built Drawings (\$2000+\$1/ft) | 1 | LS | | | \$ 15,808 | \$ 15,808 | \$ 15,808 |
| Total Design / Engineering / Construction Cost | | | | | | | \$ 767,400 |
| 5 CONTINGENCY | | | | | | | |
| Projects < \$2 million - Contingency is 30% | 30 | % | | | \$ - | \$ - | \$ - |
| Projects >\$2 million - Contingency is 20% | 20 | % | | | \$ 1,602,540 | \$ 1,602,540 | \$ 1,602,540 |
| TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | \$ 9,615,300 |

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|-----------------------|-----------|----------------------------|--------------------|--------------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 | | |
| | | Criteria | Accelerated | Total |
| Line Number | 49-27 | 1.439 | 0.002 | 1.442 |
| Diameter (in.) | 16, 12.75 | | | |

Cost Detail

| Capital | | O&M | |
|-----------------------------|---------------------|-----------------------------|-------------|
| Direct Labor | \$ 168,200 | Direct Labor | \$ - |
| Direct Non Labor | \$ 4,515,600 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 4,683,800 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workshop Supporting Chapter IX**

Existing Segments

| Category | Station Start | Station Stop | Criteria Miles | Diameter | Action | Decision Tree Box | Comments |
|----------|---------------|--------------|----------------|----------|---------|-------------------|---|
| Cat 1 | 0 | 13 | 0.0025 | 16 | Replace | | Go under La Jolla Village Dr overpass, entrance to UCSD, possible night work. |
| Cat 4 | 13 | 7612 | 1.4392 | 12.75 | Replace | 2 | Two regulator station inlet taps (4" ball valves). |

New Segments

| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|---------------|--------------|----------|----------------|-------|-----------------------------|
| 0 | 13 | 16 | 0.312 | X-65 | Upsize from 12" to 16" pipe |
| 13 | 7612 | 16 | 0.312 | X-65 | Upsize from 12" to 16" pipe |

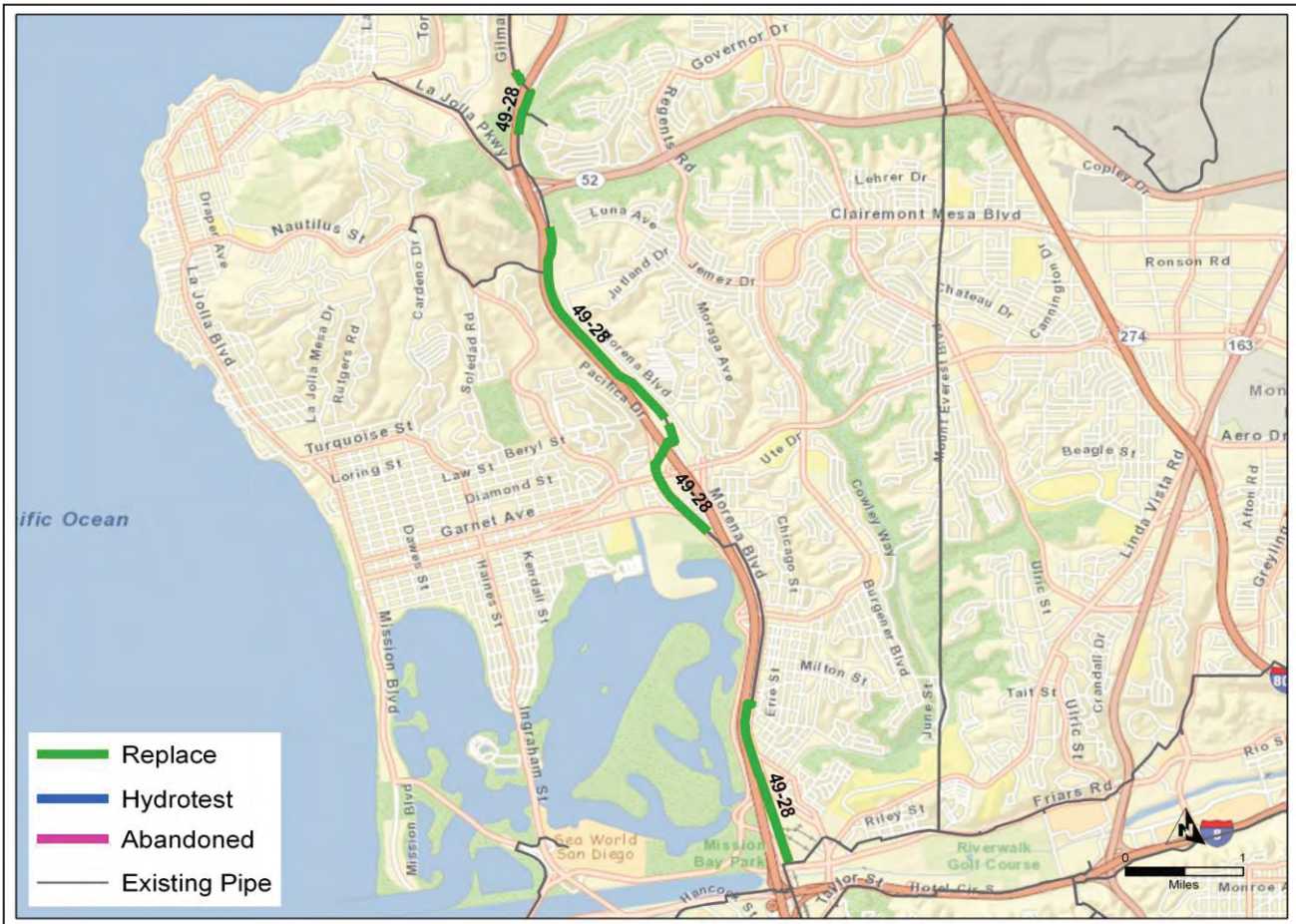
| ACTIVITY AND LOCATION: | | SPECIFICATION NO. | A/E FIRM NAME | SHEET | | | | | |
|--|--|-------------------|---------------------|---------------|------------|------------|--------------|---------------------|---|
| Line L-49-27 | | | SP3C SERVICES | Sheet 1 of 1 | | | | | |
| PROJECT TITLE AND CLIENT: | | ESTIMATED BY: | DATE: | | | | | | |
| SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | | SP3C | July 12, 2011 | | | | | | |
| | | STATUS OF DESIGN | SPEC Project Number | | | | | | |
| | | Complete | 5057 | | | | | | |
| DESCRIPTION | | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST | Comments |
| | | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL | |
| INPUT IN ALL GREEN CELLS | | | | | | | | | |
| 1 MATERIALS | | | | | | | | | |
| Pipe 16 inch, .312 WT X-65 | | | | | | | | | |
| | | 7612 | Feet | \$ 57 | \$ 436,624 | | | \$ 436,624 | Replaced Segment Pipe OD Per Remediation Plan |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 34 | Each | \$ 3,339 | \$ 113,515 | | | \$ 113,515 | |
| | Pressure Rating 300 lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ 94,320 | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | \$ | \$ 4.14 | \$ 31,514 | | | \$ 31,514 | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ 27,507 | |
| | Freight / Tax | 12.5 | % | | | | | \$ 76,149 | |
| | Pipe n/a | 0 | Feet | \$ - | \$ - | | | \$ - | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 0 | Each | \$ - | \$ - | | | \$ - | |
| | Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | \$ | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| | Pipe n/a | 0 | Feet | \$ - | \$ - | | | \$ - | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 0 | Each | \$ - | \$ - | | | \$ - | |
| | Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | \$ | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| | Casing n/a | 0 | Feet | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| | Total length | 1.4 | Miles | | | | | | |
| | Total Material Cost | | | | | | | \$ 685,400 | |
| 2 CONSTRUCTION (See Appendix for construction type definitions) | | | | | | | | | |
| 16 inch pipe | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | | \$ 200 | \$ - | \$ - | |
| | Pipe Install - Type 2 | 7599 | Feet | | | \$ 320 | \$ 2,431,680 | \$ 2,431,680 | |
| | Pipe Install - Type 3 | 0 | Feet | | | \$ 500 | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | | \$ 750 | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | | \$ 600 | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 13 | Feet | | | \$ 650 | \$ 8,450 | \$ 8,450 | |
| | n/a | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | n/a | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Tie-ins Crew Rates | 1 | Each | | | \$ 35,000 | \$ 35,000 | \$ 35,000 | |
| | Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | 42516 | SCF | \$ 0.19 | \$ 8,078 | | | \$ 8,078 | |
| | Purging Labor | 1 | LS | | | \$ 25,000 | \$ 25,000 | \$ 25,000 | |
| | 95% Abandonment of Existing Pipeline (\$50/CY) | 374 | CY | | | \$ 95 | \$ 35,530 | \$ 35,530 | |
| | 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | 75 | % | | | | | \$ 91,505 | |
| | Mobilization / Demobilization | 1 | Each | | | \$ 30,000 | \$ 30,000 | \$ 30,000 | |
| | Contaminated Soil | 0 | CY | | | \$ - | \$ - | \$ - | |
| | Asbestos Abatement | 0 | Feet | | | \$ - | \$ - | \$ - | |
| | Radiographic Inspection | 17 | Days | \$ 150 | \$ 2,550 | \$ 600 | \$ 10,200 | \$ 12,750 | |
| | Construction period | 25 | days | | | | | | |
| | Total Construction Cost | | | | | | | \$ 2,678,000 | |
| 3 SCG LABOR / INSPECTION | | | | | | | | | |
| | Projects < \$1 million - company labor is 10% | 10 | % | | | | \$ - | \$ - | |
| | \$1 million < Projects < \$10 million - company labor is 5% | 5 | % | | | | \$ 168,170 | \$ 168,170 | |
| | Projects > \$10 million - company labor is 2.5% | 2.5 | % | | | | \$ - | \$ - | |
| | Total SCG Labor / Inspection Cost | | | | | | | \$ 168,200 | |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | | | |
| | Planning / Design / Eng / Coord / Procurement | 10 | % | | | | \$ 336,340 | \$ 336,340 | |
| | Construction Stake, As-Built Survey (2 man crew) | 17 | Days | \$ 100 | \$ 1,700 | \$ 1,400 | \$ 23,800 | \$ 25,500 | |
| | ROW Acquisition | 0 | LS | | | | \$ - | \$ - | |
| | Construction Permits | 0 | LS | | | | \$ - | \$ - | |
| | Environmental Permits | 0 | LS | | | | \$ - | \$ - | |
| | Environmental Monitoring | 0 | LS | | | | \$ - | \$ - | |
| | As-Built Drawings (\$2000+\$1/ft) | 1 | LS | | | | \$ 9,612 | \$ 9,612 | |
| | Total Design / Engineering / Construction Cost | | | | | | | \$ 371,500 | |
| 5 CONTINGENCY | | | | | | | | | |
| | Projects < \$2 million - Contingency is 30% | 30 | % | | | | \$ - | \$ - | |
| | Projects > \$2 million - Contingency is 20% | 20 | % | | | | \$ 780,620 | \$ 780,620 | |
| | TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | \$ 4,683,800 | |

San Diego Gas & Electric Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

| | | | | |
|----------------|------------------|--------------------------------|--------------------|--------------|
| Company | SDG&E | Replacement Mileage | | |
| Plant Category | Dist | Category 4 Criteria | Accelerated | Total |
| Line Number | 49-28 | 1.796 | 3.099 | 4.895 |
| Diameter (in.) | 8.625, 12.75, 16 | | | |

Cost Detail

| | | | |
|-----------------------------|----------------------|-----------------------------|-------------|
| Capital | | O&M | |
| Direct Labor | \$ 328,500 | Direct Labor | \$ - |
| Direct Non Labor | \$ 17,561,900 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 17,890,400 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workshop Supporting Chapter IX**

Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision Tree Box | Comments |
|----------|---------|--------|-------------------|----------|------------|----------------------|--|
| | Start | Stop | | | | | |
| Cat 4 | 0 | 84 | 0.0159 | 8.625 | Replace | 2 | |
| Cat 4 | 84 | 2212 | 0.2780 | 16 | Replace | 2 | New route from 0+84.00 to 69+06.00 is 1,650' feet longer than current route, bore 85' under railroad. |
| Cat 4 | 2212 | 2288 | 0.0144 | 16 | Replace | 2 | New route from 0+84.00 to 69+06.00 is 1,650' feet longer than current route, crowded utilities in Sherman St. |
| Cat 4 | 2288 | 3100 | 0.1538 | 16 | Replace | 2 | New route from 0+84.00 to 69+06.00 is 1,650' feet longer than current route, busy intersection at Morena blvd and Sherman St |
| Cat 4 | 3100 | 3115 | 0.0028 | 16 | Replace | 2 | New route from 0+84.00 to 69+06.00 is 1,650' feet longer than current route, bore 80' under Tecolote creek culvert. |
| Cat 4 | 3115 | 3222.6 | 0.0204 | 16 | Replace | 2 | New route from 0+84.00 to 69+06.00 is 1,650' feet longer than current route. |
| Cat 4 | 3222.6 | 6906 | 0.1219 | 16 | Replace | 2 | New route from 0+84.00 to 69+06.00 is 1,650' feet longer than current route. |
| Cat 2 | 6906 | 14851 | 1.5047 | 12.75 | Keep As Is | | |
| Cat 1 | 14851 | 15553 | 0.1330 | 16 | Replace | 2 | Bore under Hwy 5 and railroad (550' feet). CalTrans and Railroad permits. |
| Cat 4 | 15553 | 16418 | 0.1638 | 16 | Replace | 2 | Very busy road (freeway exit). |
| Cat 4 | 16418 | 16449 | 0.0059 | 16 | Replace | 2 | Very busy road (freeway exit). |
| Cat 4 | 16449 | 18908 | 0.4657 | 16 | Replace | 2 | Very busy road, possible night work. |
| Cat 4 | 18908 | 19098 | 0.0360 | 16 | Replace | 2 | Very busy road, possible night work. |
| Cat 4 | 19098 | 19362 | 0.0500 | 16 | Replace | 2 | Very busy intersection at Mission Bay Dr and Garnet, nightwork. |
| Cat 2 | 19362 | 19662 | 0.0568 | 16 | Replace | | Very busy road, possible night work. |
| Cat 1 | 19662 | 20577 | 0.1733 | 16 | Replace | | Go under Hwy 5 overpass |
| Cat 2 | 20577 | 20838 | 0.0494 | 16 | Keep As Is | | |
| Cat 1 | 20838 | 22271 | 0.2714 | 16 | Replace | | Santa Fe St crowded with utilities |
| Cat 1 | 22271 | 23985 | 0.3246 | 16 | Replace | | Santa Fe St crowded with utilities |
| Cat 1 | 23985 | 24035 | 0.0095 | 16 | Replace | | Santa Fe St crowded with utilities |
| Cat 1 | 24035 | 24544 | 0.0964 | 16 | Replace | | Santa Fe St crowded with utilities |
| Cat 2 | 24544 | 24586 | 0.0080 | 16 | Replace | | Santa Fe St crowded with utilities |

| | | | | | | |
|-------|---------|---------|--------|-------|------------|---|
| Cat 2 | 24586 | 24690 | 0.0197 | 12.75 | Replace | Santa Fe St crowded with utilities |
| Cat 2 | 24690 | 24707 | 0.0032 | 16 | Replace | Santa Fe St crowded with utilities |
| Cat 1 | 24707 | 30481.5 | 1.0937 | 16 | Replace | Rose Canyon Creek crossing, existing casing |
| Cat 2 | 30481.5 | 31659.5 | 0.2231 | 16 | Keep As Is | |
| Cat 1 | 31659.5 | 34465.5 | 0.5314 | 16 | Keep As Is | |
| Cat 4 | 34465.5 | 36269.5 | 0.3417 | 16 | Replace | 2 Bike path, possible environmental issues. |
| Cat 2 | 36269.5 | 36704.5 | 0.0824 | 16 | Keep As Is | |
| Cat 4 | 36704.5 | 38554.5 | 0.1361 | 16 | Replace | 2 Culvert crossing, bore 75' feet, possible environmental issues. Highway 5 underpass. |

New Segments

| Station Start | Station Stop | Diameter | Wall Thickness | Grade | Comments |
|---------------|--------------|----------|----------------|-------|---|
| 84 | 2212 | 16 | 0.312 | X-65 | Relocate |
| 2212 | 2288 | 16 | 0.312 | X-65 | Relocate |
| 2288 | 3100 | 16 | 0.312 | X-65 | Relocate |
| 3100 | 3115 | 16 | 0.312 | X-65 | Relocate |
| 3115 | 3222.6 | 16 | 0.312 | X-65 | Relocate |
| 3222.6 | 6906 | 16 | 0.312 | X-65 | Relocate |
| 14851 | 15553 | 16 | 0.312 | X-65 | |
| 15553 | 16418 | 16 | 0.312 | X-65 | |
| 16418 | 16449 | 16 | 0.312 | X-65 | |
| 16449 | 18908 | 16 | 0.312 | X-65 | Install 16" ANSI 300 main line valve (fault line), 6" ball valve bridal for reg station at Bunker Hill St |
| 18908 | 19098 | 16 | 0.312 | X-65 | |
| 19098 | 19362 | 16 | 0.312 | X-65 | |
| 19362 | 19662 | 16 | 0.312 | X-65 | 4" ball valve tap for reg station |
| 19662 | 20577 | 16 | 0.312 | X-65 | |
| 20838 | 22271 | 16 | 0.312 | X-65 | |
| 22271 | 23985 | 16 | 0.312 | X-65 | Install 16" ANSI 300 main line valve (fault line) |
| 23985 | 24035 | 16 | 0.312 | X-65 | |
| 24035 | 24544 | 16 | 0.312 | X-65 | |
| 24544 | 24586 | 16 | 0.312 | X-65 | |
| 24586 | 24690 | 16 | 0.312 | X-65 | Replace 12" with 16" for in line inspection |
| 24690 | 24707 | 16 | 0.312 | X-65 | |

24707 30481.5 16 0.312 X-65 Use existing 260' foot 20" casing at 281+37 creek crossing. 16" Main line valve and 6" bridal at 295+58.

34465.5 36269.5 16 0.312 X-65
36704.5 38554.5 16 0.312 X-65

| ACTIVITY AND LOCATION: | | SPECIFICATION NO. | | A/E FIRM NAME | | SHEET | | |
|---|-----|---|------------|---------------|------------|---------------------|--------------|----------------------|
| Line 49-28 | | | | SPEC SERVICES | | Sheet 1 of 1 | | |
| PROJECT TITLE AND CLIENT: | | ESTIMATED BY: | | DATE: | | SPEC Project Number | | |
| SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | | SPEC | | July 12, 2011 | | 5057 | | |
| DESCRIPTION | | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST |
| | | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL |
| INPUT IN ALL GREEN CELLS | | | | | | | | |
| 1 MATERIALS | | | | | | | | |
| 16 inch | | | | | | | | |
| Pipe | 16 | inch, .312 WT X-65 | 24042 | Feet | \$ 57 | \$ 1,379,049 | | \$ 1,379,049 |
| | | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 100 | Each | \$ 3,339 | \$ 333,867 | | \$ 333,867 |
| Pressure Rating | 400 | lb Block Valve w/Electric Actuator (one per 4 miles) | 1 | Each | \$ 210,828 | \$ 210,828 | | \$ 210,828 |
| | | FBE Coating (5/ft) | | | \$ 4.14 | \$ 99,534 | | \$ 99,534 |
| | | Miscellaneous Materials (5%) | 1 | Lot | | | | \$ 99,187 |
| | | Freight / Tax | 12.5 | % | | | | \$ 264,933 |
| Pipe | n/a | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 0 | Feet | \$ - | \$ - | | \$ - |
| | | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | \$ - |
| Pressure Rating | n/a | lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | \$ - |
| | | FBE Coating (5/ft) | | | \$ - | \$ - | | \$ - |
| | | Miscellaneous Materials (5%) | 1 | Lot | | | | \$ - |
| | | Freight / Tax | 12.5 | % | | | | \$ - |
| Pipe | n/a | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 0 | Feet | \$ - | \$ - | | \$ - |
| | | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | \$ - |
| Pressure Rating | n/a | lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | \$ - |
| | | FBE Coating (5/ft) | | | \$ - | \$ - | | \$ - |
| | | Miscellaneous Materials (5%) | 1 | Lot | | | | \$ - |
| | | Freight / Tax | 12.5 | % | | | | \$ - |
| Casing | 20 | inch, .312 WT X-65 | 200 | Feet | \$ 76 | \$ 15,208 | | \$ 15,208 |
| | | Miscellaneous Materials (5%) | 1 | Lot | | | | \$ 760.40 |
| | | Freight / Tax | 12.5 | % | | | | \$ 1,996 |
| | | Total length | 4.6 | Miles | | | | |
| Total Material Cost | | | | | | | | \$ 2,402,400 |
| 2 CONSTRUCTION (See Appendix for construction type definitions) | | | | | | | | |
| 16 inch pipe | | | | | | | | |
| Pipe Install - Type 1 | | | 0 | Feet | | \$ 200 | \$ - | \$ - |
| Pipe Install - Type 2 | | | 15360 | Feet | | \$ 320 | \$ 4,915,200 | \$ 4,915,200 |
| Pipe Install - Type 3 | | | 4474 | Feet | | \$ 500 | \$ 2,237,000 | \$ 2,237,000 |
| Pipe Install - Type 4 | | | 550 | Feet | | \$ 750 | \$ 412,500 | \$ 412,500 |
| Pipe Install - Type 5 | | | 445 | Feet | | \$ 600 | \$ 267,000 | \$ 267,000 |
| Pipe Install - Type 6 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 7 | | | 3213 | Feet | | \$ 650 | \$ 2,088,450 | \$ 2,088,450 |
| n/a | | | | | | | | |
| Pipe Install - Type 1 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 2 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 3 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 4 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 5 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 6 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 7 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| n/a | | | | | | | | |
| Pipe Install - Type 1 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 2 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 3 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 4 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 5 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 7 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Pipe Install - Type 6 | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Tie-ins Crew Rates | | | 4 | Each | | \$ 35,000 | \$ 140,000 | \$ 140,000 |
| Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | | | 134276 | SCF | \$ 0.19 | \$ 25,512 | | \$ 25,512 |
| Purging Labor | | | 1 | LS | | \$ 25,000 | \$ 25,000 | \$ 25,000 |
| 95% Abandonment of Existing Pipeline (\$50/CY) | | | 1180 | CY | | \$ 95 | \$ 112,100 | \$ 112,100 |
| 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | | | 75 | % | | | | \$ 372,006 |
| Mobilization / Demobilization | | | 3 | Each | | \$ 30,000 | \$ 90,000 | \$ 90,000 |
| Contaminated Soil | | | 0 | CY | | \$ - | \$ - | \$ - |
| Asbestos Abatement | | | 0 | Feet | | \$ - | \$ - | \$ - |
| Radiographic Inspection | | | 68 | Days | \$ 150 | \$ 10,200 | \$ 600 | \$ 40,800 |
| Construction period | | | 76 | days | | | | |
| Total Construction Cost | | | | | | | | \$ 10,735,800 |
| 3 SCG LABOR / INSPECTION | | | | | | | | |
| Projects < \$1 million - company labor is 10% | | | 10 | % | | | \$ - | \$ - |
| \$1million <Projects < \$10 million - company labor is 5% | | | 5 | % | | | \$ - | \$ - |
| Projects >\$10 million - company labor is 2.5% | | | 2.5 | % | | | \$ 328,455 | \$ 328,455 |
| Total SCG Labor / Inspection Cost | | | | | | | | \$ 328,500 |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | | |
| Planning / Design / Eng / Coord / Procurement | | | 10 | % | | | \$ 1,313,820 | \$ 1,313,820 |
| Construction Stake, As-Built Survey (2 man crew) | | | 68 | Days | \$ 100 | \$ 6,800 | \$ 1,400 | \$ 95,200 |
| ROW Acquisition | | | 0 | LS | | | \$ - | \$ - |
| Construction Permits | | | 0 | LS | | | \$ - | \$ - |
| Environmental Permits | | | 0 | LS | | | \$ - | \$ - |
| Environmental Monitoring | | | 0 | LS | | | \$ - | \$ - |
| As-Built Drawings (\$2000+\$1/ft) | | | 1 | LS | | | \$ 26,042 | \$ 26,042 |
| Total Design / Engineering / Construction Cost | | | | | | | | \$ 1,441,900 |
| 5 CONTINGENCY | | | | | | | | |
| Projects < \$2 million - Contingency is 30% | | | 30 | % | | | \$ - | \$ - |
| Projects >\$2 million - Contingency is 20% | | | 20 | % | | | \$ 2,981,720 | \$ 2,981,720 |
| TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | | \$ 17,890,400 |

| Comments |
|---|
| Replaced segment pipe OD per Remediation Plan |
| Crossing RR |
| Rose Canyon Creek Crossing Bore under HWY 5 |

**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX**

| | |
|-----------------------|-----------|
| Company | SDG&E |
| Plant Category | Dist |
| Line Number | 49-32 |
| Diameter (in.) | 12.75, 16 |

| Replacement Mileage | | |
|----------------------------|--------------------|--------------|
| Category 4 Criteria | Accelerated | Total |
| 0.057 | - | 0.057 |

| Hydrotest Mileage | | |
|----------------------------|--------------------|--------------|
| Category 4 Criteria | Accelerated | Total |
| 0.198 | - | 0.198 |

Cost Detail

| Capital | | O&M | |
|-----------------------------|------------|-----------------------------|------|
| Direct Labor | \$ 30,300 | Direct Labor | \$ - |
| Direct Non Labor | \$ 448,400 | Direct Non Labor | \$ - |
| Total Direct Capital | \$ 478,700 | Total Direct O&M | \$ - |



**San Diego Gas & Electric
Pipeline Safety Enhancement Program - Workbook Supporting Chapter IX**

Existing Segments

| Category | Station | | Criteria Miles | Diameter | Action | Decision | | |
|----------|---------|---------|-------------------|----------|------------|----------|-----|---|
| | Start | Stop | | | | Tree | Box | Comments |
| Cat 1 | 0 | 1964 | 0.3720 | 12.75 | Keep As Is | | | |
| Cat 2 | 1964 | 7072.33 | 0.9675 | 16 | Keep As Is | | | |
| Cat 4 | 7072.33 | 7082.33 | 0.0019 | 16 | Replace | 2 | | Busy road, under interstate overpass. |
| Cat 4 | 7082.33 | 8127.33 | 0.1979 | 16 | Hydrotest | 4 | | Section to be tested is in bridge |
| Cat 4 | 8127.33 | 8171.33 | 0.0083 | 16 | Replace | 2 | | Dirt area, potential environmental issues |
| Cat 4 | 8171.33 | 8392 | 0.0418 | 16 | Replace | 2 | | Dirt area, potential environmental issues |

New Segments

| Station Start | Station Stop | Wall | | |
|------------------|-----------------|----------|-----------|-------|
| | | Diameter | Thickness | Grade |
| 7072.33 | 7082.33 | 16 | 0.312 | X-65 |
| 8127.33 | 8171.33 | 16 | 0.312 | X-65 |
| 8171.33 | 8392 | 16 | 0.312 | X-65 |

| ACTIVITY AND LOCATION: Line 49-32 | | SPECIFICATION NO. | | A/E FIRM NAME SP3C SERVICES | | SHEET Sheet 1 of 1 | | | |
|---|--|-----------------------|--------------|--------------------------------|-----------|-----------------------------|----------|-------------------|----------|
| PROJECT TITLE AND CLIENT: SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE | | ESTIMATED BY: SPEC | | DATE: July 11, 2011 | | SPEC Project Number 5057 | | | |
| DESCRIPTION | | QUANTITY | | MATERIAL COST | | LABOR COST | | TOTAL COST | Comments |
| | | NUMBER | UNIT | UNIT COST | TOTAL | UNIT COST | TOTAL | TOTAL | |
| INPUT IN ALL GREEN CELLS | | | | | | | | | |
| 1 MATERIALS | | | | | | | | | |
| 16 inch pipe | | | | | | | | | |
| | 16 inch, .312 WT X-65 | 275 | Feet | \$ 57 | \$ 15,774 | | | \$ 15,774 | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 5 | Each | \$ 3,339 | \$ 16,693 | | | \$ 16,693 | |
| | Pressure Rating 400 lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ 210,828 | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | | \$ 4.14 | \$ 1,139 | | | \$ 1,139 | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ 1,623 | |
| | Freight / Tax | 12.5 | % | | | | | \$ 4,404 | |
| n/a | | | | | | | | | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 4 | Each | \$ - | \$ - | | | \$ - | |
| | Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| n/a | | | | | | | | | |
| | Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet) | 0 | Feet | \$ - | \$ - | | | \$ - | |
| | Pressure Rating n/a lb Block Valve w/Electric Actuator (one per 4 miles) | 0 | Each | \$ - | \$ - | | | \$ - | |
| | FBE Coating (5/ft) | | | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| n/a | | | | | | | | | |
| | Casing | 0 | Feet | \$ - | \$ - | | | \$ - | |
| | Miscellaneous Materials (5%) | 1 | Lot | | | | | \$ - | |
| | Freight / Tax | 12.5 | % | | | | | \$ - | |
| | Total length | 0.1 | Miles | | | | | | |
| Total Material Cost | | | | | | | | \$ 38,700 | |
| 2 CONSTRUCTION (See Appendix for construction type definitions) | | | | | | | | | |
| 16 inch pipe | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | \$ 200 | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 44 | Feet | | \$ 320 | \$ 14,080 | \$ - | \$ 14,080 | |
| | Pipe Install - Type 3 | 231 | Feet | | \$ 500 | \$ 115,500 | \$ - | \$ 115,500 | |
| | Pipe Install - Type 4 | 0 | Feet | | \$ 750 | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | \$ 600 | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | \$ 650 | \$ - | \$ - | \$ - | |
| n/a | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| n/a | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| n/a | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| n/a | | | | | | | | | |
| | Pipe Install - Type 1 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 2 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 3 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 4 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 5 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 6 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| | Pipe Install - Type 7 | 0 | Feet | | \$ - | \$ - | \$ - | \$ - | |
| n/a | | | | | | | | | |
| | Tie-ins Crew Rates | 2 | Each | | \$ 35,000 | \$ 70,000 | | \$ 70,000 | |
| | Purging Volume of Nitrogen (to obtain 3 atm (44 psig) on line) | 1536 | SCF | \$ 0.19 | \$ 292 | | | \$ 292 | |
| | Purging Labor | 1 | LS | | \$ 25,000 | \$ 25,000 | | \$ 25,000 | |
| | 95% Abandonment of Existing Pipeline (\$50/CY) | 14 | CY | | \$ 95 | \$ 1,330 | | \$ 1,330 | |
| | 5% Removal of Existing Pipeline (75% of Construction Labor Cost) | 75 | % | | | | | \$ 4,859 | |
| | Mobilization / Demobilization | 1 | Each | | \$ 30,000 | \$ 30,000 | | \$ 30,000 | |
| | Contaminated Soil | 0 | CY | | \$ - | \$ - | | \$ - | |
| | Asbestos Abatement | 0 | Feet | | \$ - | \$ - | | \$ - | |
| | Radiographic Inspection | 2 | Days | \$ 150 | \$ 300 | \$ 600 | \$ 1,200 | \$ 1,500 | |
| | Construction period | 10 | days | | | | | | |
| Total Construction Cost | | | | | | | | \$ 262,600 | |
| 3 SCG LABOR / INSPECTION | | | | | | | | | |
| | Projects < \$1 million - company labor is 10% | 10 | % | | | \$ 30,230 | | \$ 30,230 | |
| | \$1million <Projects < \$10 million - company labor is 5% | 5 | % | | | \$ - | | \$ - | |
| | Projects >\$10 million - company labor is 2.5% | 2.5 | % | | | \$ - | | \$ - | |
| Total SCG Labor / Inspection Cost | | | | | | | | \$ 30,300 | |
| 4 DESIGN / ENG. / CONST / ENVIRON. | | | | | | | | | |
| | Planning / Design / Eng / Coord / Procurement | 10 | % | | | \$ 30,230 | | \$ 30,230 | |
| | Construction Stake, As-Built Survey (2 man crew) | 2 | Days | \$ 100 | \$ 200 | \$ 1,400 | \$ 2,800 | \$ 3,000 | |
| | ROW Acquisition | 0 | LS | | | \$ - | | \$ - | |
| | Construction Permits | 0 | LS | | | \$ - | | \$ - | |
| | Environmental Permits | 0 | LS | | | \$ - | | \$ - | |
| | Environmental Monitoring | 0 | LS | | | \$ - | | \$ - | |
| | As-Built Drawings (\$2000+\$1/ft) | 1 | LS | | | \$ 2,275 | | \$ 2,275 | |
| Total Design / Engineering / Construction Cost | | | | | | | | \$ 35,600 | |
| 5 CONTINGENCY | | | | | | | | | |
| | Projects < \$2 million - Contingency is 30% | 30 | % | | | \$ 110,460 | | \$ 110,460 | |
| | Projects>\$2 million - Contingency is 20% | 20 | % | | | \$ - | | \$ - | |
| TOTAL PROJECT COST (See Appendix for assumptions/clarifications) | | | | | | | | \$ 478,700 | |

San Diego Gas & Electric
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Company SDG&E
 Plant Category Dist

Summary of remaining pipelines

| Line Number | Replacement Mileage | | | Capital Cost Detail | | |
|-------------|------------------------|-------------|-------|---------------------|---------------------|-------------------------|
| | Category 4 Criteria | Accelerated | Total | Direct Labor | Direct Non Labor | Total Direct Capital |
| 49-20 | 0.038 | - | 0.038 | \$ - | \$ - | \$ - |