

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

HAT CREEK PROJECT

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Summary Of Estimates For Air Quality Control Systems - April 1981*

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SUMMARY OF ESTIMATES FOR
AIR QUALITY CONTROL SYSTEMS

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SUMMARY OF
ESTIMATES FOR
AIR QUALITY CONTROL SYSTEMS

The purpose of this report is to summarize the comparative costs for the various Air Quality Control Systems (AQCS) which were considered with respect to the Hat Creek Project. These various systems are identified as follows:

<u>System No.</u>	<u>System Description</u>
1	Base Scheme - 244 m stack - 99.49 percent efficient Electrostatic Precipitator (ESP)
2	System No. 1 - except for Meteorological Control System (MCS)
3	System No. 1 - except for 366 m stack and MCS
4	System No. 1 - except for partial washing of coal
5	System No. 1 - except for full washing of coal
6	System No. 1 - except for 99.80 percent ESP
7	System No. 1 - except for 99.95 percent ESP
8	System No. 1 - except for 99.97 percent efficient fabric filters
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10	System No. 1 - except for partial FGD between upper and lower limit
11	System No. 1 - except for full FGD
12	System No. 1 - except for partial dry FGD
13	System No. 1 - except for full dry FGD

System 1 - Base Scheme

The AQCS for this base system includes a 244 m stack and a 99.49 percent electrostatic precipitators (ESP). The stack would be 244 m in height, have an external diameter at the top of 21.5 m and would house four separate 7 m diameter flues, one for each boiler. The ESPs would be designed to handle a mass flow of 830 kg/s and to remove 99.49 percent of inlet particulate loading.

The costs for this AQCS scheme are the base costs for this report. Thus this report identifies the incremental cost to this base for systems 2 to 13.

System 2 - MCS

The AQCS for this alternative is the same as the AQCS for the base except that it includes a MCS.

The MCS involves:

1. A meteorological and ambient air quality instantaneous monitoring network.
2. A computer based model to predict local meteorological conditions and resulting air quality at ground level.
3. Flexibility in plant operations to allow both reduction in the powerplant output and/or switching to low sulphur coal when conditions dictate.

The incremental construction and operating cost for this alternative would be as follows:

1980 (k\$)

<u>Fiscal Year</u>	<u>Construction</u> ¹	<u>Operating</u> ²
1980/81		
1981/82		
1982/83		
1983/84		
1984/85	2054	
1985/86	685	608
1986/87		608
1987/88		608
1988/89 - 1st year of operation		1215
1989/90		1215 is an annual cost
1990/91		to be calculated for
1991/92		35 years from 1 August
1992/93		1988 to 1 August 2023

In the following table present worth values are given for the above incremental cash flows.

1980 (M\$)

	Discount Rate*		
		(%)	
	<u>3</u>	<u>6</u>	<u>10</u>
<u>MCS</u> (System 2 minus System 1)			
Capital	2	2	2
Operating	23	13	7
TOTAL	25	15	9

System 3 - 366 m Stack

The AQCS for this alternative is the same as the AQCS for System 2 except that it includes a 366 m stack instead of a 244 m stack. The 366 m stack would also house four separate 7 m diameter flues. This system would also include a MCS system.

The incremental construction and operating costs for this alternative would be as follows:

* Present worth calculations are given in Appendix II.

Fiscal Year	1980 (k\$)			
	<u>Construction</u> ³	MCS <u>Capital Costs</u>	<u>Operating</u> ⁴	MCS <u>Operating Costs</u>
1980/81				
1981/82				
1982/83				
1983/84				
1984/85		2054		
1985/86	411	685		608
1986/87	1491			608
1987/88 - 1st year of	2265			608
1988/89 operation	2409		71	1215*
1989/90	1835		143	
1990/91	870		214	
1991/92	239		285**	
1992/93	38			

In the following table present worth values are given for the above incremental cash flows (see previous page).

	1980 (M\$)		
	Discount Rate (%)		
	<u>3</u>	<u>6</u>	<u>10</u>
<u>366 m Stack + MCS</u> (System 3 minus System 1)			
Capital	10	8	6
Operating	27	16	8
TOTAL	37	24	14

The present worth calculations are in Appendix II.

Note that the SO₂ and particulate emissions for this case would be the same as the case for the base (System 1).

* 1215 is an annual cost to be calculated for 35 years from 1 August 1988 to 1 August 2123.

** 285 is an annual cost to be calculated for 32 years from 1 August 1991 to 1 August 2023.

System 4 - Partial Washing of Coal (Beneficiation)

Several alternative beneficiation schemes were examined but, for the purposes of evaluation, two wet gravity-separation schemes were studied and their costs were compared with the benefits which would accrue if either one was adopted. The partial washing scheme washes only the larger size fractions (particles larger than 13 mm) in a Heavy Medium Bath while the full washing scheme washes, the larger size fractions in a Heavy Medium Bath, but also washes the smaller size fractions (particles smaller than 13 mm) in a Water Only Cyclone.

Wet gravity-separation schemes are based on the fact that mineral matter particles within the coal are denser than the coal itself. Therefore, if the coal is fed into a medium which has a density slightly greater than the coal particles, the mineral matter will sink and the coal will float. The Heavy Medium Bath method involves conveying the raw coal through a water-magnetite solution. Magnetite effectively increases the density of water beyond that of the coal. The Water Only Cyclone method is a similar process except that centrifugal force is used to augment the water density.

System 4 involves the partial washing scheme. The raw coal would be screened at 13 mm and the minus 13 mm particles would bypass the wash plant while the plus 13 mm particles would be washed in the Heavy Medium Bath. The floats (clean coal) would then be recombined with the bypassed smaller fractions while the sinks would be dewatered and sent to the waste disposal areas.

In assessing the costs of this system it is important to note that there would also be economic benefits. The following table indicates the incremented costs and benefits for this system relative to system (1).

The incremental construction and operating costs for this alternative would be as follows:

1980 (k\$)

<u>Fiscal Year</u>	<u>Construction</u>		<u>Operating</u>	
	<u>Costs</u> ⁵	<u>Benefits</u> ⁶	<u>Costs</u> ⁷	<u>Benefits</u> ⁸
1980/81		57		
1981/82		11		
1982/83		137		
1983/84		444		
1984/85		1269		
1985/86	1537	3084		
1986/87	7657	5075		
1987/88	7657	6358		
1988/89 - 1st year of operation	7657	5195	1615	386
1989/90		4133	3231	772
1990/91		2242	4846	1158
1991/92		424	6461	1544
1992/93		20	6461 and 1544 are annual figures to be calculated for 32 years from 1 August 1991 to 1 August 2023	
1995/96	1330			
2003/04	2395			
2013/14	1330			

In the following table, present worth values are given for the above incremental cash flows (see previous page).

1980 (M\$)

	<u>Discount Rate</u>		
	<u>3</u>	<u>6</u>	<u>10</u>
<u>Partial Washing</u> (System 4 minus System 1)			
Capital and operating costs (+)	128	74	41
Capital and operating benefits (-)	48	32	22
Net costs (+)	80	42	19

For this system the SO₂ emission rate, compared to the base scheme is as follows:

	SO ₂ (mg/kJ)
Proposed project (System 1)	0.57
Partial washing (System 3)	0.52

System 5 - Full Washing of Coal (Beneficiation)

In the full washing system raw coal would similiary be screened with larger fractions going to a Heavy Medium Bath but the samller frac-tions, instead of being bypassed, would be washed in a Water Only Cyclone circuit. The clean coal product from both circuits would then be recombined and sent to the powerplant while the sinks (or tailings) from both circuits would be dewatered and sent to the waste disposal area.

Similiary, in assessing the costs of this alternative it is important to note that there would also be economic benefits. Therefore, the following table indicates the incremental costs on benefits compared to the base (System 1).

Fiscal Year	1980 (k\$)			
	<u>Construction</u>		<u>Operating</u>	
	<u>Costs</u> ⁹	<u>Benefits</u> ¹⁰	<u>Costs</u> ¹¹	<u>Benefits</u> ¹²
1980/81		133		
1981/82		27		
1982/83		319		
1983/84		1 036		
1984/85		2 962		
1985/86	3 388	7 199		
1986/87	12 705	11 848		
1987/88	12 705	14 843		
1988/89 - 1st year of	12 705	12 127	4 271	961
1989/90 operation		9 650	8 541	1 922
1990/91		5 233	12 812	2 883
1991/92		1 990	17 082	3 843
1992/93		46	17 082 and 3843 are annual figures to be calculated for 32 years from 1 August 1991 to 1 August 2023	
1995/96	2 093			
2003/04	4 135			
2013/14	2 093			

In the following table, present worth values are given for the above incremental cash flows .

	1980 (M\$)		
	Discount Rate (%)		
	<u>3</u>	<u>6</u>	<u>10</u>
<u>Full Washing</u> (System 5 minus System 1)			
Capital and operating costs (+)	317	179	96
Capital and operating benefits (-)	117	78	51
Net costs	200	101	45

For this system the SO₂ emission rate, compared to the base scheme is as follows:

	SO ₂ (mg/kJ)
Proposed project	0.57
Full washing	0.45 to 0.37

System 6 - 99.80 percent ESP

The AQCS for this alternative is the same as the AQCS for the base except that it includes a more efficient ESP. A 99.80 percent efficiency performance from an ESP is considered to be readily achievable and would mean a more costly precipitator (larger in collection area, one additional electric field) compared to the ESP in the base system. The incremental construction and operating costs for this alternative would be as follows:

<u>Fiscal Year</u>	1980 (k\$)	
	<u>Construction</u> ¹³	<u>Operating</u> ¹⁴
1980/81		
1981/82		
1982/83		
1983/84		
1984/85		
1985/86	932	
1986/87	3382	
1987/88	5138	
1988/89 - 1st year of	5464	52
1989/90 operation	4163	104
1990/91	1973	156
1991/92	542	208
1992/93	87	

208 is an annual cost to be calculated for 32 years from 1 Aug 1991 to 1 Aug 2023

In the following table present worth values are given for the above incremental cash flows.

	1980 (M\$)		
	Discount Rate (%)		
<u>99.80 percent ESP</u>	<u>3</u>	<u>6</u>	<u>10</u>
Capital	17	14	10
Operating	3	2	1
TOTAL	20	16	11

For this system the particulate emission rate, compared to the base scheme is as follows:

	Particulate (mg/kJ)
Proposed project	0.06
99.80 percent ESP	0.04

System 7 - 99.95 percent ESP

The AQCS for this alternative is the same as the AQCS for the base except that it includes a more efficient ESP.

ESP manufactures were contacted with respect to the feasibility of supplying a precipitator with an efficiency of 99.95 percent to handle ash from a coal which had similar quality but a greater quantity of ash than contained in performance coal. They had reservations particularly concerning the difficulties and costliness of meeting the performance and maintaining this level; however, the performance was generally considered to be technically achievable. The manufacturer's information varied somewhat with respect to additional collection area required and with respect to additional cost. Therefore, the construction and operation estimates are subject to greater tolerance than the estimate for the base.

<u>Fiscal Year</u>	1980 (k\$)	
	<u>Construction</u> ¹⁵	<u>Operating</u> ¹⁶
1980/81		
1981/82		
1982/83		
1983/84		
1984/85		
1985/86	2 039	
1986/87	7 397	
1987/88	11 237	
1988/89 - 1st year of	11 948	104
1989/90 operation	9 103	208
1990/91	4 315	312
1991/92	1 185	416
1992/93	190	

416 is an annual cost to be calculated for 32 years from 1 Aug 1991 to 1 Aug 2023

In the following table present worth values are given for the above incremental cash flows compared to the base.

1980 (M\$)

	Discount Rate (%)		
	<u>3</u>	<u>6</u>	<u>10</u>
<u>99.95 percent ESP</u>			
Capital	38	30	23
Operating	7	4	2
TOTAL	45	34	25

For this system the particulate emission rate, compared to the base is as follows:

	Particulate (mg/kJ)
Proposed project	0.06
99.95 percent ESP	0.01

System 8 - 99.97 percent Efficiency Fabric Filters

The arrangement of the AQCS for this system is similar to that for the proposed project except that fabric filters replace the ESPs.

Fabric filter installations have been used by the utility industry over the last 5 years. As a result a development work on fabric materials, many of these installations now show acceptable performance with respect to fabric life duration at low grain loadings. Collection efficiencies for this technology are typically in the range of 99.8 to 99.9 percent and, for certain flyashes which are difficult to collect by electrostatic precipitation, fabric filters can offer economic advantages over ESPs.

Fabric filters are viewed as an emerging technology which is possibly a technically feasible alternative to ESPs for the Hat Creek Project and is accepted for this study as such. However, it is felt that a more

definitive determination of feasibility would require an assessment of the initial operation of the larger fabric filter installations planned for the early 1980s in conjunction with bench or pilotscale tests of fabrics to define the operating characteristics with Hat Creek flyash.

The estimated construction costs of a 99.97 percent fabric filter are less than the estimated construction costs for the base 99.50 percent ESP, but the estimated operating costs for the fabric filter are greater. Therefore, the following table indicates estimates of the incremental construction benefits and the incremental operating costs.

<u>Fiscal Year</u>	1980 (k\$)	
	<u>Construction</u> ¹⁷	<u>Operating</u> ¹⁸
1980/81		
1981/82		
1982/83		
1983/84		
1984/85		
1985/86	645	
1986/87	2340	
1987/88	3555	
1988/89 - 1st year of	3781	545
1989/90 operation	2880	1090
1990/91	1365	1634
1991/92	375	2179
1992/93	60	

2179 is an annual cost to be calculated for 32 years from 1 Aug 1991 to 1 Aug 2023

In the following table present worth values are given for the above cash flows.

	1980 (M\$)		
		Discount Rate (%)	
<u>99.97 percent FF</u>	<u>3</u>	<u>6</u>	<u>10</u>
Capital (benefits -)	-12	-10	-7
Operating	36	19	9
TOTAL	24	9	2

For this alternative the particulate emission rate, compared to the alternative selected for the base is as follows:

	Particulate (mg/kJ)
Proposed project	0.06
99.97 percent fabric filter	0.01

Systems 9 and 10 - Partial Wet FGD

The wet scrubbing systems are essentially similar, differing mainly in the size of plant necessary to provide partial or full flue gas scrubbing. Flue gas leaves the particulate control system and passes to the FGD absorber modules for SO₂ removal with subsequent discharge to the chimney.

Reagent is delivered to the FGD modules in slurry form with preparation in a sub-system consisting primarily of dry storage silos, wet ball mills, slurry storage tanks and transfer pumps. Blowdown waste slurry is dewatered in gravity thickeners and vacuum filters, and is then blended with flyash and a small quantity of lime to produce an essentially dry product which can be handled by the dry ash conveying system incorporated in the project base plant design.

With the two partial wet scrubbing alternatives a portion of the flue gas flow bypasses the FGD modules at all times and recombines with the treated flue gas at a downstream mixing chamber. An 85 percent of the SO₂ is removed from the flue gas that passes through the FGD modules. For system (9) approximately 50 percent of the gas is bypassed to give an overall removal efficiency of 42 percent and for system (10) approximately 41 percent is bypassed to give an overall removal efficiency of 50 percent.

For this partial wet scrubbing alternative - 50 percent of the flue gas passes through the FGD absorber modules (two operating plus one spare)

having an 85 percent SO₂ removal efficiency, giving an overall efficiency of 42 percent relative to total gas flow. One half of the total gas flow bypasses the FGD modules at all times and recombines with the treated flue gas at the downstream mixing chamber. For this system reheating of the flue gas is not required.

The 42 percent removal system removes sufficient SO₂ so that the upper limit of the Pollution Control Board's emission objectives is maintained. The construction and operating costs for this alternative would be as follows:

System 9 - 42% Removal

<u>Fiscal Year</u>	1980 (k\$)	
	<u>Construction</u> ¹⁹	<u>Operating</u> ²⁰
1980/81		
1981/82		
1982/83		
1983/84		
1984/85		
1985/86	9 629	
1986/87	34 933	
1987/88	53 071	
1988/89 - 1st year of	56 430	2 067
1989/90 operation	42 994	4 134
1990/91	20 377	6 200
1991/92	5 598	8 267
1992/93	896	

8267 is an annual cost to be calculated for 32 years from 1 Aug 1991 to 1 Aug 2023

In the following table present worth values are given for the above incremental cash flows.

	1980 (M\$)		
	Discount Rate (%)		
	<u>3</u>	<u>6</u>	<u>10</u>
<u>Partial Wet FGD</u> (Upper limit maintained)			
Capital	178	143	108
Operating	135	72	35
TOTAL	313	215	143

For this system the SO₂ emission rate, compared to the base alternative is as follows:

	SO ₂ (mg/kJ)
Proposed project	0.57
Partial wet FGD (42% removal)	0.34

System 10 - 52 percent Removal

The 52 percent removal system removes sufficient SO₂ so that the SO₂ emission falls in between the upper and lower Pollution Control Board's objective's limit. The construction and operating costs for this alternative would be as follows:

<u>Fiscal Year</u>	1980 (k\$)	
	<u>Construction</u> ²¹	<u>Operating</u> ²²
1980/81		
1981/82		
1982/83		
1983/84		
1984/85		
1985/86	11 564	
1986/87	41 953	
1987/88	63 737	
1988/89 - 1st year of	67 771	2 401
1989/90 operation	51 635	4 802
1990/91	24 473	7 202
1991/92	6 723	9 603
1992/93	1 076	

9603 is an annual cost to be calculated for 32 years from 1 Aug 1991 to 1 Aug 2023

In the following table present worth values are given for the above incremental cash flows.

1980 (M\$)

<u>Partial Wet FGD</u> (between upper and lower limit)	Discount Rate (%)		
	<u>3</u>	<u>6</u>	<u>10</u>
Capital	214	171	129
Operating	157	84	41
TOTAL	371	255	170

For this system the SO₂ emission rate, compared to the base alternative is as follows:

	SO ₂ (mg/kJ)
Base alternative	0.57
Partial wet FGD (50% removal)	0.27

System 11 - Full Wet FGD

In this scheme, all the flue gas passes through the FGD absorber modules (three operating plus one spare) to remove 85 percent of the SO₂. Hot air is injected into the treated flue gas in a downstream mixing chamber to raise the mix temperature above saturation and prevent water fall-out within the plant area. The FGD module facility is equipped with a full flow bypass for utilization during startup, shutdown or upset conditions; this bypass is not used under normal operating conditions.

The estimated construction and operating costs for this system would be as follows:

<u>Fiscal Year</u>	1980 (k\$)	
	<u>Construction</u> ²³	<u>Operating</u> ²⁴
1980/81		
1981/82		
1982/83		
1983/84		
1984/85		
1985/86	14 417	
1986/87	52 305	
1987/88	79 463	
1988/89 - 1st year of	84 493	3 556
1989/90 operation	64 375	7 112
1990/91	30 511	10 668
1991/92	8 382	14 224
1992/93	1 341	

14 224 is an annual cost to be calculated for 32 years from 1 Aug 1991 to 1 Aug 2023

In the following table present worth values are given for the above incremental cash flows.

<u>Full Wet FGD</u>	1980 (M\$)		
	Discount Rate (%)		
	<u>3</u>	<u>6</u>	<u>10</u>
Capital	267	214	161
Operating	232	124	61
TOTAL	499	338	222

For this system the SO₂ emission rate, compared to the base scheme is as follows:

	<u>SO₂</u> <u>(mg/kJ)</u>
Proposed project	0.57
Full wet FGD	0.09

System 12 - Partial Dry FGD

The dry scrubber system is located upstream of the particulate control device. For combination with fabric filters, the spray dryer vessels would be located between the mechanical collectors and filters.

The mechanical collectors remove an estimated 85 percent of the particulates. The lime slurry injected in the spray dryers reacts with the SO_2 to produce calcium sulphite and sulphate in a dry powder form; the reaction is considered to occur during or shortly after evaporation of the injected slurry water. The fabric filters receive the flue gas leaving the spray dryers to remove the calcium salts and further fly ash quantities.

The waste material from fabric filter hoppers is in dry form and can be pneumatically conveyed to a central location for disposal via belt conveyors.

For the partial dry FGD system, approximately 50 percent of the flue gas must be treated to achieve the upper PCB emission limit for SO_2 of 0.34 mg/kJ. The remaining 50 percent is bypassed and remixed with the spray dryer exit gas prior to the particulate removal equipment.

The estimated construction and operating costs for this alternative would be as follows:

<u>Fiscal Year</u>	1980 (k\$)	
	<u>Construction</u> ²⁵	<u>Operating</u> ²⁶
1980/81		
1981/82		
1982/83		
1983/84		
1984/85		
1985/86	7 072	
1986/87	25 657	
1987/88	38 979	
1988/89 - 1st year of	41 446	1 298
1989/90 operation	31 578	2 596
1990/91	14 967	3 893
1991/92	4 112	5 190
1992/93	658	

5190 is an annual cost to be calculated for 32 years from 1 Aug 1991 to 1 Aug 2023

In the following table present worth values are given for the above cash flows.

	1980 (M\$)		
	Discount Rate (%)		
<u>Partial Dry FGD</u>	<u>3</u>	<u>6</u>	<u>10</u>
Capital	131	105	79
Operating	85	45	22
TOTAL	216	150	101

For this system the SO₂ emission rate, compared to the base is as follows:

	<u>SO₂</u> <u>(mg/kJ)</u>
Proposed project	0.57
Partial dry FGD	0.34

System 13 - Full Dry FGD

In this system all flue gas is treated. The spray dryer facility is equipped with a bypass for start-up, shutdown and upset conditions but is not used during normal operation.

The estimated construction and operating costs for this system would be as follows:

<u>Fiscal Year</u>	1980 (k\$)	
	<u>Construction</u> ²⁷	<u>Operating</u> ²⁸
1980/81		
1981/82		
1982/83		
1983/84		
1984/85		
1985/86	10 778	
1986/87	39 101	
1987/88	59 403	
1988/89 - 1st year of	63 163	2 384
1989/90 operation	48 124	4 769
1990/91	22 809	7 153
1991/92	6 266	9 537
1992/93	1 003	

9537 is an annual cost to be calculated for 32 years from 1 Aug 1991 to 1 Aug 2023

In the following table present worth values are given for the above cash flows.

<u>Full Dry FGD</u>	1980 (M\$)		
	Discount Rate (%)		
	<u>3</u>	<u>6</u>	<u>10</u>
Capital	199	160	120
Operating	156	83	41
TOTAL	355	243	161

For this system the SO₂ emission rate, compared to the base scheme is as follows:

	SO ₂ <u>(mg/kJ)</u>
Proposed project	0.57
Full dry FGD	0.09

REFERENCE NOTES

1. This construction cost cash flow is calculated from the incremental capital cost which is taken from Appendix I, Table A, column B, line 8.3. The capital costs shown in above table have been inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 7 on Table C in Appendix I. The distribution shown on Table C was based on 1 August 1989 in-service date. In order to accommodate 1 August 1988 in-service date, the above cash flow was based on Table C (column 7) distribution, moved forward 1 year.
2. This incremental operating cost cash flow is derived from Appendix I, Table A, column B, line 9.4. The cost shown on Table A was inflated by 9.5 percent in order to convert 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table B in Appendix I. The distribution shown in Table B was based on 1 August 1989 in-service date. In order to accommodate 1 August 1988 in-service date the above cash flow was based on Table B (column 4) distribution, moved forward 1 year.
3. This construction cost cash flow is calculated from the incremental capital cost which is taken from Appendix I, Table A, column C, line 8.1. The capital costs shown in above table have been inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.
4. This incremental operating cost was derived from Appendix I, Table A, column C, line 9.1. The cost shown on this table was inflated by 9.5 percent in order to convert 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.

5. This construction cost cash flow is calculated from the incremental capital cost which is shown in Appendix I, Table A, column D, line 8.2. The capital costs shown in above table have been inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 5 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.
6. This benefit cash flow is calculated from the incremental value which is shown in Appendix I, Table A, column D, line 8.1. The value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution is the same as the distribution used in Table D, line 1.1.
7. This incremental operating cost is calculated from the values which are shown in Appendix I, Table A, column D, lines 9.2 and 9.3. These values were inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 2 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.
8. This incremental operating benefit is calculated from the values which are shown in Appendix I, Table A, column D, line 9.1. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.
9. This construction cost cash flow is calculated from the incremental capital cost which is shown in Appendix I, Table A, column E, line 8.2. The capital costs shown in above table have been inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 6 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.

10. This benefit cash flow is calculated from the incremental value which is shown in Appendix I, Table A, column E, line 8.1. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution is the same as the distribution used in Table D, line 1.1.
11. This incremental operating cost is calculated from the values which are shown in Appendix I, Table A, column E, lines 9.2 and 9.3. These values were inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 2 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.
12. This incremental operating benefit is calculated from the value which is shown in Appendix I, Table A, column E, line 9.1. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.
13. This construction cost cash flow is calculated from the incremental capital cost which is shown in Appendix I, Table A, column G, line 8.1. The capital costs shown in above table have been inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.
14. This incremental operating cost was derived from Appendix I, Table A, column G, lines 9.1 and 9.4. The cost was inflated by 9.5 percent in order to convert 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.

15. This construction cost cash flow is calculated from the incremental cost which is shown in Appendix I, Table A, column H, line 8.1. This cost was inflated by 9.5 percent in order to convert 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.
16. This incremental operating cost was derived from the Appendix I, Table A, column H, line 9.1. This cost was inflated by 9.5 percent in order to convert 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.
17. This construction benefit cash flow is calculated from the incremental value which is shown in Appendix I, Table A, column Q, line 8.1. The capital costs shown in above table have been inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.
18. This incremental operating cost was derived from Appendix I, Table A, column Q, line 9.1. The cost was inflated by 9.5 percent in order to convert 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table D in Appendix I. See Note 2 regarding 1989 in-service date.
19. This construction cost cash flow was calculated from the incremental capital costs which are shown in Appendix I, Table A, line 8.1, columns J and G. Column J is the incremental costs for partial scrubbing (42% removal) but also includes the incremental costs for 99.80 percent ESP. Therefore, the incremental capital cost was derived as follows: $224\,300\,000 - 19\,800\,000 = 204\,500\,000$. This value was inflated by 9.5 percent in order to

bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.

20. This incremental operating cost was calculated from the value which is shown in Appendix I, Table A, column J, lines 9.1 minus the incremental operating cost for the 99.80 percent ESP, column G, line 9.1. Therefore, the incremental operating cost was derived as follows: $7\,740\,000 - 190\,000 = 7\,550\,000$. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.
21. This construction cost cash flow was calculated from the incremental capital costs which are shown in Appendix I, Table A, line 8.1, columns JJ1 and G. Column JJ1 is the incremental costs for partial scrubbing (50% removal) but also includes the incremental costs for 99.80 percent ESP. Therefore, the incremental capital cost was derived as follows: $265\,400\,000 - 19\,800\,000 = 245\,600\,000$. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.
22. This incremental operating cost was calculated from the value which is shown in Appendix I, Table A, column JJ1, lines 9.1 minus the incremental operating cost for the 99.80 percent ESP, column G, line 9.1. Therefore, the incremental operating cost was derived as follows: $8\,960\,000 - 190\,000 = 8\,770\,000$. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.

23. This construction cost cash flow was calculated from the incremental capital costs which are shown in Appendix I, Table A, line 8.1, columns M and H. Column M is the incremental costs for full scrubbing but also includes the incremental costs for 99.95 percent ESPs. Therefore, the incremental capital cost was derived as follows: $349\,500\,000 - 43\,300\,000 = 306\,200\,000$. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.
24. This incremental operating cost was calculated from the value which is shown in Appendix I, Table A, column M, lines 9.1 minus the incremental operating cost for the 99.95 percent ESP, column H, line 9.1. Therefore, the incremental operating cost was derived as follows: $13\,370\,000 - 380\,000 = 12\,990\,000$. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.
25. This construction cost cash flow was calculated from the incremental capital costs which are shown in Appendix I, Table A, line 8.1, columns N and Q. Column N is the incremental costs for partial dry scrubbing but also includes the incremental costs for fabric filters. Therefore, the incremental capital cost was derived as follows: $136\,500\,000 - (-13\,700\,000) = 150\,200\,000$. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.
26. This incremental operating cost was calculated from the value which is shown in Appendix I, Table A, column N, lines 9.1 minus the incremental operating cost for the fabric filter column Q,

line 9.1. Therefore, the incremental operating cost was derived as follows: $6\,730\,000 - 1\,990\,000 = 4\,740\,000$. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.

27. This construction cost cash flow was calculated from the incremental capital costs which are shown in Appendix I, Table A, line 8.1, columns P and Q. Column P is the incremental costs for full dry scrubbing but also includes the costs for fabric filters. Therefore, the incremental capital cost was derived as follows: $215\,200\,000 - (-13\,700\,000) = 228\,900\,000$. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 4 on Table C in Appendix I. See Note 1 regarding 1989 in-service date.

28. This incremental operating cost was calculated from the value which is shown in Appendix I, Table A, column P, lines 9.1 minus the incremental operating cost for the fabric filter column Q, line 9.1. Therefore, the incremental operating cost was derived as follows: $10\,700\,000 - 1\,990\,000 = 8\,710$. This value was inflated by 9.5 percent in order to bring 1979 dollars to 1980 dollars. The cash flow distribution was derived from the distribution shown in column 1 on Table B in Appendix I. See Note 2 regarding 1989 in-service date.

APPENDIX I

HAI CREEK PROJECT

Summary of Estimates for Coal Washing and AGCS for Coal/Benefit Study to Support EIS Section 24
For 2000 MW S.O. at 65% Annual Capacity Factor, in \$199 Millions

Table A

7. Case		A	B	C	D	E	F	G	H	I	J	331	332	K	L	M	N	O	P	Q
7. Description of coal as treated at the Powerplant		Blended raw	Blended raw	Blended raw	Partially washed	Fully washed	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended	Worst quality blended
3. Process to mitigate particulate and sulphur dioxide emissions, including MS E Milling Systems		ESP only	ESP + MCS	ESP + MCS	ESP + Coal Washing + MCS	ESP + Coal Washing + Milling	ESP only	ESP + MCS	ESP + MCS	ESP + MCS	ESP + Partial Milling + Milling	ESP + Partial Milling + Milling	ESP + Partial Milling + Milling	ESP + Partial Milling + Milling	ESP + Partial Milling + Milling	ESP + Full Milling + Milling	ESP + Full Milling + Milling	ESP + Full Milling + Milling	ESP + Full Milling + Milling	ESP + Full Milling + Milling
4. Coal products																				
4.1 Dry, Dry basis	10(75)	737	737	737	737	737	737	737	737	737	737	737	737	737	737	737	737	737	737	737
4.2 Ash	10(75)	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5	49.5
4.3 Sulphur	10(75)	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
5. Stack height		11	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
6. Inclusion of stack outlet																				
6.1 Fly ash	10(75)	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
6.2 Sulphur dioxide	10(75)	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
7. Removal efficiencies																				
7.1 Fly ash removal efficiency	1	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95	91.95
7.2 Sulphur dioxide removal efficiency	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
8. Incremental direct cost																				
8.1 Powerplant and AGCS	10(75)	Base	Base	+0.22	-25.30	-20.65	Base	Base	+10.0	+13.7	+229.3	+165.6	+225.3	+226.0	+241.0	+290.5	+136.5	+210.2	+210.2	+13.7
8.2 Coal beneficiation plant	10(75)	nil	nil	nil	+27.00	+15.00	nil	nil	nil	nil	+1.0	+1.0	+1.0	nil	nil	nil	nil	nil	nil	+15.0
8.3 MS Facilities & Milling Systems	10(75)	nil	+2.5	+2.5	+1.30	+1.03	nil	nil	nil	nil	+1.0	+1.0	+1.0	+1.0	+1.0	+1.0	+1.0	+1.0	+1.0	+1.0
8.4 Sew. (incl. 10000000)	10(75)	Base	Base	+12.25	+7.57	+6.62	Base	Base	+2.0	+2.2	+19.0	+125.0	+162.0	+127.0	+127.0	+127.0	+127.0	+127.0	+127.0	+12.25
8.5 Construction items	10(75)	nil	0	+1.00	+0.00	+0.00	nil	nil	nil	nil	+0.1	+0.1	+0.1	+0.1	+0.1	+0.1	+0.1	+0.1	+0.1	+0.1
8.6 Total incremental direct cost	10(75)	Base	+2.5	+11.3	+1.3	-13.0	Base	+2.0	+2.2	+19.0	+126.0	+163.0	+127.0	+127.0	+127.0	+127.0	+127.0	+127.0	+127.0	+12.25
8.7 Total incremental direct cost with 1985 Base Cost as datum	10(75)	-2.5	Base	+1.0	+1.0	-10.1	-2.0	Base	+10.0	+13.7	+229.3	+165.6	+225.3	+226.0	+241.0	+290.5	+136.5	+210.2	+210.2	+13.7
9. Incremental operating cost																				
9.1 Powerplant and AGCS production expenses	10(75)	Base	Base	+0.95	-1.91	-2.54	Base	Base	+0.10	+0.20	+2.70	+0.36	+3.27	+12.10	+2.90	+12.37	+6.70	+10.20	+10.20	+0.50
9.2 Coal beneficiation plant	10(75)	nil	nil	nil	+0.30	+0.30	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
9.3 Additional miling	10(75)	nil	nil	nil	+1.00	+0.70	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
9.4 MS or Milling System	10(75)	nil	+0.11	+0.11	+0.11	+0.95	nil	nil	nil	nil	+0.01	+0.01	+0.01	+0.01	+0.01	+0.01	+0.01	+0.01	+0.01	+0.11
9.5 Replacement operating for MS	10(75)	nil	+1.00	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil	nil
9.6 Total incremental operating cost	10(75)	Base	+2.10	+1.37	+0.30	+12.53	Base	+3.10	+2.30	+12.30	+0.36	+3.27	+5.63	+15.00	+2.90	+12.30	+7.70	+11.20	+11.20	+0.50
9.7 Total incremental operating cost (1980 F.F.S. Base Cost)	10(75)	-1.12	Base	-0.75	+1.30	+10.40	-2.12	Base	+0.10	+0.10	+0.01	+2.15	+2.51	+11.70	+0.75	+11.00	+5.00	+9.00	+9.00	+0.10

NOTES:

- Support for Table A is provided in Tables 1A, 1B, 1C, 1D & 1E for all cases except "33". For Case 33, see "HAI CREEK PROJECT ESTIMATES OF INVESTMENT COSTS (INCLUDING IDC AND BIFMA OVERHEAD) AND OPERATING EXPENSE AT 65% ANNUAL CAPACITY FACTOR: 60M-07712/604M-0712070.R.W./24 March 1981/Issue 01
- Case 33 costs of Power Plant and Offsites with Meteorological Control System (MCS) for Base Scheme described in EIS - MS(75) 1301.05 (11 83) rounded corresponding to Columns "B" and "10", (Line 0.7).
- Annual Operating and Maintenance Costs for Power Plant and Offsites with MCS - MS(75) 1301.05/a (111 rounded) corresponding to Columns "B" and "10", (Line 5.2)
- Column 211 and 212 (Proposed Project April 1981) added to show effect of EMC decision on 1 March 1981 that the Proposed Project shall include 120 - 140 tonnes of SO₂ well below upper level of PIP Control Objectives (0.0 16/MSW).

Changes Issue 06: See Note 15).
Column "Q" and
"331" "332" added.

HAT CREEK PROJECT

Table Of Cash Flows For Operating Costs For Cost/Benefit Study to Support EIS Section 24

Table B

11. Cash flow for Operating Costs for stated item, expressed as a percentage of operating cost in average year at 65% capacity factor.	Year	Year	P.W. Factor	Powerplant Including FGD	Coal Beneficiation		MCS Facilities or Monitoring Systems	
				Item 9.1 % Column 1	Beneficiation Plant	Additional Mining	Item 9.4 % Column 4	Item 9.5 % Column 5
					Item 9.2 % Column 2	Item 9.3 % Column 3		
	1980/81	1	1.0					
	1981/82	2	0.9709					
	1982/83	3	0.9426					
	1983/84	4	0.9151					
	1984/85	5	0.8885					
	1985/86	6	0.8626					
	1986/87	7	0.8375					50
	1987/88	8	0.8131					50
	1988/89	9	0.7894					50
#1 unit enters service	1989/90	10	0.7664	25	25	25	100	25
#2 unit enters service	1990/91	11	0.7441	50	50	50	100	50
#3 unit enters service	1991/92	12	0.7224	75	75	75	100	75
#4 unit enters service	1992/93	13	0.7014	100	100	100	100	100
	1993/94	14	0.6810	100	100	100	100	100
	2013/24	44	0.2724	100	100	100	100	100

Note:

1. Items 9.1, 9.2, 9.3, 9.4, & 9.5 stated in the Table refer to those items in Table A.
2. Cash flow for the power plant reflects the amounts shown in item 9.1 for a 2000 MW powerplant operating at an annual capacity factor of 65%, with units entering service successfully at yearly intervals.
3. Cash flows for beneficiation items 9.2 & 9.3, reflects the amounts shown in Table A adjusted for four successive units entering service at year intervals.
4. Cash flows for MCS facilities or Monitoring System, item 9.4, assume that monitoring occurs before start-up of the first unit. Cash flow for Replacement Generation, item 9.5, reflects the amounts shown in table A adjusted for four successive units entering service at yearly intervals.
5. Year 1980/81 is Year 1 of the project schedule. All costs are expressed as a present worth in 1980/81 and at 1979 prices.

File: 604H-07722/Issue 02
DRW/PRW/29 April 1981

HAT CREEK PROJECT

TABLE OF CASH FLOWS FOR DIRECT CAPITAL COSTS FOR COST/BENEFIT STUDY TO SUPPORT E.I.S. SECTION 24

TABLE C

Calendar Year	Project Year	Power Plant Item 11.2 Table B & Incl. in Item 8.1 of Table A	AQCS Item 11.1 Table B & Incl. in Item 8.1 Table A	Coal Beneficiation Plant Partially Washed Item 8.2 Table A	Fully Washed Item 8.2 Table A	MCS Facilities or Monitoring Systems Item 8.3 Table A
		%	%	%	%	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1980/81	1	0.12				
1981/82	2	0.11				
1982/83	3	0.14				
1983/84	4	0.51				
1984/85	5	2.73				
1985/86	6	4.55				75
1986/87	7	10.12	4.3	5.2	6.8	25
1987/88	8	17.71	15.6	25.9	25.5	
1988/89	9	21.60	* 23.7	25.9	25.5	
1989/90	10	18.14	* 25.2	25.9	25.5	
1990/91	11	14.12	* 19.2			
1991/92	12	8.33	9.1			
1992/93	13	1.64	2.5			
1993/94	14	0.18	0.4			
1996/97	17			4.5	4.2	
2004/05	25			8.1	8.3	
2014/15	35			4.5	4.2	
		<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

- Sources: 1) Power Plant, Col. (3), from Hat Creek Project, Preliminary Engineering, Final Report, Dec. 1979, Table 6-4. Note that distribution assumes basis of cash flows for years 1 thru 14, aggregating \$(79) 1,370,322,000, which is the Project Total less prior years, less prior 12 months. This distribution applies to strictly power plant items and not AQCS items. It especially applies to Power Plant Costs affected by beneficiation of coal such as quoted in Col. (D) and (E) of Table A.
- 2) AQCS, Col. (4), from Hat Creek Project Air Quality Control Study, Integ-Ebasco, October 1979, Exhibit 4-7. Note that for simplicity Cash Flow #2 is assumed for all AQCS Costs.
- 3) Memo from P.R. Willis to D.R. Wright, dated 14 May 1980, on Files: 604H-01422, 07722, 200.0-2, which confirms a telephone conversation between S. Butcher (Ex. Simon-Carves) and P.R. Willis that detailed the cash flows for beneficiating plant originally estimated by Simon-Carves.
- 4) Memo from D.R. Wright to A.L. Brotherston, dated 27 May 1980, on File: 604H-07722.

File: 604H-07722/Issue 02
DRW/WNL/2 April 1981

Revised April 2, 1981 (*These numbers were changed to correct previous error)
Note: This Table is based on August 1989 1st Unit In-Service.

TABLE D

PROJECT	HAT CREEK 2000 MW (4 x 560 MW)	SHEET 1 OF 4	EXPENDITURE (\$'000's)											
			BUDGET PERIOD ENDING 31st OF MARCH											
Unit No. 1 In Service August 1st 1988 (+12 month Intervals)			Yr.#1											
ITEM	PROJECT TOTAL	PRIOR YEARS	PRIOR 12 MONTHS	1st YEAR 1982	2nd YEAR 1983	3rd YEAR 1984	4th YEAR 1985	5th YEAR 1986	6th YEAR 1987	7th YEAR 1988	8th YEAR 1989	9th YEAR 1990	10th YEAR 1991	TO COMPLETE
1. GENERATING STATION														
1.1 Base Case MCS	1,366,401	2,450	255	614	6,600	21,300	61,000	148,100	243,812	305,386	249,440	198,604	107,640	21,200
1.2 ^a Addit. Cost for Appr'd Proj. Partial Scrubbing (.27 mg/kJ SO ₂ Emission Level)	300,359							12,915	46,856	71,185	75,691	57,669	27,333	8,710
1.3 Approved Project Partial Scrubbing (1.1 + 1.2)	1,666,760	2,450	255	614	6,600	21,300	61,000	161,015	290,668	376,571	325,131	256,273	134,973	29,910
2. OFFSITE FACILITIES	119,934	752	25	587	2,020	19,386	17,049	18,325	39,052	22,383	110	82	163	
3. DISCRETIONARY EXPENSES	12,686	-	-	750	1,205	5,168	4,228	601	188	188	188	170		
4. CONSTRUCTION INSURANCE & BONDS														
4.1 Base Case MCS	6,349			2	39	207	360	705	1,199	1,390	1,058	842	457	90
4.2 ^b Add. Cost for Part. Scrubbing	1,291							56	201	306	325	248	118	17
4.3 Appr. Proj. Part. Scrubbing (4.1 + 4.2)	7,640			2	39	207	360	761	1,400	1,696	1,383	1,090	575	127
5. LAND ACQUISITION	4,324	1,114	810	945	945	390	30	30	30	30				
6. OTHER ONGOING STUDIES	9,236	5,582	669	630	434	121	86	806	199	215	138	113	115	128
7. GENERATION STATION TOTALS:														
7.1 BASE MCS (1.1+2+3+4.1+5+6)	1,518,930	9,898	1,759	3,528	11,243	46,572	82,753	168,567	284,480	329,592	250,934	199,811	108,375	21,418
7.2 APPROVED PROJECT PARTIAL SCRUBBING (1.3+2+3+4.3+5+6)	1,820,580	9,898	1,759	3,528	11,243	46,572	82,753	181,538	331,537	401,083	326,950	257,728	135,826	30,165
SUB TOTAL														
INFLATION														
TOTAL FOR BUDGET														
INFLATION INDICES														
REMARKS	3 April 1981 Interim document prepared by P. R. Willis to be finalized by Project Control Department Thermal Generation Projects Division.													
	a,b - See note a & b on attachment.													
	Generation Planning Generation Planning Program Planning													

TABLE D

PROJECT HAT CREEK 2000 MW (4 x 560 MW)

SHEET 2 OF 4

EXPENDITURE (\$'000's)

Unit No. 1 In Service 1 Aug. 1988(+12 month Intervals)

Yr. #

BUDGET PERIOD ENDING 31st OF MARCH

ITEM	PROJECT TOTAL	PRIOR YEARS	PRIOR 12 MONTHS	BUDGET PERIOD ENDING 31st OF MARCH										TO COMPLETE	
				1st YEAR 1992	2nd YEAR 1993	3rd YEAR 1994	4th YEAR 1995	5th YEAR 1996	6th YEAR 1997	7th YEAR 1998	8th YEAR 1999	9th YEAR 2000	10th YEAR 2001		
1. GENERATING STATION															
1.1 Base Case MCS	21,200			20,300	900										
Additional Cost for Approved Project Partial Scrubbing (.27 mg/kJ SO ₂ Emission Level)	8,710			7,509	1,201										
Approved Project Partial Scrubbing	29,910			27,809	2,101										
2. OFFSITE FACILITIES															
3. DISCRETIONARY EXPENDITURES															
4. CONSTRUCTION INSURANCE & BONDS															
4.1 Base Case MCS	90			86	4										
4.2 Addit. Cost for Partial Scrubbing	37			32	5										
4.3 Appr'd Project Partial Scrubbing	127			118	9										
5. LAND ACQUISITION															
6. OTHER ONGOING STUDIES	128			128											
7. GENERATING STATION TOTALS															
7.1 Base MCS (1.1+2+3+4.1+5+6)	21,418			20,514	904										
7.2 APPROVED PROJECT PARTIAL SCRUBBING	30,165			28,055	2,110										
SUB TOTAL															
INFLATION															
TOTAL FOR BUDGET															

INFLATION INDICES

REVIEWED BY

REMARKS: 1 April 1981

Interim Document Prepared by P. R. Willis to be finalized by Project Control Department, Thermal Generation Projects Division.

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 Generation Planning
 Program Planning

TABLE D

PROJECT HAT CREEK 2000 MW (4 x 560 MW)

SHEET 3 OF 4

EXPENDITURE (\$000's)

Unit No. 1 In Service 1 Aug. 1988 (+12 month intervals)

ITEM	PROJECT TOTAL	PRIOR YEARS	PRIOR 12 MONTHS	BUDGET PERIOD ENDING 31st OF MARCH											TO COMPLETE
				1st YEAR 1982	2nd YEAR 1983	3rd YEAR 1984	4th YEAR 1985	5th YEAR 1986	6th YEAR 1987	7th YEAR 1988	8th YEAR 1989	9th YEAR 1990	10th YEAR 1991		
UNIT COST BREAKDOWN															
8.															
8.1 Unit 1 MCS Base Case	470,968	2,450	255	614	4,100	14,700	38,300	87,300	140,384	145,841	36,305	719			
8.2 ^c Unit 1 addit. AQCS Cost	84,100							12,915	32,739	26,432	11,113	901			
8.3 Unit 1 Approved Proj.(8.1+8.2)	555,068	2,450	255	614	4,100	14,700	38,300	100,215	173,123	172,273	47,418	1,620			
9.															
9.1 Unit 2 MCS Base Case	296,729				1,300	4,400	12,100	29,200	49,970	79,943	96,577	22,629	610		
9.2 ^c Unit 2 Addit. AQCS Cost	72,087								14,117	30,036	19,824	7,509	601		
9.3 Unit 2 Appr'd Proj.(9.1+9.2)	368,816				1,300	4,400	12,100	29,200	64,087	109,979	116,400	30,138	1,211		
10.															
10.1 Unit 3 MCS Base Case	309,765				600	1,100	5,900	20,000	35,652	56,972	74,772	92,445	21,624	700	
10.2 ^c Unit 3 Addit. AQCS Cost	72,086									14,717	29,736	19,824	7,209	600	
10.3 Unit 3 Appr'd Proj.(10.1+10.2)	381,851				600	1,100	5,900	20,000	35,652	71,690	104,508	112,268	28,833	1,300	
11.															
11.1 Unit 4 MCS Base Case	288,939				600	1,100	4,700	11,600	17,806	22,630	41,786	82,811	85,406	20,560	
11.2 ^c Unit 4 Addit. AQCS Cost	72,086										15,018	29,435	19,523	8,110	
11.3 Unit 4 Appr'd Proj.(11.1+11.2)	361,025				600	1,100	4,700	11,600	17,806	22,630	56,804	112,246	104,929	28,670	
12.															
12.1 Total MCS Base Case (8.1+9.1+10.1+11.1)	1,366,401	2,450	255	614	6,600	21,300	61,000	148,100	243,812	305,386	249,440	198,604	107,640	21,200	
	300,359							17,915	46,856	71,185	75,691	57,669	27,333	8,710	
12.2 Total Approved Project (8.3+9.3+10.3+11.3)	1,666,760	2,450	255	614	6,600	21,300	61,000	161,015	290,668	376,571	325,131	256,273	134,973	29,910	
SUB TOTAL															
INFLATION															
TOTAL FOR BUDGET															

INFLATION INDICES

REMARKS:

3 April 1981 Interim document prepared by P. R. Willis to be finalized by Project Control Department, Thermal Generation Projects Division.

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c - See note c on attachment.

TABLE D

PROJECT HAT CREEK 2000 MW (4 x 560 MW)

SHEET 4 OF 4

EXPENDITURE (\$000's)

Unit No.1 In Service 1 Aug. 1988 (+12 month intervals)

BUDGET PERIOD ENDING 31st OF MARCH

ITEM	PROJECT TOTAL	PRIOR YEARS	PRIOR 12 MONTHS	1st YEAR 1992	2nd YEAR 1993	3rd YEAR 1994	4th YEAR 1995	5th YEAR 1996	6th YEAR 1997	7th YEAR 1998	8th YEAR 1999	9th YEAR 2000	10th YEAR 2001	10 COMPLETE
UNIT COST BREAKDOWN														
8.														
8.1 Unit 1 MCS Base Case														
8.2 Unit 1 Additional AQCS Cost														
8.3 Unit 1 Approved Project(8.1+8.2)														
9.														
9.1 Unit 2 MCS Base Case														
9.2 Unit 2 Additional AQCS Cost														
9.3 Unit 2 Approved Project(9.1+9.2)														
10.														
10.1 Unit 3 MCS Base Case	700			700										
10.2 Unit 3 Additional AQCS Cost	600			600										
10.3 Unit 3 Approved Proj.(10.1+10.2)	1,300			1,300										
11.														
11.1 Unit 4 MCS Base Case	20,500			19,600	900									
11.2 Unit 4 Addit. AQCS Cost	8,110			6,909	1,201									
11.3 Unit 4 Appr'd Proj. (11.1+11.2)	28,609			26,508	2,101									
12.														
12.1 Total MCS Base Case	21,200			20,300	900									
12.2 Total Additional AQCS Cost	8,710			7,509	1,201									
12.3 Approved Project	29,910			27,809	2,101									
SUB TOTAL														
INFLATION														
TOTAL FOR BUDGET														
INFLATION INDICES														
REMARKS	3 April 1981 Interim document prepared by P. R. Wilks to be finalized by Project Control Department, Thermal Generation Projects Division.											REVIEWED BY Generation Planning Generation Planning Program Planning		

APPENDIX II

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 250M PLUS MCS CONSTRUCTION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *2/1/80	P.W. FACTOR	P.W. VALUE
		* DOLS		
0	1980/81	*0	1.0000	*0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*2054	.8885	1825
5	1985/86	+645	.8626	551
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*0	.7890	0
9	1989/90	*0	.7664	0
10	1990/91	*0	.7441	0
11	1991/92	*0	.7224	0
12	1992/93	*0	.7014	0
TOTAL				2416

THE PRESENT WORTH VALUE FOR A CONSTANT ANNUAL VALUE OF *100 STARTING IN YEAR NO*0 AND ENDING IN YEAR NO*00 IS

AA
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PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 20M PLUS NCS CONSTRUCTION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO LARGEST NUMBER OF YEARS AUG. 1 1980 FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS	P.W.	P.W.
		*R/1/80 FACTOR	VALUE	
		* DOLS		
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8909	0
3	1983/84	*0	.8396	0
4	1984/85	*2054	.7921	1627
5	1985/86	*695	.7473	512
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*0	.6274	0
9	1989/90	*0	.5919	0
10	1990/91	*0	.5584	0
11	1991/92	*0	.5268	0
12	1992/93	*0	.4970	0
TOTAL			2139	

THE PRESENT WORTH VALUE FOR A CONSTANT ANNUAL VALUE OF \$1000 STARTING IN YEAR NO*0 AND ENDING IN YEAR 10*00 IS

AA
 AA
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AA
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PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 266M PLUS MCS CONSTRUCTION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *11%
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO LARGEST NUMBER OF YEARS AUG. 1 1980 FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *R/1/80 \$ DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*2054	.6830	1403
5	1985/86	*625	.6209	425
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*0	.4665	0
9	1989/90	*0	.4241	0
10	1990/91	*0	.3855	0
11	1991/92	*0	.3505	0
12	1992/93	*0	.3186	0
TOTAL				1828

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 255M STACK PLUS WGS OPERATION COSTS

ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3

PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *3/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81 *0		1.0000	0
1	1981/82 *0		.9709	0
2	1982/83 *0		.9426	0
3	1983/84 *0		.9151	0
4	1984/85 *0		.8885	0
5	1985/86 *608		.8626	524
6	1986/87 *608		.8375	509
7	1987/88 *608		.8131	494
8	1988/89 *0		.7894	0
9	1989/90 *0		.7664	0
10	1990/91 *0		.7441	0
11	1991/92 *0		.7224	0
12	1992/93 *0		.7014	0

TOTAL 1528

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *1215 STARTING IN YEAR A
 NO*8 AND ENDING IN YEAR NO*42 IS 21227 A

THE PRESENT WORTH GRAND TOTAL IS 22755

AA

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981

20M STACK PLUS MCR OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FIRST DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *\$	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*608	.7473	454
6	1986/87	*608	.7050	429
7	1987/88	*608	.6651	404
8	1988/89	*0	.6274	0
9	1989/90	*0	.5919	0
10	1990/91	*0	.5584	0
11	1991/92	*0	.5268	0
12	1992/93	*0	.4970	0

TOTAL 1287

THE PRESENT WORTH VALUE FOR A CONSTANT ANNUAL VALUE OF *1215 STARTING IN YEAR NO*8 AND ENDING IN YEAR NO*42 IS 11715

THE PRESENT WORTH GRAND TOTAL IS 13003

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 AA

PRESENT WORTH VALUE FOR COST DISTRIBUTION

EIS BENEFIT/COST STUDY APRIL 7 1981
 260M STACK PLUS MCS OPERATING COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1986
 FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *\$1/80 * DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*608	.6209	378
6	1986/87	*608	.5645	343
7	1987/88	*608	.5132	312
8	1988/89	*0	.4665	0
9	1989/90	*0	.4241	0
10	1990/91	*0	.3855	0
11	1991/92	*0	.3505	0
12	1992/93	*0	.3186	0

TOTAL 1033

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *1215 STARTING IN YEAR
 NO*8 AND ENDING IN YEAR NO*42 IS 6013 A

THE PRESENT WORTH GRAND TOTAL IS 7046

THE PRESENT WORTH VALUE FOR A CONSTANT ANNUAL VALUE OF *1215 STARTING IN YEAR NO*8 AND ENDING IN YEAR NO*12 IS

AA
 AA
 AA
 AA
 AA
 AA
 AA
 AA
 AA
 AA

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 366M STACK CONSTRUCTION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO LARGEST NUMBER OF YEARS AUG. 1 1980 FROM DISCOUNT DATE *13

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
0	980/81	*0	1.0000	0
1	981/82	*0	.9709	0
2	982/83	*0	.9426	0
3	983/84	*0	.9151	0
4	984/85	*0	.8885	0
5	985/86	*411	.8626	355
6	986/87	*1491	.8375	1249
7	987/88	*2265	.8131	1842
8	988/89	*2400	.7894	1902
9	989/90	*1835	.7664	1406
10	990/91	*870	.7441	647
11	991/92	*239	.7224	173
12	992/93	*34	.7014	27
13.	993/94	*0	.6810	0
TOTAL				7600

THE PRESENT WORTH VALUE FOR A CONSTANT ANNUAL VALUE OF *000 STARTING IN YEAR NO*0 AND ENDING IN YEAR NO*00 IS

AA
 AAA
 AAA
 AAA
 AAA
 AAA
 AAA
 AAA
 AAA

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 366M STACK
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *5 CONSTRUCTION COSTS
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO LARGEST NUMBER OF YEARS
 FROM DISCOUNT RATE *13

YEAR NO.	FISCAL YEAR	COSTS *000	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*411	.7473	307
6	1986/87	*1091	.7050	1051
7	1987/88	*2265	.6651	1506
8	1988/89	*2400	.6274	1511
9	1989/90	*1835	.5919	1086
10	1990/91	*670	.5584	376
11	1991/92	*230	.5268	126
12	1992/93	*38	.4970	19
13	1993/94	*0	.4688	0
TOTAL				6093

AA
 AA
 PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 360M STACK CONSTRUCTION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *13

YEAR NO.	FISCAL YEAR	COSTS * \$ DOLS	P.W. * 8/1/80 FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*411	.6209	255
6	1986/87	*1401	.5645	842
7	1987/88	*2245	.5132	1162
8	1988/89	*2409	.4665	1124
9	1989/90	*1835	.4241	778
10	1990/91	*870	.3855	335
11	1991/92	*230	.3505	84
12	1992/93	*38	.3186	12
13	1993/94	*0	.2897	0

TOTAL 4592

AA
 AAA
 AAA

PRESENT WORTH VALUE FOR COST DISTRIBUTION

EIS BENEFIT/COST STUDY APRIL 7 1981

366M STACK OPERATIONS COSTS

ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3

PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO

LARGEST NUMBER OF YEARS AUG. 1 1980

FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9425	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*71	.7894	56
9	1989/90	*143	.7664	110
10	1990/91	*214	.7441	159
11	1991/92	*0	.7224	0
12	1992/93	*0	.7014	0

TOTAL 325

THE PRESENT WORTH VALUE FOR A CONSTANT ANNUAL VALUE OF *285 STARTING IN YEAR NO*11 AND ENDING IN YEAR NO*42 IS 4324

A
A

THE PRESENT WORTH GRAND TOTAL IS 4649

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981

366M STACK OPERATION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *R/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*71	.6274	45
9	1989/90	*143	.5919	85
10	1990/91	*214	.5584	119
11	1991/92	*0	.5268	0
12	1992/93	*0	.4970	0

TOTAL 249

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *285 STARTING IN YEAR A
 NO*11 AND ENDING IN YEAR NO*42 IS 2241 A

THE PRESENT WORTH GRAND TOTAL IS 2490

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 366M STACK OPERATION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *R/1/80	P.W. FACTOR	P.N. VALUE
* HOLDS				
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*71	.4665	33
9	1989/90	*173	.4241	61
10	1990/91	*214	.3855	83
11	1991/92	*0	.3505	0
12	1992/93	*0	.3186	0

TOTAL 176

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *225 STARTING IN YEAR A
 NO*11 AND ENDING IN YEAR NO*42 IS 1047 A

THE PRESENT WORTH GRAND TOTAL IS 1223

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL WASHING CONSTRUCTION BENEFITS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
			K DOLS	
0	1980/81	*57	1.0000	57
1	1981/82	*11	.9709	11
2	1982/83	*137	.9426	129
3	1983/84	*444	.9151	406
4	1984/85	*1259	.8885	1127
5	1985/86	*3094	.8626	2660
6	1986/87	*5075	.8375	4250
7	1987/88	*6356	.8131	5170
8	1988/89	*5195	.7894	4101
9	1989/90	*4133	.7664	3168
10	1990/91	*2242	.7441	1668
11	1991/92	*424	.7224	306
12	1992/93	*20	.7014	14
			TOTAL	23068

7 APR 1991
WIFINA OUTPUT MARCH 26

PRESENT NORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL WASHING CONSTRUCTION BENEFITS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1989
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *6/1/80 M. DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*57	1.0000	57
1	1981/82	*11	.9434	10
2	1982/83	*137	.8900	122
3	1983/84	*444	.8396	373
4	1984/85	*1269	.7921	1005
5	1985/86	*3084	.7473	2305
6	1986/87	*5075	.7050	3578
7	1987/88	*6358	.6651	4228
8	1988/89	*5195	.6274	3259
9	1989/90	*4133	.5919	2446
10	1990/91	*2242	.5584	1252
11	1991/92	*424	.5268	223
12	1992/93	*20	.4970	10
			TOTAL	18869

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL WASHING CONSTRUCTION BENEFITS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 K DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*57	1.0000	57
1	1981/82	*11	.9091	10
2	1982/83	*137	.8264	113
3	1983/84	*444	.7513	334
4	1984/85	*1259	.6830	857
5	1985/86	*3084	.6209	1915
6	1986/87	*5075	.5645	2855
7	1987/88	*6356	.5132	3253
8	1988/89	*5195	.4665	2424
9	1989/90	*4133	.4241	1753
10	1990/91	*2242	.3855	854
11	1991/92	*424	.3505	149
12	1992/93	*20	.3185	6
			TOTAL	14619

7 APR 1981
 WIPINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENIFIT/COST STUDY APRIL 7 1981
 PARTIAL WASHING OPERATION BENEFITS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *11

YEAR NO.	FISCAL YEAR	COSTS	P.W. FACTOR	P.W. VALUE
K DOLS				
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*386	.7894	305
9	1989/90	*772	.7664	592
10	1990/91	*1158	.7441	862
11	1991/92	*1544	.7224	1115
TOTAL				1759
				2075

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *1544 STARTING IN YEAR
 NO*11 AND ENDING IN YEAR NO*42 IS 23424
 25183
 THE PRESENT WORTH GRAND TOTAL IS ~~25240~~

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7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 PARTIAL WASHING OPERATION BENEFITS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *11

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
K DOLS				
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8395	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*386	.6274	242
9	1989/90	*772	.5919	457
10	1990/91	*1158	.5584	647
11	1991/92	*1544	.5268	813

TOTAL ~~2159~~ 1346

THE PRESENT WORTH VALUE FOR A CONSTANT ANNUAL VALUE OF *1544 STARTING IN YEAR NO*11 AND ENDING IN YEAR NO*42 IS 12143

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THE PRESENT WORTH GRAND TOTAL IS ~~14702~~ 13489

7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 PARTIAL WASHING OPERATION BENEFITS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE #10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE #11

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
K DOLS				
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*536	.4665	180
9	1989/90	*772	.4241	327
10	1990/91	*1158	.3855	446
11	1991/92	*1544	.3503	541

953
~~TOTAL 1495~~

THE PRESENT WORTH VALUE FOR A CONSTANT ANNUAL VALUE OF *1544 STARTING IN YEAR NO*11 AND ENDING IN YEAR NO*42 IS 5671
 THE PRESENT WORTH GRAND TOTAL IS ~~7100~~ 5624

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7 APR 1981
WIFINA OUTPUT MARCH 26

PAGE 1

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL WASHINGTON CONSTRUCTION COST
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *33

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 K. DOLS.	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*1557	.8626	1326
6	1986/87	*7657	.8375	6413
7	1987/88	*7657	.8131	6226
8	1988/89	*7657	.7894	6045
9	1989/90	*0	.7664	0
10	1990/91	*0	.7441	0
11	1991/92	*0	.7224	0
12	1992/93	*0	.7014	0
13	1993/94	*0	.6810	0
14	1994/95	*0	.6611	0
15	1995/96	*1330	.6419	854
16	1996/97	*0	.6232	0
17	1997/98	*0	.6050	0
18	1998/99	*0	.5874	0
19	1999/00	*0	.5703	0
20	2000/01	*0	.5537	0
21	2001/02	*0	.5375	0
22	2002/03	*0	.5219	0
23	2003/04	*2395	.5067	1214
24	2004/05	*0	.4919	0
25	2005/06	*0	.4776	0
26	2006/07	*0	.4637	0
27	2007/08	*0	.4502	0
28	2008/09	*0	.4371	0
29	2009/10	*0	.4243	0
30	2010/11	*0	.4120	0
31	2011/12	*0	.4000	0
32	2012/13	*0	.3883	0
33	2013/14	*1330	.3770	501

TOTAL 22577

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL WASHINGTON CONSTRUCTION COST
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *33

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 K DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*1537	.7473	1149
6	1986/87	*7657	.7050	5398
7	1987/88	*7657	.6651	5092
8	1988/89	*7657	.6274	4804
9	1989/90	*0	.5919	0
10	1990/91	*0	.5584	0
11	1991/92	*0	.5268	0
12	1992/93	*0	.4970	0
13	1993/94	*0	.4688	0
14	1994/95	*0	.4423	0
15	1995/96	*1330	.4173	555
16	1996/97	*0	.3936	0
17	1997/98	*0	.3714	0
18	1998/99	*0	.3503	0
19	1999/00	*0	.3305	0
20	2000/01	*0	.3118	0
21	2001/02	*0	.2942	0
22	2002/03	*0	.2775	0
23	2003/04	*2395	.2618	627
24	2004/05	*0	.2470	0
25	2005/06	*0	.2330	0
26	2006/07	*0	.2198	0
27	2007/08	*0	.2074	0
28	2008/09	*0	.1956	0
29	2009/10	*0	.1846	0
30	2010/11	*0	.1741	0
31	2011/12	*0	.1643	0
32	2012/13	*0	.1550	0
33	2013/14	*1330	.1462	194

TOTAL 17819

7 APR 1981
 WIFINA OUTPUT MARCH 26.

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 PARTIAL WASHING CONSTRUCTION COST
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *33

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*1537	.6209	954
6	1986/87	*7657	.5645	4322
7	1987/88	*7657	.5132	3929
8	1988/89	*7657	.4665	3572
9	1989/90	*0	.4241	0
10	1990/91	*0	.3855	0
11	1991/92	*0	.3505	0
12	1992/93	*0	.3186	0
13	1993/94	*0	.2897	0
14	1994/95	*0	.2633	0
15	1995/96	*1330	.2394	318
16	1996/97	*0	.2176	0
17	1997/98	*0	.1978	0
18	1998/99	*0	.1799	0
19	1999/00	*0	.1635	0
20	2000/01	*0	.1486	0
21	2001/02	*0	.1351	0
22	2002/03	*0	.1228	0
23	2003/04	*2595	.1117	267
24	2004/05	*0	.1015	0
25	2005/06	*0	.0923	0
26	2006/07	*0	.0839	0
27	2007/08	*0	.0763	0
28	2008/09	*0	.0693	0
29	2009/10	*0	.0630	0
30	2010/11	*0	.0573	0
31	2011/12	*0	.0521	0
32	2012/13	*0	.0474	0
33	2013/14	*1330	.0431	57

TOTAL 13421

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL WASHING OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *11

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81 *0		1.0000	0
1	1981/82 *0		.9709	0
2	1982/83 *0		.9426	0
3	1983/84 *0		.9151	0
4	1984/85 *0		.8885	0
5	1985/86 *0		.8626	0
6	1986/87 *0		.8375	0
7	1987/88 *0		.8131	0
8	1988/89 *1615		.7894	1275
9	1989/90 *3231		.7664	2476
10	1990/91 *4846		.7441	3606
11	1991/92 *6461		.7229	4668

TOTAL ~~12025~~ 7357

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *6461 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 98021

THE PRESENT WORTH GRAND TOTAL IS ~~12025~~ 105378

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7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL WASHING OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *11

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 K DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*1615	.6274	1013
9	1989/90	*3231	.5919	1912
10	1990/91	*4846	.5584	2706
11	1991/92	*6461	.5268	3404

TOTAL ~~9835~~ 5631

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *6461 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 50812 A
56443 A
THE PRESENT WORTH GRAND TOTAL IS ~~59878~~

7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 PARTIAL WASHING OPERATION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *11

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
M. DOLS				
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*1615	.4665	753
9	1989/90	*3231	.4241	1370
10	1990/91	*4846	.3855	1868
11	1991/92	*6461	.3505	2265

TOTAL ~~6297~~ 3997

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *6461 STARTING IN YEAR
 NO*11 AND ENDING IN YEAR NO*42 IS 23730

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THE PRESENT WORTH GRAND TOTAL IS ~~8997~~ 27721

7 APR 1981
 WIFINA OUTPUT MARCH 26

ACT. 4

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 FULL WASHINGTON CONSTRUCTION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *33

YEAR NO.	FISCAL YEAR	COSTS *6/1/80 M. DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*3388	.8626	2923
6	1986/87	*12705	.8375	10640
7	1987/88	*12705	.8131	10330
8	1988/89	*12705	.7894	10029
9	1989/90	*0	.7664	0
10	1990/91	*0	.7441	0
11	1991/92	*0	.7224	0
12	1992/93	*0	.7014	0
13	1993/94	*0	.6810	0
14	1994/95	*0	.6611	0
15	1995/96	*2095	.6419	1343
16	1996/97	*0	.6232	0
17	1997/98	*0	.6050	0
18	1998/99	*0	.5874	0
19	1999/00	*0	.5703	0
20	2000/01	*0	.5537	0
21	2001/02	*0	.5375	0
22	2002/03	*0	.5219	0
23	2003/04	*4135	.5067	2095
24	2004/05	*0	.4919	0
25	2005/06	*0	.4776	0
26	2006/07	*0	.4637	0
27	2007/08	*0	.4502	0
28	2008/09	*0	.4371	0
29	2009/10	*0	.4243	0
30	2010/11	*0	.4120	0
31	2011/12	*0	.4000	0
32	2012/13	*0	.3883	0
33	2013/14	*2095	.3770	789

TOTAL 38150

7 APR 1981
WIFINA OUTPUT MARCH 26

ACT. 4

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WASHING CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *33

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*3388	.7473	2532
6	1985/87	*12705	.7050	8957
7	1987/88	*12705	.6651	8450
8	1988/89	*12705	.6274	7971
9	1989/90	*0	.5919	0
10	1990/91	*0	.5584	0
11	1991/92	*0	.5268	0
12	1992/93	*0	.4970	0
13	1993/94	*0	.4688	0
14	1994/95	*0	.4423	0
15	1995/96	*2093	.4173	873
16	1995/97	*0	.3936	0
17	1997/98	*0	.3714	0
18	1993/99	*0	.3503	0
19	1999/00	*0	.3305	0
20	1901/01	*0	.3118	0
21	2001/02	*0	.2942	0
22	2002/03	*0	.2775	0
23	2003/04	*4135	.2618	1083
24	2004/05	*0	.2470	0
25	2005/06	*0	.2330	0
26	2005/07	*0	.2198	0
27	2007/08	*0	.2074	0
28	2003/09	*0	.1956	0
29	2009/10	*0	.1846	0
30	2011/11	*0	.1741	0
31	2011/12	*0	.1643	0
32	2012/13	*0	.1550	0
33	2013/14	*2093	.1462	306

TOTAL 30171

7 APR 1981
WIFINA OUTPUT MARCH 26

ACT. 4

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WASHING CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *33

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*3388	.6209	2104
6	1986/87	*12705	.5645	7172
7	1987/88	*12705	.5132	6520
8	1988/89	*12705	.4665	5927
9	1989/90	*0	.4241	0
10	1990/91	*0	.3855	0
11	1991/92	*0	.3505	0
12	1992/93	*0	.3186	0
13	1993/94	*0	.2897	0
14	1994/95	*0	.2633	0
15	1995/96	*2093	.2394	501
16	1996/97	*0	.2176	0
17	1997/98	*0	.1978	0
18	1998/99	*0	.1799	0
19	1999/00	*0	.1635	0
20	1900/01	*0	.1486	0
21	2001/02	*0	.1351	0
22	2002/03	*0	.1228	0
23	2003/04	*4135	.1117	462
24	2004/05	*0	.1015	0
25	2005/06	*0	.0923	0
26	2006/07	*0	.0839	0
27	2007/08	*0	.0763	0
28	2008/09	*0	.0693	0
29	2009/10	*0	.0630	0
30	2010/11	*0	.0573	0
31	2011/12	*0	.0521	0
32	2012/13	*0	.0474	0
33	2013/14	*2093	.0431	90

TOTAL 22775

7 APR 1981
WIFINA OUTPUT MARCH 26

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PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WASHING OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *11

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*4271	.7894	3372
9	1989/90	*8541	.7664	6546
10	1990/91	*12812	.7441	9533
11	1991/92	*0	.7224	0

TOTAL 19451

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *17082 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 259154

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THE PRESENT WORTH GRAND TOTAL IS 278605

7 APR 1981
WIFINA OUTPUT MARCH 26

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PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WASHING OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *11

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*4271	.6274	2680
9	1989/90	*8541	.5919	5055
10	1990/91	*12812	.5584	7154
11	1991/92	*0	.5268	0

TOTAL 14889

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *17082 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 134341

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THE PRESENT WORTH GRAND TOTAL IS 149230

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WASHING OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *11

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
			M DOLS	
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*4271	.4665	1992
9	1989/90	*8541	.4241	3622
10	1990/91	*12812	.3855	4940
11	1991/92	*0	.3505	0

TOTAL 10554

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *17082 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 62739

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THE PRESENT WORTH GRAND TOTAL IS 73294

7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 FULL WASHINGTON CONSTRUCTION BENEFITS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*135	1.0000	135
1	1981/82	*27	.9709	26
2	1982/83	*319	.9426	301
3	1983/84	*1035	.9151	948
4	1984/85	*2952	.8885	2632
5	1985/86	*7199	.8626	6210
6	1986/87	*11848	.8375	9923
7	1987/88	*14843	.8131	12069
8	1988/89	*12127	.7894	9573
9	1989/90	*9650	.7654	7396
10	1990/91	*5233	.7441	3894
11	1991/92	*300	.7224	-215 *12
12	1992/93	*46	.7014	32
			TOTAL	53851 54575

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WASHINGTON CONSTRUCTION BENEFITS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1990
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*133	1.0000	133
1	1981/82	*27	.9434	25
2	1982/83	*319	.9900	284
3	1983/84	*1036	.8396	870
4	1984/85	*2962	.7921	2346
5	1985/86	*7199	.7473	5380
6	1986/87	*11848	.7050	8352
7	1987/88	*14843	.6651	9871
8	1988/89	*12127	.6274	7609
9	1989/90	*9650	.5919	5712
10	1990/91	*5233	.5584	2922
11	1991/92	*220	.5268	-522 / 048
12	1992/93	*46	.4970	23

TOTAL ~~44049~~
44575

7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 FULL WASHING CONSTRUCTION BENEFITS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*133	1.0000	133
1	1981/82	*27	.9091	25
2	1982/83	*319	.8264	264
3	1983/84	*3036	.7513	778
4	1984/85	*2952	.6830	2023
5	1985/86	*7199	.6209	4470
6	1986/87	*11848	.5645	6688
7	1987/88	*14843	.5132	7617
8	1988/89	*12127	.4665	5657
9	1989/90	*9650	.4241	4093
10	1990/91	*5233	.3855	2018
11	1991/92	*728	.3505	257 257
12	1992/93	*46	.3186	15
TOTAL				34126
				34478

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WASHING OPERATION BENEFITS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*961	.7894	759
9	1989/90	*1922	.7664	1473
10	1990/91	*2882	.7441	2144

TOTAL 4376

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *5343 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 53303

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THE PRESENT WORTH GRAND TOTAL IS 62679

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WASHING OPERATION BENEFITS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *6/1/80	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*461	.6274	603
9	1989/90	*1922	.5919	1138
10	1990/91	*2882	.5584	1609

TOTAL 3350

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *3843 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 30223

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THE PRESENT WORTH GRAND TOTAL IS 33573

7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 FULL WASHING OPERATION BENEFITS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
M DOLS				
0	1980/81 *0		1.0000	0
1	1981/82 *0		.9091	0
2	1982/83 *0		.8264	0
3	1983/84 *0		.7513	0
4	1984/85 *0		.6830	0
5	1985/86 *0		.6209	0
6	1986/87 *0		.5645	0
7	1987/88 *0		.5132	0
8	1988/89 *961		.4665	448
9	1989/90 *1922		.4241	815
10	1990/91 *2882		.3855	1111

TOTAL 2575

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *3843 STARTING IN YEAR
 NO*11 AND ENDING IN YEAR NO*42 IS 14115

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THE PRESENT WORTH GRAND TOTAL IS 16489

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT NORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.8 PERCENT ESP CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *5
PRESENT NORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *3/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*932	.8626	804
6	1986/87	*3382	.8375	2832
7	1987/88	*5138	.8131	4178
8	1988/89	*5464	.7894	4313
9	1989/90	*4163	.7664	3191
10	1990/91	*1973	.7441	1468
11	1991/92	*542	.7224	392
12	1992/93	*87	.7014	61
			TOTAL	17239

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.8 PERCENT ESP CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *9/1/89 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81 *0		1.0000	0
1	1981/82 *0		.9434	0
2	1982/83 *0		.8900	0
3	1983/84 *0		.8396	0
4	1984/85 *0		.7921	0
5	1985/86 *932		.7473	696
6	1986/87 *3382		.7050	2384
7	1987/88 *5138		.6651	3417
8	1988/89 *5464		.6274	3428
9	1989/90 *4163		.5919	2464
10	1990/91 *1973		.5584	1102
11	1991/92 *542		.5268	286
12	1992/93 *87		.4970	43
			TOTAL	13920

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.8 PERCENT ESP CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *\$1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8254	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6850	0
5	1985/86	*932	.6209	579
6	1986/87	*3382	.5645	1909
7	1987/88	*5138	.5132	2637
8	1988/89	*5464	.4665	2549
9	1989/90	*4163	.4241	1766
10	1990/91	*1973	.3855	761
11	1991/92	*542	.3505	190
12	1992/93	*87	.3186	28
			TOTAL	13417

7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 99.8 PERCENT ESP OPERATION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1960
 FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9425	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*52	.7894	41
9	1989/90	*104	.7664	80
10	1990/91	*156	.7441	116

TOTAL 257

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *209 STARTING IN YEAR
 NO*11 AND ENDING IN YEAR NO*42 IS 3156

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THE PRESENT WORTH GRAND TOTAL IS 3392

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.8 PERCENT ESP OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9454	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*52	.6274	33
9	1989/90	*104	.5919	62
10	1990/91	*156	.5584	87

TOTAL 181

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *208 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 1636

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THE PRESENT WORTH GRAND TOTAL IS 1817

7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 99.8 PERCENT ESP OPERATION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*52	.4665	24
9	1989/90	*104	.4241	44
10	1990/91	*156	.3855	60

TOTAL 129

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *208 STARTING IN YEAR
 NO*11 AND ENDING IN YEAR NO*42 IS 764

A
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THE PRESENT WORTH GRAND TOTAL IS 892

7 APR 1981
WIFIMA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.95 PERCENT ESP CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*2039	.8625	1759
6	1986/87	*7397	.8375	6195
7	1987/88	*11237	.8131	9137
8	1988/89	*11948	.7894	9432
9	1989/90	*9103	.7664	6977
10	1990/91	*4315	.7441	3211
11	1991/92	*1185	.7224	856
12	1992/93	*190	.7014	133
			TOTAL	37699

7 APR 1981
WIFIMA OUTPUT MARCH 86

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.95 PERCENT ESP CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *3/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*2039	.7473	1524
6	1986/87	*7397	.7050	5215
7	1987/88	*11237	.6651	7473
8	1988/89	*11948	.6274	7496
9	1989/90	*9103	.5919	5388
10	1990/91	*4315	.5584	2409
11	1991/92	*1185	.5268	624
12	1992/93	*190	.4970	94
			TOTAL	30224

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.95 PERCENT ESP CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*2039	.6209	1266
6	1986/87	*7397	.5645	4175
7	1987/88	*11237	.5132	5766
8	1988/89	*11948	.4665	5574
9	1989/90	*9103	.4241	3861
10	1990/91	*4315	.3855	1664
11	1991/92	*1185	.3505	415
12	1992/93	*190	.3186	61
			TOTAL	22782

7 APR 1981
 WZFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 99.95 PERCENT ESP OPERATION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
		M DOLS		
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*104	.7894	82
9	1989/90	*208	.7664	159
10	1990/91	*312	.7441	232

TOTAL 474

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *416 STARTING IN YEAR
 NO*11 AND ENDING IN YEAR NO*42 IS 6311

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THE PRESENT WORTH GRAND TOTAL IS 6785

7 APR 1981
WIFINA OUTPUT MARCH 86

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
69.95 PERCENT ESP OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*104	.6274	65
9	1989/90	*208	.5919	123
10	1990/91	*312	.5584	174

TOTAL 363

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *416 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 3272

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THE PRESENT WORTH GRAND TOTAL IS 3634

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.95 PERCENT ESP OPERATION COSTS
*ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81 *0		1.0000	0
1	1981/82 *0		.9091	0
2	1982/83 *0		.8254	0
3	1983/84 *0		.7513	0
4	1984/85 *0		.6830	0
5	1985/86 *0		.6209	0
6	1986/87 *0		.5645	0
7	1987/88 *0		.5132	0
8	1988/89 *104		.4665	49
9	1989/90 *203		.4241	88
10	1990/91 *312		.3855	120
	TOTAL			257

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *416 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 1523

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THE PRESENT WORTH GRAND TOTAL IS 1785

7 APR 1981
WIFINA OUTPUT MARCH 86

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.97 PERCENT ~~FOR~~ CONSTRUCTION ~~VALUES~~ FF BENEFITS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*645	.8626	556
6	1986/87	*2340	.8375	1960
7	1987/88	*3555	.8131	2891
8	1988/89	*3781	.7894	2985
9	1989/90	*2880	.7664	2207
10	1990/91	*1365	.7441	1016
11	1991/92	*375	.7224	271
12	1992/93	*60	.7014	42
			TOTAL	11927

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.97 PERCENT OF CONSTRUCTION COSTS FOR BENEFITS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*645	.7473	482
6	1986/87	*2340	.7050	1650
7	1987/88	*3555	.6651	2364
8	1988/89	*3731	.6274	2372
9	1989/90	*2680	.5919	1703
10	1990/91	*1365	.5584	762
11	1991/92	*375	.5268	198
12	1992/93	*60	.4970	30
			TOTAL	9562

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT NORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.97 PERCENT ~~FOR~~ CONSTRUCTION COSTS FROM BENEFIT
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT NORTH DATE *VALUES ARE PRES. NORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*645	.6209	400
6	1986/87	*2340	.5645	1321
7	1987/88	*3555	.5132	1824
8	1988/89	*3781	.4665	1764
9	1989/90	*2380	.4241	1221
10	1990/91	*1365	.3855	524
11	1991/92	*375	.3505	131
12	1992/93	*60	.3186	19
			TOTAL	7008

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.97 PERCENT OF OPERATION COSTS FF
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *\$/1/80	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*545	.7894	430
9	1989/90	*1090	.7664	835
10	1990/91	*1634	.7441	1216

TOTAL 2481

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *2179 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 33058

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THE PRESENT WORTH GRAND TOTAL IS 35539

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.97 PERCENT ~~OP~~ OPERATION COSTS ~~F~~ F
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81 *0		1.0000	0
1	1981/82 *0		.9434	0
2	1982/83 *0		.8900	0
3	1983/84 *0		.8396	0
4	1984/85 *0		.7921	0
5	1985/86 *0		.7473	0
6	1986/87 *0		.7050	0
7	1987/88 *0		.6651	0
8	1988/89 *545		.6274	342
9	1989/90 *1090		.5919	645
10	1990/91 *1634		.5584	912

TOTAL 1900

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *2179 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 17137

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THE PRESENT WORTH GRAND TOTAL IS 19036

7 APR 1981
WIFINA OUTPUT MARCH 25

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
99.97 PERCENT ~~SSP~~ OPERATION COSTS F F
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*545	.4665	254
9	1989/90	*1090	.4241	462
10	1990/91	*1634	.3855	630

TOTAL 1346

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *2179 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 8003

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THE PRESENT WORTH GRAND TOTAL IS 9350

7 APR 1981
MIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS SENSITIVITY/COST STUDY APRIL 7 1981
PARTIAL WASHINGTON CONSTRUCTION COSTS 42% FGD
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3

PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *2/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*9629	.8626	8306
6	1986/87	*34933	.8375	29256
7	1987/88	*53071	.8131	43152
8	1988/89	*56430	.7894	44546
9	1989/90	*42994	.7664	32951
10	1990/91	*20377	.7441	15162
11	1991/92	*5598	.7224	4044
12	1992/93	*896	.7014	628

TOTAL 178046

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL WASHING CONSTRUCTION COSTS 42% FSC
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
			M DOLS	
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*9629	.7473	7195
6	1986/87	*34933	.7053	24626
7	1987/88	*53071	.6651	35295
8	1988/89	*56430	.6274	35405
9	1989/90	*42994	.5919	25448
10	1990/91	*20377	.5584	11378
11	1991/92	*5598	.5268	2949
12	1992/93	*896	.4970	445

TOTAL 142743

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL WASHING CONSTRUCTION COSTS 42% FISC
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *\$1/80	P.W. FACTOR	P.W. VALUE
			M DOLS	
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6833	0
5	1985/86	*9629	.6209	5979
6	1986/87	*34933	.5645	19719
7	1987/88	*53071	.5132	27234
8	1988/89	*56430	.4655	26325
9	1989/90	*42994	.4241	18234
10	1990/91	*20377	.3855	7856
11	1991/92	*5598	.3505	1962
12	1992/93	*896	.3166	285
			TOTAL	107594

7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 PARTIAL WASHING WET OPERATION COSTS $\$2,590$
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE $\#3$
 PRESENT WORTH DATE $\#$ VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE $\#10$

YEAR NO.	FISCAL YEAR	COSTS $\#8/1/80$	P.W. FACTOR	P.W. VALUE
		M DOLS		
0	1980/81	$\#0$	1.0000	0
1	1981/82	$\#0$	.9709	0
2	1982/83	$\#0$	.9426	0
3	1983/84	$\#0$	.9151	0
4	1984/85	$\#0$	.8885	0
5	1985/86	$\#0$	.8626	0
6	1986/87	$\#0$	.8375	0
7	1987/88	$\#0$	.8131	0
8	1988/89	$\#2067$	.7894	1632
9	1989/90	$\#4134$	.7664	3168
10	1990/91	$\#6200$	.7441	4613

TOTAL 9413

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF $\#8267$ STARTING IN YEAR
 NO $\#11$ AND ENDING IN YEAR NO $\#42$ IS 125420

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THE PRESENT WORTH GRAND TOTAL IS 134833

APR 1981
 WIFINA OUTPUT MARCH 25

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 SIS BENEFIT/COST STUDY APRIL 7 1981
 PARTIAL WASHING NET OPERATION COSTS \$2,000
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*2067	.6274	1297
9	1989/90	*4134	.5919	2447
10	1990/91	*6200	.5584	3462

TOTAL 7206

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *8267 STARTING IN YEAR
 NO*11 AND ENDING IN YEAR NO*42 IS 65015

THE PRESENT WORTH GRAND TOTAL IS 73221

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7 APR 1981
 WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENIFIT/COST STUDY APRIL 7 1981
 PARTIAL WASHING WET OPERATION COSTS 4.2 M DOLLARS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*2067	.4665	964
9	1989/90	*4134	.4241	1753
10	1990/91	*6200	.3855	2390
TOTAL				5108

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *8267 STARTING IN YEAR
 NO*11 AND ENDING IN YEAR NO*42 IS 30363

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THE PRESENT WORTH GRAND TOTAL IS 35471

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
52 PERCENT REMOVAL SO2 CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *6/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*11564	.8626	9975
6	1986/87	*41953	.8375	35135
7	1987/88	*63737	.8131	51824
8	1988/89	*67771	.7894	53499
9	1989/90	*51635	.7664	39574
10	1990/91	*24473	.7441	18210
11	1991/92	*6723	.7224	4857
12	1992/93	*1076	.7014	755

TOTAL 213829

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
52 PERCENT REMOVAL SO2 CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *\$	P.W. FACTOR 1/80	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*11564	.7473	8641
6	1986/87	*41953	.7050	29575
7	1987/88	*53737	.6651	42589
8	1988/89	*67771	.6274	42520
9	1989/90	*51535	.5919	30563
10	1990/91	*24473	.5584	13666
11	1991/92	*6723	.5268	3542
12	1992/93	*1076	.4970	535

TOTAL 171430

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT NORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
52 PERCENT REMOVAL SO2 CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT NORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*11564	.6209	7180
6	1986/87	*41953	.5643	23681
7	1987/88	*63737	.5132	32707
8	1988/89	*67771	.4665	31616
9	1989/90	*51635	.4241	21898
10	1990/91	*24473	.3855	9435
11	1991/92	*6723	.3505	2356
12	1992/93	*1076	.3126	343

TOTAL 129217

7 APR 1981
 WIFIRA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
 EIS BENEFIT/COST STUDY APRIL 7 1981
 52 PERCENT REMOVAL SO2 OPERATION COSTS
 ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
 PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
 LARGEST NUMBER OF YEARS AUG. 1 1980
 FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *6/1/80	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*2481	.7894	1895
9	1989/90	*4802	.7664	3680
10	1990/91	*7202	.7441	5359

TOTAL 10935

THE PRESENT WORTH VALUE FOR A CONSTANT
 ANNUAL VALUE OF *9603 STARTING IN YEAR
 NO*11 AND ENDING IN YEAR NO*42 IS 145689

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THE PRESENT WORTH GRAND TOTAL IS 156623

7 APR 1981
WIFINA OUTPUT MARCH 85

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
52 PERCENT REMOVAL SO2 OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS	P.W. FACTOR	P.W. VALUE
		*M DOLS		
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.6900	0
3	1983/84	*0	.6396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*2401	.6274	1506
9	1989/90	*4802	.5919	2842
10	1990/91	*7202	.5584	4022

TOTAL 8370

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *9603 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 75522

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THE PRESENT WORTH GRAND TOTAL IS 83893

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
52 PERCENT REMOVAL SO2 OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.N. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*2401	.4665	1120
9	1989/90	*4802	.4241	2037
10	1990/91	*7202	.3855	2777

TOTAL 5933

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *9683 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 35270

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THE PRESENT WORTH GRAND TOTAL IS 41203

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7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WET FGD CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*14417	.8626	12436
6	1986/87	*52303	.8375	43805
7	1987/88	*79463	.8131	64611
8	1988/89	*84493	.7894	66730
9	1989/90	*64375	.7664	49338
10	1990/91	*30511	.7441	22703
11	1991/92	*8332	.7224	6055
12	1992/93	*1541	.7014	941
			TOTAL	266588

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WET PCD CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *6/1/80 M DCLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8395	0
4	1984/85	*0	.7921	0
5	1985/86	*14417	.7473	10773
6	1986/87	*52305	.7050	36873
7	1987/88	*79463	.6651	52847
8	1988/89	*84493	.6274	53012
9	1989/90	*64375	.5919	38103
10	1990/91	*30511	.5584	17037
11	1991/92	*6382	.5268	4416
12	1992/93	*1341	.4970	666

TOTAL 213728

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL NET FGD CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*14417	.6209	8952
6	1986/87	*52305	.5645	29525
7	1987/88	*79463	.5132	40777
8	1988/89	*84493	.4665	39417
9	1989/90	*64375	.4241	27301
10	1990/91	*30511	.3855	11763
11	1991/92	*8382	.3505	2938
12	1992/93	*1341	.3186	427

TOTAL 161100

7 APR 1981
WIPENA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL NET FGD OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *\$8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*3556	.7894	2807
9	1989/90	*7112	.7664	5451
10	1990/91	*10668	.7441	7938

TOTAL 16196

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *14224 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 215795

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THE PRESENT WORTH GRAND TOTAL IS 231990

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENIFIT/COST STUDY APRIL 7 1981
FULL WET FGD OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL COSTS YEAR	P.W. *8/1/80 M DOLS	P.W. FACTOR VALUE
0	1980/81 *0	1.0000	0
1	1981/82 *0	.9434	0
2	1982/83 *0	.8900	0
3	1983/84 *0	.8396	0
4	1984/85 *0	.7921	0
5	1985/86 *0	.7473	0
6	1986/87 *0	.7050	0
7	1987/88 *0	.6651	0
8	1988/89 *3556	.6274	2231
9	1989/90 *7112	.5919	4210
10	1990/91 *10668	.5584	5957

TOTAL 12398

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *14224 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 111864

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THE PRESENT WORTH GRAND TOTAL IS 124262

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL WET FGD OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS	P.W. FACTOR	P.W. VALUE
		*8/1/80		
		M DOLS		
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*3556	.4665	1659
9	1989/90	*7112	.4241	3014
10	1990/91	*10668	.3855	4113

TOTAL 8733

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *14224 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 52242

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THE PRESENT WORTH GRAND TOTAL IS 61030

7 APR 1981
WIFINA OUTPUT MARCH 86

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL DRY FGD CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *\$1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*7072	.8626	6100
6	1986/87	*25657	.8375	21487
7	1987/88	*33979	.8131	31693
8	1988/89	*41446	.7894	32718
9	1989/90	*31578	.7664	24202
10	1990/91	*14967	.7441	11137
11	1991/92	*4112	.7224	2971
12	1992/93	*658	.7014	462

TOTAL 130770

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL DRY FGD CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.H. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*7072	.7475	5285
6	1986/87	*25657	.7050	13087
7	1987/88	*38979	.6651	25923
8	1988/89	*41446	.6274	26004
9	1989/90	*31578	.5919	18691
10	1990/91	*14967	.5584	8357
11	1991/92	*4112	.5268	2166
12	1992/93	*658	.4970	327

TOTAL 104840

7 APR 1981
WIFINA OUTPUT MARCH 26

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PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL DRY FGD CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DCLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*7072	.6209	4391
6	1986/87	*25657	.5645	14483
7	1987/88	*38979	.5132	20002
8	1988/89	*41446	.4665	19335
9	1989/90	*31578	.4241	13392
10	1990/91	*14967	.3855	5770
11	1991/92	*4112	.3505	1441
12	1992/93	*658	.3186	210
			TOTAL	79025

7 APR 1981
WIFINA OUTPUT MARCH 26

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PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL DRY FGO OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS	P.W. FACTOR	P.W. VALUE
		*8/1/80		
		M DOLS		
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9426	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*1298	.7894	1025
9	1989/90	*2595	.7664	1989
10	1990/91	*3893	.7441	2897

TOTAL 5910

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *5190 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 76738

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THE PRESENT WORTH GRAND TOTAL IS 84649

7 APR 1981
HIFINA OUTPUT MARCH 26

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PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/CCST STUDY APRIL 7 1981
PARTIAL DRY FGD OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*1298	.6274	814
9	1989/90	*2595	.5919	1536
10	1990/91	*3893	.5584	2174

TOTAL 4524

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *5190 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 40817

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THE PRESENT WORTH GRAND TOTAL IS 45341

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
PARTIAL DRY FGD OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
M DOLS				
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*1298	.4665	606
9	1989/90	*2595	.4241	1101
10	1990/91	*3393	.3855	1501

TOTAL 3207

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *5190 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 19062

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THE PRESENT WORTH GRAND TOTAL IS 22269

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL DRY FGD CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
		M DOLS		
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9424	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*10778	.8626	9297
6	1986/87	*39101	.8375	32746
7	1987/88	*59403	.8131	48300
8	1988/89	*63163	.7894	49861
9	1989/90	*48124	.7664	36883
10	1990/91	*22809	.7441	16972
11	1991/92	*6266	.7224	4527
12	1992/93	*1003	.7014	703

TOTAL 199290

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENIFIT/COST STUDY APRIL 7 1981
FULL DRY FGD CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS - AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS M DOLS	P.W. *8/1/80 FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9434	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*10778	.7473	8054
6	1986/87	*39101	.7050	27565
7	1987/88	*59403	.6651	39506
8	1988/89	*63163	.6274	39629
9	1989/90	*48124	.5919	28485
10	1990/91	*22809	.5584	12736
11	1991/92	*6266	.5268	3301
12	1992/93	*1003	.4970	498

TOTAL 159775

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL DRY FGD CONSTRUCTION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *12

YEAR NO.	FISCAL YEAR	COSTS *\$1/80 M DCLS	P.W. FACTOR	P.N. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*10776	.6209	6692
6	1986/87	*39101	.5645	22071
7	1987/88	*59403	.5132	30483
8	1988/89	*63163	.4665	29466
9	1989/90	*48124	.4241	20409
10	1990/91	*22809	.3855	8794
11	1991/92	*6266	.3505	2196
12	1992/93	*1003	.3186	320

TOTAL 120432

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL DRY FGD OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *3
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9709	0
2	1982/83	*0	.9425	0
3	1983/84	*0	.9151	0
4	1984/85	*0	.8885	0
5	1985/86	*0	.8626	0
6	1986/87	*0	.8375	0
7	1987/88	*0	.8131	0
8	1988/89	*2384	.7894	1882
9	1989/90	*4769	.7664	3655
10	1990/91	*7153	.7441	5323

TOTAL 10859

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *9537 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 144687

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THE PRESENT WORTH GRAND TOTAL IS 155547

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL DRY FGD OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *6
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9454	0
2	1982/83	*0	.8900	0
3	1983/84	*0	.8396	0
4	1984/85	*0	.7921	0
5	1985/86	*0	.7473	0
6	1986/87	*0	.7050	0
7	1987/88	*0	.6651	0
8	1988/89	*2384	.6274	1496
9	1989/90	*4769	.5919	2823
10	1990/91	*7153	.5584	3994

TOTAL 8313

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *9537 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 75003

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THE PRESENT WORTH GRAND TOTAL IS 83316

7 APR 1981
WIFINA OUTPUT MARCH 26

PRESENT WORTH VALUE FOR COST DISTRIBUTION
EIS BENEFIT/COST STUDY APRIL 7 1981
FULL DRY FGD OPERATION COSTS
ASSUMING NO INFLATION AND A FIXED DISCOUNT RATE

DISCOUNT RATE *10
PRESENT WORTH DATE *VALUES ARE PRES. WORTH TO
LARGEST NUMBER OF YEARS AUG. 1 1980
FROM DISCOUNT DATE *10

YEAR NO.	FISCAL YEAR	COSTS *8/1/80 M DOLS	P.W. FACTOR	P.W. VALUE
0	1980/81	*0	1.0000	0
1	1981/82	*0	.9091	0
2	1982/83	*0	.8264	0
3	1983/84	*0	.7513	0
4	1984/85	*0	.6830	0
5	1985/86	*0	.6209	0
6	1986/87	*0	.5645	0
7	1987/88	*0	.5132	0
8	1988/89	*2384	.4665	1112
9	1989/90	*4769	.4241	2023
10	1990/91	*7153	.3855	2758

→ TOTAL 5892

THE PRESENT WORTH VALUE FOR A CONSTANT
ANNUAL VALUE OF *9537 STARTING IN YEAR
NO*11 AND ENDING IN YEAR NO*42 IS 35028

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THE PRESENT WORTH GRAND TOTAL IS 40920