

## **7.7 EVALUACIÓN ECONÓMICA Y FINANCIERA**

## 7.7 Evaluación Económica y Financiera

### 7.7.1 Evaluación Económica

#### (1) Plan para el Mejoramiento del Canal

- 1) Cálculo del SCF (*Standard Conversion Factor*, Factor de Conversión Estándar) es de la siguiente manera:

**Tabla 7.7.1 SCF (Standard Conversion Factor) para el Precio de Sombra**

Por Volumen	Bienes Importados (CIF)			Bienes Exportados (FOB)		
	Artículo	Cantidad (000 US\$)	Arancel (%)	Artículo	Cantidad (000 US\$)	Arancel (%)
1	Maquinaria	4,668,818	10	Metal	1,635,109	0
2	Productos Industriales	1,452,181	6	Productos Industriales	859,688	0
3	Metal	1,306,670	9	Repuestos de Vehículos	399,141	0
4	Bebidas	644,999	15	Bebidas	354,468	0
5	Cultivos	639,598	15	Productos Químicos	315,853	0
6	Productos Químicos	599,653	18	Productos Minerales	276,986	0
7	Productos Textiles	496,152	20	Joyería	261,848	0
8	Productos de Papel	474,634	16	Cultivos	201,181	0
9	Productos Minerales	368,339	15	Maquinaria	192,641	0
10	Ganadería	291,906	17	Productos de Papel	128,567	0
		10,942,950	*11.4			4,625,482

\* peso promediado

Fuente: Nuevo Arancel de Aduanas de Venezuela (LEGIS Editores, C.A.)  
OECI

$$\text{SCF} = \frac{10,942,950 + 4,625,482}{[ (10,942,950 \times 1.114) + 4,625,482 ]}$$

$$= \frac{15,568,432}{16,815,928} = 0.93$$

- 2) Evaluación
- a) Análisis Costo y Beneficio (Valor Actual Neto)

Alternativa I (Dique de Cierre Completo)

**Tabla 7.7.2 Dique de Cierre Completo: Valor Actual Neto ( Costo )**

		Tasa de Descuento	Costo de Construcción	Costo O/M	Costo Total	Valor Actual Neto
0	1.1	1	14,036,746		14,036,746	14036746
1	1.1	0.909090909	24,411,733		24,411,733	22192485
2	1.1	0.826446281	15,257,333		15,257,333	12609366
3	1.1	0.751314801	7,323,520		7,323,520	5502269
4	1.1	0.683013455		305,147	305,147	208420
5	1.1	0.620921323		305,147	305,147	189472
6	1.1	0.56447393		305,147	305,147	172248
7	1.1	0.513158118		305,147	305,147	156589
8	1.1	0.46650738		305,147	305,147	142353
9	1.1	0.424097618		305,147	305,147	129412
10	1.1	0.385543289		305,147	305,147	117647
11	1.1	0.350493899		305,147	305,147	106952
12	1.1	0.318630818		305,147	305,147	97229
13	1.1	0.28966438		305,147	305,147	88390
14	1.1	0.263331254		305,147	305,147	80355
15	1.1	0.239392049		305,147	305,147	73050
16	1.1	0.217629136		305,147	305,147	66409
17	1.1	0.197844669		305,147	305,147	60372
18	1.1	0.17985879		305,147	305,147	54883
19	1.1	0.163507991		305,147	305,147	49894
20	1.1	0.148643628		305,147	305,147	45358
21	1.1	0.135130571		305,147	305,147	41235
22	1.1	0.122845974		305,147	305,147	37486
23	1.1	0.111678158		305,147	305,147	34078
24	1.1	0.101525598		305,147	305,147	30980
25	1.1	0.092295998		305,147	305,147	28164
26	1.1	0.083905453		305,147	305,147	25603
27	1.1	0.076277684		305,147	305,147	23276
28	1.1	0.069343349		305,147	305,147	21160
29	1.1	0.063039409		305,147	305,147	19236
30	1.1	0.057308553		305,147	305,147	17488
						56458602

Tasa de Descuento: 10 %

**Tabla 7.7.3 Dique de Cierre Completo: Valor Actual Neto (Beneficio)**

		Tasa de Descuento	Beneficio	Valor Actual Neto
0	1.1	1		
1	1.1	0.909090909		
2	1.1	0.826446281		
3	1.1	0.751314801		
4	1.1	0.683013455	2,234,700	1526330
5	1.1	0.620921323	4,469,400	2775146
6	1.1	0.56447393	6,704,100	3784290
7	1.1	0.513158118	8,938,800	4587018
8	1.1	0.46650738	8,938,800	4170016
9	1.1	0.424097618	8,938,800	3790924
10	1.1	0.385543289	8,938,800	3446294
11	1.1	0.350493899	8,938,800	3132995
12	1.1	0.318630818	8,938,800	2848177
13	1.1	0.28966438	8,938,800	2589252
14	1.1	0.263331254	8,938,800	2353865
15	1.1	0.239392049	8,938,800	2139878
16	1.1	0.217629136	8,938,800	1945343
17	1.1	0.197844669	8,938,800	1768494
18	1.1	0.17985879	8,938,800	1607722
19	1.1	0.163507991	8,938,800	1461565
20	1.1	0.148643628	8,938,800	1328696
21	1.1	0.135130571	8,938,800	1207905
22	1.1	0.122845974	8,938,800	1098096
23	1.1	0.111678158	8,938,800	998269
24	1.1	0.101525598	8,938,800	907517
25	1.1	0.092295998	8,938,800	825015
26	1.1	0.083905453	8,938,800	750014
27	1.1	0.076277684	8,938,800	681831
28	1.1	0.069343349	8,938,800	619846
29	1.1	0.063039409	8,938,800	563497
30	1.1	0.057308553	8,938,800	512270
				53420264

Tasa de Descuento: 10%

$$B/C = 53420264/56458602 = 0.946$$

Alternativa II ( Dique Sumergido)

**Tabla 7.7.4 Dique Sumergido: Valor Actual Neto ( Costo )**

		Tasa de Descuento	Costo de Construcción	Costo O/M	Costo Total	Valor Actual Neto
0	1.1	1	17,925,345		17,925,345	17925345
1	1.1	0.909090909	31,174,513		31,174,513	28340466
2	1.1	0.826446281	19,484,071		19,484,071	16102538
3	1.1	0.751314801	9,352,354		9,352,354	7026562
4	1.1	0.683013455		389,682	389,682	266158
5	1.1	0.620921323		389,682	389,682	241962
6	1.1	0.56447393		389,682	389,682	219965
7	1.1	0.513158118		389,682	389,682	199968
8	1.1	0.46650738		389,682	389,682	181790
9	1.1	0.424097618		389,682	389,682	165263
10	1.1	0.385543289		389,682	389,682	150239
11	1.1	0.350493899		389,682	389,682	136581
12	1.1	0.318630818		389,682	389,682	124165
13	1.1	0.28966438		389,682	389,682	112877
14	1.1	0.263331254		389,682	389,682	102615
15	1.1	0.239392049		389,682	389,682	93287
16	1.1	0.217629136		389,682	389,682	84806
17	1.1	0.197844669		389,682	389,682	77097
18	1.1	0.17985879		389,682	389,682	70088
19	1.1	0.163507991		389,682	389,682	63716
20	1.1	0.148643628		389,682	389,682	57924
21	1.1	0.135130571		389,682	389,682	52658
22	1.1	0.122845974		389,682	389,682	47871
23	1.1	0.111678158		389,682	389,682	43519
24	1.1	0.101525598		389,682	389,682	39563
25	1.1	0.092295998		389,682	389,682	35966
26	1.1	0.083905453		389,682	389,682	32696
27	1.1	0.076277684		389,682	389,682	29724
28	1.1	0.069343349		389,682	389,682	27022
29	1.1	0.063039409		389,682	389,682	24565
30	1.1	0.057308553		389,682	389,682	22332
						72099326

Tasa de Descuento: 10%

**Tabla 7.7.5 Dique Sumergido: Valor Actual Neto ( Beneficio )**

		Tasa de Descuento	Beneficio	Valor Actual Neto
0	1.1	1		
1	1.1	0.909090909		
2	1.1	0.826446281		
3	1.1	0.751314801		
4	1.1	0.683013455	2,234,700	1526330
5	1.1	0.620921323	4,469,400	2775146
6	1.1	0.56447393	6,704,100	3784290
7	1.1	0.513158118	8,938,800	4587018
8	1.1	0.46650738	8,938,800	4170016
9	1.1	0.424097618	8,938,800	3790924
10	1.1	0.385543289	8,938,800	3446294
11	1.1	0.350493899	8,938,800	3132995
12	1.1	0.318630818	8,938,800	2848177
13	1.1	0.28966438	8,938,800	2589252
14	1.1	0.263331254	8,938,800	2353865
15	1.1	0.239392049	8,938,800	2139878
16	1.1	0.217629136	8,938,800	1945343
17	1.1	0.197844669	8,938,800	1768494
18	1.1	0.17985879	8,938,800	1607722
19	1.1	0.163507991	8,938,800	1461565
20	1.1	0.148643628	8,938,800	1328696
21	1.1	0.135130571	8,938,800	1207905
22	1.1	0.122845974	8,938,800	1098096
23	1.1	0.111678158	8,938,800	998269
24	1.1	0.101525598	8,938,800	907517
25	1.1	0.092295998	8,938,800	825015
26	1.1	0.083905453	8,938,800	750014
27	1.1	0.076277684	8,938,800	681831
28	1.1	0.069343349	8,938,800	619846
29	1.1	0.063039409	8,938,800	563497
30	1.1	0.057308553	8,938,800	512270
				53420264

Tasa de Descuento: 10%

$$B/C = 53420264/72099326 = 0.741$$

## (2) Plan para el Mejoramiento de Dragado

## 1) Beneficio

**Tabla 7.7.6 Costo de Navegación para el Sistema de Embarcaciones en Río Orinoco**

<b>A. Ruta y Distancia</b>							
1. Ruta de Navegación	Río Grande	Río Grande			Río Grande		
2. Distancia (km)	Puerto Ordaz - TV- Puerto. Ordaz	605	605	605	605	605	605
<b>B. Condiciones del Buque</b>							
1. Tipo de Buque		Panamax			Handy Max		
2. DWT (ton)		65,000			45,000		
3. Calado (m)		13.6			11.2		
<b>C. Cargo</b>							
1. Cargo Unitario por Buque durante Navegación	\$10,600+5,100/día para Panamax; \$8,500+4,600 para Handymax	15,700	15,700	15,700	13,100	13,100	13,100
2. Cargo Unitario por Buque durante Descarga	\$10,600 para Panamax; \$8,500 para Handymax	10,600	10,600	10,600	8,500	8,500	8,500
<b>D. Caso de Estudio:</b>							
Calado (m)		9.5 m	11.0 m	12.6 m	9.5 m	11.0m	12.6m
* Volumen de Carga (ton)		43,500	52,500	62,500	36,500	44,000	45,000
1. Tiempo de carga en Puerto Ordaz	Capacidad de carga: 4,000t/hr	10.9	13.1	15.6	9.1	11.0	11.3
2. Tiempo de Navegación para TV + tiempo de espera/operación de maniobras	Velocidad de Navegación: 17km/hr	35.6	35.6	35.6	35.6	35.6	35.6
3. Tiempo de Descarga en TV	Capacidad de Descarga: 3,500t/hr	12.4	15.0	17.9	10.4	12.6	12.9
4. Tiempo de Navegación para Puerto Ordaz + tiempo de espera/operación de maniobras	Velocidad de Navegación: 14km/hr, Tiempo de Espera: 6hr	49.2	49.2	49.2	49.2	49.2	49.2
Tiempo requerido por ciclo (hr)	(Hr)	108.1	112.9	118.3	104.4	108.4	108.9
	(Días)	4.5	4.7	4.9	4.43	4.5	4.5
<b>E. Num. Rondas por Año</b>	Eficiencia del Período de Trabajo: 0.95	77.0	73.7	70.4	79.7	76.8	76.4
<b>F. Cargo por Embarcación</b>							
1. Cargo durante Carga y Descarga	(D.1+D.3)x1.2/24xC.2	12,351	14,906	17,746	8,310	10,018	10,246
2. Cargo durante Navegación	(D.2+D.4)x1.2/24xC.1	55,475	55,475	55,475	46,288	46,288	46,288
	Total	67,826	70,381	73,221	54,598	56,306	56,534
<b>G. Cobro Total 4,000,000 ton/año</b>		6,236,862	5,362,380	4,686,113	5,983,377	5,118,718	5,025,207
<b>H. Costo del Buque por Carga/ton</b>	F total/D* (\$/ton)	1.56	1.34	1.17	1.50	1.28	1.26

2) Evaluación

a) Análisis Costo Beneficio

**Tabla 7.7.7 Caso del GPS Adicional: Valor Actual Neto (Costo)**

		Tasa de Descuento	Costo	Costo O/M	Total	Valor Actual Neto
0	1.1	1	177,165		177,165	177165
1	1.1	0.909090909		465	465	423
2	1.1	0.826446281		465	465	384
3	1.1	0.751314801		465	465	349
4	1.1	0.683013455		465	465	318
5	1.1	0.620921323		465	465	289
6	1.1	0.56447393		465	465	262
7	1.1	0.513158118		465	465	239
8	1.1	0.46650738		465	465	217
9	1.1	0.424097618		465	465	197
10	1.1	0.385543289		465	465	179
11	1.1	0.350493899		465	465	163
12	1.1	0.318630818		465	465	148
13	1.1	0.28966438		465	465	135
14	1.1	0.263331254		465	465	122
15	1.1	0.239392049		465	465	111
16	1.1	0.217629136		465	465	101
17	1.1	0.197844669		465	465	92
18	1.1	0.17985879		465	465	84
19	1.1	0.163507991		465	465	76
20	1.1	0.148643628		465	465	69
21	1.1	0.135130571		465	465	63
22	1.1	0.122845974		465	465	57
23	1.1	0.111678158		465	465	52
24	1.1	0.101525598		465	465	47
25	1.1	0.092295998		465	465	43
						181386

Tasa de Descuento: 10%

**Tabla 7.7.8 Caso del GPS Adicional: Valor Actual Neto ( Beneficio )**

	Tasa de Descuento		Beneficio	Valor Actual Neto
0	1.1	1		
1	1.1	0.90909091	874,500	795000
2	1.1	0.82644628	874,500	722727
3	1.1	0.7513148	874,500	657025
4	1.1	0.68301346	874,500	597295
5	1.1	0.62092132	874,500	542996
6	1.1	0.56447393	874,500	493632
7	1.1	0.51315812	874,500	448757
8	1.1	0.46650738	874,500	407961
9	1.1	0.42409762	874,500	370873
10	1.1	0.38554329	874,500	337158
11	1.1	0.3504939	874,500	306507
12	1.1	0.31863082	874,500	278643
13	1.1	0.28966438	874,500	253312
14	1.1	0.26333125	874,500	230283
15	1.1	0.23939205	874,500	209348
16	1.1	0.21762914	874,500	190317
17	1.1	0.19784467	874,500	173015
18	1.1	0.17985879	874,500	157287
19	1.1	0.16350799	874,500	142988
20	1.1	0.14864363	874,500	129989
21	1.1	0.13513057	874,500	118172
22	1.1	0.12284597	874,500	107429
23	1.1	0.11167816	874,500	97663
24	1.1	0.1015256	874,500	88784
25	1.1	0.092296	874,500	80713
				7937871

Tasa de Descuento: 10%

$$B/C=7,937,871/181,386=43.76$$

**Tabla 7.7.9 Caso del Sistema de Gabarras de Eliminación Valor Actual Neto  
( Costo )**

		Tasa de Descuento	Costo	Costo O/M	Total	Valor Actual Neto
0	1.1	1	20,544,165		20,544,165	20,544,165
1	1.1	0.90909091		319,455	319,455	290414
2	1.1	0.82644628		319,455	319,455	264012
3	1.1	0.7513148		319,455	319,455	240011
4	1.1	0.68301346		319,455	319,455	218192
5	1.1	0.62092132		319,455	319,455	198356
6	1.1	0.56447393		319,455	319,455	180324
7	1.1	0.51315812		319,455	319,455	163931
8	1.1	0.46650738		319,455	319,455	149028
9	1.1	0.42409762		319,455	319,455	135480
10	1.1	0.38554329		319,455	319,455	123164
11	1.1	0.3504939		319,455	319,455	111967
12	1.1	0.31863082		319,455	319,455	101788
13	1.1	0.28966438		319,455	319,455	92535
14	1.1	0.26333125		319,455	319,455	84122
15	1.1	0.23939205		319,455	319,455	76475
16	1.1	0.21762914		319,455	319,455	69523
17	1.1	0.19784467		319,455	319,455	63202
18	1.1	0.17985879		319,455	319,455	57457
19	1.1	0.16350799		319,455	319,455	52233
20	1.1	0.14864363		319,455	319,455	47485
21	1.1	0.13513057		319,455	319,455	43168
22	1.1	0.12284597		319,455	319,455	39244
23	1.1	0.11167816		319,455	319,455	35676
24	1.1	0.1015256		319,455	319,455	32433
25	1.1	0.092296		319,455	319,455	29484
						23,443,871

Tasa de Descuento: 10%

**Tabla 7.7.10 Caso del Sistema de Gabarras de Eliminación: Valor Actual Neto  
( Beneficio )**

		Tasa de Descuento	Beneficio	Valor Actual Neto
0	1.1	1		
1	1.1	0.909090909	11,250,700	10227909
2	1.1	0.826446281	11,250,700	9298099
3	1.1	0.751314801	11,250,700	8452817
4	1.1	0.683013455	11,250,700	7684379
5	1.1	0.620921323	11,250,700	6985800
6	1.1	0.56447393	11,250,700	6350727
7	1.1	0.513158118	11,250,700	5773388
8	1.1	0.46650738	11,250,700	5248535
9	1.1	0.424097618	11,250,700	4771395
10	1.1	0.385543289	11,250,700	4337632
11	1.1	0.350493899	11,250,700	3943302
12	1.1	0.318630818	11,250,700	3584820
13	1.1	0.28966438	11,250,700	3258927
14	1.1	0.263331254	11,250,700	2962661
15	1.1	0.239392049	11,250,700	2693328
16	1.1	0.217629136	11,250,700	2448480
17	1.1	0.197844669	11,250,700	2225891
18	1.1	0.17985879	11,250,700	2023537
19	1.1	0.163507991	11,250,700	1839579
20	1.1	0.148643628	11,250,700	1672345
21	1.1	0.135130571	11,250,700	1520314
22	1.1	0.122845974	11,250,700	1382103
23	1.1	0.111678158	11,250,700	1256457
24	1.1	0.101525598	11,250,700	1142234
25	1.1	0.092295998	11,250,700	1038395
				102123054

Tasa de Descuento: 10%

$$B/C=102,123,054/23,443,871=4.36$$

b) TIRE

**Tabla 7.7.11 Caso del GPS Adicional: TIRE**

	Costo	Costo O/M	Total	Beneficio	Balance
0	177,165		177,165		-177,165
1		465	465	874,500	874,035
2		465	465	874,500	874,035
3		465	465	874,500	874,035
4		465	465	874,500	874,035
5		465	465	874,500	874,035
6		465	465	874,500	874,035
7		465	465	874,500	874,035
8		465	465	874,500	874,035
9		465	465	874,500	874,035
10		465	465	874,500	874,035
11		465	465	874,500	874,035
12		465	465	874,500	874,035
13		465	465	874,500	874,035
14		465	465	874,500	874,035
15		465	465	874,500	874,035
16		465	465	874,500	874,035
17		465	465	874,500	874,035
18		465	465	874,500	874,035
19		465	465	874,500	874,035
20		465	465	874,500	874,035
21		465	465	874,500	874,035
22		465	465	874,500	874,035
23		465	465	874,500	874,035
24		465	465	874,500	874,035
25		465	465	874,500	874,035
				EIRR:	493%

**Tabla 7.7.12 Caso del Sistema de Gabarras de Eliminación: TIRE**

	Costo	Costo O/M	Total	Beneficio	Balance
0	20,544,165		20,544,165		-20,544,165
1		319,455	319,455	11,250,700	10,931,245
2		319,455	319,455	11,250,700	10,931,245
3		319,455	319,455	11,250,700	10,931,245
4		319,455	319,455	11,250,700	10,931,245
5		319,455	319,455	11,250,700	10,931,245
6		319,455	319,455	11,250,700	10,931,245
7		319,455	319,455	11,250,700	10,931,245
8		319,455	319,455	11,250,700	10,931,245
9		319,455	319,455	11,250,700	10,931,245
10		319,455	319,455	11,250,700	10,931,245
11		319,455	319,455	11,250,700	10,931,245
12		319,455	319,455	11,250,700	10,931,245
13		319,455	319,455	11,250,700	10,931,245
14		319,455	319,455	11,250,700	10,931,245
15		319,455	319,455	11,250,700	10,931,245
16		319,455	319,455	11,250,700	10,931,245
17		319,455	319,455	11,250,700	10,931,245
18		319,455	319,455	11,250,700	10,931,245
19		319,455	319,455	11,250,700	10,931,245
20		319,455	319,455	11,250,700	10,931,245
21		319,455	319,455	11,250,700	10,931,245
22		319,455	319,455	11,250,700	10,931,245
23		319,455	319,455	11,250,700	10,931,245
24		319,455	319,455	11,250,700	10,931,245
25		319,455	319,455	11,250,700	10,931,245
				EIRR:	53%

## 7.7.2 Evaluación Financiera

(1) Plan para el Mejoramiento del Canal

Ninguno

(2) Plan para el Mejoramiento del Dragado

**Tabla 7.7.14 Caso del GPS Adicional: TIRF**

	Costo	Costo O/M	Total	Ingreso	Balance
0	190,500		190,500		-190,500
1		500	500	87,450	86,950
2		500	500	87,450	86,950
3		500	500	87,450	86,950
4		500	500	87,450	86,950
5		500	500	87,450	86,950
6		500	500	87,450	86,950
7		500	500	87,450	86,950
8		500	500	87,450	86,950
9		500	500	87,450	86,950
10		500	500	87,450	86,950
11		500	500	87,450	86,950
12		500	500	87,450	86,950
13		500	500	87,450	86,950
14		500	500	87,450	86,950
15		500	500	87,450	86,950
16		500	500	87,450	86,950
17		500	500	87,450	86,950
18		500	500	87,450	86,950
19		500	500	87,450	86,950
20		500	500	87,450	86,950
21		500	500	87,450	86,950
22		500	500	87,450	86,950
23		500	500	87,450	86,950
24		500	500	87,450	86,950
25		500	500	87,450	86,950
				TIRF	46%

**Tabla 7.7.14 Caso del Sistema de Gabarras de Eliminación: TIRF**

	Costo	Costo O/M	Total	Ingreso	Balance
0	22,090,500		22,090,500		-22,090,500
1		343,500	343,500	9,700,000	9,356,500
2		343,500	343,500	9,700,000	9,356,500
3		343,500	343,500	9,700,000	9,356,500
4		343,500	343,500	9,700,000	9,356,500
5		343,500	343,500	9,700,000	9,356,500
6		343,500	343,500	9,700,000	9,356,500
7		343,500	343,500	9,700,000	9,356,500
8		343,500	343,500	9,700,000	9,356,500
9		343,500	343,500	9,700,000	9,356,500
10		343,500	343,500	9,700,000	9,356,500
11		343,500	343,500	9,700,000	9,356,500
12		343,500	343,500	9,700,000	9,356,500
13		343,500	343,500	9,700,000	9,356,500
14		343,500	343,500	9,700,000	9,356,500
15		343,500	343,500	9,700,000	9,356,500
16		343,500	343,500	9,700,000	9,356,500
17		343,500	343,500	9,700,000	9,356,500
18		343,500	343,500	9,700,000	9,356,500
19		343,500	343,500	9,700,000	9,356,500
20		343,500	343,500	9,700,000	9,356,500
21		343,500	343,500	9,700,000	9,356,500
22		343,500	343,500	9,700,000	9,356,500
23		343,500	343,500	9,700,000	9,356,500
24		343,500	343,500	9,700,000	9,356,500
25		343,500	343,500	9,700,000	9,356,500
				FIRR:	42%

**Tabla 7.7.15 Caso del Sistema de Gabarras de Eliminación (Con Préstamo Externo): TIRF**

	Financiamiento	Costo O/M	Interés	Pago	Total	Ingreso	Balance
0	22,090,500				22,090,500		-22,090,500
1		343,000	485,991		828,991	9,700,000	8,871,009
2		343,000	485,991		828,991	9,700,000	8,871,009
3		343,000	485,991		828,991	9,700,000	8,871,009
4		343,000	485,991		828,991	9,700,000	8,871,009
5		343,000	485,991		828,991	9,700,000	8,871,009
6		343,000	485,991		828,991	9,700,000	8,871,009
7		343,000	485,991		828,991	9,700,000	8,871,009
8		343,000		1,158,225	1,501,225	9,700,000	8,198,775
9		343,000		1,158,225	1,501,225	9,700,000	8,198,775
10		343,000		1,158,225	1,501,225	9,700,000	8,198,775
11		343,000		1,158,225	1,501,225	9,700,000	8,198,775
12		343,000		1,158,225	1,501,225	9,700,000	8,198,775
13		343,000		1,158,225	1,501,225	9,700,000	8,198,775
14		343,000		1,158,225	1,501,225	9,700,000	8,198,775
15		343,000		1,158,225	1,501,225	9,700,000	8,198,775
16		343,000		1,158,225	1,501,225	9,700,000	8,198,775
17		343,000		1,158,225	1,501,225	9,700,000	8,198,775
18		343,000		1,158,225	1,501,225	9,700,000	8,198,775
19		343,000		1,158,225	1,501,225	9,700,000	8,198,775
20		343,000		1,158,225	1,501,225	9,700,000	8,198,775
21		343,000		1,158,225	1,501,225	9,700,000	8,198,775
22		343,000		1,158,225	1,501,225	9,700,000	8,198,775
23		343,000		1,158,225	1,501,225	9,700,000	8,198,775
24		343,000		1,158,225	1,501,225	9,700,000	8,198,775
25		343,000		1,158,225	1,501,225	9,700,000	8,198,775
26		343,000		1,158,225	1,501,225	9,700,000	8,198,775
27		343,000		1,158,225	1,501,225	9,700,000	8,198,775
28		343,000		1,158,225	1,501,225	9,700,000	8,198,775
29		343,000		1,158,225	1,501,225	9,700,000	8,198,775
30		343,000		1,158,225	1,501,225	9,700,000	8,198,775
31		343,000		1,158,225	1,501,225	9,700,000	8,198,775
32		343,000		1,158,225	1,501,225	9,700,000	8,198,775
						TIRF	40%

Condición del Préstamo (JBIC)

Tasa de Interés: 2.2%

Período de Gracia: 7 años

Período de Pago: 25 años

**Tabla 7.7.16 Caso del Sistema de Gabarras de Eliminación  
(Sistema de Gabarras con Subsidio): TIRF**

	Costo (GPS)	Costo O/M	Total	Ingreso	Balance
0	190,500		190,500		-190,500
1		343,500	343,500	378,308	34,808
2		343,500	343,500	378,308	34,808
3		343,500	343,500	378,308	34,808
4		343,500	343,500	378,308	34,808
5		343,500	343,500	378,308	34,808
6		343,500	343,500	378,308	34,808
7		343,500	343,500	378,308	34,808
8		343,500	343,500	378,308	34,808
9		343,500	343,500	378,308	34,808
10		343,500	343,500	378,308	34,808
11		343,500	343,500	378,308	34,808
12		343,500	343,500	378,308	34,808
13		343,500	343,500	378,308	34,808
14		343,500	343,500	378,308	34,808
15		343,500	343,500	378,308	34,808
16		343,500	343,500	378,308	34,808
17		343,500	343,500	378,308	34,808
18		343,500	343,500	378,308	34,808
19		343,500	343,500	378,308	34,808
20		343,500	343,500	378,308	34,808
21		343,500	343,500	378,308	34,808
22		343,500	343,500	378,308	34,808
23		343,500	343,500	378,308	34,808
24		343,500	343,500	378,308	34,808
25		343,500	343,500	378,308	34,808
26		343,500	343,500	378,308	34,808
				TIRF	18%

Ingreso: Caso para el Incremento del 7% en el Costo del Peaje (Mineral de Hierro)