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
49-13	WP-IX-1-D4	49-18	WP-IX-1-D26	49-26	WP-IX-1-D38
49-14	WP-IX-1-D7	49-19	WP-IX-1-D30	49-27	WP-IX-1-D42
49-15	WP-IX-1-D10	49-20	WP-IX-1-D53	49-28	WP-IX-1-D45
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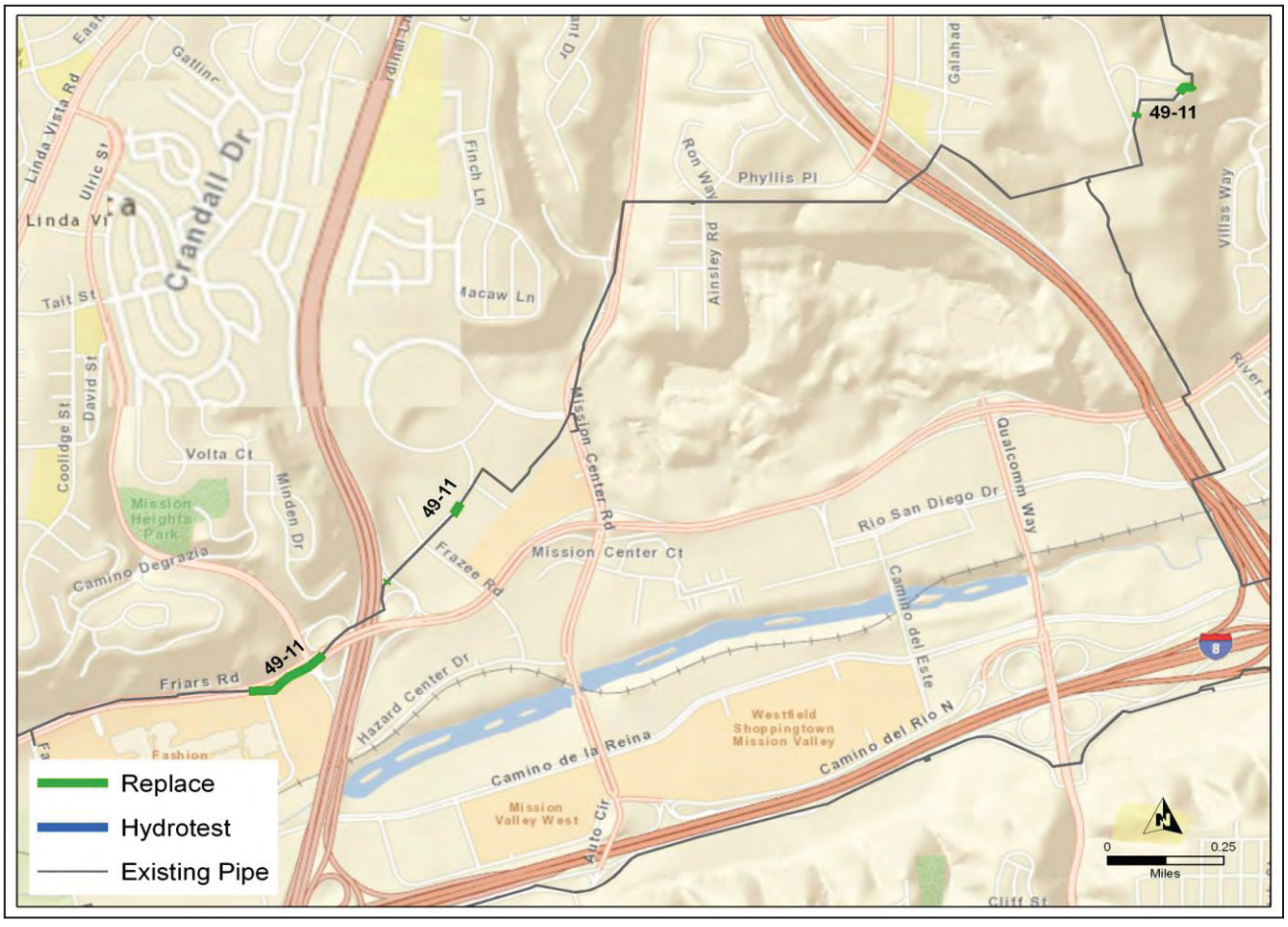
Company	SDG&E
Plant Category	Dist
Line Number	49-11
Diameter (in.)	20

Replacement Mileage

Category 4 Criteria	Accelerated	Total
0.344	-	0.344

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**	$	-



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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	336670	0.0534	20	Keep As Is		
Cat 1	336670	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		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		August 12, 2011
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
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 ($/ft)		$	$ 5.32	$ 5,389			$ 5,389	
Miscellaneous Materials (5%)	1	Lot					$ 6,123	
Freight / Tax	12.5	%					$ 16,746	
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 ($/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 ($/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	**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	%				$ -	$ -	
$1million <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**	

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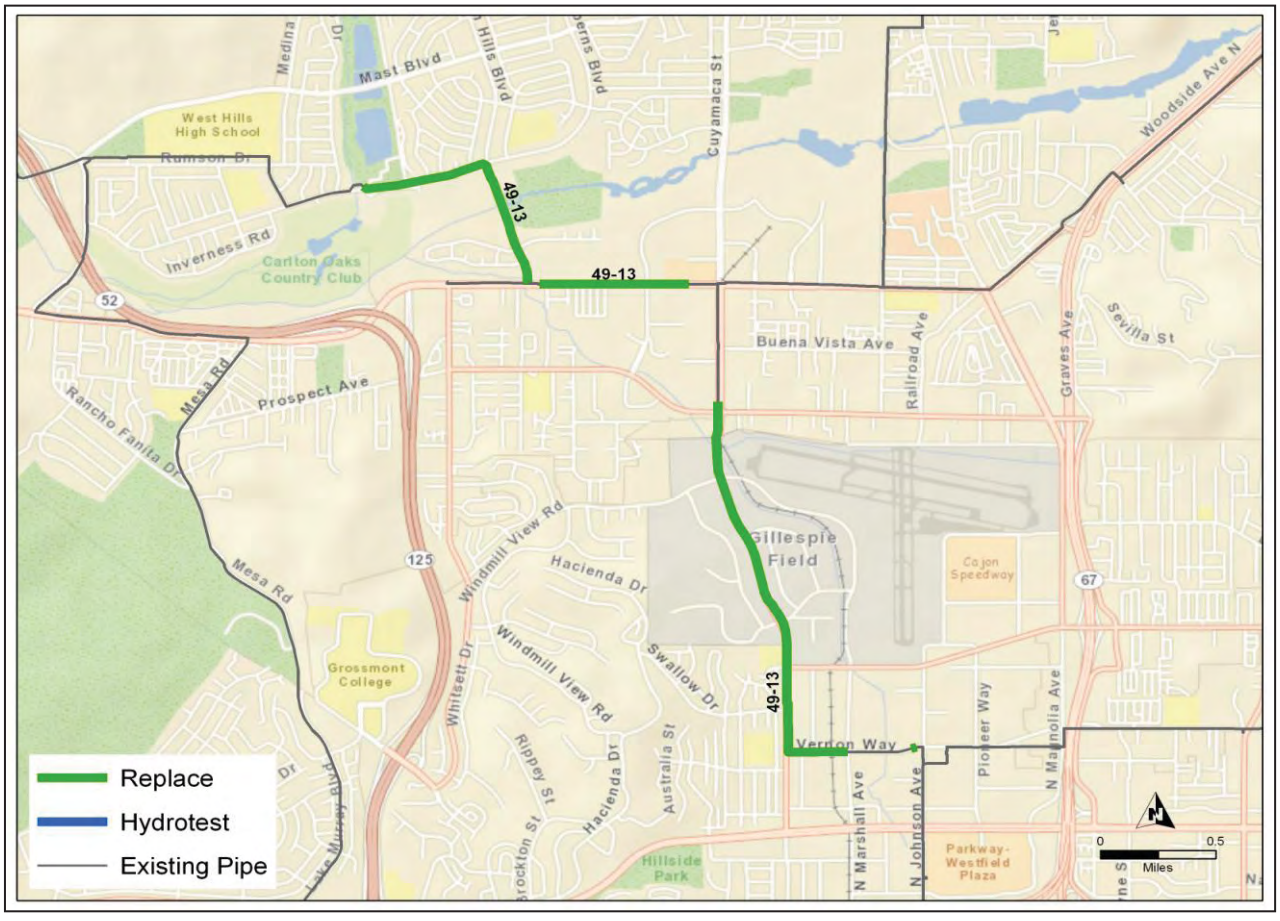
Company	SDG&E
Plant Category	Dist
Line Number	49-13
Diameter (in.)	10.75, 12.75

Replacement Mileage

Category 4 Criteria	Accelerated	Total
3.464	-	3.464

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**	$	-



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Existing Segments

Category	Station Start	Station Stop	Criteria Miles	Diameter	Action	Decision Tree Box	Comments
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 riverbead, enviromental 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
0	2463	12	0.375	X-52	Regulator station ball valve inlet tap
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:	SPECIFICATION NO.	A-E FIRM NAME	SHEET
Line 49-13		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		July 12, 2011
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
INPUT IN ALL GREEN CELLS								
1 MATERIALS								
Pipe 12 inch, STD. WT X-52	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 ($/ft)		$	$ 3.26	$ 8,029			$ 8,029	
Miscellaneous Materials (5%)	1	Lot					$ 6,645	
Freight / Tax	12.5	%					$ 18,446	
Pipe 10 inch, STD. WT X-52	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 ($/ft)		$	$ 2.86	$ 42,214			$ 42,214	
Miscellaneous Materials (5%)	1	Lot					$ 31,143	
Freight / Tax	12.5	%					$ 87,028	
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 ($/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			$ -	$ -	$ -	
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	%				$ -	$ -	
$1million <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**	

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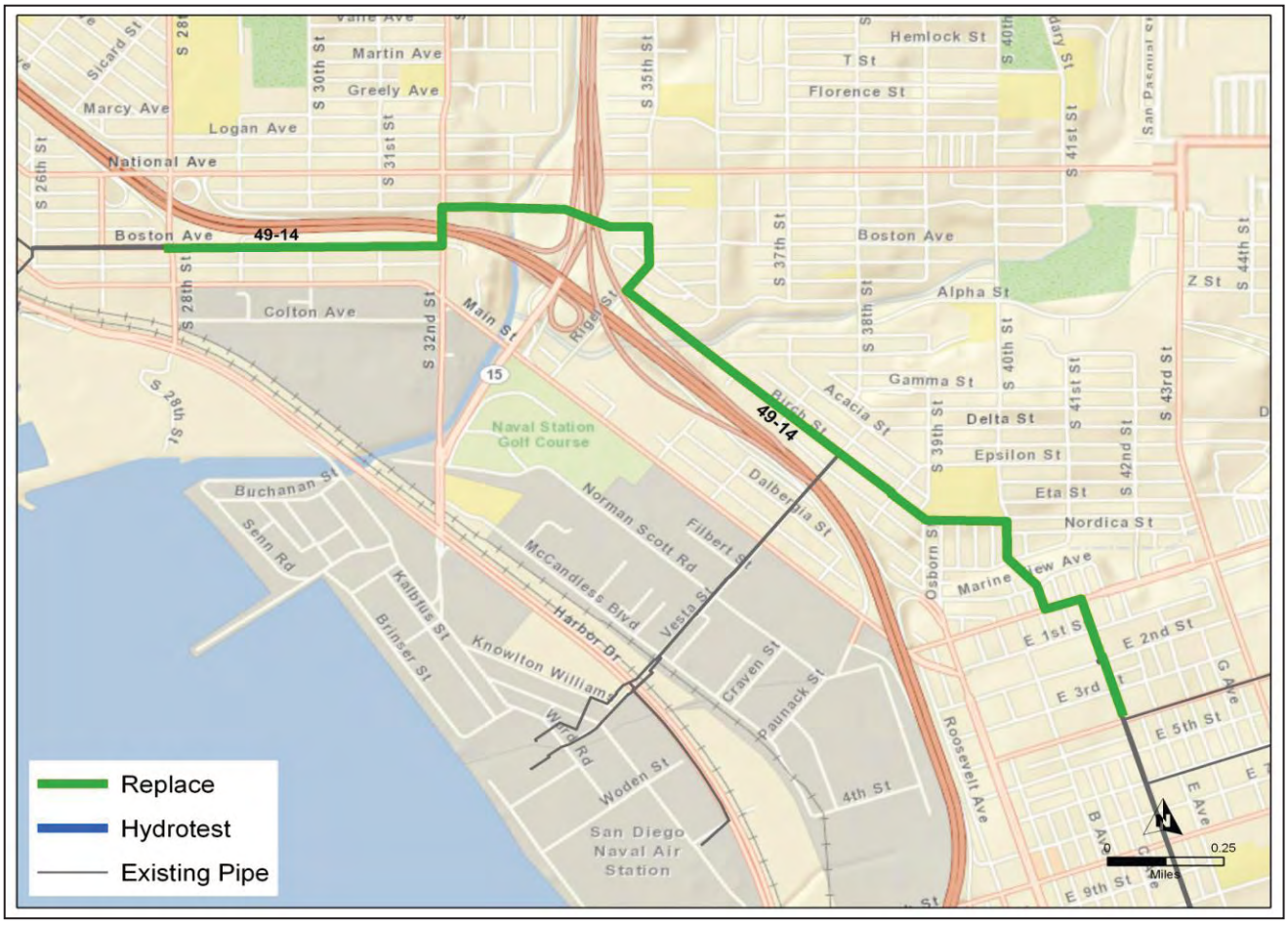
Company	SDG&E
Plant Category	Dist
Line Number	49-14
Diameter (in.)	10.75 16

Replacement Mileage

Category 4 Criteria	Accelerated	Total
0.316	2.134	2.450

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**	$	-



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Existing Segments

Category	Station Start	Station Stop	Criteria Miles	Diameter	Action	Decision 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 Enviromentally Sensitive Area
Cat 1	10302	12935	0.4987	16	Replace		

New Segments

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

ACTIVITY AND LOCATION:	SPECIFICATION NO.	A-E FIRM NAME	SHEET
Line 49-14		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		August 12, 2011
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
INPUT IN ALL GREEN CELLS								
1 MATERIALS								
Pipe 16 inch, .312 WT X-65	11362	Feet	$ 57	$ 651,724			$ 651,724	
Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet)	49	Each	$ 3,339	$ 163,595			$ 163,595	
Pressure Rating 300 lb Block Valve w/Electric Actuator (one per 4 miles)	0	Each	$ 94,320	$ -			$ -	
FBE Coating ($/ft)		$	$ 4.14	$ 47,039			$ 47,039	
Miscellaneous Materials (5%)	1	Lot					$ 40,766	
Freight / Tax	12.5	%					$ 112,890	
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 ($/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 ($/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	**2.2**	**Miles**						
Total Material Cost							**$ 1,034,000**	
2 CONSTRUCTION (See Appendix for construction type definitions)								
16 inch pipe								
Pipe Install - Type 1	0	Feet			$ 200	$ -	$ -	
Pipe Install - Type 2	11162	Feet			$ 320	$ 3,571,840	$ 3,571,840	
Pipe Install - Type 3	0	Feet			$ 500	$ -	$ -	
Pipe Install - Type 4	0	Feet			$ 750	$ -	$ -	
Pipe Install - Type 5	0	Feet			$ 600	$ -	$ -	Bridge Crossing Conduit, crosses Chollas Creek
Pipe Install - Type 6	200	Feet			$ 1,000	$ 200,000	$ 200,000	
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 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 pisg) on line]	63460	SCF	$ 0.19	$ 12,057			$ 12,057	
Purging Labor	1	LS			$ 25,000	$ 25,000	$ 25,000	
95% Abandonment of Existing Pipeline ($50/CY)	558	CY			$ 95	$ 53,010	$ 53,010	
5% Removal of Existing Pipeline (75% of Construction Labor Cost)	75	%					$ 141,444	
Mobilization / Demobilization	1	Each			$ 30,000	$ 30,000	$ 30,000	
					$ -	$ -	$ -	
Contaminated Soil	0	CY			$ -	$ -	$ -	
Asbestos Abatement	0	Feet			$ -	$ -	$ -	
Radiographic Inspection	26	Days	$ 150	$ 3,900	$ 600	$ 15,600	$ 19,500	
Construction period	**34**	**days**						
Total Construction Cost							**$ 4,087,900**	
3 SCG LABOR / INSPECTION Projects < $1 million - company labor is 10%	10	%				$ -	$ -	
$1million <Projects < $10 million - company labor is 5%	5	%				$ 256,095	$ 256,095	
Projects >$10 million - company labor is 2.5%	2.5	%				$ -	$ -	
Total SCG Labor / Inspection Cost							**$ 256,100**	
4 DESIGN / ENG. / CONST. / ENVIRON.								
Planning / Design / Eng / Coord / Procurement	10	%				$ 512,190	$ 512,190	
Construction Stake, As-Built Survey (2 man crew)	26	Days	$ 100	$ 2,600	$ 1,400	$ 36,400	$ 39,000	
ROW Acquisition	0	LS				$ -	$ -	
Construction Permits	0	LS				$ -	$ -	
Environmental Permits	0	LS				$ -	$ -	
Environmental Monitoring	0	LS						
As-Built Drawings ($2000+$1/ft)	1	LS				$ 13,362	$ 13,362	
Total Design / Engineering / Construction Cost							**$ 564,600**	
5 CONTINGENCY								
Projects < $2 million - Contingency is 30%	30	%				$ -	$ -	
Projects>$2 million - Contingency is 20%	20	%				$ 1,188,520	$ 1,188,520	
TOTAL PROJECT COST (See Appendix for assumptions/clarifications)							**$ 7,131,200**	

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

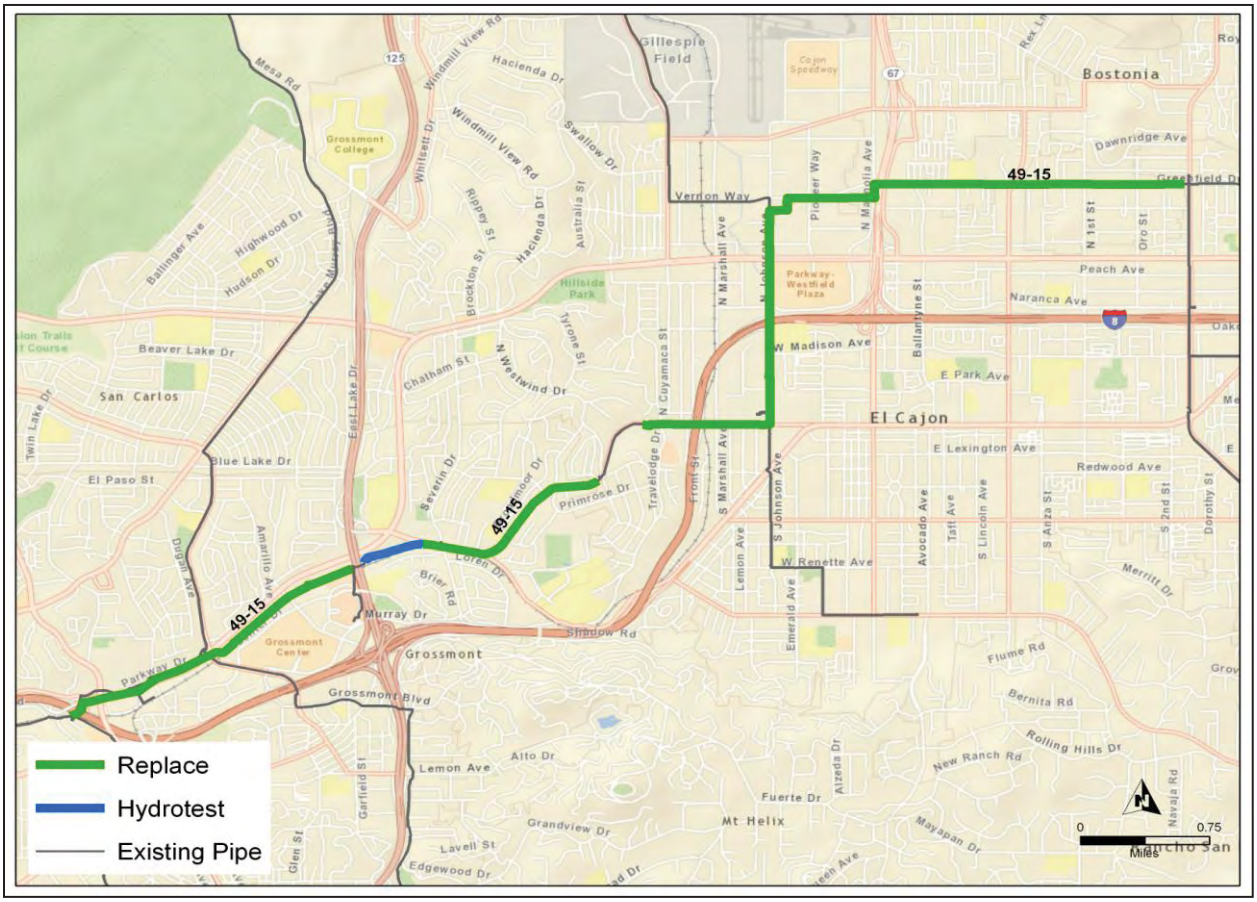
Category 4 Criteria	Accelerated	Total
1.978	4.626	6.604

Hydrotest Mileage

Category 4 Criteria	Accelerated	Total
-	0.306	0.306

Cost Detail

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



Existing Segments

Category	Station Start	Station Stop	Criteria Miles	Diameter	Action	Decision Tree Box	Comments
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		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		August 12, 2011
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
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 (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 ($/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 (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 ($/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 ($/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	$ 372,815	
Total SCG Labor / Inspection Cost							**$ 372,900**	
4 DESIGN / ENG. / CONST./ ENVIRON.								
Planning / Design / Eng / Coord / Procurement	10	%				$ 1,491,260	$ 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+$1/ft)	1	LS				$ 36,119	$ 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	$ 3,389,880	
TOTAL PROJECT COST (See Appendix for assumptions/clarifications)							**$ 20,339,300**	

ACTIVITY AND LOCATION:	SPECIFICATION NO.	A-E FIRM NAME	SHEET
Line 49-15		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SOUTHERN CALIFORNIA GAS COMPANY	SPEC Services, Inc.		July 29, 2011
PIPE HYDROTEST COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION				QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
		INPUT IN ALL BLUE CELLS									
1 MATERIALS											
Pipe	10.75	Actual OD (in)	Water Volume:	167	bbl / OD						
	0.219	Wall Thickness (in)	Baker Tank Volume:	167	bbl / Segment						
	1614	Length (Ft)									
Hydrotest Test Segment	1	QTY									
Pipe	n/a	Actual OD (in)	Water Volume:	0	bbl / OD						
	0.000	Wall Thickness (in)	Baker Tank Volume:	0	bbl / Segment						
	0	Length (Ft)									
Hydrotest Test Segment	0	QTY									
Pipe	n/a	Actual OD (in)	Water Volume:	0	bbl / OD						
	0.000	Wall Thickness (in)	Baker Tank Volume:	0	bbl / Segment						
	0	Length (Ft)									
Hydrotest Test Segment	0	QTY									
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) =Y=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		1	day(s)	$ 5,000	$ 5,000			$ 5,000	
		Treated Water Disposal ($55/bbl)		167	bbl	$ 55	$ 9,169			$ 9,169	
		Miscellaneous Materials		5	%		$ 3,301			$ 3,301	
SCG Post Estimate Changes											
Additional Baker Tanks:	0	QTY									
Additional Test Segments: (due to elevation changes)	0	QTY									
		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	
		Test/Construction period (5 days per test segment+ Hydrotest Labor+ Disposal Time) =Z		**7**	**day(s)**						
		Total Construction Cost								**$ 77,000**	
3 SCG LABOR / INSPECTION		Projects < $1 million - company labor is 10%		10	%				$ 7,700	$ 7,700	
		$1million < 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/clarifications)								**$ 210,000**	

WP-IX-1-D15

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

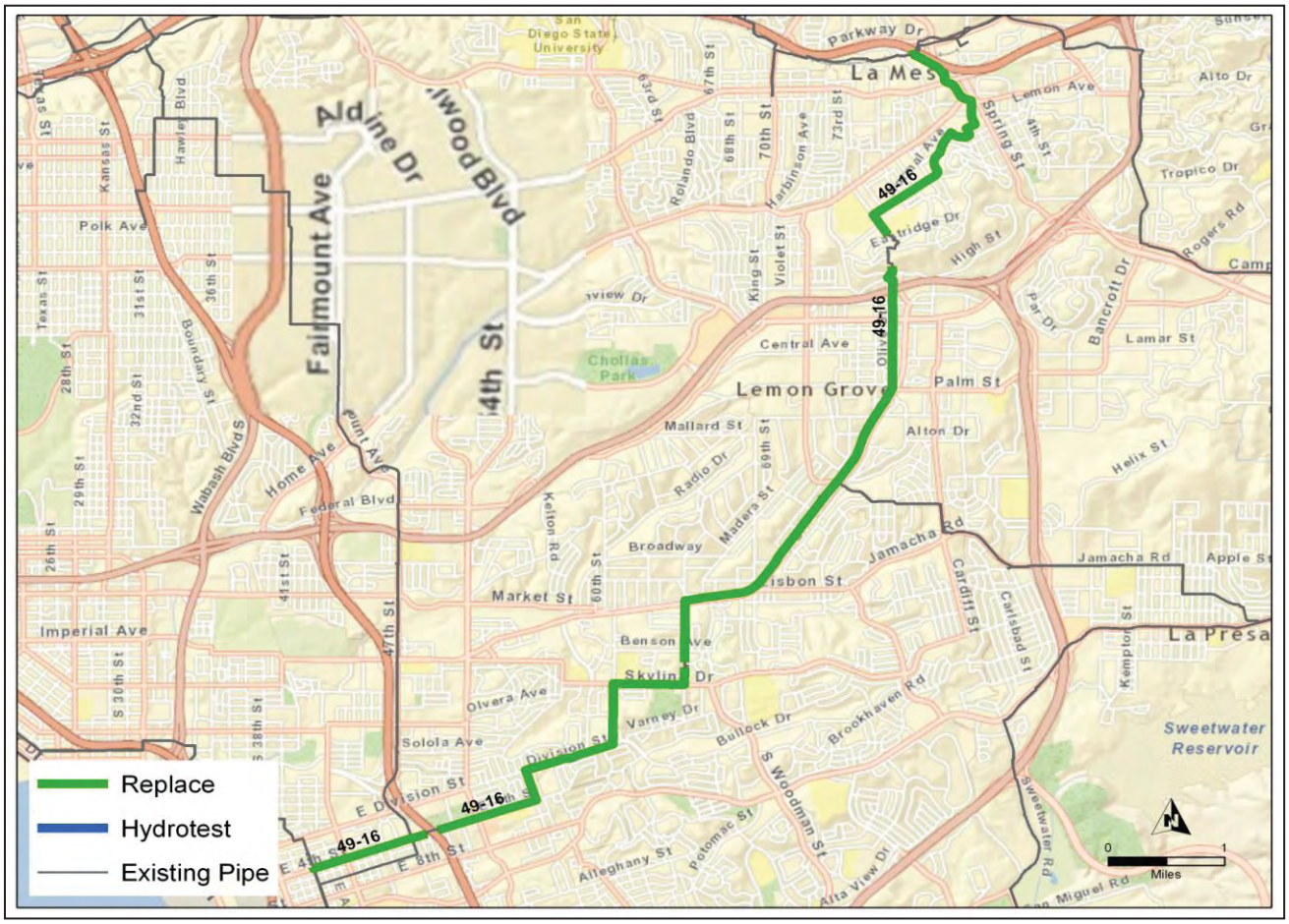
Company	SDG&E
Plant Category	Dist
Line Number	49-16
Diameter (in.)	12.75, 16

Replacement Mileage

Category 4 Criteria	Accelerated	Total
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**	$	-



Existing Segments

Category	Station Start	Station Stop	Criteria Miles	Diameter	Action	Decision 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	12 inch in 16-inch conduit Caltrans R/w
Cat 4	51691.88	51940.58	0.0471	12.75	Replace	2	12 inch in 16-inch conduit Caltrans R/w
Cat 2	51940.58	52415.58	0.0900	16	Replace		Very Busy area Night work
Cat 4	52415.58	53576.58	0.2199	16	Replace	2	Very Busy area Night work
Cat 4	53576.58	53592	0.0029	16	Replace	2	

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		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		July 12, 2011
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
INPUT IN ALL GREEN CELLS								
1 MATERIALS								Replaced segments pipe OD per Remediation Plan
Pipe 16 inch, .312 WT X-65	50635	Feet	$ 57	$ 2,904,424			$ 2,904,424	
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 ($/ft)		$	$ 4.14	$ 209,629			$ 209,629	
Miscellaneous Materials (5%)	1	Lot					$ 189,041	
Freight / Tax	12.5	%					$ 522,438	
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 ($/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 ($/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	Steep Slope Hard digging
Pipe Install - Type 7	3206	Feet			$ 650	$ 2,083,900	$ 2,083,900	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	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**	

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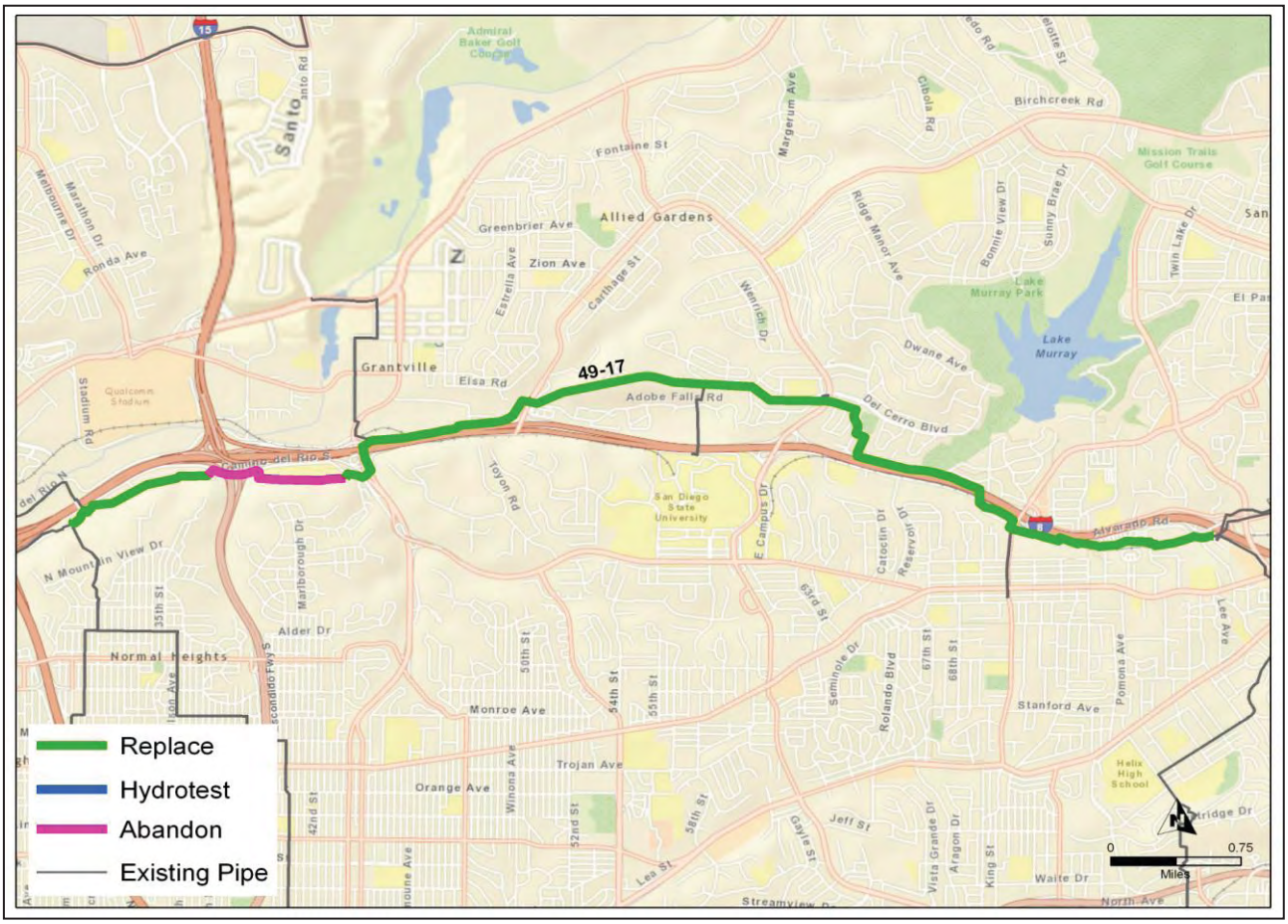
Company	SDG&E
Plant Category	Dist
Line Number	49-17
Diameter (in.)	16

Replacement Mileage

Category 4 Criteria	Accelerated	Total
5.259	0.553	5.812

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**	$	-



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Existing Segments

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

ACTIVITY AND LOCATION:	SPECIFICATION NO.	A-E FIRM NAME	SHEET
Line 49-17		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		July 11, 2011
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
INPUT IN ALL GREEN CELLS								
1 MATERIALS								
Pipe 16 inch, .312 WT X-65	30685	Feet	$ 57	$ 1,760,092			$ 1,760,092	
Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet)	126	Each	$ 3,339	$ 420,672			$ 420,672	
Pressure Rating 300 lb Block Valve w/Electric Actuator (one per 4 miles)	1	Each	$ 94,320	$ 94,320			$ 94,320	
FBE Coating ($/ft)		$	$ 4.14	$ 127,036			$ 127,036	
Miscellaneous Materials (5%)	1	Lot					$ 113,754	
Freight / Tax	12.5	%					$ 314,484	
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 ($/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 ($/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	**5.8**	**Miles**						
Total Material Cost							**$ 2,830,400**	
2 CONSTRUCTION (See Appendix for construction type definitions)								
16 inch pipe								
Pipe Install - Type 1	0	Feet			$ 200	$ -	$ -	
Pipe Install - Type 2	26764	Feet			$ 320	$ 8,564,480	$ 8,564,480	
Pipe Install - Type 3	0	Feet			$ 500	$ -	$ -	
Pipe Install - Type 4	0	Feet			$ 750	$ -	$ -	
Pipe Install - Type 5	608	Feet			$ 600	$ 364,800	$ 364,800	Crossing Hwy 8 twice
Pipe Install - Type 6	300	Feet			$ 800	$ 240,000	$ 240,000	Large Culvert Crossing Steep
Pipe Install - Type 7	3013	Feet			$ 650	$ 1,958,450	$ 1,958,450	Slop
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]	171380	SCF	$ 0.19	$ 32,562			$ 32,562	
Purging Labor	1	LS			$ 25,000	$ 25,000	$ 25,000	
95% Abandonment of Existing Pipeline ($50/CY)	1506	CY			$ 95	$ 143,070	$ 143,070	
5% Removal of Existing Pipeline (75% of Construction Labor Cost)	75	%					$ 417,290	
Mobilization / Demobilization	1	Each			$ 30,000	$ 30,000	$ 30,000	
		--			$ -	$ -	$ -	
Contaminated Soil	0	CY			$ -	$ -	$ -	
Asbestos Abatement	0	Feet			$ -	$ -	$ -	
Radiographic Inspection	74	Days	$ 150	$ 11,100	$ 600	$ 44,400	$ 55,500	
Construction period	**82**	**days**						
Total Construction Cost							**$ 11,866,200**	
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	%				$ 367,415	$ 367,415	
Total SCG Labor / Inspection Cost							**$ 367,500**	
4 DESIGN / ENG. / CONST./ ENVIRON.								
Planning / Design / Eng / Coord / Procurement	10	%				$ 1,469,660	$ 1,469,660	
Construction Stake, As-Built Survey (2 man crew)	74	Days	$ 100	$ 7,400	$ 1,400	$ 103,600	$ 111,000	
ROW Acquisition	0	LS				$ -	$ -	
Construction Permits	0	LS				$ -	$ -	
Environmental Permits	0	LS				$ -	$ -	
Environmental Monitoring	0	LS						
As-Built Drawings ($2000+$1/ft)	1	LS				$ 32,685	$ 32,685	
Total Design / Engineering / Construction Cost							**$ 1,613,400**	
5 CONTINGENCY								
Projects < $2 million - Contingency is 30%	30	%				$ -	$ -	
Projects>$2 million - Contingency is 20%	20	%				$ 3,335,500	$ 3,335,500	
TOTAL PROJECT COST (See Appendix for assumptions/clarifications)							**$ 20,013,000**	

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

Replacement Mileage

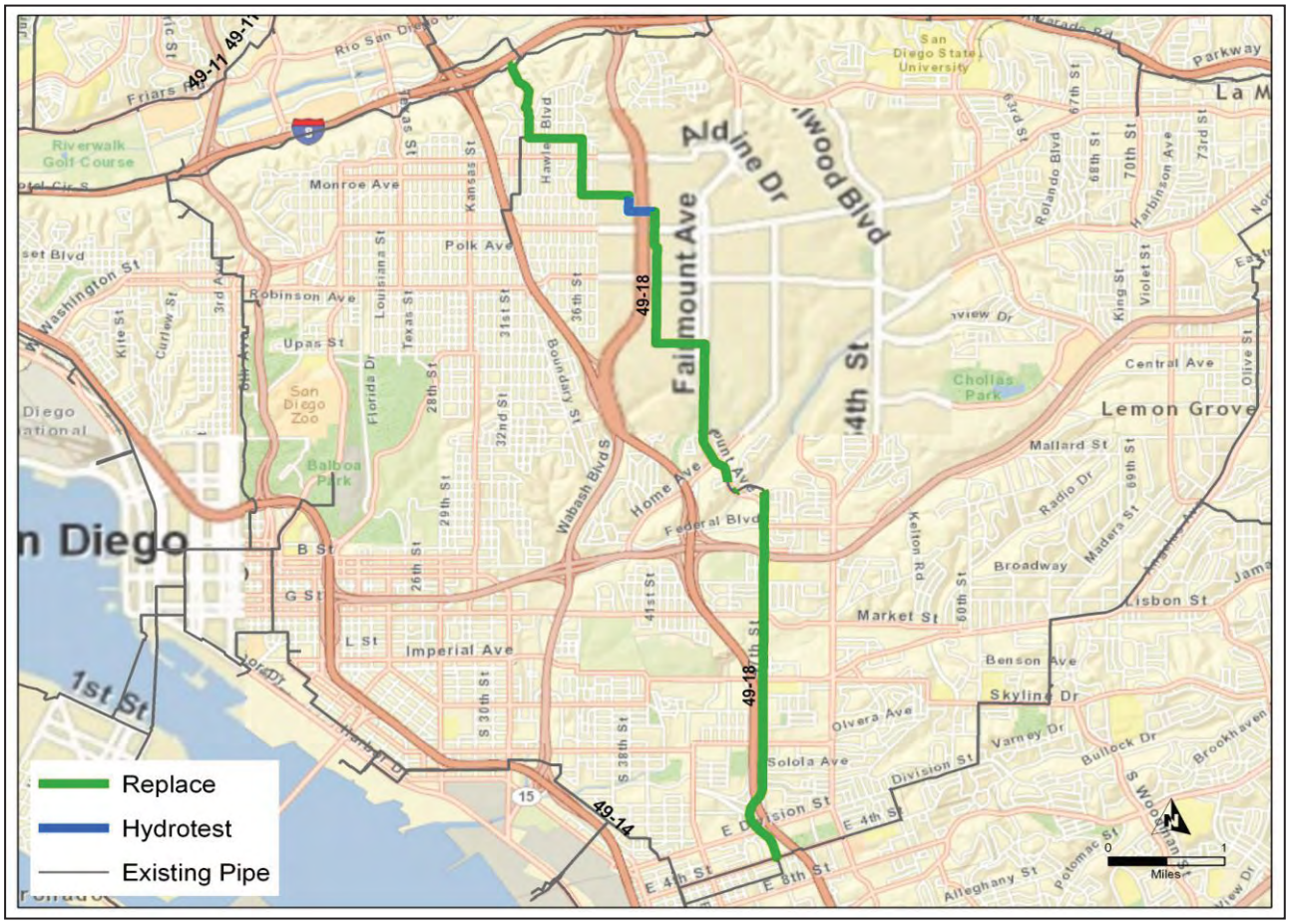
Category 4 Criteria	Accelerated	Total
7.197	0.115	7.312

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**	$	-



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	
Cat 4	23039	24548	0.2858	20	Replace	2
Cat 1	24548	25112	0.1068	20	Keep As Is	
Cat 4	25112	25245	0.0252	20	Replace	2
Cat 2	25245	26496	0.2369	20	Keep As Is	
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	

Comments

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

Caltrans ROW, I-805 Undercrossing

ng pipe test at 500 psig

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

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
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 ($/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 ($/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 ($/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**	

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Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

Company	SDG&E
Plant Category	Dist
Line Number	49-19
Diameter (in.)	16

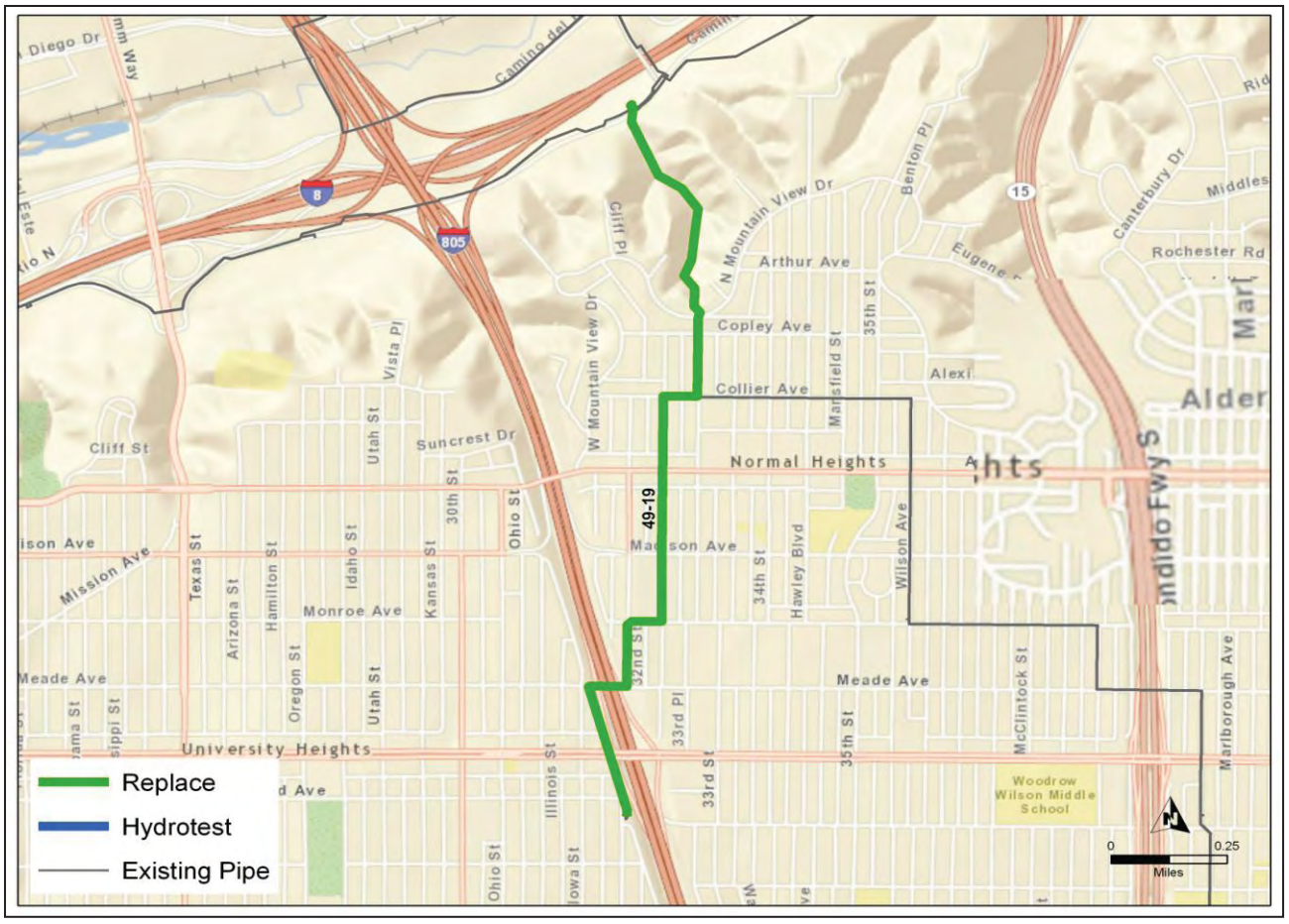
Replacement Mileage

Category 4 Criteria	Accelerated	Total
1.306	0.357	1.663

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.*



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Existing Segments

Category	Station Start	Station Stop	Criteria Miles	Diameter	Action	Decision 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
0	7056.94	16	0.312	X-65	
7056.94	8782.94	16	0.312	X-65	

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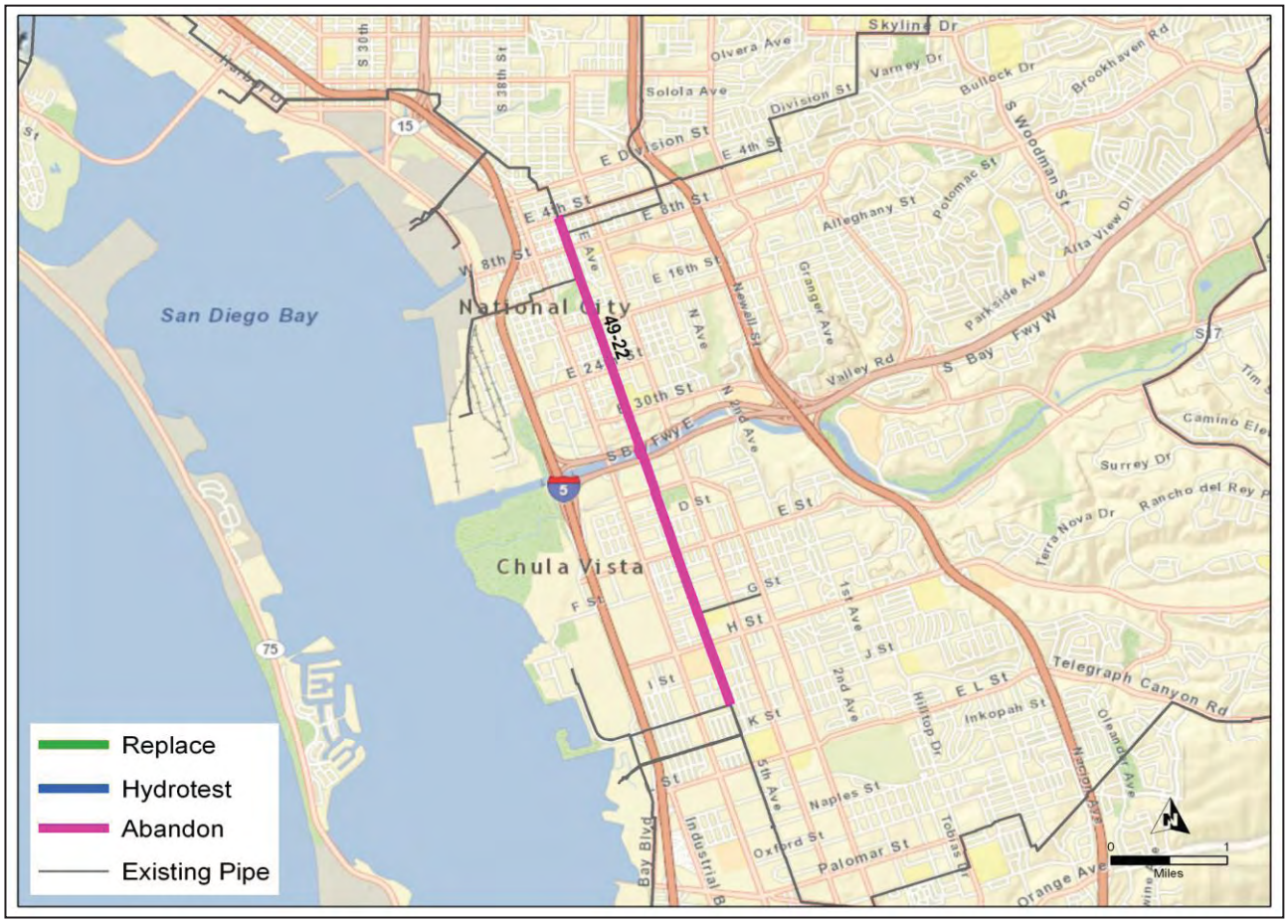
Company	SDG&E
Plant Category	Dist
Line Number	49-22
Diameter (in.)	10.75, 16

Abandonment Mileage

Category 4 Criteria	Accelerated	Total
3.913	0.124	4.037

Cost Detail

Capital			**O&M**		
Direct Labor	$	-	**Direct Labor**	$	-
Direct Non Labor	$	-	**Direct Non Labor**	$	-
Total Direct Capital	$	-	**Total Direct O&M**	$	-



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Existing Segments

Category	Station Start	Station Stop	Criteria Miles	Diameter	Action	Decision 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

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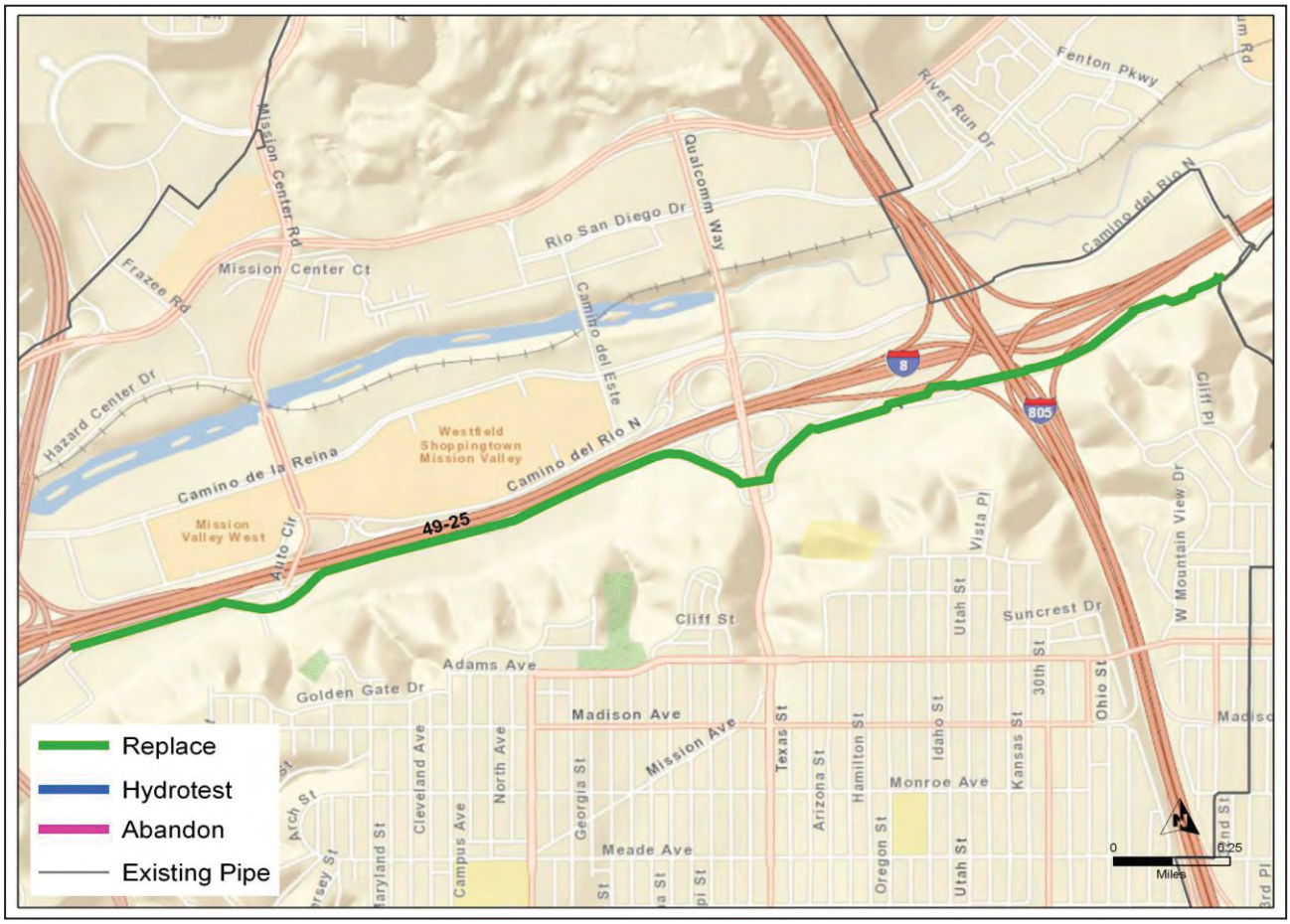
Company	SDG&E
Plant Category	Dist
Line Number	49-25
Diameter (in.)	16

Replacement Mileage

Category 4 Criteria	Accelerated	Total
1.566	0.712	2.278

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**	$	-



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Existing Segments

Category	Station Start	Station Stop	Criteria Miles	Diameter	Action	Decision 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		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		July 11, 2011
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
INPUT IN ALL GREEN CELLS								
1 MATERIALS								Replaced Segment pipe OD per Remediation Plan
Pipe 12 inch, STD. WT X-52	12024	Feet	$ 44	$ 532,423			$ 532,423	
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 ($/ft)		$	$ 3.26	$ 39,198			$ 39,198	
Miscellaneous Materials (5%)	1	Lot					$ 31,388	
Freight / Tax	12.5	%					$ 87,293	
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 ($/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 ($/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	**2.3**	**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	%				$ -	$ -	
$1million <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**	

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Pipeline Safety Enhancement Program - Workpaper Supporting Chapter IX

Company	SDG&E
Plant Category	Dist
Line Number	49-26
Diameter (in.)	12.75

Replacement Mileage

Category 4 Criteria	Accelerated	Total
2.396	0.219	2.615

Cost Detail

Capital		**O&M**	
Direct Labor	$ 344,200	**Direct Labor**	$ -
Direct Non Labor	$ 9,247,000	**Direct Non Labor**	$ -
Total Direct Capital	$ 9,591,200	**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	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		
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		
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			Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		October 5, 2011 Rev. 1
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
INPUT IN ALL GREEN CELLS								
1 MATERIALS								
Pipe 12 inch, STD. WT X-52	13782	Feet	$ 44	$ 610,267			$ 610,267	
Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet)	59	Each	$ 1,833	$ 108,167			$ 108,167	
Pressure Rating ## lb Block Valve w/Electric Actuator (one per 4 miles)	0	Each	$ 36,010	$ -			$ -	
FBE Coating ($/ft)		$	$ 3.26	$ 44,929			$ 44,929	
Miscellaneous Materials (5%)	1	Lot					$ 35,922	
Freight / Tax	12.5	%					$ 99,911	
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 ($/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 ($/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							**$ 899,200**	
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	5558	Feet			$ 585	$ 3,251,430	$ 3,251,430	
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]	43300	SCF	$ 0.19	$ 8,227			$ 8,227	
Purging Labor	1	LS			$ 25,000	$ 25,000	$ 25,000	
95% Abandonment of Existing Pipeline ($50/CY)	381	CY			$ 95	$ 36,195	$ 36,195	
5% Removal of Existing Pipeline (75% of Construction Labor Cost)	75	%					$ 210,666	
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							**$ 5,983,600**	
3 SCG LABOR / INSPECTION Projects < $1 million - company labor is 10%	10	%				$ -	$ -	
$1million < Projects < $10 million - company labor is 5%	5	%				$ 344,140	$ 344,140	
Projects > $10 million - company labor is 2.5%	2.5	%				$ -	$ -	
Total SCG Labor / Inspection Cost							**$ 344,200**	
4 DESIGN / ENG. / CONST / ENVIRON.								
Planning / Design / Eng / Coord / Procurement	10	%				$ 688,280	$ 688,280	
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				$ 15,782	$ 15,782	
Total Design / Engineering / Construction Cost							**$ 765,600**	
5 CONTINGENCY								
Projects < $2 million - Contingency is 30%	30	%				$ -	$ -	
Projects>$2 million - Contingency is 20%	20	%				$ 1,598,520	$ 1,598,520	
TOTAL PROJECT COST (See Appendix for assumptions/clarifications)							**$ 9,591,200**	

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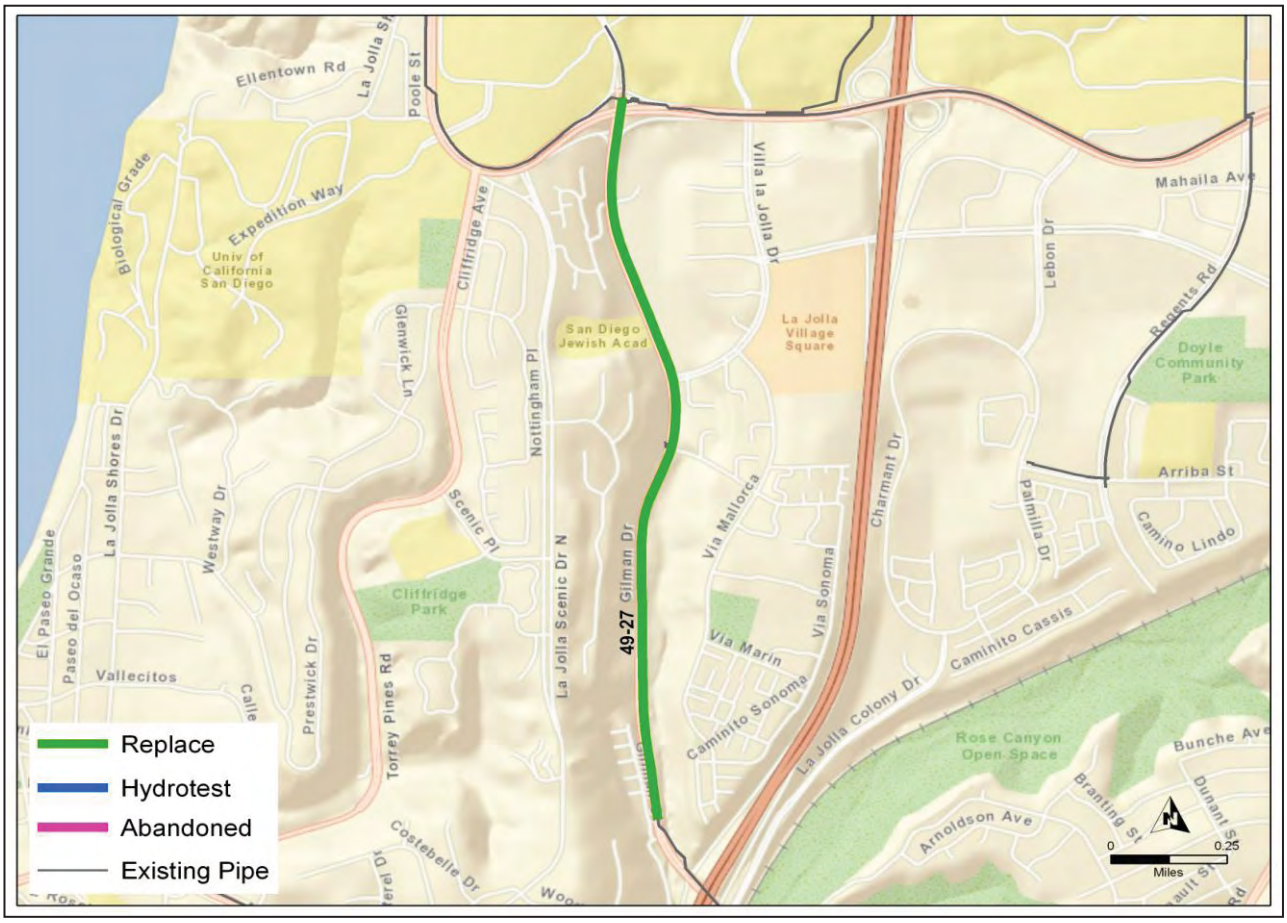
Company	SDG&E
Plant Category	Dist
Line Number	49-27
Diameter (in.)	16, 12.75

Replacement Mileage

Category 4 Criteria	Accelerated	Total
1.439	0.002	1.442

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**	$	-



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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, enterance 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		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		July 12, 2011
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
INPUT IN ALL GREEN CELLS								
1 MATERIALS								Replaced Segment Pipe OD Per Remediatiion Plan
Pipe 16 inch, .312 WT X-65	7612	Feet	$ 57	$ 436,624			$ 436,624	
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 ($/ft)		$	$ 4.14	$ 31,514			$ 31,514	
Miscellaneous Materials (5%)	1	Lot					$ 27,507	
Freight / Tax	12.5	%					$ 76,145	
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 ($/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 ($/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	%				$ -	$ -	
$1million <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**	

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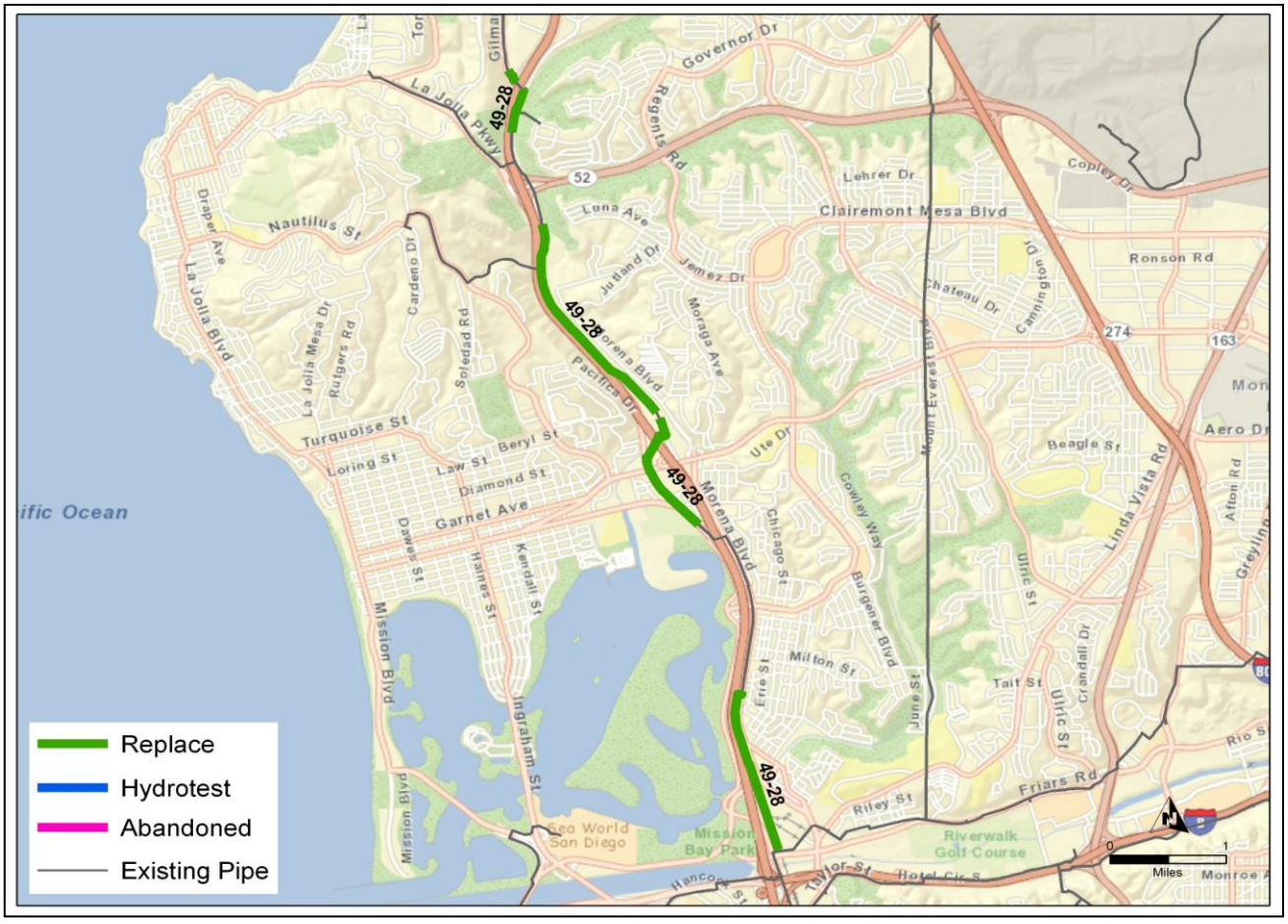
Company	SDG&E
Plant Category	Dist
Line Number	49-28
Diameter (in.)	8.625, 12.75, 16

Replacement Mileage

Category 4 Criteria	Accelerated	Total
1.796	3.099	4.895

Cost Detail

Capital			**O&M**		
Direct Labor	$	328,000	**Direct Labor**	$	-
Direct Non Labor	$	17,535,100	**Direct Non Labor**	$	-
Total Direct Capital	$	17,863,100	**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	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 uttilities 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: Line 49-28	SPECIFICATION NO.	A-E FIRM NAME	SHEET Sheet 1 of 1
PROJECT TITLE AND CLIENT: SAN DIEGO GAS & ELECTRIC PIPE REPLACEMENT COST ESTIMATE	ESTIMATED BY: SPEC		DATE: October 5, 2011 Rev.1
	STATUS OF DESIGN Conceptual		SPEC Project Number 5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
INPUT IN ALL GREEN CELLS								
1 MATERIALS								
Pipe 16 inch, .312 WT X-65	24008	Feet	$ 57	$ 1,377,099			$ 1,377,099	Replaced segment pipe OD per Remediation Plan
Bends, 3R-Forged (minimum of 4, plus 1 bend/250 feet)	100	Each	$ 3,339	$ 333,867			$ 333,867	
Pressure Rating ## lb Block Valve w/Electric Actuator (one per 4 miles)	1	Each	$ 210,828	$ 210,828			$ 210,828	
FBE Coating ($/ft)		$	$ 4.14	$ 99,393			$ 99,393	
Miscellaneous Materials (5%)	1	Lot					$ 96,090	
Freight / Tax	12.5	%					$ 264,660	
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 ($/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 ($/ft)		$	$ -	$ -			$ -	
Miscellaneous Materials (5%)	1	Lot					$ -	
Freight / Tax	12.5	%					$ -	
Casing 20 inch, .312 WT X-65	200	Feet	$ 76	$ 15,208			$ 15,208	Crossing RR
Miscellaneous Materials (5%)	1	Lot					$ 760.40	
Freight / Tax	12.5	%					$ 1,996	
Total length	**4.5**	**Miles**						
Total Material Cost							**$ 2,400,000**	
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	4440	Feet			$ 500	$ 2,220,000	$ 2,220,000	
Pipe Install - Type 4	550	Feet			$ 750	$ 412,500	$ 412,500	Rose Canyon Creek Crossing
Pipe Install - Type 5	445	Feet			$ 600	$ 267,000	$ 267,000	Bore under HWY 5
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 pisg) on line]	134088	SCF	$ 0.19	$ 25,477			$ 25,477	
Purging Labor	1	LS			$ 25,000	$ 25,000	$ 25,000	
95% Abandonment of Existing Pipeline ($50/CY)	1179	CY			$ 95	$ 112,005	$ 112,005	
5% Removal of Existing Pipeline (75% of Construction Labor Cost)	75	%					$ 371,368	
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	$ 51,000	
Construction period	**76**	**days**						
Total Construction Cost							**$ 10,718,000**	
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	%				$ 327,950	$ 327,950	
Total SCG Labor / Inspection Cost							**$ 328,000**	
4 DESIGN / ENG. / CONST. / ENVIRON.								
Planning / Design / Eng / Coord / Procurement	10	%				$ 1,311,800	$ 1,311,800	
Construction Stake, As-Built Survey (2 man crew)	68	Days	$ 100	$ 6,800	$ 1,400	$ 95,200	$ 102,000	
ROW Acquisition	0	LS				$ -	$ -	
Construction Permits	0	LS				$ -	$ -	
Environmental Permits	0	LS				$ -	$ -	
Environmental Monitoring	0	LS						
As-Built Drawings ($2000+$1/ft)	1	LS				$ 26,008	$ 26,008	
Total Design / Engineering / Construction Cost							**$ 1,439,900**	
5 CONTINGENCY								
Projects < $2 million - Contingency is 30%	30	%				$ -	$ -	
Projects>$2 million - Contingency is 20%	20	%				$ 2,977,180	$ 2,977,180	
TOTAL PROJECT COST (See Appendix for assumptions/clarifications)							$ 17,863,100	

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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	$	-

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Existing Segments

Category	Station Start	Station Stop	Criteria Miles	Diameter	Action	Decision 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	Diameter	Wall Thickness	Grade	Comments
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:	SPECIFICATION NO.	A-E FIRM NAME	SHEET
Line 49-32		SPEC SERVICES	Sheet 1 of 1
PROJECT TITLE AND CLIENT:	ESTIMATED BY:		DATE:
SAN DIEGO GAS & ELECTRIC	SPEC		July 11, 2011
PIPE REPLACEMENT COST ESTIMATE	STATUS OF DESIGN		SPEC Project Number
	Conceptual		5057

DESCRIPTION	QUANTITY NUMBER	QUANTITY UNIT	MATERIAL COST UNIT COST	MATERIAL COST TOTAL	LABOR COST UNIT COST	LABOR COST TOTAL	TOTAL COST TOTAL	Comments
INPUT IN ALL GREEN CELLS								
1 MATERIALS								
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 ($/ft)		$	$ 4.14	$ 1,139			$ 1,139	
Miscellaneous Materials (5%)	1	Lot					$ 1,623	
Freight / Tax	12.5	%					$ 4,404	
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 ($/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 ($/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	**0.1**	**Miles**						
Total Material Cost							**$ 39,700**	
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 7	0	Feet			$ -	$ -	$ -	
Pipe Install - Type 6	0	Feet			$ -	$ -	$ -	
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**	

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Company SDG&E
Plant Category Dist

Summary of remaining pipelines

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