Preliminary Cost Estimates for Infrastructure

As previously stated, current infrastructure within the Specific Plan area is limited, and when it occurs has limited capacity, particularly for the scale of development envisioned in this Specific Plan. In order to establish basic parameters for the future requirements of the area, an analysis of the infrastructure needs to support development of the land use plan was conducted. This analysis resulted in recommendations for size and location of water, sanitary sewer and roadway infrastructure throughout the area.

Water Lines

A number of water lines currently occur within the Plan area. To support the proposed land use plan, however, additional water mains will be required. Both existing and proposed water lines are depicted in Exhibit IV-3. For purposes of this analysis, typical industrial development was assumed, with a focus on warehouse-type development. Should a water-intensive manufacturing use be proposed, up-sizing of water lines may be required. Based on the anticipated build out of the Plan area, 12 and 14-inch lines will be required throughout the Plan area. Table B-1 illustrates the costs associated with installation of these lines. Cost estimates include cost of pavement, connection laterals and pressure reducing stations.

Table B-1
Specific Plan Water Main Improvement Costs (2006 Dollars)

Water Line Size	Improvement Cost/Linear Foot	Miles of Line in Plan Area	Linear Feet of Line in Plan Area	Total Cost
12 inch	$60.00	12	63,360	$3,801,600
14 inch	$70.00	8.75	46,200	$3,234,000
Total Water Main Improvement Costs				**$7,035,600**

Source: Fomotor Engineering, Terra Nova Planning

Sanitary Sewer Lines

As discussed above, only one sewer line, a 15-inch line, currently occurs in the Plan area. In order to assure that development is served by sanitary sewer as the Plan area develops, a number of main lines will be required. These lines are depicted in Exhibit IV-4, Specific Plan Future Sanitary Sewer Mains. The costs associated with the construction of these mains is illustrated in Table B-2, next page. The costs include piping, manholes, cleanouts, and associated infrastructure.

Table B-2
Specific Plan Sanitary Sewer Improvement Costs (2006 Dollars)

Sewer Line Size	Improvement Cost/Linear Foot	Miles of Line in Plan Area	Linear Feet of Line in Plan Area	Total Cost
8 inch	$60.00	17.35	91,608	$5,496,480
10 inch	$70.00	4.2	22,176	$1,552,320
12 inch	$80.00	2.25	11,880	$950,400
15 inch	$90.00	1	5,280	$475,200
18 inch	$100.00	2.25	11,880	$1,188,000
Total Sanitary Sewer Improvement Costs				**$7,048,800**

Roadways

As discussed in Section IV.A.1., above, the Town has specific standards for each roadway classification, including medians, curb and gutter, sidewalk and parkway areas. Based on these standards, estimates of the costs of these improvements within the Specific Plan were developed. Table B-3, below, summarizes the information.

Table B-3
Rough Order Of Magnitude Cost Estimates For 2030 On-Site Intersection Improvements, With Preferred Project Alternative

ON-SITE INTERSECTION	LAND USE ALTERNATIVE	TRAFFIC CONTROL [1]	INTERSECTION APPROACH LANES												TOTAL COST [2]
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			
			L	T	R	L	T	R	L	T	R	L	T	R	
Dale Evans Pkwy. East (NS) / Quarry Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	1	0	0	1	0	0	1	0	0	1	0	0	$450,000
Dale Evans Pkwy (NS) / "B" St. (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	0	1	1	1	1	0	0	0	0	1	0	1	
	Additional Improvements	TS	0	0	1	1	0	0	0	0	0	1	0	1	$450,000

Dale Evans Pkwy. East (NS) / Johnson Rd. (EW)	Current Geometry	CSS	1	1	1	1	1	0	0	1	0	0.5	0.5	1>>	
	Preferred Alternative Recommended Geometry	TS	1	2	1>	1	2	1	1	2	1>	2	2	1>>	
	Additional Improvements	TS	0	1	>	0	1	1	1	1	1>	2	1	0	$1,150,000
Dale Evans Pkwy (NS) / Los Padres/Saugus Rd. (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	2	1	1	2	1	2	1	1	2	1	1	
	Additional Improvements	TS	1	1	1	1	1	1	2	1	1	2	1	1	$1,350,000
Dale Evans Pkwy (NS) / Gustine Rd. (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	2	2	1	1	2	1	2	1	1>	2	1	1	
	Additional Improvements	TS	2	1	1	1	1	1	2	1	1>	2	1	1	$1,425,000
Dale Evans Pkwy (NS) / High Desert Corridor WB (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	2	0	0	2	1	0	0	0	1	0	1	
	Additional Improvements	TS	1	1	0	0	1	1	0	0	0	1	0	1	$750,000
Dale Evans Pkwy (NS) / High Desert Corridor EB (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	0	2	1	2	2	0	2	0	1	0	0	0	
	Additional Improvements	TS	0	1	1	2	1	0	2	0	1	0	0	0	$850,000
Dale Evans Pkwy. East (NS) / Corwin Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	2	1	2	2	1>	2	1	1	2	1	1	
	Additional Improvements	TS	1	1	1	2	1	1>	2	1	1	2	1	1	$1,425,000
"C" St. (NS) / Quarry Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	0	1	0	0	0	0	1	1	1	1	0	
	Additional Improvements	TS	1	0	1	0	0	0	0	0	1	1	0	0	$450,000
"C" St. (NS) / "B" St. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	1	1	0	1	1	0	1	1	0	1	1	0	$1,050,000

"C" St. (NS) / Gustine Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	1	1	1	0	1	1	0	
	Additional Improvements	TS	1	1	0	1	1	1	1	1	0	1	1	0	$1,100,000
Navajo Rd. (NS) / Quarry Rd. (EW)	Current Geometry	CSS	0	0	0	0	0	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	1	1	0	1	1	0	1	0	0	1	0	0	$750,000
Navajo Rd. (NS) / "B" St. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	1	1	0	1	1	0	1	1	0	1	1	0	$1,050,000
Navajo Rd. (NS) / Johnson Rd. (EW)	Current Geometry	0	0	1	0	0	0	0	0	1	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	1	1	1	1	2	2	0	2	2	1	
	Additional Improvements	TS	1	0	1	1	1	1	2	1	0	2	2	1	$1,300,000
Navajo Rd. (NS) / Los Padres/Saugus Rd. (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	1	2	1	0	1	1	0	
	Additional Improvements	TS	1	0	0	1	0	1	2	1	0	1	1	0	$850,000
High Desert Corridor EB (NS) / Waalew Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	0	0	0	1	0	1	0	1	1	1	1	0	
	Additional Improvements	TS	0	0	0	1	0	1	0	0	1	1	0	0	$450,000
High Desert Corridor WB (NS) / Waalew Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	0	1	0	0	0	1	1	0	0	1	1	
	Additional Improvements	TS	1	0	1	0	0	0	1	0	0	0	0	1	$450,000
Central Rd. (NS) / Quarry Rd. (EW)	Current Geometry	CSS	0	1	0	0	0	0	0	1	0	0.5	0.5	0	
	Preferred Alternative Recommended Geometry	CSS	0	1	0	0	0	0	0	1	0	1	1	0	
	Additional Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	$-

Central Rd. (NS) / "B" St. (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	2	1	0	0	1	0	1	0	1	0	0	0	
	Additional Improvements	TS	2	0	0	0	0	0	1	0	1	0	0	0	$450,000
Central Rd. (NS) / Johnson Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	2	1	1	1	1	1	1	1	1	1	1	0	
	Additional Improvements	TS	2	0	1	1	0	1	1	0	1	1	0	0	$650,000
Central Rd. (NS) Lafayette/Saugus Rd. (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	2	0	0	2	1	1	0	1	0	0	0	
	Additional Improvements	TS	1	1	0	0	1	1	1	0	1	0	0	0	$750,000
TOTAL ON-SITE COST - PREFERRED PROJECT ALTERNATIVE															**$17,150,000**

[1] TS = Traffic Signal; CSS = Cross Street Stop

[2] Rough Order Magnitude cost estimates based on the following unit cost:
Traffic Signal = $250,000; Left Turn Lane = $50,000; Through Lane = $150,000; Right Turn Lane = $50,000;
Right-Turn Overlap Phasing (>) = $25,000; Free-Flow Right Turn (>>) = $75,000

The improvements outlined above represent the major roadways within the Specific Plan Area which require improvement.

In addition, the costs associated with off-site road improvements required to the year 2030, as described in the Specific Plan Traffic Impact Analysis, was calculated. This information is included in Table B-4, below.

Table B-4
Rough Order of Magnitude Cost Estimates for 2030 Off-Site Intersection Improvements with Preferred Project Alternative

			INTERSECTION APPROACH LANES												
OFF SITE INTER-SECTION	**LAND USE ALTERNA-TIVE**	**TRAFFIC CONTROL[1]**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**TOTAL COST[2]**
Stoddard Wells Rd. (NS) / High Desert Corridor (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	1	1	1	1	1	2	0	1	2	0	
	Additional Improvements	TS	1	1	1	1	1	1	1	2	0	1	2	0	$1,450,000
I-15 SB Ramps (NS) / Dale Evans Pkwy. (EW)	Current Geometry	CSS	0	0	0	0.5	0.5	1	0	1	0	0.5	0.5	0	
	Preferred Alternative Recommended Geometry	CSS	0	0	0	1	1	1	0	1	0	1	1	0	
	Additional Improvements	0	0	0	0	1	0	0	0	0	0	1	0	0	$100,000
I-15 SB Ramps (NS) / Stoddard Wells Rd. North (EW)	Current Geometry	CSS	0	0	0	0	1	0	0.5	0.5	0	0	1	1>>	
	Preferred Alternative Recommended Geometry	TS	0	0	0	1	0	1	1	1	0	0	1	1>>	
	Additional Improvements	TS	0	0	0	1	0	0	1	0	0	0	0	0	$350,000
I-15 SB Ramps (NS) / High Desert Corridor (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	0	0	0	1	0	1	0	2	1	2	2	0	
	Additional Improvements	TS	0	0	0	1	0	1	0	3	1	2	3	0	$1,400,000
I-15 SB Ramps (NS) / Stoddard Wells South (EW)	Current Geometry	CSS	0	0	0	0	1	0	0.5	0.5	0	1	0	1>>	
	Preferred Alternative Recommended Geometry	TS	0	0	0	1	0	1	0	1	1	2	1	1>>	
	Additional Improvements	TS	0	0	0	1	0	0	0	0	1	1	1	0	$550,000
I-15 NB Ramps (NS) / Dale Evans Pkwy (EW)	Current Geometry	CSS	0.5	0.5	1	0	0	0	0.5	0.5	0	0	1	0	
	Preferred Alternative Recommended Geometry	CSS	1	0	1	0	0	0	0.5	0.5	0	0	1	0	
	Additional Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	$-
I-15 NB Ramps / Outer Highway 15 (NS) / Stoddard Wells Rd. North (EW)	Current Geometry	CSS	0	1	0	0.5	0.5	1	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	2	1	0	1	2	0	2	2	1	
	Add'l Improvements	TS	1	0	0	2	0	0	1	1	0	2	1	1	$900,000

I-15 NB Ramps (NS) / High Desert Corridor (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	0	1>>	0	0	0	1	2	0	0	2	1	
	Additional Improvements	TS	1	0	1>>	0	0	0	1	2	0	0	2	1	$1,075,000
I-15 NB Ramps (NS) / Stoddard Wells South (EW)	Current Geometry	CSS	0.5	0.5	0	0	1	0	0	0	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	0	1	0	1	0	1	1	0	0	1	1	
	Additional Improvements	TS	0	0	1	0	0	0	1	1	0	0	0	1	$550,000
Outer I-15 (NS) / Saugus Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	0	1	1	1	1	0	0	0	0	2	0	1	
	Additional Improvements	TS	0	1	1	1	1	0	0	0	0	2	0	1	$800,000
Outer I-15 Hwy (NS) / Gustine Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	0	2	0	1	2	0	0	0	0	2	0	1	
	Additional Improvements	TS	0	2	0	1	2	0	0	0	0	2	0	1	$1,050,000
Outer I-15 (NS) / High Desert Corridor (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	2	0	1	2	1>>	2	3	1	1	3	1	
	Additional Improvements	TS	1	2	0	1	2	1>>	2	3	1	1	3	1	$2,175,000
Outer I-15 Hwy (NS) / Falchion Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	0	1	1	1	1	0	0	0	0	1	0	1	
	Additional Improvements	TS	0	1	1	1	1	0	0	0	0	1	0	1	$750,000
Outer I-15 Hwy (NS) / Stoddard Wells Rd. South (EW)	Current Geometry	CSS	0.5	0.5	0	0	1	0	1	0	1	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	0	1	1>	1	0	1	0	0	0	
	Additional Improvements	TS	1	0	0	0	0	1>	0	0	0	0	0	0	$375,000
Apple Valley Rd. (NS) / Falchion Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	0	1	0	0	0	0	1	1	1	1	0	
	Additional Improvements	TS	1	0	1	0	0	0	0	1	1	1	1	0	$750,000
Apple Valley Rd. (NS) / Happy Trails Hwy. (SR-18) (EW)	Current Geometry	TS	1.5	0.5	1	1	1	1	2	2	1>>	1	2	1	
	Preferred Alternative Recommended Geometry	TS	2	3	1>	2	3	1>	2	3	1>>	2	3	1>	
	Additional Improvements	0	1	2	>	1	2	>	0	1	0	1	1	>	$1,125,000

Apple Valley Rd. (NS) / Yucca Loma Rd. (EW)	Current Geometry	TS	1	1	1	1	1	1	1	2	1	1	1	1	
	Preferred Alternative Recommended Geometry	TS	2	2	1 >	2	2	1>	2	2	1>	2	2	1>	
	Additional Improvements	0	1	1	>	1	1	>	1	0	>	1	1	>	$750,000
Kasota Rd. (NS) / Happy Trails Hwy. (SR-18) (EW)	Current Geometry	TS	0	1	0	0	1	0	1	2	1	1	2	1	
	Preferred Alternative Recommended Geometry	TS	0	1	0	0	1	0	1	2	1	1	2	1	
	Additional Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	$-
Corwin Rd. (NS) / Happy Trails Hwy. (SR-18) (EW)	Current Geometry	TS	0	0	0	1	0	2>	1	2	0	0	2	0	
	Preferred Alternative Recommended Geometry	TS	0	0	0	1	0	2>	2	2	0	0	2	0	
	Additional Improvements	0	0	0	0	0	0	0	1	0	0	0	0	0	$50,000
Corwin Rd. (NS) / Waalew Rd. (EW)	Current Geometry	CSS	0	1	0	0.5	0.5	0	0	0	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	0	2	1	1	2	0	0	0	0	1	0	1	
	Additional Improvements	TS	0	1	1	1	1	0	0	0	0	0	0	1	$700,000
Tao Rd. (NS) / Falchion Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	0	1	0	0	0	0	1	0	1	1	0	
	Additional Improvements	TS	1	0	1	0	0	0	0	1	0	1	1	0	$700,000
Tao Rd. (NS) / Corwin Rd. (EW)	Current Geometry	AWS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	1	1	1	1	1	2	1	1	2	1	
	Additional Improvements	TS	1	0	1	1	0	1	1	1	1	1	1	1	$950,000
Choco Rd. (NS) / Stoddard Wells Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	0	1	0	0	0	0	2	0	1	2	0	
	Additional Improvements	TS	1	0	1	0	0	0	0	1	0	1	1	0	$700,000
Choco Rd. (NS) / Saugus Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	1	
	Additional Improvements	TS	1	1	0	1	1	0	1	1	0	1	1	1	$1,100,000
Choco Rd. (NS) / High Desert Corridor WB (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	0	1	1	0	0	0	1	0	1	
	Additional Improvements	TS	1	1	0	0	1	1	0	0	0	1	0	1	$750,000

Choco Rd. (NS) / High Desert Corridor EB (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	0	1	1	1	1	0	1	0	1	0	0	0	
	Additional Improvements	TS	0	1	1	1	1	0	1	0	1	0	0	0	$750,000
Choco Rd. (NS) / Falchion Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	1	1	0	1	1	0	1	1	0	1	1	0	$1,050,000
Choco Rd. (NS) / Corwin Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	0	1	0	0.5	0.5	1	
	Preferred Alternative Recommended Geometry	TS	1	1	1	1	1	1>	1	2	1	1	2	1	
	Additional Improvements	TS	1	0	1	1	0	1>	1	1	1	1	1	0	$2,000,000
"A" St. (NS) / Saugus Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	0	1	0	0	0	0	1	1	1	1	0	
	Additional Improvements	TS	1	0	1	0	0	0	0	1	1	1	1	0	$750,000
"A" St. (NS) / Gustine Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	1	1	0	1	1	0	1	1	0	1	1	0	$1,050,000
"A" St. (NS) / Falchion Rd. (EW)	Current Geometry	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	0	0	0	1	0	1	1	1	0	0	1	1	
	Additional Improvements	TS	0	0	0	1	0	1	1	1	0	0	1	1	$750,000
Stoddard Wells Rd. (NS) / Johnson Rd. (EW)	Current Geometry	CSS	0	1	0	0.5	0.5	0	0	0	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	0	1	1>	1	1	0	0	0	0	2	0	1	
	Additional Improvements	TS	0	0	1>	1	0	0	0	0	0	2	0	0	$475,000
Stoddard Wells Rd. (NS) / Quarry Rd. (EW)	Current Geometry	CSS	0	1	0	0.5	0.5	0	0	0	0	0	1	0	
	Preferred Alternative Recommended Geometry	CSS	1	1	1	0	1	0	0	1	0	1	1	0	
	Additional Improvements	0	1	0	1	0	0	0	0	1	0	1	0	0	$300,000
Rancherias Rd. (NS) / Otoe Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	1	0	0	1	0	0	1	0	0	1	0	0	$450,000

Rancherias Rd. (NS) / Thunderbird Rd. (EW)	Current Geometry	CSS	0	1	1	1	1	0	0	0	0	1	0	1	
	Preferred Alternative Recommended Geometry	TS	0	1	1	1	1	0	0	0	0	1	0	1	
	Additional Improvements	TS	0	0	0	0	0	0	0	0	0	0	0	0	$250,000
Rancherias Rd. (NS) / Happy Trails Hwy. (SR-18) (EW)	Current Geometry	TS	1	1	0	1	1	1	1	2	1	1	2	1	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	1	1	2	1	1	2	1	
	Additional Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	$-
Rincon Rd. (NS) / Yucca Loma Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	1	1	0	1	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	2	0	1	2	0	
	Additional Improvements	TS	1	0	0	1	0	0	0	1	0	0	1	0	$650,000
Dale Evans Pkwy. East (NS) / Stoddard Wells Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	CSS	1	1	0	1	1	0	0	1	0	0	1	0	
	Additional Improvements	0	1	0	0	1	0	0	0	0	0	0	0	0	$100,000
Dale Evans Pkwy. East (NS) / Waalew Rd. (EW)	Current Geometry	CSS	0	0	0	0	1	0	0.5	0.5	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	0	0	0	2	0	2	2	2	0	0	2	0	
	Additional Improvements	TS	0	0	0	2	0	1	2	1	0	0	1	0	$800,000
Dale Evans Pkwy. West (NS) / Waalew Rd. (NS)	Current Geometry	CSS	0	1	0	0	0	0	0	1	0	0.5	0.5	0	
	Preferred Alternative Recommended Geometry	TS	1	0	1	0	0	0	0	2	0	2	2	0	
	Additional Improvements	TS	0	0	1	0	0	0	0	1	0	2	1	0	$700,000
Dale Evans Pkwy West (NS) / Otoe Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	1	1	1	1>	1	1	0	1	1	0	
	Additional Improvements	TS	1	0	1	1	0	1>	1	0	0	1	0	0	$525,000
Dale Evans Pkwy West (NS) / Thunderbird Rd. (EW)	Current Geometry	AWS	1	1	1	1	1	1	1	1	1	1	1	1	
	Preferred Alternative Recommended Geometry	TS	1	1	1	1	1	1	1	1	1	1	1	1	
	Additional Improvements	TS	0	0	0	0	0	0	0	0	0	0	0	0	$250,000
Dale Evans Pkwy (NS) / Happy Trails Hwy (SR-18) (EW)	Current Geometry	TS	1	1	0	1	1	0	1	2	1	1	2	1	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	2	1	1	2	1	
	Additional Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	$-

Kiowa Rd. (NS) / Happy Trails Hwy. (SR-18) (EW)	Current Geometry	TS	1	1	0	1	1	0	1	2	1	1	2	1	
	Preferred Alternative Recommended Geometry	TS	2	1	0	1	1	0	1	2	1	1	2	1	
	Additional Improvements	0	1	0	0	0	0	0	0	0	0	0	0	0	$50,000
Kiowa Rd. (NS) / Yucca Loma Rd. (EW)	Current Geometry	AWS	0	1	0	0	1	0	1	1	0	1	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	2	1	1	2	0	
	Additional Improvements	TS	1	0	0	1	0	0	0	1	1	0	1	0	$700,000
Kiowa Rd. (NS) / Ottawa Rd. (EW)	Current Geometry	CSS	1	1	0	1	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	0	0	0	0	0	0	1	0	0	1	0	0	$350,000
Navajo Rd. (NS) / Thunderbird Rd. (EW)	Current Geometry	AWS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	1	0	0	1	0	0	1	0	0	1	0	0	$450,000
Navajo Rd. (NS) / Happy Trails Hwy. (SR-18) (EW)	Current Geometry	TS	1	2	0	1	2	0	1	2	1	1	2	1	
	Preferred Alternative Recommended Geometry	TS	2	2	1>	1	2	0	1	2	1>	2	2	1	
	Additional Improvements	0	1	0	1>	0	0	0	0	0	>	1	0	0	$200,000
Navajo Rd. (NS) / Ottawa Rd. (EW)	Current Geometry	CSS	1	2	1	1	2	1	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	2	1	1	2	1	1	1	0	1	1	0	
	Additional Improvements	TS	0	0	0	0	0	0	1	0	0	1	0	0	$350,000
Central Rd. (NS) / Waalew Rd. (EW)	Current Geometry	AWS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	2	1	1	2	1	1	1	0	1	1	0	
	Additional Improvements	TS	1	1	1	1	1	1	1	0	0	1	0	0	$850,000
Central Rd. (NS) / High Desert Corridor WB (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	2	0	0	2	1	0	0	0	1	0	1	
	Additional Improvements	TS	1	1	0	0	1	1	0	0	0	1	0	1	$750,000

Central Rd. (NS) / High Desert Corridor EB (EW)	Current Geometry	0	0	1	0	0	1	0	0	0	0	0	0	0	
	Preferred Alternative Recommended Geometry	TS	0	2	1	1	2	0	1	0	1	0	0	0	
	Additional Improvements	TS	0	1	1	1	1	0	1	0	1	0	0	0	$750,000
Central Rd. (NS) / Thunderbird Rd. (EW)	Current Geometry	CSS	0.5	0.5	0	0	1	0	1	0	1	0	0	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	2	0	0	1	0	0	0	0	0	1	1	0	$600,000
Central Rd. (NS) / Happy Trails Hwy. (SR-18) (EW)	Current Geometry	TS	0.5	0.5	1	0.5	0.5	1	1	2	1	1	2	1	
	Preferred Alternative Recommended Geometry	TS	2	1	0	1	1	1	1	2	1	1	2	1	
	Additional Improvements	0	1	0	0	0	0	1	0	0	0	0	0	0	$100,000
Central Rd. (NS) / Ottawa Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	0	1	0	0	1	0	
	Preferred Alternative Recommended Geometry	TS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	TS	1	0	0	1	0	0	1	0	0	1	0	0	$450,000
Joshua Rd. (NS) / Waalew Rd. (EW)	Current Geometry	CSS	0	1	0	0	1	0	0	1	0	0.5	0.5	0	
	Preferred Alternative Recommended Geometry	CSS	1	1	0	1	1	0	1	1	0	1	1	0	
	Additional Improvements	0	1	0	0	1	0	0	1	0	0	1	0	0	$200,000
TOTAL OFF-SITE COST - PREFERRED PROJECT ALTERNATIVE															**$36,050,000**

[1] TS = Traffic Signal; AWS = All-Way Stop; CSS = Cross Street Stop
[2] Rough Order Magnitude cost estimates based on the following unit cost:
Traffic Signal = $250,000; Left Turn Lane = $50,000; Through Lane = $150,000; Right Turn Lane = $50,000;
Right-Turn Overlap Phasing (>) = $25,000; Free-Flow Right Turn (>>) = $75,000

Priorities for Improvements

As described below, the funding of required infrastructure improvements can be accomplished in a number of ways. Funding which is to provide area-wide benefit could be undertaken ahead of development to promote and enhance development opportunities within the Specific Plan Area. The prioritizing of these improvements is difficult to ascertain at this time, because market forces will drive the development of the Specific Plan Area. However, the following basic recommendations are made:

1. Water line improvements should be prioritized by size. 14-inch lines should be considered for construction ahead of development. 12-inch lines should be considered as second tier improvements.
2. Sanitary sewer line improvements should be prioritized by size. 18 and 15-inch lines should be considered collectors, and considered for installation ahead of development.

3. Second tier sanitary sewer improvements should include all 12-inch lines within the Specific Plan Area.
4. Roadway improvements to Dale Evans Parkway, Johnson Road and Central Road, in that order, will benefit the greatest number of properties, and should be considered the "spine" of the Specific Plan Area.
5. Improvements to Papago, Waalew, Dakota and Temecula Roads, on the southern boundary of the Specific Plan Area, will provide residential land uses to the south with an immediate buffer, ahead of development.
6. Second tier roadway improvements which benefit a greater number of properties within the Specific Plan Area include Quarry Road, Navajo Road, C and D Streets (as identified in the Traffic Impact Analysis).

Funding of Infrastructure

Typically, infrastructure is constructed on a "fair share" basis by development as it occurs. In the Specific Plan area, however, where backbone infrastructure is limited, the costs of extending services and roadways may be a deterrent to development. A number of alternatives are available for the funding of infrastructure, with and without the Town's participation.

When the Town makes roadway improvements currently, funding is primarily through the State's fuel tax and traffic impact fees collected through the development process. The Town also has the ability to fund infrastructure projects through General Fund revenues, although in recent years reductions in State funding have made it much more unlikely for local jurisdictions to have discretionary funds in their General Fund.

Roadway and other infrastructure funding can also come from Town funds, regional, state and federal grants and loans, and funding mechanisms such as assessment districts, developer impact fees and Mello-Roos districts. Funding mechanisms available for the development of the Specific Plan's infrastructure are discussed further below.

1. Special Improvement Districts

Special Improvement or Assessment Districts may be initiated by the municipality subject to the approval of property owners or voters. They allow the municipality to issue tax-exempt bonds for public infrastructure improvements. Assessments are generally accompanied by a formal lien against each property which receives the improvements. Those properties benefiting from the improvement are assessed an annual cost on their tax bill. Assessments are proportional to the amount of benefit being received by the property owner. The assessments are generally paid over up to 30 years, but may be prepaid. The boundary of an assessment area is set by the jurisdiction, which provides great flexibility. An assessment district can be created for a small neighborhood, or can extend Town-wide, as long as the benefit of the improvement is demonstrated.

2. General Obligation Bonds

General Obligation bonds may fund a wide range of capital improvement projects from road construction, to property acquisition, to fire prevention. The Town may enter into General Obligation Bond agreements upon approval by two thirds of participating voters in a ballot measure. These bonds are repaid over a finite period of time (ten, twenty, or thirty years), through an increase in the annual property tax being levied by the Town. Unlike assessment districts, general obligation bonds affect all property in Town. Residential property owners would, therefore, be financing improvements in the Specific Plan area which would not directly benefit them.

3. Developer Impact Fees

The state allows the imposition of developer impact fees for the costs of infrastructure, based on the level of impact of a project on a particular facility. Developer impact fees can be used for a variety of improvements, and require the preparation of cost estimates and fair share distribution based on a "rational nexus" that the fee being paid is equivalent to the cost which would otherwise be incurred by the developer to provide his fair share of an improvement. Developer impact fees are most typically used for regional improvements, when a single developer would be unlikely to support the cost of the installation of the improvement, and a pooling of funds is required. The appeal to the development community is the assurance provided in the payment of the fee – the potential cost is known and limited, and the improvement is the responsibility of the Town. In the Specific Plan area, backbone road improvements including major arterials (including the half-width improvements to the perimeter streets described above), water and sewer trunk lines and the project entry features' improvements could all be financed through developer impact fees.

4. Landscaping and Lighting Districts

Landscaping and Lighting Districts may be created to provide a range of infrastructure improvements. Annual assessment would be raised from properties in the district. Funds may be used for construction and maintenance of curbs, gutters, sidewalks, paving, parkway landscaping and other facilities. The long-term maintenance of the Specific Plan area's street system could be financed through this vehicle. The formation of the district occurs with the first development to occur in the Specific Plan area, and each subsequent development is required to annex into the district as maps are recorded or building permits are issued.

5. Mello-Roos Districts

Mello-Roos districts can be used to finance a wide range of improvements, including land purchases and maintenance. Mello-Roos districts require a 2/3 major vote of the registered voters within the district. District boundaries can be set by the Town to include any area benefiting from the improvement, and do not impact the entire community. The creation of the district results in a special tax levied on the affected property owners. Unlike general obligation bonds, Mello-Roos district taxes are not tied to property value, but rather to a special tax formula based on the level of benefit received by each property. With the formation of a Mello-Roos district, the Town would have the ability to issue bonds for the improvements included in the district, and build the improvements in anticipation of future need.

6. Infrastructure State Revolving Fund Program

The state operates the California Infrastructure and Economic Development Bank (I-Bank), which has loan funds available for infrastructure programs including streets, water, sanitary sewer and drainage improvements. The I-Bank periodically issues bonds whose proceeds are available to be loaned to local jurisdictions. A wide range of projects are eligible, including water, wastewater and street improvements. Loans can range from $250,000 to $10 million.

7. Water Conservation Bond Law of 1988

The California Department of Water Resources manages a loan program designed to fund new water improvement projects, including reservoirs, well fields, and reclaimed water facilities. Municipalities and water purveyors are eligible. Projects are funded to a limit of $5 million.

8. Regional Transportation Funding

Funds through the Surface Transportation Program (STP) are made available each year as a result of the Intermodal Surface Transportation Efficiency Act. Eligible activities are enhancement programs that include pedestrian and bicycle facilities, scenic highway programs, removal of outdoor advertising, and the control of water quality impacts from street runoff. The Town may apply directly to the State of California for these funds, and may also work with the San Bernardino Association of Governments (SANBAG) to apply for available funds.

9. Existing Funding for Sewer Infrastructure

Growth of the population in the sanitary sewer service area, including the Specific Plan area, will be served by a combination of the existing Regional Treatment Plant and a number of local or town-level reclamation facilities that will be linked by the Regional Interceptors. Construction of these facilities will be financed by VVWRA using sewer connection fees, State revolving fund loans, grants, and municipal bonds. Collection fees generated by new connections will be collected by the individual municipalities and retained by the VVWRA. Fees will go toward construction or debt service requirements.

10. Existing Funding for Drainage Facilities

Financing Strategies and Costs

Estimated costs for Alternative 1 (using natural, earthen channels) in the Town's Master Plan for Drainage were $67.6 million in 1988. All of the Specific Plan Area is within this northern drainage area, and constitutes the majority of the northern drainage area.

The average cost allocation for all non-residential drainage areas in the Apple Valley Master Plan for Drainage is stated at $8,097 per acre, in 1988 dollars. The Town requires developers to pay mitigation fees depending upon their runoff potential. For industrial and commercial facilities, the fee is 11.5 cents per square foot of building footprint.

Financing strategies for the ultimate development of regional facilities include the following:

- Development fees for a drainage system to serve the entire industrial park are could be based upon a prorated share of allocation acreage.
- Private construction of master plan facilities could be allowed in place of development fees, when fee revenues are inadequate to provide timely flood protection, combined with long-term repayment agreements.
- Special Assessment or Mello-Roos financing for master planned facilities.