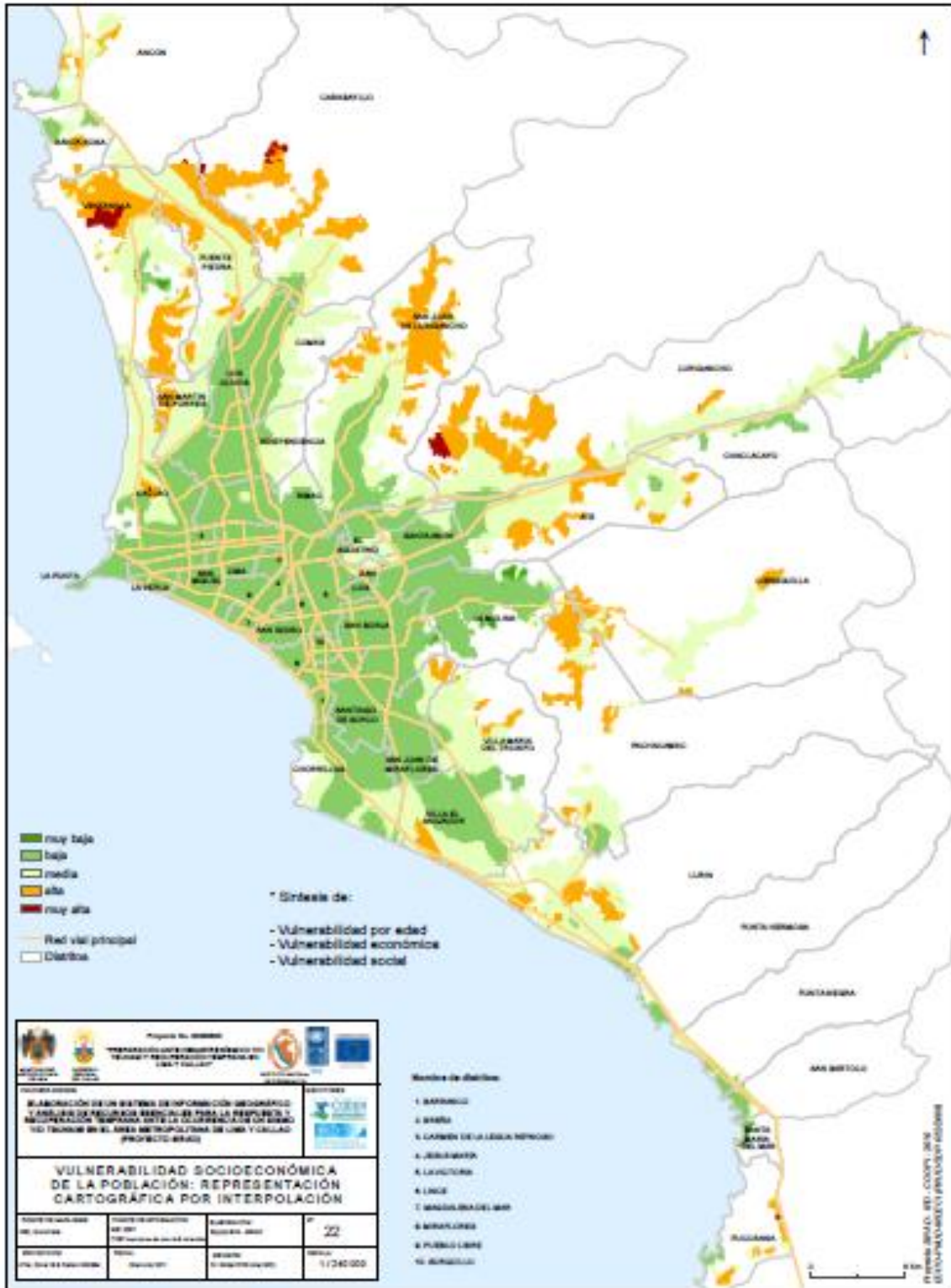
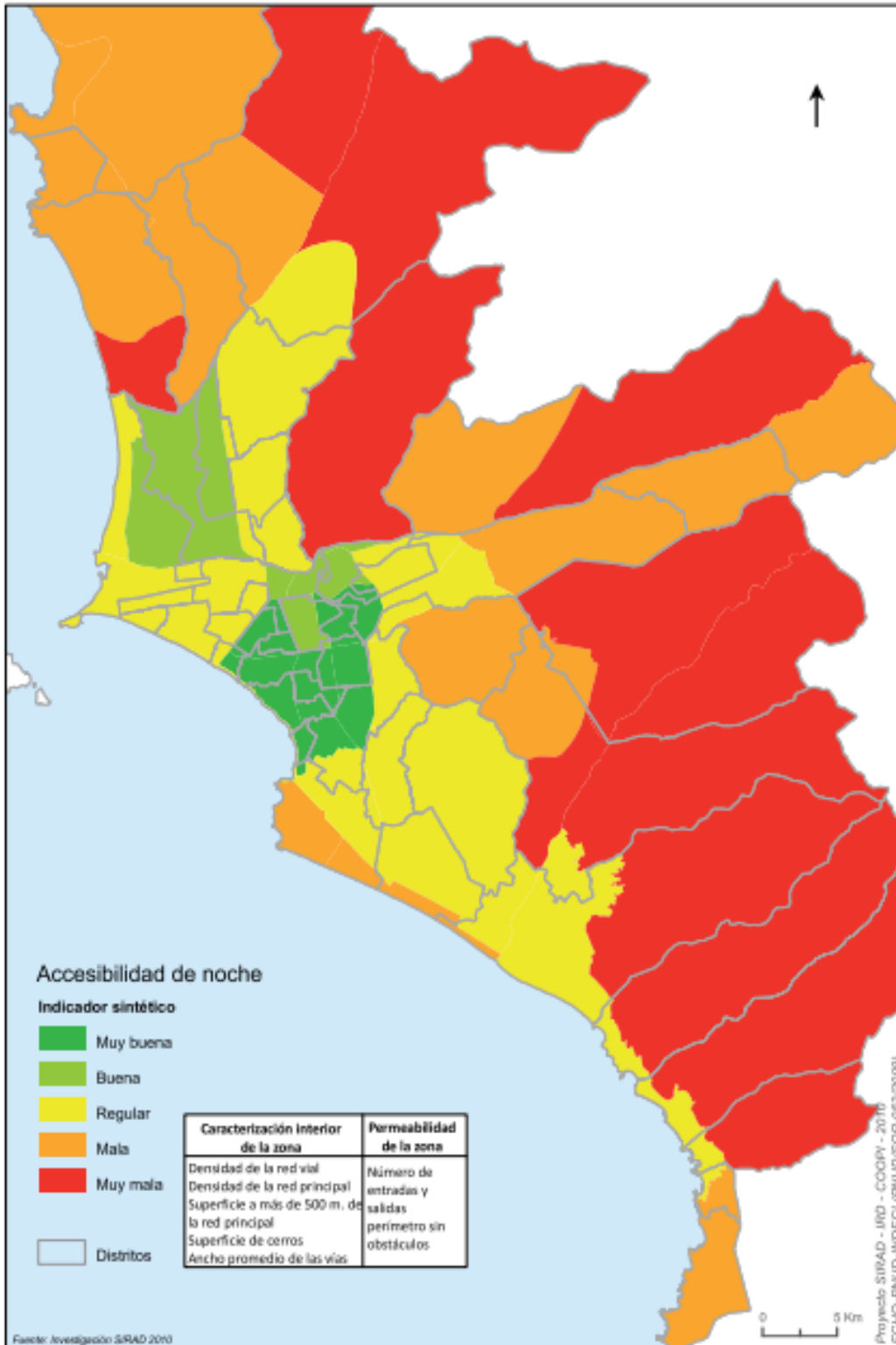


ANEXO 1: MAPA DE VULNERABILIDAD SOCIOECONÓMICA



Fuente: INDECI

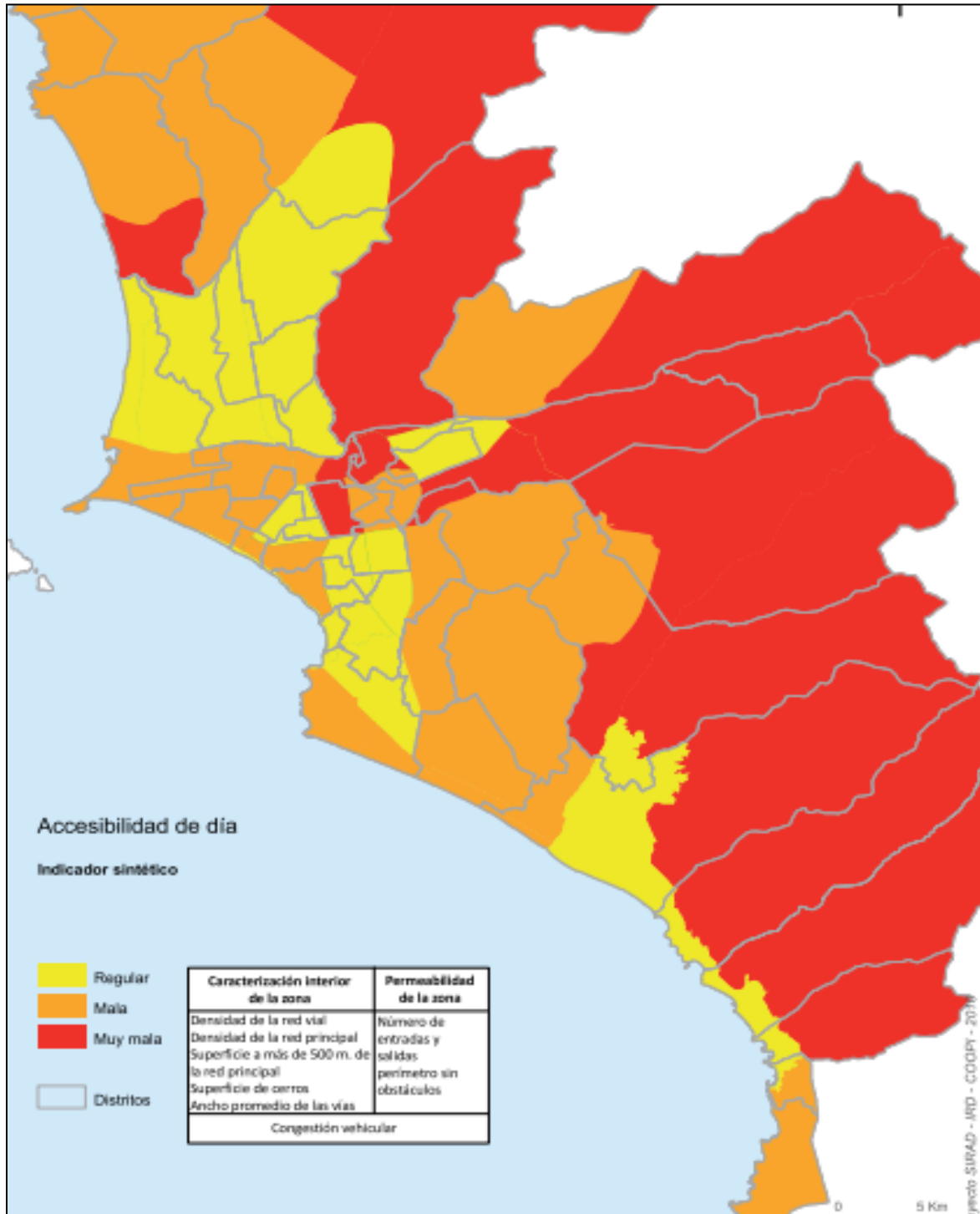
ANEXO 2: MAPA VULNERABILIDAD POR MALA ACCESIBILIDAD DE NOCHE



Fuente: INDECI

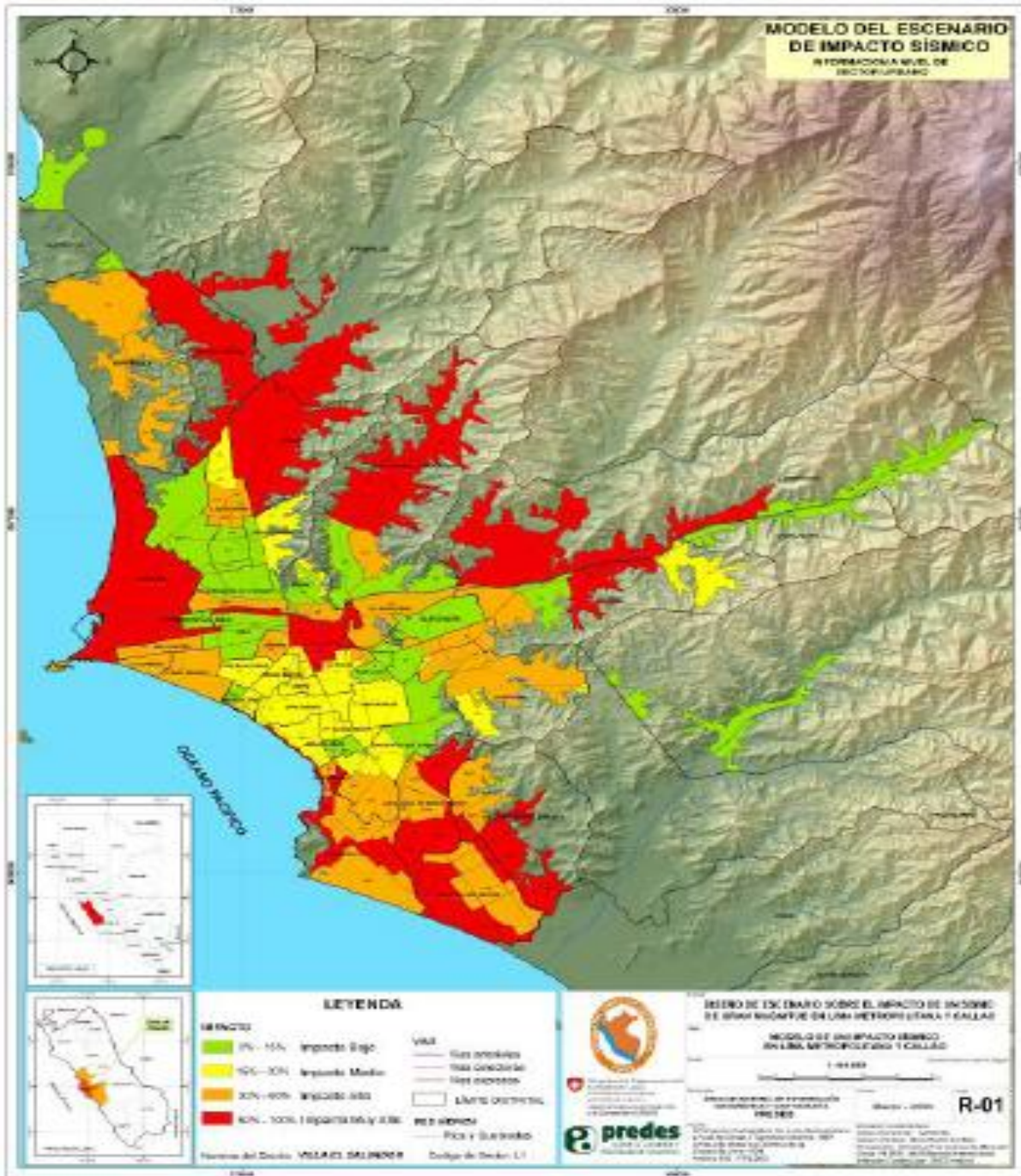


ANEXOS 3: MAPA VULNERABILIDAD POR MALA ACCESIBILIDAD DE DÍA



Fuente: INDECI

ANEXOS 4: MAPA VULNERABILIDAD POR EXPOSICIÓN A PELIGROS



Fuente: INDECI

Anexo 5: Cálculo Distancias Reales recorridas en cada Propuesta

Propuesta 1:

AC1 - AM20 - AM21 - AM19 - AM18 - AC1

$$29.82 + 4.25 + 4.22 + 4.93 + 25.9 = 69.13 \text{ Km}$$

AC1-AM15-AM16-AM17-AC1

$$21.44 + 2.26 + 2.50 + 19.01 = 50.26 \text{ Km}$$

AC1 - AM24 - AM22 - AM25 - AM14 - AM4 - AM3 - AC1

$$4.38 + 4.21 + 7.27 + 2.07 + 1.06 + 0.52 + 3.12 = 22.63 \text{ Km}$$

AC2 - AM8 - AM23 - AM11 - AM26 - AC2

$$10.7 + 6.36 + 3.22 + 4.52 + 1.47 = 26.27 \text{ Km}$$

AC2 - AM12 - AM27 - AM7 - AM1 - AM13 - AM6 - AC2

$$3.15 + 6.63 + 9.37 + 8.25 + 2.91 + 4.09 + 3.24 = 37.64 \text{ Km}$$

AC2 - AM5 - AM9 - AM10 - AM2 - AC2

$$11.76 + 19.32 + 19.69 + 5.55 + 6.53 = 62.85 \text{ Km}$$

Propuesta 2:

AC1 - AM24 - AM15 - AM18 - AM16 - AM25 - AC1

$$4.38 + 24.23 + 2.96 + 1.97 + 22.17 + 1.16 = 56.87 \text{ Km}$$

AC1 - AM17 - AM19 - AM20 - AM21 - AC1

$$19.20 + 7.83 + 0.692 + 2.75 + 24.73 = 55.20 \text{ Km}$$

AC1 - AM22 - AM14 - AM3 - AM4 - AC1

$$7.97 + 9.57 + 1.41 + 0.417 + 2.22 = 21.59 \text{ Km}$$

AC2 - AM11 - AM23 - AM8 - AM26 - AC2

$$4.07 + 3.18 + 7.35 + 10.91 + 1.16 = 26.67 \text{ Km}$$

AC2 – AM6 – AM13 – AM1 –AM7 – AM27 – AM12 – AC2

$$3.40 + 4.10 + 2.75 + 8.19 + 9.20 + 7.63 + 2.66 = 37.93 \text{ Km}$$

AC2 – AM2 – AM5 – AM9 – AM10 –AC2

$$6.47 + 5.10 + 18.40 + 19.00 + 12.20 = 61.17 \text{ Km}$$

Propuesta 3:

AC1 – AM24 –AM18 – AM16 – AM17 – AC1

$$4.59+ 15.88+ 3.27+ 3.25 + 24.42 = 50.67 \text{ Km}$$

AC1 – AM15 – AM19 – AM20 – AM21 – AM22 – AC1

$$27.30 + 0.8 + 2.51 + 7.29 + 15.53+ 8.18 = 61.61 \text{ Km}$$

AC1 – AM25 – AM14 – AM3 – AM4 – AC1

$$0.91 + 2.4 + 1.89 + 0.5 + 3.88 = 9.58 \text{ Km}$$

AC2 – AM11 – AM7 – AM27 – AM23 – AM8 – AC2

$$6.15 + 11.37+ 6.68+ 10.54+ 6.23 + 6.85= 47.82 \text{ Km}$$

AC2 – AM13 – AM1 – AM5- AM9 – AM10 - AC2

$$7.16 + 2.11 + 6.99 + 20.19 + 20.45 + 11.05 =67.95 \text{ Km}$$

AC2 – AM2 – AM6 – AM26 – AM12 – AC2

$$7.31 + 4.26 + 3.15 + 2.95 + 2.32 = 19.98 \text{ Km}$$

Propuesta 4:

AC1 – AM4 – AM3 – AM14 – AM25 – AC1

$$1.77 + 0.32 + 1.26 + 1.62 + 1.29 = 6.26 \text{ Km}$$

AC1 – AM22 – AM17 – AM16 – AM18 - AC1

$$6.55 + 13.10 + 2.38 + 2.08 + 24.08 = 48.19 \text{ Km}$$

AC1 – AM21 – AM20 – AM19 – AM15 – AM24 – AC1

$$25.98 + 2.31 + 0.77 + 5.83 + 19.35 + 3.49 = 57.73 \text{ Km}$$

AC2 – AM26 – AM8 – AM11 – AM23 – AC2

$$1.03 + 10.76 + 10.34 + 3.26 + 6.26 = 31.63 \text{ Km}$$

AC2 – AM2 – AM10 – AM9 – AM5 – AM13 – AC2

$$7.27 + 5.51 + 22.06 + 21.78 + 5.45 + 7.72 = 69.82 \text{ Km}$$

AC2 – AM6 – AM1 – AM7 – AM27 – AM12 – AC2

$$3.39 + 4.60 + 9.3 + 9.5 + 6.37 + 2.37 = 35.54 \text{ Km}$$

Propuesta 5:

AC1 - AM17 - AM21 – AM20 - AM19 - AM18 – AM16 – AM15 – AC1

$$19.01 + 6.39 + 2.75 + 0.8 + 3.92 + 1.97 + 2.26 + 22.44 = 58.54 \text{ Km}$$

AC1 – AM22 – AM24 – AC1

$$7.97 + 4.21 + 4.28 = 16.56 \text{ Km}$$

AC1 – AM4 – AM25 – AM3 – AM14 – AC1

$$2.22 + 2.85 + 3.72 + 1.41 + 1.42 = 11.62 \text{ Km}$$

AC2 – AM5 – AM8 – AM10 – AC2

$$11.76 + 11.66 + 12.20 + 11.67 = 47.29 \text{ Km}$$

AC2 – AM9 – AM7 – AM11- AM23 – AC2

$$35.85 + 33.02 + 9.53 + 3.04 + 5.82 = 87.37$$

AC2 – AM12 – AM27 – AM1 – AM13 – AM2 – AM6 – AM26 – AC2

$$3.15 + 9.37 + 4.19 + 2.91 + 4.74 + 3.11 + 1.47 = 28.94 \text{ Km}$$



ANEXO 6: CÁLCULOS ADICIONALES PARA ELABORACIÓN DE RUTA DE CADA CLUSTER POR PROPUESTA PLANTEADA

PROPUESTA 1: METODO POR CERCANICA DE PUNTOS

Distancias (en Km) entre puntos de acopio que conforman cada cluster

CLUSTER 1 - ABASTECE AC1

	AM20	AM21	AM19	AM18
AM20		2.03	0.68	3.49
AM21	2.03		1.69	1.87
AM19	0.68	1.69		2.89
AM18	3.49	1.87	2.89	

CLUSTER 2 - ABASTECE AC1

	AM16	AM15	AM17
AM16		2.1	2.13
AM15	2.1		3.3
AM17	2.13	3.3	

CLUSTER 3 - ABASTECE AC1

	AM25	AM14	AM4	AM3	AM22	AM24
AM25		1.62	2.58	2.79	4.99	2.44
AM14	1.62		0.97	1.26	6.46	4.06
AM4	2.58	0.97		0.32	7.4	4.8
AM3	2.79	1.26	0.32		7.65	5.1
AM22	4.99	6.46	7.4	7.65		3.89
AM24	2.44	4.06	4.8	5.1	3.89	

CLUSTER 4 - ABASTECE AC2

	AM8	AM11	AM23	AM26
AM8		7.6	5.5	7.91
AM11	7.6		2.4	2.53
AM23	5.5	2.4		4.2
AM26	7.91	2.53	4.2	

CLUSTER 5 - ABASTECE AC2

	AM1	AM6	AM7	AM12	AM13	AM27
AM1		3.73	7.54	7.09	1.9	2.53
AM6	3.73		10.68	4.03	3.89	3.23
AM7	7.54	10.68		11.93	8.92	7.7
AM12	7.09	4.03	11.93		7.85	5.16
AM13	1.9	3.89	8.92	7.85		4.37
AM27	2.53	3.23	7.7	5.16	4.37	

CLUSTER 6 - ABASTECE AC2

	AM2	AM5	AM9	AM10
AM2		4.58	22.66	4.59
AM5	4.58		18.14	2.73
AM9	22.66	18.14		18.37
AM10	4.59	2.73	18.37	

Método Ahorro aplicado en cada cluster: Matriz de Ahorros y Ruta Resultante

CLUSTER 1 - ALMACEN CENTRAL 1	
Puntos	Distancia en Km (Dij)
AM20	21.58
AM21	24.37
AM19	24.87
AM18	22.87

MATRIZ DE AHORROS - CLUSTER 1

	AM20	AM21	AM19	AM18
AM20		43.92	45.77	40.96
AM21	43.92		47.55	45.37
AM19	45.77	47.55		44.85
AM18	40.96	45.37	44.85	

RUTA	AM20	AM19	AM21	AM18

CLUSTER 2 - ALMACEN CENTRAL 1	
Puntos	Distancia en Km (Dij)
AM15	19.78
AM16	19.71
AM17	17.44

MATRIZ DE AHORROS - CLUSTER 2

	AM16	AM15	AM17
AM16		37.39	35.02
AM15	37.39		33.92
AM17	35.02	33.92	

RUTA	AM15	AM16	AM17

CLUSTER 3 - ALMACEN CENTRAL 1	
Puntos	Distancia en Km (Dij)
AM3	2.06
AM4	1.77
AM14	1.04
AM22	5.87
AM24	3.07
AM25	1.13

MATRIZ DE AHORROS - CLUSTER 3

	AM25	AM14	AM4	AM3	AM22	AM24
AM25		0.55	0.32	0.4	2.01	1.76
AM14	0.55		1.85	1.84	0.45	0.05
AM4	0.32	1.85		3.51	0.24	0.04
AM3	0.4	1.84	3.51		0.28	0.03
AM22	2.01	0.45	0.24	0.28		5.05
AM24	1.76	0.05	0.04	0.03	5.05	

RUTA	AM24	AM22	AM25	AM14	AM4	AM3
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CLUSTER 4 – ALMACEN CENTRAL 2	
Puntos	Distancia en Km (Dij)
AM8	8.48
AM11	2.44
AM23	4.6
AM26	0.757

MATRIZ DE AHORROS - CLUSTER 4

	AM8	AM11	AM23	AM26
AM8		3.32	7.58	1.33
AM11	3.32		4.64	0.67
AM23	7.58	4.64		1.16
AM26	1.33	0.67	1.16	

RUTA	AM8	AM23	AM11	AM26
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CLUSTER 5 – ALMACEN CENTRAL 2	
Puntos	Distancia en Km (Dij)
AM1	9.03
AM6	2.75
AM7	12.54
AM12	1.92
AM13	6.43
AM27	4.96

MATRIZ DE AHORROS - CLUSTER 5

	AM1	AM6	AM7	AM12	AM13	AM27
AM1		8.05	14	3.86	13.6	11.5
AM6	8.05		4.61	0.64	5.29	4.48
AM7	14	4.61		2.53	10.1	9.8
AM12	3.86	0.64	2.53		0.5	1.72
AM13	13.6	5.29	10.1	0.5		7.02
AM27	11.5	4.48	9.8	1.72	7.02	

RUTA	AM12	AM27	AM7	AM1	AM13	AM6
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CLUSTER 6 – ALMACEN CENTRAL 2	
Puntos	Distancia en Km (Dij)
AM2	6.06
AM5	10.21
AM9	28.32
AM10	9.93

MATRIZ DE AHORROS - CLUSTER 6

	AM2	AM5	AM9	AM10
AM2		11.7	11.7	11.4
AM5	11.7		20.4	17.4
AM9	11.7	20.4		19.9
AM10	11.4	17.4	19.9	

RUTA	AM5	AM9	AM10	AM2
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PROPUESTA 2: METODO DEL BARRIDO – MATRIZ DE DISTANCIAS, DE AHORROS Y RUTAS.

CLUSTER 1

MATRIZ DISTANCIAS 1 - AC1					
	AM24	AM25	AM15	AM18	AM16
AM24		2.44	17.03	18.92	17.11
AM25	2.44		18.91	20.62	18.9
AM15	17.03	18.91		2.66	2.1
AM18	18.92	20.62	2.66		1.86
AM16	17.11	18.9	2.1	1.86	

DISTANCIA A AC1		
	AC1	
AM24	AC1	3.07
AM25	AC1	1.13
AM15	AC1	19.78
AM18	AC1	21.58
AM16	AC1	19.71

MATRIZ AHORROS 1 - AC1					
	AM24	AM25	AM15	AM18	AM16
AM24		1.76	5.82	5.73	5.67
AM25	1.76		2	2.09	1.94
AM15	5.82	2		38.7	37.39
AM18	5.73	2.09	38.7		39.43
AM16	5.67	1.94	37.39	39.43	

RUTA: AC1 AM24 AM15 AM18 AM16 AM25 AC1

CLUSTER 2

MATRIZ DISTANCIAS 2 - AC1				
	AM19	AM20	AM17	AM21
AM19		0.68	6.33	1.69
AM20	0.68		7.29	2.03
AM17	6.33	7.29		5.37
AM21	1.69	2.03	5.37	

DISTANCIA A AC1		
	AC1	
AM19	AC1	24.37
AM20	AC1	24.87
AM17	AC1	17.44
AM21	AC1	22.87

MATRIZ AHORROS 2 - AC1				
	AM19	AM20	AM17	AM21
AM19		48.56	35.48	45.55
AM20	48.56		35.02	45.71
AM17	35.48	35.02		34.94
AM21	45.55	45.71	34.94	

RUTA: AC1 AM17 AM19 AM20 AM21 AC1

CLUSTER 3:

MATRIZ DISTANCIAS 3 - AC1				
	AM22	AM14	AM3	AM4
AM22		6.46	7.65	7.4
AM14	6.46		1.26	0.971
AM3	7.65	1.26		0.32
AM4	7.4	0.97	0.32	

DISTANCIA A AC1		
	AC1	
AM22	AC1	5.87
AM14	AC1	1.04
AM3	AC1	2.06
AM4	AC1	1.77

MATRIZ AHORROS 3 - AC1				
	AM22	AM14	AM3	AM4
AM22		0.45	0.28	0.24
AM14	0.45		1.840	1.839
AM3	0.28	1.84		3.51
AM4	0.24	1.84	3.51	

ruta: AC1 AM22 AM14 AM3 AM4 AC1

CLUSTER 4

MATRIZ DISTANCIAS 4 - AC2				
	AM8	AM11	AM26	AM23
AM8		7.6	7.91	5.5
AM11	7.6		2.53	2.4
AM26	7.91	2.53		4.2
AM23	5.5	2.4	4.2	

DISTANCIA A AC2		
	AC2	
AM8	AC2	8.48
AM11	AC2	2.44
AM26	AC2	0.757
AM23	AC2	4.6

MATRIZ AHORROS 4 - AC2				
	AM22	AM14	AM3	AM4
AM8		3.32	1.327	7.58
AM11	3.32		0.667	4.640
AM26	1.327	0.667		1.157
AM23	7.58	4.64	1.157	

ruta: AC2 AM11 AM23 AM8 AM26 AC2

CLUSTER 5:

MATRIZ DISTANCIAS 5 - AC2						
	AM13	AM12	AM6	AM27	AM7	AM1
AM13		7.85	3.89	4.37	8.92	1.9
AM12	7.85		4.03	5.16	11.93	7.09
AM6	3.89	4.03		3.23	10.68	3.73
AM27	4.37	5.16	3.23		7.7	2.53
AM7	8.92	11.93	10.68	7.7		7.54
AM1	1.9	7.09	3.73	2.53	7.54	

MATRIZ AHORROS 5 - AC2						
	AM13	AM12	AM6	AM27	AM7	AM1
AM13		0.5	5.29	7.02	10.05	13.56
AM12	0.5		0.64	1.72	2.53	3.86
AM6	5.29	0.64		4.48	4.61	8.05
AM27	7.02	1.72	4.48		9.8	11.46
AM7	10.05	2.53	4.61	9.8		14.03
AM1	13.56	3.86	8.05	11.46	14.03	

RUTA: AC2 AM6 AM13 AM1 AM7 AM27 AM12 AC2

CLUSTER 6:

MATRIZ DISTANCIAS 6 - AC2				
	AM9	AM10	AM2	AM5
AM9		18.37	22.66	18.14
AM10	18.37		4.59	2.73
AM2	22.66	4.59		4.58
AM5	18.14	2.73	4.58	

MATRIZ AHORROS 6 - AC2				
	AM9	AM10	AM2	AM5
AM9		-18.37	-22.66	-18.14
AM10	-18.37		-4.59	-2.73
AM2	-22.66	-4.59		-4.58
AM5	-18.14	-2.73	-4.58	

RUTA: AC2 AM2 AM5 AM9 AM10 AC2

PROPUESTA 3: METODO GRAN RUTA

Distancias entre todos los puntos de acopio abastecidos por Almacén Central 1

PUNTOS ABASTECIDOS POR ALMACEN CENTRAL 1

	AM3	AM4	AM14	AM15	AM16	AM17	AM18	AM19	AM20	AM21	AM22	AM24	AM25
AM3		0.32	1.26	21.58	21.48	19.39	23.3	26.09	26.61	25.35	7.65	5.1	2.79
AM4	0.32		0.98	21.35	21.21	19.14	23.01	25.79	26.35	24.4	7.4	4.8	2.58
AM14	1.26	0.971		20.37	20.23	18.18	22.11	24.78	25.44	23.5	6.46	4.06	1.62
AM15	21.58	21.35	20.37		2.1	3.3	2.66	5.13	5.77	4.43	13.98	17.03	18.91
AM16	21.48	21.21	20.23	2.1		2.13	1.86	4.58	5.25	3.35	14.08	17.11	18.9
AM17	19.39	19.14	18.18	3.3	2.13		3.98	6.83	7.29	5.37	11.74	15.15	16.79
AM18	23.3	23.01	22.11	2.66	1.86	3.98		2.89	3.49	1.87	15.58	18.92	20.62
AM19	26.09	25.79	24.78	5.13	4.58	6.83	2.89		0.68	1.69	18.45	21.81	23.29
AM20	26.61	26.35	25.44	5.77	5.25	7.29	3.49	0.68		2.03	18.97	22.36	24.02
AM21	25.35	24.4	23.5	4.43	3.35	5.37	1.87	1.69	2.03		16.97	20.46	22.01
AM22	7.65	7.4	6.46	13.98	14.08	11.74	15.58	18.45	18.97	16.97		3.89	4.99
AM24	5.1	4.8	4.06	17.03	17.11	15.15	18.92	21.81	22.36	20.46	3.89		2.44
AM25	2.79	2.58	1.62	18.91	18.9	16.79	20.62	23.29	24.01	22.01	4.99	2.44	

Matriz de ahorros para obtención de ruta de puntos abastecidos por Almacén Central 1 – ALGORITMO DE CLARK Y WRIGHT

MATRIZ DE AHORROS ALMACEN CENTRAL 1

	AM3	AM4	AM14	AM15	AM16	AM17	AM18	AM19	AM20	AM21	AM22	AM24	AM25
AM3		3.51	1.84	0.26	0.29	0.11	0.34	0.34	0.32	-0.42	0.28	0.03	0.4
AM4	3.51		1.83	0.2	0.27	0.07	0.34	0.35	0.29	0.24	0.24	0.04	0.32
AM14	1.84	1.84		0.45	0.52	0.3	0.51	0.63	0.47	0.41	0.45	0.05	0.55
AM15	0.26	0.2	0.45		37.39	33.92	38.7	39.02	38.88	38.22	11.67	5.82	2
AM16	0.29	0.27	0.52	37.39		35.02	39.43	39.5	39.33	39.23	11.5	5.67	1.94
AM17	0.11	0.07	0.3	33.92	35.02		35.04	34.98	35.02	34.94	11.57	5.36	1.78
AM18	0.34	0.34	0.51	38.7	39.43	35.04		43.06	42.96	42.58	11.87	5.73	2.09
AM19	0.34	0.35	0.63	39.02	39.5	34.98	43.06		48.56	45.55	11.79	5.63	2.21
AM20	0.32	0.29	0.47	38.88	39.33	35.02	42.96	48.56		45.71	11.77	5.58	1.98
AM21	-0.42	0.24	0.41	38.22	39.23	34.94	42.58	45.55	45.71		11.77	5.48	1.99
AM22	0.28	0.24	0.45	11.67	11.5	11.57	11.87	11.79	11.77	11.77		5.05	2.01
AM24	0.03	0.04	0.05	5.82	5.67	5.36	5.73	5.63	5.58	5.48	5.05		1.76
AM25	0.4	0.32	0.55	2	1.94	1.78	2.09	2.21	1.99	1.99	2.01	1.76	

RUTA RESULTANTE: AC1 – AM24 – AM17 – AM16 – AM18 – AM19 – AM20 – AM21 – AM15 – AM22 – AM25 – AM14 – AM3 – AM4 – AC1

Distancias entre todos los puntos de acopio abastecidos por Almacén Central 2 - ALGORITMO DE CLARK Y WRIGHT

PUNTOS ABASTECIDOS POR ALMACEN CENTRAL 2

	AM1	AM2	AM5	AM6	AM7	AM8	AM9	AM10	AM11	AM12	AM13	AM23	AM26	AM27
AM1		4.52	6.28	3.73	7.54	11.1	23.78	7.76	8.73	7.09	1.9	10.17	6.22	2.53
AM2	4.52		4.58	3.53	11.97	7.05	22.66	4.59	4.64	7.43	3.18	7.35	5.05	5.87
AM5	6.28	4.58		7.78	12.06	9.7	18.14	2.73	11.51	11.52	4.54	11.64	9.77	8.6
AM6	3.73	3.53	7.78		10.68	8.83	25.82	7.96	4.95	4.03	3.89	6.5	2.61	3.23
AM7	7.54	11.97	12.06	10.68		18.79	26.08	14.18	7.53	11.93	8.92	17.15	12.87	7.7
AM8	11.1	7.05	9.7	8.83	18.79		24.38	7.51	7.6	10.3	10.21	5.5	7.91	11.97
AM9	23.78	22.66	18.14	25.82	26.08	24.38		18.37	23.75	29.69	22.24	28.76	27.52	26.28
AM10	7.76	4.59	2.73	7.96	14.18	7.51	18.37		10.87	11.77	5.96	10.38	9.39	9.62
AM11	8.73	4.64	11.51	4.95	7.53	7.6	23.75	10.87		6.93	8.77	2.4	2.53	2.64
AM12	7.09	7.43	11.52	4.03	11.93	10.3	29.69	11.77	6.93		7.85	5.77	2.44	5.16
AM13	1.9	3.18	4.54	3.89	8.92	10.21	22.24	5.96	2.01	7.85		9.61	6.3	4.37
AM23	10.17	7.35	11.64	6.5	17.15	5.5	28.76	10.38	2.4	5.77	9.61		4.2	9.52
AM26	6.22	5.05	9.77	2.61	12.87	7.91	27.52	9.39	2.53	2.44	6.3	4.2		5.15
AM27	2.53	5.87	8.6	3.23	7.7	11.97	26.28	9.62	2.64	5.16	4.37	9.52	5.15	

Matriz de ahorros para obtención de ruta de puntos abastecidos por Almacén Central 2

PUNTOS ABASTECIDOS POR ALMACEN CENTRAL 2

	AM1	AM2	AM5	AM6	AM7	AM8	AM9	AM10	AM11	AM12	AM13	AM23	AM26	AM27
AM1		4.52	6.28	3.73	7.54	11.1	23.78	7.76	8.73	7.09	1.9	10.17	6.22	2.53
AM2	4.52		4.58	3.53	11.97	7.05	22.66	4.59	4.64	7.43	3.18	7.35	5.05	5.87
AM5	6.28	4.58		7.78	12.06	9.7	18.14	2.73	11.51	11.52	4.54	11.64	9.77	8.6
AM6	3.73	3.53	7.78		10.68	8.83	25.82	7.96	4.95	4.03	3.89	6.5	2.61	3.23
AM7	7.54	11.97	12.06	10.68		18.79	26.08	14.18	7.53	11.93	8.92	17.15	12.87	7.7
AM8	11.1	7.05	9.7	8.83	18.79		24.38	7.51	7.6	10.3	10.21	5.5	7.91	11.97
AM9	23.78	22.66	18.14	25.82	26.08	24.38		18.37	23.75	29.69	22.24	28.76	27.52	26.28
AM10	7.76	4.59	2.73	7.96	14.18	7.51	18.37		10.87	11.77	5.96	10.38	9.39	9.62
AM11	8.73	4.64	11.51	4.95	7.53	7.6	23.75	10.87		6.93	8.77	2.4	2.53	2.64
AM12	7.09	7.43	11.52	4.03	11.93	10.3	29.69	11.77	6.93		7.85	5.77	2.44	5.16
AM13	1.9	3.18	4.54	3.89	8.92	10.21	22.24	5.96	2.01	7.85		9.61	6.3	4.37
AM23	10.17	7.35	11.64	6.5	17.15	5.5	28.76	10.38	2.4	5.77	9.61		4.2	9.52
AM26	6.22	5.05	9.77	2.61	12.87	7.91	27.52	9.39	2.53	2.44	6.3	4.2		5.15
AM27	2.53	5.87	8.6	3.23	7.7	11.97	26.28	9.62	2.64	5.16	4.37	9.52	5.15	

RUTA RESULTANTE: AC2 – AM11 – AM8 – AM23 – AM27 – AM7 – AM1- AM13 – AM5 – AM9 – AM10 – AM2- AM6 – AM26 – AM12 – AC2

PROPUESTA 4: MÉTODO CLASIFICACIÓN ASCENDENTE JERÁRQUICA: MATRIZ DE DISTANCIAS, AHORROS Y RUTAS

MATRIZ DISTANCIAS 1 -AC1

	AM19	AM20	AM18	AM21	AM17	AM15	AM16
AM19		0.68	2.89	1.69	6.83	5.13	4.58
AM20			3.49	2.03	7.29	5.77	5.25
AM18				1.87	3.98	2.66	1.86
AM21					5.37	4.43	3.35
AM17						3.3	2.13
AM15							2.1
AM16							

MATRIZ DISTANCIAS 2 -AC1

	AM22	AM24
AM22		0.68
AM24		

MATRIZ AHORROS 2 - AC1

	AM22	AM24
AM22		8.26
AM24		

RUTA: AC1 AM22 AM24 AC1

MATRIZ AHORROS 1 - AC1

	AM19	AM20	AM18	AM21	AM17	AM15	AM16
AM19		48.6	43.1	45.6	35	39	39.5
AM20			43	45.7	35	38.9	39.3
AM18				42.6	35	38.2	39.4
AM21					34.9	19.8	39.2
AM17						33.9	35
AM15							37.4
AM16							

MATRIZ DISTANCIAS 3 -AC1

	AM3	AM14	AM4	AM25
AM3		1.84	3.51	0.4
AM14			1.83	0.55
AM4				0.32
AM25				

MATRIZ AHORROS 3 - AC1

	AM3	AM14	AM4	AM25
AM3		1.26	0.32	2.79
AM14			0.98	1.62
AM4				2.58
AM25				

RUTA: AC1 AM4 AM25 AM3 AM14 AC1

RUTA: AC1 AM17 AM21 AM20 AM19 AM18 AM16 AM15 AC1

MATRIZ DISTANCIAS 4 -AC2

	AM9	AM7	AM11	AM23
AM9		26.1	23.8	28.8
AM7			7.53	17.2
AM11				2.4
AM23				

MATRIZ AHORROS 4 - AC2

	AM9	AM7	AM11	AM23
AM9		14.8	7.01	4.16
AM7			7.45	-0
AM11				4.64
AM23				

RUTA: AC2 AM9 AM7 AM11 AM23 AC2

MATRIZ DISTANCIAS 5 -AC2

	AM5	AM8	AM10
AM5		9.7	2.73
AM8			7.51
AM10			

MATRIZ AHORROS 5 - AC2

	AM5	AM8	AM10
AM5		8.99	17.4
AM8			10.9
AM10			

RUTA: AC2 AM5 AM8 AM10 AC2

MATRIZ DISTANCIAS 6 -AC2

	AM6	AM13	AM1	AM27	AM2	AM12	AM26
AM6		3.89	3.73	3.23	3.53	4.03	2.61
AM13			1.9	4.37	3.18	7.85	6.3
AM1				2.53	4.52	7.09	6.22
AM27					5.87	5.16	5.15
AM2						7.43	5.05
AM12							2.44
AM26							

MATRIZ AHORROS 6 - AC2

	AM6	AM13	AM1	AM27	AM2	AM12	AM26
AM6		5.29	8.05	4.48	5.28	0.64	0.9
AM13			13.6	7.02	9.31	0.5	0.89
AM1				11.5	10.6	1.72	3.57
AM27					5.15	1.92	0.57
AM2						0.55	1.77
AM12							0.24
AM26							

RUTA: AC2 AM12 AM27 AM1 AM13 AM2 AM6 AM26 AC2

