BOARD OF COUNTY COMMISSIONERS
MASON COUNTY, WASHINGTON

RESOLUTION NO. 105-98

A RESOLUTION ADOPTING THE AMENDED MASON COUNTY SOLID WASTE MANAGEMENT PLAN

AMENDING RESOLUTION NO. 56-92

WHEREAS, the purpose of the Mason County Solid Waste Management Plan, adopted in May 1992, was to provide decision makers in Mason County with the guidelines needed to implement, monitor and evaluate future solid waste activities, and

WHEREAS, pursuant to the Washington State Solid Waste Management Reduction and Recycling Act (RCW 70.95), Mason County and the City of Shelton are required to prepare a Solid Waste Management Plan, and

WHEREAS, pursuant RCW 70.95.110 requires that existing plans be reviewed and revised every five years, and

WHEREAS, the Mason County Solid Waste Advisory Committee has overseen the preparation of both the May 1992 Plan and the amended plan which will be dated October 1998 and have recommended in both instances that it be adopted by the local jurisdictions, and

WHEREAS, the Mason County Solid Waste Advisory Committee held numerous meetings and a public hearing on February 26, 1998, and

WHEREAS, the Mason County Board of Commissioners held a public hearing on September 29, 1998; and

WHEREAS, the City of Shelton held a public hearing in September 1998 and approved the amendments to the Solid Waste Plan, and

WHEREAS, Mason County is meeting it's requirements for environmental review under the State Environmental Policy Act by issuance of a Determination of Non-Significance on March 20, 1998, and

PAGE 2 OF RESOLUTION NO. 105-98

NOW THEREFORE BE IT RESOLVED THAT:

The Mason County Board of Commissioners hereby adopts the Mason County Solid Waste Management Plan as amended referenced here as Attachment "A".

DATED THIS 29TH DAY OF SEPTEMBER, 1998.

BOARD OF COUNTY COMMISSIONERS
MASON COUNTY, WASHINGTON

John A Bolender
JOHN BOLENDER, CHAIRPERSON

Mary Jo Cady
MARY JO CADY, COMMISSIONER

Cynthia Olsen
CINDY OLSEN, COMMISSIONER

ATTEST:

Rebecca D Rogers
CLERK OF THE BOARD

APPROVED AS TO FORM:

CHIEF DPA
DEPUTY PROS. ATTORNEY

TABLE OF CONTENTS

REFERENCES

APPENDIX A	DETERMINATION OF NON-SIGNIFICANCE
APPENDIX B	FINDINGS OF FACT ADOPTION RESOLUTION AND CONCURRENCE DOCUMENTATION SWAC MINUTES
APPENDIX C	WUTC LETTER
APPENDIX D	DOE LETTER

LIST OF TABLES

LIST OF FIGURES

FIGURE

Table II-7
Combined WGA Material Type Summary for Washington State: Health

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	42.9%		45,911	
Newspaper		4.5%		4,823
Corrugated Paper		6.9%		7,419
Computer Paper		1.7%		1,801
Office Paper		2.2%		2,307
Mixed Recyclable Paper		12.0%		12,833
Milk/Juice Cartons		1.8%		1,980
Aseptic Juice Containers		0.0%		2
Frozen Food Containers		0.0%		48
Other Paper		13.7%		14,697
PLASTIC	11.3%		12,154	
PET Containers (#1)		0.2%		175
HDPE Containers (#2)		0.7%		714
LDPE Plastics (#4)		0.1%		60
Polystyrene (#6)		1.0%		1,045
Plastic Bags		5.7%		6,083
Other Coded Plastic Packaging		0.3%		366
Other Plastics		3.5%		3,711
GLASS	1.7%		1,813	
Clear Glass Containers		1.3%		1,378
Green Glass Containers		0.1%		131
Brown Glass Containers		0.2%		162
Refillable Beer Bottles		0.0%		0
Other Glass		0.1%		141
FERROUS METALS	4.6%		4,904	
Tin Cans		2.7%		2,932
Bi-Metal Cans		0.0%		0
Mixed Metal & Other Materials		0.2%		245
White / Brown Goods		0.1%		111
Other Ferrous Metals		1.5%		1,616
NON-FERROUS METALS	1.1%		1,145	
Aluminum Cans		0.9%		977
Other Aluminum		0.1%		117
Other Non-Ferrous Metals		0.0%		51
ORGANICS	12.8%		13,754	
Food		9.8%		10,495
Yard Wastes		0.0%		29
Other Organics		3.0%		3,230
CONSTRUCTION DEBRIS	1.1%		1,174	
Wood Wastes		0.6%		597
Gypsum Drywall		0.0%		0
Inert Solids/ Fines		0.0%		0
Other Construction Debris		0.5%		576
OTHER WASTES	20.6%		22,108	
Disposable Diapers		14.8%		15,862
Textiles		3.1%		3,274
Rubber Products (except Tires)		2.8%		2,972
Large Bulky Items		0.0%		0
Other Materials		0.0%		0
HAZARDOUS WASTE	3.9%		4,133	
Paint / Adhesives / Solvents		0.1%		75
Cleaners		1.2%		1,291
Pesticides / Herbicides		0.0%		0
Non- Vehicle Batteries		0.0%		31
Other Hazardous Wastes		2.6%		2,736
SPECIAL WASTES	0.0%		0	
Used Oil		0.0%		0
Tires		0.0%		0
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.0%		0
Total Percent:	100.0%	Total Tons:	107,095	

Table II-7
Combined WGA Material Type Summary for Washington State: Other Commercial

WASTE CATEGORIES Material	Mean Percentage of Total Disposal	Total Tons Disposed per Material
PAPER	39.2%	29,044
Newspaper	3.2%	2,378
Corrugated Paper	10.2%	7,570
Computer Paper	0.9%	660
Office Paper	2.4%	1,755
Mixed Recyclable Paper	9.7%	7,228
Milk/Juice Cartons	1.3%	952
Aseptic Juice Containers	0.1%	52
Frozen Food Containers	0.1%	75
Other Paper	11.3%	8,374
PLASTIC	11.6%	8,607
PET Containers (#1)	0.3%	236
HDPE Containers (#2)	0.8%	583
LDPE Plastics (#4)	0.0%	26
Polystyrene (#6)	1.1%	840
Plastic Bags	5.8%	4,312
Other Coded Plastic Packaging	0.2%	132
Other Plastics	3.3%	2,478
GLASS	5.5%	4,111
Clear Glass Containers	2.6%	1,952
Green Glass Containers	0.7%	489
Brown Glass Containers	1.3%	970
Refillable Beer Bottles	0.0%	12
Other Glass	0.9%	688
FERROUS METALS	3.6%	2,661
Tin Cans	1.4%	1,068
Bi-Metal Cans	0.0%	0
Mixed Metal & Other Materials	0.7%	534
White / Brown Goods	0.0%	27
Other Ferrous Metals	1.4%	1,032
NON-FERROUS METALS	0.8%	627
Aluminum Cans	0.6%	469
Other Aluminum	0.1%	103
Other Non-Ferrous Metals	0.1%	55
ORGANICS	26.2%	19,402
Food	20.2%	14,968
Yard Wastes	1.0%	750
Other Organics	5.0%	3,684
CONSTRUCTION DEBRIS	6.8%	5,051
Wood Wastes	5.4%	4,016
Gypsum Drywall	0.2%	168
Inert Solids/ Fines	0.2%	175
Other Construction Debris	0.9%	692
OTHER WASTES	5.0%	3,706
Disposable Diapers	2.1%	1,558
Textiles	1.6%	1,196
Rubber Products (except Tires)	0.5%	397
Large Bulky Items	0.7%	515
Other Materials	0.1%	41
HAZARDOUS WASTE	1.2%	927
Paint / Adhesives / Solvents	0.5%	394
Cleaners	0.1%	103
Pesticides / Herbicides	0.0%	31
Non- Vehicle Batteries	0.0%	24
Other Hazardous Wastes	0.5%	374
SPECIAL WASTES	0.0%	29
Used Oil	0.0%	11
Tires	0.0%	0
Vehicle Batteries	0.0%	0
Ferrous Vehicle Parts	0.0%	18
TOTALS PERCENT:	100.0% TONS:	74,166

Table II-7
Combined WGA Material Type Summary for Washington State: Food Processing

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	45.8%		30,751	
Newspaper		0.7%		470
Corrugated Paper		26.0%		17,457
Computer Paper		0.3%		201
Office Paper		2.0%		1,343
Mixed Recyclable Paper		10.0%		6,714
Milk/Juice Cartons		0.0%		0
Aseptic Juice Containers		0.0%		0
Frozen Food Containers		0.0%		0
Other Paper		6.8%		4,566
PLASTIC	13.9%		9,333	
PET Containers (#1)		0.1%		67
HDPE Containers (#2)		1.0%		671
LDPE Plastics (#4)		0.0%		0
Polystyrene (#6)		0.4%		269
Plastic Bags		11.0%		7,386
Other Coded Plastic Packaging		0.5%		336
Other Plastics		0.9%		604
GLASS	0.5%		336	
Clear Glass Containers		0.2%		134
Green Glass Containers		0.1%		67
Brown Glass Containers		0.1%		67
Refillable Beer Bottles		0.0%		0
Other Glass		0.1%		67
FERROUS METALS	3.5%		2,350	
Tin Cans		2.0%		1,343
Bi-Metal Cans		0.0%		0
Mixed Metal & Other Materials		0.5%		336
White / Brown Goods		0.0%		0
Other Ferrous Metals		1.0%		671
NON-FERROUS METALS	0.1%		67	
Aluminum Cans		0.1%		67
Other Aluminum		0.0%		0
Other Non-Ferrous Metals		0.0%		0
ORGANICS	30.0%		20,143	
Food		28.0%		18,800
Yard Wastes		1.0%		671
Other Organics		1.0%		671
CONSTRUCTION DEBRIS	6.0%		4,029	
Wood Wastes		3.0%		2,014
Gypsum Drywall		0.0%		0
Inert Solids/ Fines		2.0%		1,343
Other Construction Debris		1.0%		671
OTHER WASTES	0.2%		134	
Disposable Diapers		0.0%		0
Textiles		0.1%		67
Rubber Products (except Tires)		0.1%		67
Large Bulky Items		0.0%		0
Other Materials		0.0%		0
HAZARDOUS WASTE	0.0%		0	
Paint / Adhesives / Solvents		0.0%		0
Cleaners		0.0%		0
Pesticides / Herbicides		0.0%		0
Non- Vehicle Batteries		0.0%		0
Other Hazardous Wastes		0.0%		0
SPECIAL WASTES	0.0%		0	
Used Oil		0.0%		0
Tires		0.0%		0
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.0%		0
Total Percent:	100.0%	Total Tons:	67,142	

Table II-7
Combined WGA Material Type Summary for Washington State: Paper and Wood Products

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	21.2%		11,747	
Newspaper		1.2%		665
Corrugated Paper		8.0%		4,433
Computer Paper		1.0%		554
Office Paper		1.0%		554
Mixed Recyclable Paper		2.0%		1,108
Milk/Juice Cartons		0.0%		0
Aseptic Juice Containers		0.0%		0
Frozen Food Containers		0.0%		0
Other Paper		8.0%		4,433
PLASTIC	7.0%		3,879	
PET Containers (#1)		0.1%		55
HDPE Containers (#2)		0.1%		55
LDPE Plastics (#4)		0.0%		0
Polystyrene (#6)		0.2%		111
Plastic Bags		4.5%		2,494
Other Coded Plastic Packaging		0.1%		55
Other Plastics		2.0%		1,108
GLASS	0.4%		222	
Clear Glass Containers		0.2%		111
Green Glass Containers		0.1%		55
Brown Glass Containers		0.0%		0
Refillable Beer Bottles		0.0%		0
Other Glass		0.1%		55
FERROUS METALS	2.7%		1,496	
Tin Cans		0.2%		111
Bi-Metal Cans		0.0%		0
Mixed Metal & Other Materials		0.4%		222
White / Brown Goods		0.0%		0
Other Ferrous Metals		2.1%		1,164
NON-FERROUS METALS	0.3%		166	
Aluminum Cans		0.2%		111
Other Aluminum		0.1%		55
Other Non-Ferrous Metals		0.0%		0
ORGANICS	13.4%		7,425	
Food		10.0%		5,541
Yard Wastes		0.5%		277
Other Organics		2.9%		1,607
CONSTRUCTION DEBRIS	49.0%		27,152	
Wood Wastes		42.0%		23,273
Gypsum Drywall		0.0%		0
Inert Solids/ Fines		6.0%		3,325
Other Construction Debris		1.0%		554
OTHER WASTES	1.0%		554	
Disposable Diapers		0.0%		0
Textiles		0.5%		277
Rubber Products (except Tires)		0.5%		277
Large Bulky Items		0.0%		0
Other Materials		0.0%		0
HAZARDOUS WASTE	5.0%		2,771	
Paint / Adhesives / Solvents		0.0%		0
Cleaners		0.0%		0
Pesticides / Herbicides		0.0%		0
Non- Vehicle Batteries		0.0%		0
Other Hazardous Wastes		5.0%		2,771
SPECIAL WASTES	0.0%		0	
Used Oil		0.0%		0
Tires		0.0%		0
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.0%		0
Total Percent:	**100.0%**	**Total Tons:**	**55,412**	

Table II-7
Combined WGA Material Type Summary for Washington State: Metal Products

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	24.0%		10,236	
Newspaper		2.5%		1,066
Corrugated Paper		10.0%		4,265
Computer Paper		1.0%		427
Office Paper		1.0%		427
Mixed Recyclable Paper		2.5%		1,066
Milk/Juice Cartons		0.0%		0
Aseptic Juice Containers		0.0%		0
Frozen Food Containers		0.0%		0
Other Paper		7.0%		2,986
PLASTIC	5.5%		2,346	
PET Containers (#1)		0.1%		43
HDPE Containers (#2)		0.1%		43
LDPE Plastics (#4)		0.0%		0
Polystyrene (#6)		0.3%		128
Plastic Bags		1.0%		427
Other Coded Plastic Packaging		0.0%		0
Other Plastics		4.0%		1,706
GLASS	2.1%		896	
Clear Glass Containers		1.5%		640
Green Glass Containers		0.2%		85
Brown Glass Containers		0.2%		85
Refillable Beer Bottles		0.0%		0
Other Glass		0.2%		85
FERROUS METALS	25.2%		10,748	
Tin Cans		0.2%		85
Bi-Metal Cans		0.0%		0
Mixed Metal & Other Materials		0.0%		0
White / Brown Goods		0.0%		0
Other Ferrous Metals		25.0%		10,663
NON-FERROUS METALS	10.2%		4,351	
Aluminum Cans		0.2%		85
Other Aluminum		0.0%		0
Other Non-Ferrous Metals		10.0%		4,265
ORGANICS	3.6%		1,535	
Food		1.0%		427
Yard Wastes		0.1%		43
Other Organics		2.5%		1,066
CONSTRUCTION DEBRIS	24.3%		10,364	
Wood Wastes		22.3%		9,511
Gypsum Drywall		0.0%		0
Inert Solids/ Fines		2.0%		853
Other Construction Debris		0.0%		0
OTHER WASTES	5.0%		2,133	
Disposable Diapers		0.0%		0
Textiles		1.0%		427
Rubber Products (except Tires)		4.0%		1,706
Large Bulky Items		0.0%		0
Other Materials		0.0%		0
HAZARDOUS WASTE	0.1%		43	
Paint / Adhesives / Solvents		0.0%		0
Cleaners		0.0%		0
Pesticides / Herbicides		0.0%		0
Non- Vehicle Batteries		0.0%		0
Other Hazardous Wastes		0.1%		43
SPECIAL WASTES	0.0%		0	
Used Oil		0.0%		0
Tires		0.0%		0
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.0%		0
Total Percent:	100.0%	Total Tons:	42,652	

Table II-7
Combined WGA Material Type Summary for Washington State: Other Industrial

WASTE CATEGORIES Material	Mean Percentage of Total Disposal	Total Tons Disposed per Material
PAPER	39.6%	47,609
Newspaper	3.3%	3,909
Corrugated Paper	12.6%	15,162
Computer Paper	1.2%	1,495
Office Paper	2.3%	2,726
Mixed Recyclable Paper	12.2%	14,684
Milk/Juice Cartons	0.0%	0
Aseptic Juice Containers	0.0%	0
Frozen Food Containers	0.0%	49
Other Paper	8.0%	9,584
PLASTIC	10.6%	12,746
PET Containers (#1)	0.1%	170
HDPE Containers (#2)	0.3%	379
LDPE Plastics (#4)	0.0%	0
Polystyrene (#6)	1.3%	1,601
Plastic Bags	4.3%	5,158
Other Coded Plastic Packaging	0.6%	761
Other Plastics	3.9%	4,678
GLASS	1.1%	1,364
Clear Glass Containers	0.5%	577
Green Glass Containers	0.2%	188
Brown Glass Containers	0.2%	214
Refillable Beer Bottles	0.0%	0
Other Glass	0.3%	386
FERROUS METALS	7.9%	9,516
Tin Cans	0.6%	709
Bi-Metal Cans	0.0%	0
Mixed Metal & Other Materials	0.2%	239
White / Brown Goods	0.4%	494
Other Ferrous Metals	6.7%	8,074
NON-FERROUS METALS	2.0%	2,459
Aluminum Cans	0.3%	311
Other Aluminum	0.0%	24
Other Non-Ferrous Metals	1.8%	2,124
ORGANICS	12.2%	14,646
Food	10.1%	12,096
Yard Wastes	0.5%	622
Other Organics	1.6%	1,928
CONSTRUCTION DEBRIS	23.7%	28,529
Wood Wastes	18.9%	22,672
Gypsum Drywall	0.0%	0
Inert Solids/ Fines	4.4%	5,331
Other Construction Debris	0.4%	525
OTHER WASTES	1.6%	1,901
Disposable Diapers	0.0%	0
Textiles	0.4%	528
Rubber Products (except Tires)	1.1%	1,373
Large Bulky Items	0.0%	0
Other Materials	0.0%	0
HAZARDOUS WASTE	1.2%	1,453
Paint / Adhesives / Solvents	0.0%	0
Cleaners	0.0%	0
Pesticides / Herbicides	0.0%	0
Non- Vehicle Batteries	0.0%	0
Other Hazardous Wastes	1.2%	1,453
SPECIAL WASTES	0.0%	0
Used Oil	0.0%	0
Tires	0.0%	0
Vehicle Batteries	0.0%	0
Ferrous Vehicle Parts	0.0%	0
TOTALS PERCENT:	100.0% TONS:	120,223

Table II-7
Combined WGA Material Type Summary for Washington State: Residential Self-haul

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	11.9%		65,949	
Newspaper		3.4%		18,795
Corrugated Paper		3.5%		19,348
Computer Paper		0.0%		166
Office Paper		0.2%		1,106
Mixed Recyclable Paper		3.6%		19,901
Milk/Juice Cartons		0.0%		0
Aseptic Juice Containers		0.0%		0
Frozen Food Containers		0.0%		0
Other Paper		1.2%		6,634
PLASTIC	5.5%		30,404	
PET Containers (#1)		0.1%		553
HDPE Containers (#2)		0.1%		553
LDPE Plastics (#4)		0.0%		0
Polystyrene (#6)		0.3%		1,658
Plastic Bags		1.0%		5,528
Other Coded Plastic Packaging		1.0%		5,528
Other Plastics		3.0%		16,584
GLASS	2.8%		15,478	
Clear Glass Containers		1.0%		5,528
Green Glass Containers		0.2%		1,106
Brown Glass Containers		0.5%		2,764
Refillable Beer Bottles		0.1%		553
Other Glass		1.0%		5,528
FERROUS METALS	8.9%		49,199	
Tin Cans		0.4%		2,211
Bi-Metal Cans		0.0%		0
Mixed Metal & Other Materials		3.2%		17,690
White / Brown Goods		0.3%		1,658
Other Ferrous Metals		5.0%		27,640
NON-FERROUS METALS	0.9%		4,975	
Aluminum Cans		0.3%		1,658
Other Aluminum		0.2%		1,106
Other Non-Ferrous Metals		0.4%		2,211
ORGANICS	25.2%		139,305	
Food		3.2%		17,690
Yard Wastes		20.9%		115,535
Other Organics		1.1%		6,081
CONSTRUCTION DEBRIS	37.5%		207,299	
Wood Wastes		25.0%		138,200
Gypsum Drywall		2.0%		11,056
Inert Solids/ Fines		3.5%		19,348
Other Construction Debris		7.0%		38,696
OTHER WASTES	6.6%		36,485	
Disposable Diapers		0.1%		553
Textiles		5.0%		27,640
Rubber Products (except Tires)		0.0%		0
Large Bulky Items		1.5%		8,292
Other Materials		0.0%		0
HAZARDOUS WASTE	0.6%		3,317	
Paint / Adhesives / Solvents		0.4%		2,211
Cleaners		0.0%		0
Pesticides / Herbicides		0.0%		0
Non- Vehicle Batteries		0.0%		0
Other Hazardous Wastes		0.2%		1,106
SPECIAL WASTES	0.1%		553	
Used Oil		0.0%		0
Tires		0.1%		553
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.0%		0
Total Percent:	100.0%	Total Tons:	552,964	

Table II-7
Combined WGA Material Type Summary for Washington State: Commercial Self-haul

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	10.5%		50,232	
Newspaper		0.7%		3,349
Corrugated Paper		5.7%		27,269
Computer Paper		0.1%		478
Office Paper		0.5%		2,392
Mixed Recyclable Paper		2.0%		9,568
Milk/Juice Cartons		0.0%		0
Aseptic Juice Containers		0.0%		0
Frozen Food Containers		0.0%		0
Other Paper		1.5%		7,176
PLASTIC	10.4%		49,754	
PET Containers (#1)		0.1%		478
HDPE Containers (#2)		0.3%		1,435
LDPE Plastics (#4)		0.0%		0
Polystyrene (#6)		0.5%		2,392
Plastic Bags		2.5%		11,960
Other Coded Plastic Packaging		2.0%		9,568
Other Plastics		5.0%		23,920
GLASS	2.5%		11,960	
Clear Glass Containers		0.5%		2,392
Green Glass Containers		0.3%		1,435
Brown Glass Containers		0.1%		478
Refillable Beer Bottles		0.1%		478
Other Glass		1.5%		7,176
FERROUS METALS	7.1%		33,966	
Tin Cans		0.1%		478
Bi-Metal Cans		0.0%		0
Mixed Metal & Other Materials		3.5%		16,744
White / Brown Goods		0.1%		478
Other Ferrous Metals		3.4%		16,266
NON-FERROUS METALS	0.7%		3,349	
Aluminum Cans		0.5%		2,392
Other Aluminum		0.1%		478
Other Non-Ferrous Metals		0.1%		478
ORGANICS	8.8%		42,099	
Food		1.5%		7,176
Yard Wastes		6.5%		31,096
Other Organics		0.8%		3,827
CONSTRUCTION DEBRIS	51.5%		246,377	
Wood Wastes		30.0%		143,520
Gypsum Drywall		2.0%		9,568
Inert Solids/ Fines		3.5%		16,744
Other Construction Debris		16.0%		76,544
OTHER WASTES	7.8%		37,315	
Disposable Diapers		0.1%		478
Textiles		7.0%		33,488
Rubber Products (except Tires)		0.7%		3,349
Large Bulky Items		0.0%		0
Other Materials		0.0%		0
HAZARDOUS WASTE	0.7%		3,349	
Paint / Adhesives / Solvents		0.2%		957
Cleaners		0.0%		0
Pesticides / Herbicides		0.0%		0
Non- Vehicle Batteries		0.0%		0
Other Hazardous Wastes		0.5%		2,392
SPECIAL WASTES	0.0%		0	
Used Oil		0.0%		0
Tires		0.0%		0
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.0%		0
Total Percent:	100.0%	Total Tons:	478,401	

Table II-7
Combined WGA Material Type Summary for Washington State

WASTE CATEGORIES Material	Mean Percentage of Total Disposal	Total Tons Disposed per Material
PAPER	29.5%	1,196,190
Newspaper	4.0%	160,960
Corrugated Paper	7.3%	294,788
Computer Paper	0.4%	15,204
Office Paper	1.1%	44,308
Mixed Recyclable Paper	8.2%	330,332
Milk/Juice Cartons	0.6%	26,176
Aseptic Juice Containers	0.0%	1,171
Frozen Food Containers	0.3%	10,760
Other Paper	7.7%	312,490
PLASTIC	10.0%	404,616
PET Containers (#1)	0.4%	14,335
HDPE Containers (#2)	0.7%	29,270
LDPE Plastics (#4)	0.0%	1,298
Polystyrene (#6)	0.8%	33,175
Plastic Bags	4.0%	162,674
Other Coded Plastic Packaging	0.6%	24,299
Other Plastics	3.4%	139,564
GLASS	4.6%	186,218
Clear Glass Containers	2.4%	97,150
Green Glass Containers	0.6%	22,607
Brown Glass Containers	0.8%	34,254
Refillable Beer Bottles	0.1%	2,672
Other Glass	0.7%	29,535
FERROUS METALS	5.6%	226,337
Tin Cans	1.5%	59,131
Bi-Metal Cans	0.0%	34
Mixed Metal & Other Materials	1.4%	56,074
White / Brown Goods	0.1%	5,808
Other Ferrous Metals	2.6%	105,290
NON-FERROUS METALS	1.1%	42,698
Aluminum Cans	0.6%	24,639
Other Aluminum	0.1%	5,800
Other Non-Ferrous Metals	0.3%	12,259
ORGANICS	24.3%	984,402
Food	11.8%	476,662
Yard Wastes	7.7%	311,879
Other Organics	4.8%	195,861
CONSTRUCTION DEBRIS	17.0%	687,167
Wood Wastes	10.9%	440,381
Gypsum Drywall	0.7%	29,147
Inert Solids/ Fines	1.8%	71,366
Other Construction Debris	3.6%	146,273
OTHER WASTES	7.0%	283,623
Disposable Diapers	2.5%	101,235
Textiles	3.4%	139,212
Rubber Products (except Tires)	0.4%	17,348
Large Bulky Items	0.5%	21,387
Other Materials	0.1%	4,440
HAZARDOUS WASTE	0.9%	36,762
Paint / Adhesives / Solvents	0.3%	14,061
Cleaners	0.0%	1,679
Pesticides / Herbicides	0.0%	609
Non- Vehicle Batteries	0.0%	1,589
Other Hazardous Wastes	0.5%	18,824
SPECIAL WASTES	0.1%	4,485
Used Oil	0.0%	1,134
Tires	0.0%	1,095
Vehicle Batteries	0.0%	1,545
Ferrous Vehicle Parts	0.0%	711
TOTALS PERCENT:	100.0% TONS:	4,052,497

MASON COUNTY SOLID WASTE MANAGEMENT PLAN
AMENDED CHAPTER 3A
WASTE REDUCTION AND RECYCLING

3.1 INTRODUCTION

The purpose of Chapter 3A is to update the waste reduction and recycling program for Mason County according to solid waste planning guidelines (WDOE 90-11). This chapter is divided into ten sections. The first section will act as an introduction and include an examination of current state regulations. Following sections will discuss waste reduction, urban and rural designations, recyclable materials, recycling programs, yard waste programs, and education.

The driving force behind 1989 revisions to RCW 70.95 and other laws related to solid waste management and the new solid waste planning guidelines, was Engrossed Substitute House Bill 1671 (ESHB 1671) also termed the "Waste Not Washington" Act. This bill brought about significant changes in the way Washington Cities and Counties handle their solid waste. The revisions to several laws including RCW 70.95 are discussed here as a preface to the waste reduction and recycling discussions.

3.1.1 RCW 70.95

Legislative findings included in RCW 70.95 declared that waste reduction and recycling must become the fundamental strategy of solid waste management. To that end, the following goals were developed and included in RCW 70.95 as amended, and were to be the basis for solid waste planning in Washington State.

> "It is the state's goal to achieve a fifty percent recycling rate by 1995."
>
> "Steps should be taken to make recycling at least as affordable and convenient to the ratepayer as mixed waste disposal."
>
> "Source separation of waste must become a fundamental strategy of solid waste management."

Under the revised law, waste reduction and recycling elements of solid waste management plans must detail how the bill's intention will be met and how contribution to the 50% goal will be made. Ecology has recently completed guidelines which provide direction to Washington Cities and Counties to comply with the law's purpose.

This chapter includes waste reduction and recycling recommendations which are expected to result in a continuing increase in the recycling rate throughout Mason County..

In addition to the new requirement for a detailed waste reduction and recycling element of Solid Waste Management Plans, other items included in RCW 70.95 include the following programs.

- The Utilities and Transportation Commission will review local plans to assess cost impacts to haulers.

- Ecology will conduct detailed monitoring of curbside and other waste disposal segregation methods to determine the effectiveness of these programs. Persons collecting solid waste are to annually report to Ecology.

- The law makes it illegal to dispose of vehicle batteries in an unauthorized manner. A fine of up to one thousand dollars can be charged for each violation. In addition, a core charge of not less than five dollars per battery must be paid by the purchaser of a new battery if the purchaser fails to provide an equivalent used battery as trade in.

3.1.2 Other Laws

In addition to RCW 70.95, ESHB 1671 also affected other laws pertaining to solid waste handling. Two of these laws are RCW 81.77 - Solid Waste Collection Companies and RCW 36.58 - Solid Waste Disposal.

RCW 81.77 regulates solid waste collection companies and establishes the Washington Utilities and Transportation Commission (WUTC) as the supervising and regulating agency for collection within unincorporated areas. ESHB 1671 amended RCW 81.77 to require the WUTC to establish rate structures and billing systems consistent with the solid waste management priorities.

ESHB 1671 revised RCW 36.58 and changed some elements of solid waste disposal and handling. Under the revised law, counties may contract for collection of recyclables if they choose. The County has full authority to manage, regulate, and fix the rates for recycling collection. However, counties may not contract for collection of refuse.

ESHB 1671 also added a new section to RCW 36.58 giving a county authority to impose a fee on the solid waste collection companies operating in unincorporated areas. The revenue should fund the administration and planning expenses that may be incurred in preparing and ensuring compliance with the Plan.

3.2 WASTE REDUCTION

Waste reduction is the highest priority for handling and management of solid waste according to RCW 70.95 as amended in 1989. This adoption of practices by consumers, manufacturers, and government to generate less waste or reduce the toxicity of waste is called waste reduction. Reducing packaging, reusing a grocery bag, buying materials in bulk, and frequenting the common garage sale are typical examples of waste reduction. These activities prevent materials from entering the waste stream.

The solid waste planning goals developed for Mason County in the area of waste reduction are:

- To advance waste reduction efforts through support of State and Federal programs.
- To promote waste reduction in Mason County through public information and education programs and other available, appropriate methods.

Although interest has been shown by reviewing agencies in percentage of the waste stream reduction, it would be difficult to quantify the percentage of the waste stream reduced under practices described here. Additional waste reduction practices would have an additional impact on the waste stream, however, estimation of additional percentages with any assurance would be difficult. For the purposes of the Plan, waste reduction percentages achieved through new programs will be assumed to be part of overall waste reduction and recycling programs and no differentiation will be made. More specific waste reduction targets may be included in future Plan updates.

3.2.1 Existing Practices

In 1993, Mason County and the City of Shelton created a position of Recycling Coordinator. This position is jointly funded by the City and County, with assistance from the Department of Ecology Coordinated Prevention Grant program. The position was created to develop, facilitate and promote waste reduction and recycling programs.

Waste reduction information is distributed during community presentations and events. Informal waste audits and shop smart tours continue to be conducted. Programs addressing the reduction of yard and kitchen waste have been developed and are discussed in 3.7.1.

Through 1997, the Recycling Coordinator has trained 60 people as Master Recycler/Composter volunteers. In exchange for training the students committed to hours of public education and outreach. This was accomplished by staffing booths at fairs and community events, establishing recycling programs at work, conducting neighborhood collection days and a myriad of other special projects.

Waste reduction and recycling education has been extended to all public schools in the City of Shelton and throughout Mason County. Eight "A-way with Waste" workshops have been conducted and curriculum has been distributed to attending educators. In the 1995-96 school year, all schools in the County implemented various types of waste reduction or recycling programs. Some began collecting mixed paper and cardboard, while others have collected tetra pak or implemented on-site worm and compost bins.

Various forms of media continue to be used to promote waste reduction including but not limited to: radio, public access television, city newsletter, local newspapers, and billing inserts.

3.2.2 Needs and Opportunities

This section evaluates the existing system to determine whether the goals for waste reduction are currently met. Where goals are not met, needs become apparent which must be filled to successfully obtain goals. In some cases opportunities may exist for improving the solid waste system. In other cases, barriers may exist which prevent implementation. Each is discussed as appropriate.

Issues are listed at the end of this section which identify the general choices decision makers must consider to meet needs. The following section - Alternatives and Evaluation - describes and evaluates alternate methods to resolve the issues.

The goals are reiterated below with discussion following.

GOAL: **To advance waste reduction efforts through support of State and Federal programs.**

Waste reduction strategies offer multiple benefits in resource conservation and environmental protection, however local options in waste reduction are limited. Many waste reduction activities such as bottle bills and packaging legislation are most effective on the State and Federal level. Good opportunities exist to advance waste reduction efforts through these types of programs.

Local support can be a driving force behind State and Federal action. Local support of waste reduction policies combined with other local jurisdictions in the state or nation, could combine to encourage further legislation and effective action on a broader level.

A growing number of opportunities exist for State or Federal programs in waste reduction. To meet the stated goal of support for State and Federal programs, the County will need to develop a policy for support of these types of programs.

Issues related to State and Federal programs are presented at the end of this subsection. The second waste reduction goal is reiterated below with discussion following.

GOAL: **To promote waste reduction in Mason County through public information and education programs and other available and appropriate methods.**

The basis for meeting this goal in Mason County schools is already established. Schools throughout the county have incorporated waste reduction and recycling programs into their curriculum. To date, every K-6 classroom in Mason County has received a presentation on waste reduction and recycling. The Recycling Coordinator is available for presentations by request to area educators. The SWAC supports inclusion of waste reduction and recycling education in schools.

In addition, other Washington State jurisdictions have developed programs suitable for a school assembly which provide information regarding waste reduction and recycling. Mason County could obtain these programs.

The proposed Rural Community Centers include Matlock, Lilliwaup, Tahuya, Grapeview, Potlatch, Dayton, Skokomish Valley, and Mason-Benson Lakes.

The population is distributed throughout the County in the following manner: City of Shelton UGA - 20.8%; Belfair UGA - 9.2%; WRA Urban - 18%; FCC - 25%; WRA - 12% and Rural Areas - 15%.

In the following you will find the projected additional population for Mason County through the year 2014 (Mason County is currently proposing revisions to the areas listed and percentages which may or may not be ready by the time this plan is adopted. The figures shown are from our current Comprehensive Plan, Land Use Chapter):

AREA	SHARE OF GROWTH	ADDITIONAL POPULATION
SHELTON UGA	20.8%	7,643
BELFAIR UGA	9.2%	3,398
WORKING RURAL AREA URBAN	18.0%	6,624
FCC	25.0%	9,201
WORKING RURAL AREA	12.0%	4,416
RURAL	15.0%	5,520
TOTAL COUNTY	100.0%	36,802

Note: Mason County is in the process of reviewing changes to its Comprehensive Plan which will change the information contained in this section if approved.

2.2.2 Climate and Air Quality

Climate

Mason County has a mid-latitude west coast marine climatic regime typical of the Puget Sound lowlands (Molenaar and Noble, 1970). The climate is influenced by the Pacific Ocean and Puget Sound water bodies as well as the Olympic and Cascade mountain ranges. Generally, moderate temperatures are experienced year round and the climate is mild with wet winters and dry summers.

Precipitation is delivered by storms driven by the prevailing southwesterly winds. The amount of precipitation varies throughout the County because of the effect of topography on air movement. The greatest topological effect is from the Olympic Mountains whose eastern slopes are in the northwestern portion of the County. The Olympics rise to an elevation of 6,000 feet, and that portion of the County experiences an average annual rainfall of 200 inches. On the other hand, at its eastern most edge, along the Puget Sound, the County receives an average annual precipitation of 50 inches.

The rainfall is typically gentle precipitation with overcast and foggy winter days. Except for higher mountain elevations, winter snowfall is intermittent and melts quickly. Winter temperatures are mild as are summer temperatures.

Mason County's climate can be characterized as moderate-maritime, influenced by the Pacific Ocean, yet sheltered by the Olympic Mountains. Average temperatures range from a high of 78 degrees F. in July to 32 degrees F. in January. The average daily temperature in Mason County is 51 degrees F. The County receives an average of 64 inches of precipitation annually, with average monthly rainfalls ranging from a low in July of 0.8 inches, to a high of 10.4 inches in January.

Air Quality

According to the Olympic Air Pollution Control Authority, there are no air quality non-attainment areas in Mason County. There are occasional seasonal problems from slash burning that occurs in the summer months. Slash burning is used to clear debris following clear cutting of timber areas. The slash burns produce a large amount of particulates in the form of smoke and ash. In 1988, a slash burn escaped confinement and produced smoke that adversely impacted areas as far away as the Seattle metropolitan area.

2.2.3 Hydrogeology

Groundwater is the major source of drinking water in the County. Since waste disposal facilities may potentially contaminate groundwater supplies, the process of siting such a facility must evaluate the complex hydrogeological factors affecting the groundwater regime.

This section discusses the hydrogeology of Mason County and is geared toward a discussion of the suitability of areas within Mason County as solid waste landfill sites.

The State of Washington's definition of aquifer recharge areas for GMA planning purposes focuses on exiting areas of supply which are vulnerable to contamination: Areas with a critical recharging effect on aquifers used for potable water are areas where an aquifer that is a source of drinking water is vulnerable to contamination that would affect the potability of the water (WAC 365-190-030).

Groundwater exists in underground layers of porous rock and soil called aquifers. Water stored in aquifers reaches the ground surface through springs, wells, or by seepage into surface water features, including wetlands. Surface water replenish, "recharge", aquifer through seepage from streams, lakes, and wetlands, and from precipitation that percolates through soil or rock.

Potable water means water suitable for drinking. Groundwater provides virtually all of Mason County's potable water. Protecting aquifers and aquifer recharge areas, therefore is critical to maintaining Mason County's water supply. Aquifers exist throughout the County. The groundwater supplying most of the County's water is obtained from the aquifers running through coarser and more permeable glacial and fluvial sedimentary deposits. The older, undifferentiated sedimentary deposits provide large quantities of water for industrial and municipal wells. Bedrock forms the bottom of the groundwater layer although fractures and joints in the relatively impermeable rocks may yield small quantities of waters. Most of Mason County enjoys an abundance of good quality water, however, the Department of

Ecology has identified some areas as the Kennedy and Goldsborough drainages where this may not be the case.

Precipitation provides the primary source of recharge for Mason County's groundwater. Precipitation within the County averages 64 inches annually. Approximately 24,970 acres have been mapped as Critical Aquifer Recharge Areas in Mason County.

Currently Mason County is shipping solid waste to Klickitat County and plans to continue in this manner. If at some future date Mason County would need to give consideration to a local landfill it would need to conduct a thorough study to determine an acceptable area, do extensive testing, gather public input, and comply with extremely difficult regulations.

The following section is organized into a general discussion of the geology of the County, a discussion of naturally occurring hazards (such as floods and geologic hazards) and a general discussion of suitable and unsuitable soils for landfilling.

General Geology

Mason County occupies about 970 square miles of land area (Figure 2.1A). The northwestern part of the County lies in the Olympic Mountains and the remainder lies in the Puget Sound Lowland. Elevations within the County range from sea level to 6,612 feet (Mt. Stone).

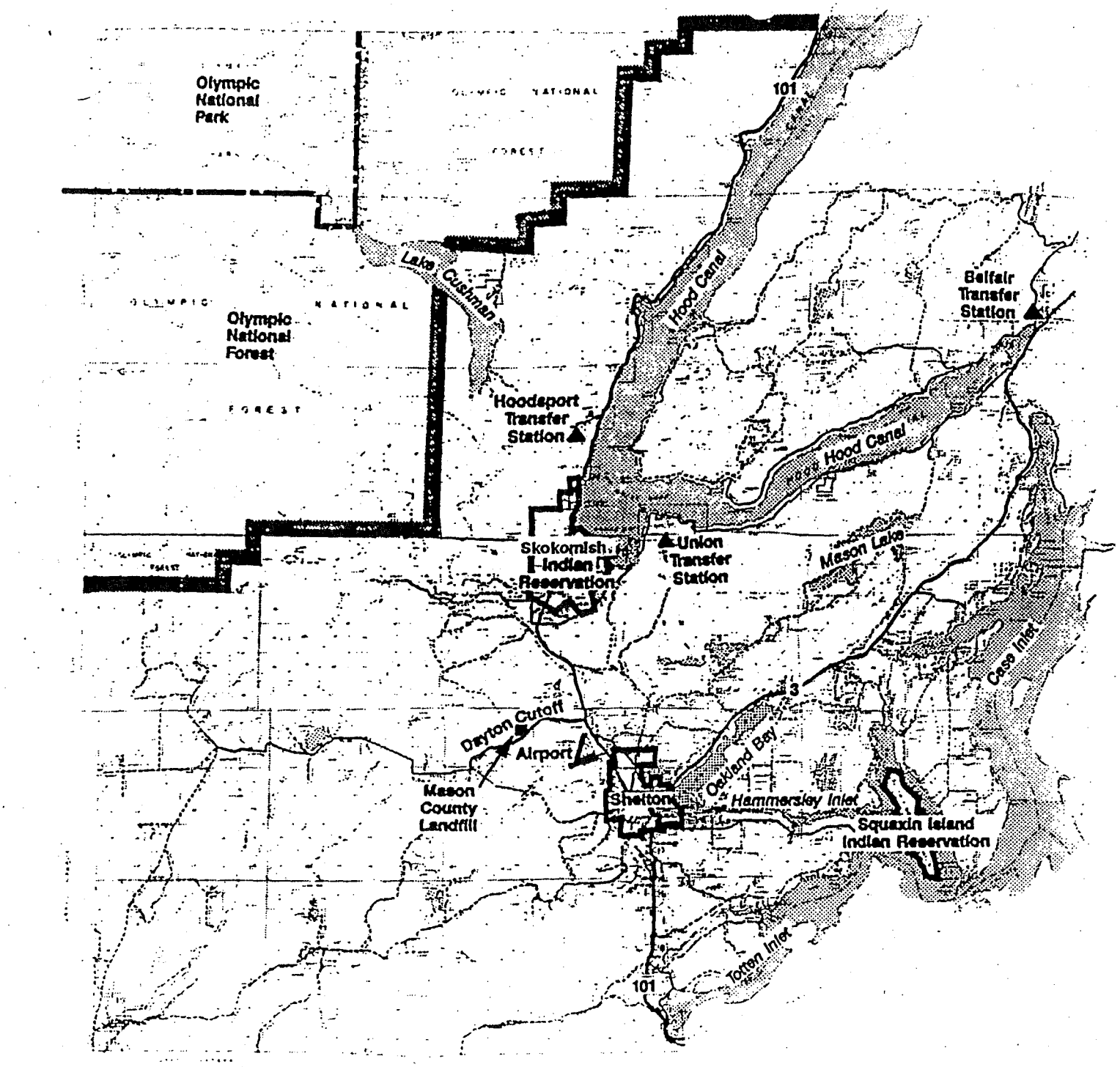


Figure 2.1A MASON COUNTY

Rocks exposed within the County consist of both volcanic rocks, with some consolidated sedimentary rocks, and a thick sequence of unconsolidated glacial and non-glacial deposits. The volcanic and consolidated sedimentary rocks are exposed within the Olympic Mountains and the Black Hills. Most of the County is underlain by the unconsolidated deposits.

The unconsolidated deposits were derived from at least three continental glaciations, one or more alpine glaciations, and two non-glacial intervals. These include, from oldest to youngest, the Salmon Springs Drift and older undifferentiated sediments, the Kitsap Formation, the Skokomish Gravel, and the Vashon Drift. The Vashon Drift is further divided into recessional outwash, till, advance outwash, and the related Colvos Sand deposit.

A typical cross-section through the County is shown in Figure 2.2A. Characteristics of the principal stratigraphic units are summarized below from youngest to oldest:

Alluvium (Qal): Fine grained silt and sand with some clay and peat; found in lowland valleys, floodplains and depressions in drift plains. Maximum thickness is over 100 feet. May yield moderate quantities of water.

Vashon Recessional Outwash (Qvr): Poorly sorted, discontinuously bedded loose gravel with some sand, silt and clay. Overlies till in depressions on drift plains. Maximum thickness is 150 feet. May yield small to moderate quantities of water.

Vashon Till (Qvt): Coarse cobbles in silt-clay matrix; extensively mantles most of upland areas. Maximum thickness is 80 feet. Essentially impervious but may yield small quantities of perched groundwater; also serves as aquiclude to confined groundwater at some localities near sea level.

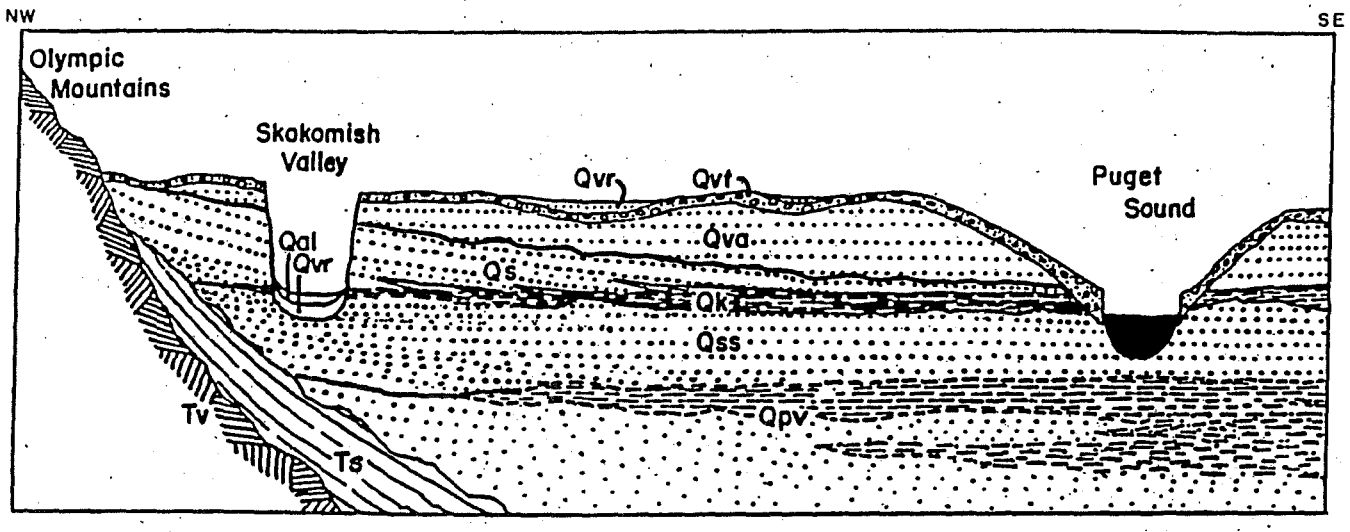
Vashon Advance Outwash (Qva): Discontinuous strata of unconsolidated gravel, sand and silt. Underlies till in most areas. Maximum thickness is over 200 feet. May yield small to large quantities of water.

Colvos Sand (Qc): Principally stratified sand. Occurs in some areas particularly in the eastern part of the County. Contains irregular lenses of fine gravel, and thin strata of clay and silt. Maximum thickness of 300 feet. May yield small to large quantities of water.

Skokomish Gravel (Qs): Coarse gravel with sand, silt, clay and some peat strata. Maximum thickness is over 300 feet. May yield small to large quantities of water.

Kitsap Formation (Qk): Well stratified, horizontally bedded silt and fine sand with some clay and peat. Maximum thickness is over 200 feet. Poor permeability except for few gravel lenses; serves as aquiclude to underlying confined groundwater. Except for gravel lenses, yields little or no groundwater.

Salmon Springs Drift and Pre-Vashon Deposits, Undifferentiated (Qss, Qpv): Coarse sand, gravel and some till. Maximum thickness may be over 600 feet. May yield from small to large quantities of water.



Qal	Alluvium
Qvr	Vashon Recessional Outwash
Qvt	Vashon Till
Qva	Vashon Advance Outwash
Qs	Skokomish Gravel
Qk	Kitsap Formation
Qss	Salmon Springs Drift
Qpv	Pre-Vashon Deposits
Ts	Tertiary Sedimentary Rocks
Tv	Tertiary Volcanic Rocks

Source: Geology and related groundwater occurrence southeastern Mason County, Washington (Molenaar and Noble, USGS Water Supply Bulletin No. 29

Figure 2.2A **Diagrmatic NW-SE Section through Mason County**

Marine Sedimentary Rocks (Ts): Fine grained marine sedimentary rock. Unimportant as a groundwater source.

Volcanic Rock (Tv): Basalt. Thickness unknown. Generally dense and impermeable and of little importance as an aquifer. Groundwater movement is primarily through fractures.

The most widely exposed soils in Mason County are largely those deposited from the latest glaciation. They include the advance outwash, till, and recessional outwash sediments (collectively referred to as Vashon Drift). Pre-Vashon deposits are generally confined to exposures along cliffs or steep slopes adjacent to rivers, streams, or Puget Sound. Of the Vashon Drift deposits, the recessional outwash and till are the two most widely exposed. Alluvial deposits (generally confined to active stream channels and flood plains) are also widely exposed throughout the County.

Because of their wide distribution and exposure throughout the County, the recessional outwash and till units of the Vashon Drift deposits are likely the two most important soils that would be encountered during any landfill siting effort.

General Hydrologic Conditions

The major source of groundwater recharge in Mason County is precipitation. Part of this precipitation percolates downward into the soil, part drains off as surface runoff, and part returns to the atmosphere by evaporation and transpiration from plants. Near the foothills of the Olympic Mountains, precipitation averages about 100 inches per year and decreases to about 50 inches annually near the eastern border of the County.

The extent to which precipitation infiltrates the surface varies from place to place, depending on the character of the subsurface materials. Essentially, all groundwater tapped in Mason County is from aquifers within the more permeable materials of the various glacial drift deposits. Most groundwater discharge is to streams, lakes and surrounding marine waters. The movement of groundwater toward discharge points is typically in the direction of the land surface slope.

Groundwater within the unconsolidated glacial drift deposits migrate toward either Puget Sound or the Pacific Ocean. A groundwater divide runs in a general south-north line from the southern border of the County to a point a few miles west of Shelton, then turns northwest toward the Olympic Mountains (Figure 2.1A). Groundwater west of this divide moves toward the Pacific Ocean and groundwater east of the divide moves toward Puget Sound.

In most places, the main water table (where present), is within 50 feet of the land surface. In general, the water table rises away from marine waterways and major stream valleys, and has a configuration similar to the rising land surface. Deeper aquifers also occur within the coarser phases of the various glacial deposits. Where groundwater occurs under perched or

semi-perched conditions, one or more higher water tables may exist locally above the main water table.

Naturally Occurring Hazards

Naturally occurring hazards are delineated on Figure 2.3A (Mason County Planning Commission, 1982). These hazards include geologic faults, unstable slopes, and flood-prone areas. Chapter 7 discusses naturally occurring hazards as they pertain to the Minimum Functional Standards (MFS), locational standards (WAC 173-304-130). Under the MFS, the existence of any of these hazards at a specific site would constitute a fatal flaw and eliminate the site from further consideration for landfill development.

Geologic Faults. Three faults, and a fourth probable fault, have been identified within Mason County that show evidence of movement during recent or Holocene time (approximately 12,000 years to present)(Wilson, Bartholomew, and Carson, 1979). These faults are located within the Olympic Mountains, northeast of Lake Cushman (Figure 2.3A), and include the Saddle Mountain East, the Saddle Mountain West, the Dow Mountain fault, and the probable Cushman Valley fault. Holocene faults may exist within the lowland glacial drift plains, but none have been identified. Potential Holocene faults within any potential landfill site would have to be investigated.

Unstable Slopes. There are several areas within Mason County that have been identified as having unstable slopes (Figure 2.3A). These areas are typically steep and/or comprised of relatively easily erodible materials or unconsolidated sediments. These unstable areas would most likely be susceptible to landslides induced by seismic activity, sustained precipitation, or high precipitation during a short duration. Stream channels with steep slopes are most susceptible. This includes most channels that empty into Hood Canal from the west. In particular, the areas adjacent to the Tahuya River and the Skokomish River both have a high risk of slope failure. Any potential landfill site would have to be investigated for the presence of unstable slopes.

Flooding. Most of the streams and rivers on the Kitsap Peninsula are prone to flooding, as is the Skokomish River west of Hood Canal. Several streams south of Shelton, including Goldsborough and Skookum Creeks, and the tributaries to the Satsop River are also flood-prone.

Other. In addition to the naturally occurring hazards within Mason County, there are other large areas that are not suitable as a landfill site. These areas are also illustrated in Figure 2.3A and should be eliminated from landfill siting consideration. They include:

- The Olympic Mountains in the northwestern part of the County (steep slopes, shallow depths to bedrock, and National Forest land).
- The Black Hills along the south border of the County (steep slopes and shallow depths to a possibly fractured bedrock).

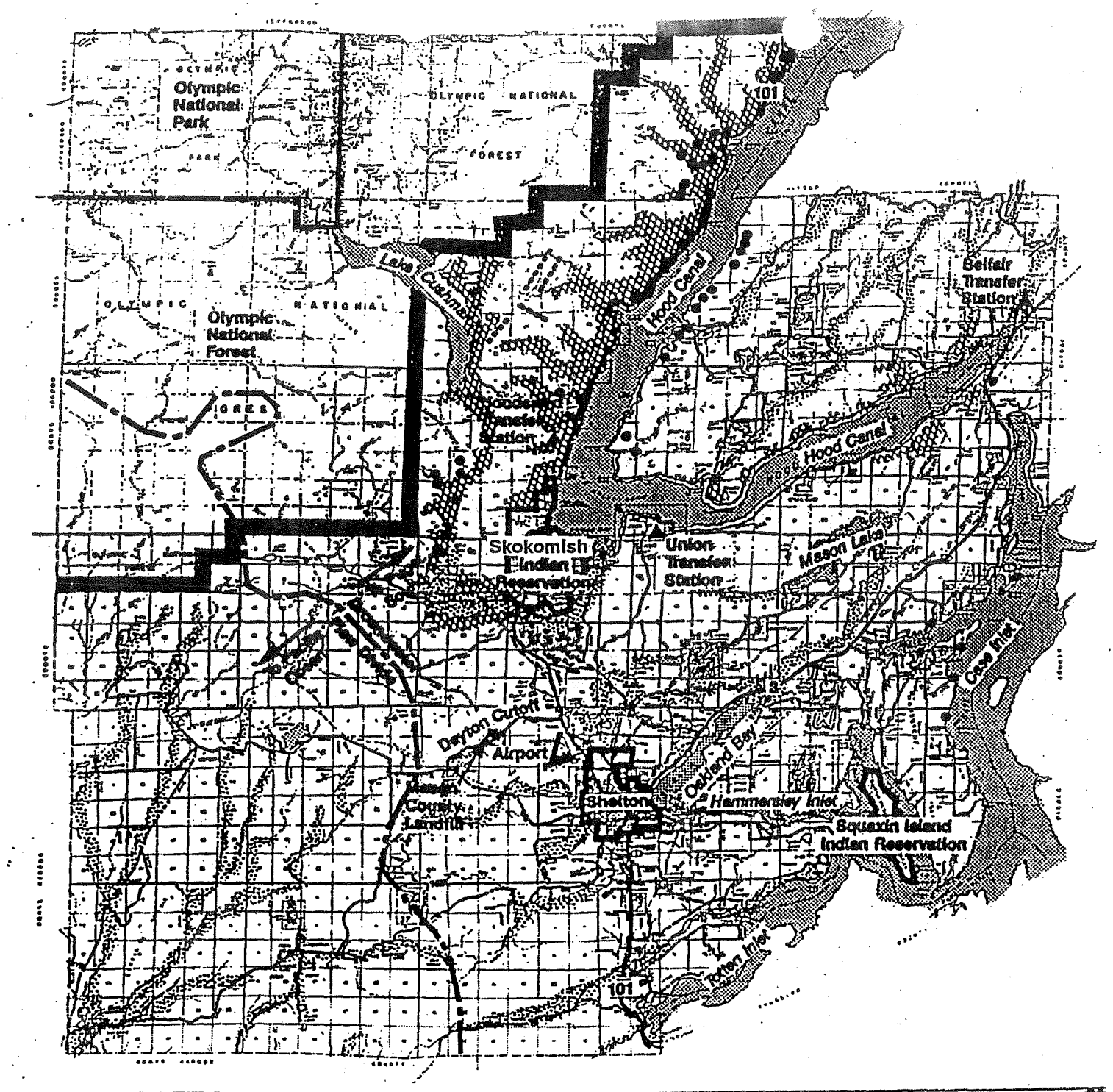


Figure 2.3A Natural Hazard Areas in Mason County

The remaining areas of the County will be discussed in the following section based on desirable soil characteristics. However the following characteristics would not exclude a site from consideration as a potential landfill site. Rather these characteristics on a site specific basis may provide deciding considerations between two potentially suitable sites.

Soils as Indicators of Site Desirability

Under State Law, leachate generated at a landfill must be contained within the landfill and prevented from entering underlying aquifers. To meet this requirement, state regulations require all landfills to be lined regardless of the site characteristics (except in arid conditions). However, additional aquifer protection may be provided by specific soil types. For example, sites on fine-grained soils (silts and clays) which have low permeabilities provide additional protection to an underlying aquifer, while coarse-grained soils and substrata (sands and gravels) do not provide such protection. The type of soils present on the landfill site is one of many indicators of site desirability.

Cation exchange capacity (CEC) is a soil related consideration. CEC refers to the ability of a material to chemically bind or absorb some contaminants, i.e. metals. CEC is a function of grain size. In general the finer the material the higher the CEC value. Finer materials have a greater ratio of surface area available for ion exchange to the total volume. Therefore, fine grained soils such as clays exhibit relatively high CEC values, followed by silt and to a much lesser extent sands and gravels.

Another consideration when working with clays is the ability of some solutions to move through clay at a high rate. This is due to the chemical nature of some compounds which allow them to "slide through" low permeability clays at a higher rate than that indicated by permeability testing. Therefore, the existence of clay under a landfill does not necessarily mean that all compounds will be contained.

Soil types that will be required in construction and operation of a landfill should also be a consideration in site selection. For example, cost reductions may be realized by avoiding the need to import coarse cover material. In addition, fine grained materials may be used for landfill liner construction in addition to providing additional protection to the aquifer. Therefore, sites that have coarse and fine grained materials are cost effective.

In Mason County, the water-bearing properties of the Vashon recessional outwash and till deposits are very important to the characterization of a potential landfill site. Generally, the coarse-grained outwash deposits exhibit relatively high permeable properties and the fine-grained till has relatively low permeable characteristics.

From a hydrogeologic perspective, the most desirable location for a landfill would be in a fine-grained deposit to protect groundwater and limit leachate migration. From an economic perspective, a desirable site would also have deposits of coarse-grained materials for road construction and daily cover operations. Alternatively, a site with a shallow excavatable layer

of coarse-grained material, with no perched groundwater, overlying fine-grained material, would also be desirable. In this second scenario, the coarse-grained material could be excavated and the landfill bottom and potentially a portion of the side slopes, placed in fine-grained material. In both scenarios the fine-grained layer could provide groundwater protection in addition to the landfill liner. The coarse-grained materials would be available for use on site.

From one perspective, the hydrogeologic conditions at sites with shallow fine-grained material are preferable to other sites. However, these types of sites are generally found near Shelton in southeast Mason County. Although from a hydrogeologic standpoint they represent the most desirable sites, from a population density standpoint they are less desirable. Landfills may be difficult to site and permit in the more densely populated areas of the County.

Considering the population density perspective, sites in rural Mason County would be more desirable. However, these sites would be typically less hydrogeologically desirable. Sites in the rural County generally contain a shallow perched aquifer unprotected by any overlying layers of silt or clay. A landfill constructed in such a location would rely on the bottom liner system to contain leachate and prevent contaminant migration. However, these sites would be removed from the general population and would allow easier siting.

Regardless of the underlying soil characteristics, State landfill liner regulations can be met at both types of sites with proper design and construction. However, landfills should not be sited at some types of sites in the County. These sites include areas of exposed or shallow volcanic rock, and the alluvial river valleys and flood plains.

Because of their general lack of permeability, the volcanic rocks exposed in the northwest portion of the County contain no aquifers of significance. Significant water movement in the basalts occurs only along fractures. Characterization of groundwater movement through a complex fracture system would make a water quality monitoring program both expensive and extremely complex. Therefore, location of a landfill on exposed basalt is not favorable.

The alluvial river valleys and flood plains should also be avoided for consideration of a landfill site. The main hydrogeologic reasons include: most are groundwater discharge regions which cause shallow groundwater conditions; no underlying protective till layer that is above the water table; potential impacts from floods; and short travel distances and low travel time of groundwater movement to the adjacent river.

2.3 WASTE STREAM ANALYSIS

The purpose of this section is to identify the waste stream in Mason County in terms of its size, projected growth rate, composition and annual variation.

The total waste stream for the County consists of many types of wastes. Most are landfilled, others are incinerated, recycled, used as a soil amendment or disposed in special sites

established for a specific type of waste. The major component of the waste stream is mixed municipal solid waste (MMSW). MMSW is generated in residential and commercial areas and is usually landfilled.

MMSW accounts for the majority of the waste stream in the County. Other solid wastes such as industrial waste, wood waste, septic tank pumpings, and sewage sludges are considered special wastes and are discussed in Chapter 9.

2.3.1 Method for Waste Stream Analysis

The major source of information used to develop and project the waste stream for Mason County is data recorded by the toll house attendant at the landfill. This information includes the number of 30 gallon containers, 55 gallon containers, and drop boxes; and the yardage of compacted and loose waste from commercial sources and other loose waste yardage delivered to the landfill.

For use in this document, the waste stream data was converted to tonnage figures using Mason County's conversion factor of 500 lbs/cy for all waste types.

Waste stream data was available for 1987, 1988, 1989, and 1990. With this information as a base, solid waste quantities were projected for two waste generation areas, the unincorporated County and the City of Shelton. The population forecasts discussed in section 2.2.1 were used to project the waste streams. It was assumed that the current waste generation rate per capita would continue through the planning period. This waste stream projection is presented in Table 2.3A.

Table 2.3A MASON COUNTY WASTE STREAM PROJECTION (1991 to 2014)

Year	City of Shelton*	Mason County*	Total Disposed*
1995	5,029	20,253	25,282
2000	5,280	22,014	27,294
2005	5,544	23,928	29,472
2010	5,821	26,009	31,830
2015	6,112	28,271	34,383

*all numbers are given in tonnages
This information reflects population projections provided by the Office of Financial Management
Mason County : 2.3% per year or 11.5% every five years
City of Shelton: 1% per year or 5% every five years

In actuality, waste stream projections are more complicated than projecting population rates. Waste generation is a function of economic conditions, personal values, as well as population. If any of these factors change during the projected period, the waste stream projection will be inaccurate.

The waste stream projection included in Table 2.3A represents the baseline waste stream upon which the effects of waste reduction, recycling and population growth can be applied. For this reason, per capita waste generation and recycling rates were assumed to stay at current levels.

2.3.2 Waste Stream Composition

Waste stream composition is also needed to assist in designing solid waste handling and disposal programs. No detailed waste composition study has been performed in Mason County to date. However, the State of Washington has recently completed a comprehensive recycling study, entitled Best Management Practices Analysis for Solid Waste (BMP) that included a waste stream composition study. The waste composition study determined that waste composition tended to be relatively uniform throughout the State of Washington.

Appendix A shows the waste stream composition for residential and commercial waste for the west waste generation area which includes Mason County. It may be assumed for purposes of this Plan that these waste stream compositions are a close approximation to the waste stream composition of residences and businesses in Mason County.

ADDENDUM A

Table II-7
Combined WGA Material Type Summary for Washington State: Single-family Residential

WASTE CATEGORIES Material	Mean Percentage of Total Disposal	Total Tons Disposed per Material
PAPER	32.0%	399,331
Newspaper	5.1%	63,819
Corrugated Paper	5.5%	68,893
Computer Paper	0.0%	241
Office Paper	0.5%	6,104
Mixed Recyclable Paper	9.5%	119,083
Milk/Juic Cartons	0.8%	10,624
Aseptic Juice Containers	0.0%	300
Frozen Food Containers	0.6%	7,398
Other Paper	9.8%	122,869
PLASTIC	10.3%	129,283
PET Containers (#1)	0.6%	7,139
HDPE Containers (#2)	1.1%	14,095
LDPE Plastics (#4)	0.1%	797
Polystyrene (#6)	0.8%	9,614
Plastic Bags	4.5%	55,623
Other Coded Plastic Packaging	0.3%	3,943
Other Plastics	3.0%	38,072
GLASS	5.5%	69,168
Clear Glass Containers	3.4%	43,029
Green Glass Containers	0.7%	8,633
Brown Glass Containers	0.9%	10,876
Refillable Beer Bottles	0.1%	1,467
Other Glass	0.4%	5,163
FERROUS METALS	4.7%	59,128
Tin Cans	2.5%	31,663
Bi-Metal Cans	0.0%	0
Mixed Metal & Other Materials	0.8%	9,429
White / Brown Goods	0.0%	618
Other Ferrous Metals	1.4%	17,419
NON-FERROUS METALS	1.1%	13,369
Aluminum Cans	0.8%	9,758
Other Aluminum	0.2%	2,224
Other Non-Ferrous Metals	0.1%	1,387
ORGANICS	32.7%	408,960
Food	13.5%	168,201
Yard Wastes	11.3%	141,006
Other Organics	8.0%	99,753
CONSTRUCTION DEBRIS	4.2%	52,510
Wood Wastes	1.7%	21,433
Gypsum Drywall	0.3%	3,303
Inert Solids/ Fines	0.9%	11,203
Other Construction Debris	1.3%	16,572
OTHER WASTES	8.4%	105,488
Disposable Diapers	4.6%	57,786
Textiles	3.1%	38,829
Rubber Products (except Tires)	0.3%	3,586
Large Bulky Items	0.1%	1,658
Other Materials	0.3%	3,629
HAZARDOUS WASTE	0.8%	10,075
Paint / Adhesives / Solvents	0.4%	5,001
Cleaners	0.0%	172
Pesticides / Herbicides	0.0%	172
Non- Vehicle Batteries	0.1%	908
Other Hazardous Wastes	0.3%	3,823
SPECIAL WASTES	0.2%	2,521
Used Oil	0.1%	976
Tires	0.0%	0
Vehicle Batteries	0.1%	1,545
Ferrous Vehicle Parts	0.0%	0
Total Percent:	100.0%	Total Tons: 1,249,834

Table II-7
Combined WGA Material Type Summary for Washington State: Multi-family Residential

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	34.7%		115,631	
Newspaper		8.6%		28,690
Corrugated Paper		6.9%		22,829
Computer Paper		0.0%		96
Office Paper		0.3%		1,071
Mixed Recyclable Paper		9.5%		31,708
Milk/Juice Cartons		0.7%		2,239
Aseptic Juice Containers		0.0%		149
Frozen Food Containers		0.6%		2,142
Other Paper		8.0%		26,707
PLASTIC	9.7%		32,268	
PET Containers (#1)		0.7%		2,300
HDPE Containers (#2)		1.1%		3,763
LDPE Plastics (#4)		0.0%		140
Polystyrene (#6)		0.7%		2,419
Plastic Bags		3.6%		12,043
Other Coded Plastic Packaging		0.3%		874
Other Plastics		3.2%		10,729
GLASS	8.3%		27,543	
Clear Glass Containers		5.1%		16,973
Green Glass Containers		1.2%		3,965
Brown Glass Containers		1.8%		5,854
Refillable Beer Bottles		0.0%		0
Other Glass		0.2%		750
FERROUS METALS	4.5%		15,090	
Tin Cans		2.2%		7,478
Bi-Metal Cans		0.0%		34
Mixed Metal & Other Materials		1.2%		3,943
White / Brown Goods		0.3%		1,027
Other Ferrous Metals		0.8%		2,608
NON-FERROUS METALS	1.2%		4,030	
Aluminum Cans		1.0%		3,227
Other Aluminum		0.1%		468
Other Non-Ferrous Metals		0.1%		335
ORGANICS	22.2%		73,767	
Food		10.2%		33,867
Yard Wastes		3.5%		11,669
Other Organics		8.5%		28,231
CONSTRUCTION DEBRIS	4.6%		15,214	
Wood Wastes		1.6%		5,464
Gypsum Drywall		0.9%		2,872
Inert Solids/ Fines		1.2%		3,843
Other Construction Debris		0.9%		3,035
OTHER WASTES	13.9%		46,143	
Disposable Diapers		6.2%		20,622
Textiles		6.2%		20,766
Rubber Products (except Tires)		0.1%		288
Large Bulky Items		1.3%		4,232
Other Materials		0.1%		235
HAZARDOUS WASTE	0.7%		2,215	
Paint / Adhesives / Solvents		0.1%		376
Cleaners		0.0%		65
Pesticides / Herbicides		0.0%		5
Non- Vehicle Batteries		0.1%		347
Other Hazardous Wastes		0.4%		1,422
SPECIAL WASTES	0.3%		1,001	
Used Oil		0.0%		0
Tires		0.2%		542
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.1%		459
Total Percent:	100.0%	Total Tons:	332,904	

Table II-7
Combined WGA Material Type Summary for Washington State: Warehousing

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	42.9%		78,164	
Newspaper		1.6%		2,965
Corrugated Paper		10.6%		19,302
Computer Paper		1.1%		2,025
Office Paper		4.1%		7,386
Mixed Recyclable Paper		11.1%		20,217
Milk/Juice Cartons		0.3%		482
Aseptic Juice Containers		0.1%		98
Frozen Food Containers		0.1%		126
Other Paper		14.0%		25,565
PLASTIC	9.4%		17,095	
PET Containers (#1)		0.2%		296
HDPE Containers (#2)		0.2%		282
LDPE Plastics (#4)		0.0%		2
Polystyrene (#6)		0.8%		1,542
Plastic Bags		5.1%		9,358
Other Coded Plastic Packaging		0.1%		185
Other Plastics		3.0%		5,430
GLASS	2.8%		5,025	
Clear Glass Containers		1.4%		2,572
Green Glass Containers		0.3%		627
Brown Glass Containers		0.3%		615
Refillable Beer Bottles		0.0%		37
Other Glass		0.6%		1,175
FERROUS METALS	6.7%		12,226	
Tin Cans		0.6%		1,147
Bi-Metal Cans		0.0%		0
Mixed Metal & Other Materials		2.3%		4,244
White / Brown Goods		0.1%		199
Other Ferrous Metals		3.6%		6,636
NON-FERROUS METALS	0.9%		1,560	
Aluminum Cans		0.5%		978
Other Aluminum		0.1%		132
Other Non-Ferrous Metals		0.2%		450
ORGANICS	12.0%		21,839	
Food		9.0%		16,468
Yard Wastes		1.5%		2,781
Other Organics		1.4%		2,590
CONSTRUCTION DEBRIS	21.3%		38,839	
Wood Wastes		19.5%		35,520
Gypsum Drywall		0.5%		885
Inert Solids/ Fines		1.0%		1,794
Other Construction Debris		0.4%		640
OTHER WASTES	2.3%		4,131	
Disposable Diapers		0.3%		475
Textiles		1.6%		2,830
Rubber Products (except Tires)		0.4%		806
Large Bulky Items		0.0%		0
Other Materials		0.0%		20
HAZARDOUS WASTE	1.7%		3,115	
Paint / Adhesives / Solvents		1.3%		2,382
Cleaners		0.0%		0
Pesticides / Herbicides		0.0%		12
Non- Vehicle Batteries		0.0%		57
Other Hazardous Wastes		0.4%		664
SPECIAL WASTES	0.1%		146	
Used Oil		0.1%		146
Tires		0.0%		0
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.0%		0
Total Percent:	100.0%	Total Tons:	182,142	

Table II-7
Combined WGA Material Type Summary for Washington State: Dry Goods Retail

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	43.7%		42,399	
Newspaper		3.7%		3,612
Corrugated Paper		12.0%		11,676
Computer Paper		1.0%		944
Office Paper		1.8%		1,762
Mixed Recyclable Paper		14.0%		13,541
Milk/Juice Cartons		0.9%		885
Aseptic Juice Containers		0.1%		89
Frozen Food Containers		0.1%		92
Other Paper		10.1%		9,797
PLASTIC	16.4%		15,901	
PET Containers (#1)		0.8%		768
HDPE Containers (#2)		0.6%		577
LDPE Plastics (#4)		0.0%		4
Polystyrene (#6)		2.4%		2,338
Plastic Bags		7.0%		6,834
Other Coded Plastic Packaging		0.2%		242
Other Plastics		5.3%		5,138
GLASS	7.1%		6,869	
Clear Glass Containers		1.9%		1,848
Green Glass Containers		0.2%		174
Brown Glass Containers		0.3%		282
Refillable Beer Bottles		0.1%		125
Other Glass		4.6%		4,440
FERROUS METALS	6.2%		5,984	
Tin Cans		0.4%		397
Bi-Metal Cans		0.0%		0
Mixed Metal & Other Materials		1.8%		1,786
White / Brown Goods		0.0%		42
Other Ferrous Metals		3.9%		3,759
NON-FERROUS METALS	0.8%		788	
Aluminum Cans		0.7%		642
Other Aluminum		0.1%		129
Other Non-Ferrous Metals		0.0%		16
ORGANICS	10.2%		9,885	
Food		6.8%		6,594
Yard Wastes		1.3%		1,232
Other Organics		2.1%		2,060
CONSTRUCTION DEBRIS	8.5%		8,267	
Wood Wastes		6.2%		6,034
Gypsum Drywall		0.8%		780
Inert Solids/ Fines		0.0%		18
Other Construction Debris		1.5%		1,435
OTHER WASTES	5.3%		5,178	
Disposable Diapers		0.4%		411
Textiles		2.8%		2,759
Rubber Products (except Tires)		0.8%		777
Large Bulky Items		1.0%		933
Other Materials		0.3%		297
HAZARDOUS WASTE	1.8%		1,709	
Paint / Adhesives / Solvents		1.0%		987
Cleaners		0.0%		36
Pesticides / Herbicides		0.0%		0
Non- Vehicle Batteries		0.0%		17
Other Hazardous Wastes		0.7%		670
SPECIAL WASTES	0.1%		52	
Used Oil		0.0%		0
Tires		0.0%		0
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.1%		52
Total Percent:	100.0%	Total Tons:	97,033	

Table II-7
Combined WGA Material Type Summary for Washington State: Groceries

WASTE CATEGORIES Material	Mean Percentage of Total Disposal	Total Tons Disposed per Material
PAPER	34.3%	52,394
Newspaper	2.6%	3,911
Corrugated Paper	16.4%	25,052
Computer Paper	0.2%	330
Office Paper	0.2%	321
Mixed Recyclable Paper	5.4%	8,216
Milk/Juice Cartons	0.8%	1,288
Aseptic Juice Containers	0.0%	7
Frozen Food Containers	0.1%	216
Other Paper	8.6%	13,053
PLASTIC	12.7%	19,424
PET Containers (#1)	0.4%	565
HDPE Containers (#2)	1.0%	1,483
LDPE Plastics (#4)	0.0%	20
Polystyrene (#6)	1.2%	1,799
Plastic Bags	7.3%	11,184
Other Coded Plastic Packaging	0.2%	315
Other Plastics	2.7%	4,058
GLASS	3.2%	4,885
Clear Glass Containers	2.1%	3,207
Green Glass Containers	0.2%	363
Brown Glass Containers	0.7%	1,134
Refillable Beer Bottles	0.0%	0
Other Glass	0.1%	181
FERROUS METALS	1.5%	2,280
Tin Cans	1.1%	1,680
Bi-Metal Cans	0.0%	0
Mixed Metal & Other Materials	0.1%	165
White / Brown Goods	0.0%	0
Other Ferrous Metals	0.3%	434
NON-FERROUS METALS	0.7%	1,106
Aluminum Cans	0.4%	640
Other Aluminum	0.3%	441
Other Non-Ferrous Metals	0.0%	25
ORGANICS	41.0%	62,511
Food	34.2%	52,190
Yard Wastes	0.7%	1,019
Other Organics	6.1%	9,303
CONSTRUCTION DEBRIS	4.8%	7,351
Wood Wastes	4.5%	6,812
Gypsum Drywall	0.0%	0
Inert Solids/ Fines	0.0%	0
Other Construction Debris	0.4%	539
OTHER WASTES	1.4%	2,173
Disposable Diapers	0.2%	304
Textiles	1.1%	1,751
Rubber Products (except Tires)	0.1%	110
Large Bulky Items	0.0%	0
Other Materials	0.0%	8
HAZARDOUS WASTE	0.2%	236
Paint / Adhesives / Solvents	0.1%	81
Cleaners	0.0%	0
Pesticides / Herbicides	0.0%	0
Non- Vehicle Batteries	0.0%	0
Other Hazardous Wastes	0.1%	155
SPECIAL WASTES	0.1%	182
Used Oil	0.0%	0
Tires	0.0%	0
Vehicle Batteries	0.0%	0
Ferrous Vehicle Parts	0.1%	182
Total Percent:	100.0%	Total Tons: 152,541

Table II-7
Combined WGA Material Type Summary for Washington State: Restaurants

WASTE CATEGORIES / Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material
PAPER	26.1%		64,924
Newspaper		2.4%	6,071
Corrugated Paper		9.4%	23,347
Computer Paper		0.0%	58
Office Paper		0.1%	337
Mixed Recyclable Paper		4.5%	11,251
Milk/Juice Cartons		1.5%	3,840
Aseptic Juice Containers		0.1%	183
Frozen Food Containers		0.0%	80
Other Paper		7.9%	19,757
PLASTIC	11.4%		28,457
PET Containers (#1)		0.3%	638
HDPE Containers (#2)		1.4%	3,469
LDPE Plastics (#4)		0.1%	182
Polystyrene (#6)		0.8%	1,963
Plastic Bags		5.8%	14,547
Other Coded Plastic Packaging		0.0%	95
Other Plastics		3.0%	7,564
GLASS	10.1%		25,219
Clear Glass Containers		4.0%	9,981
Green Glass Containers		1.5%	3,753
Brown Glass Containers		3.6%	9,015
Refillable Beer Bottles		0.0%	0
Other Glass		1.0%	2,470
FERROUS METALS	2.5%		6,110
Tin Cans		2.3%	5,771
Bi-Metal Cans		0.0%	0
Mixed Metal & Other Materials		0.0%	0
White / Brown Goods		0.0%	0
Other Ferrous Metals		0.1%	339
NON-FERROUS METALS	0.3%		770
Aluminum Cans		0.2%	515
Other Aluminum		0.1%	225
Other Non-Ferrous Metals		0.0%	30
ORGANICS	42.2%		105,035
Food		31.7%	78,781
Yard Wastes		0.5%	1,229
Other Organics		10.1%	25,025
CONSTRUCTION DEBRIS	2.6%		6,572
Wood Wastes		0.8%	1,931
Gypsum Drywall		0.0%	0
Inert Solids/ Fines		0.2%	414
Other Construction Debris		1.7%	4,227
OTHER WASTES	4.1%		10,220
Disposable Diapers		0.8%	1,915
Textiles		1.2%	2,991
Rubber Products (except Tires)		0.1%	169
Large Bulky Items		2.1%	5,146
Other Materials		0.0%	0
HAZARDOUS WASTE	0.6%		1,557
Paint / Adhesives / Solvents		0.4%	968
Cleaners		0.0%	0
Pesticides / Herbicides		0.2%	389
Non- Vehicle Batteries		0.0%	0
Other Hazardous Wastes		0.1%	199
SPECIAL WASTES	0.0%		0
Used Oil		0.0%	0
Tires		0.0%	0
Vehicle Batteries		0.0%	0
Ferrous Vehicle Parts		0.0%	0
Total Percent:	100.0%	Total Tons:	248,862

Table II-7
Combined WGA Material Type Summary for Washington State: Offices

WASTE CATEGORIES Material	Mean Percentage of Total Disposal	Total Tons Disposed per Material
PAPER	66.3%	44,226
Newspaper	4.7%	3,151
Corrugated Paper	6.3%	4,203
Computer Paper	2.6%	1,753
Office Paper	11.2%	7,436
Mixed Recyclable Paper	23.3%	15,557
Milk/Juice Cartons	0.9%	584
Aseptic Juice Containers	0.1%	50
Frozen Food Containers	0.4%	287
Other Paper	16.8%	11,206
PLASTIC	11.2%	7,459
PET Containers (#1)	0.3%	168
HDPE Containers (#2)	0.3%	204
LDPE Plastics (#4)	0.0%	32
Polystyrene (#6)	1.6%	1,056
Plastic Bags	4.5%	3,015
Other Coded Plastic Packaging	0.3%	175
Other Plastics	4.2%	2,809
GLASS	4.0%	2,658
Clear Glass Containers	2.9%	1,914
Green Glass Containers	0.8%	504
Brown Glass Containers	0.2%	136
Refillable Beer Bottles	0.0%	0
Other Glass	0.2%	104
FERROUS METALS	1.3%	849
Tin Cans	0.3%	209
Bi-Metal Cans	0.0%	0
Mixed Metal & Other Materials	0.6%	415
White / Brown Goods	0.0%	0
Other Ferrous Metals	0.3%	225
NON-FERROUS METALS	1.1%	721
Aluminum Cans	0.8%	557
Other Aluminum	0.2%	112
Other Non-Ferrous Metals	0.1%	51
ORGANICS	12.6%	8,431
Food	10.8%	7,211
Yard Wastes	0.9%	607
Other Organics	0.9%	613
CONSTRUCTION DEBRIS	1.8%	1,224
Wood Wastes	0.5%	319
Gypsum Drywall	0.0%	21
Inert Solids/ Fines	0.1%	45
Other Construction Debris	1.3%	839
OTHER WASTES	1.2%	814
Disposable Diapers	0.3%	198
Textiles	0.6%	419
Rubber Products (except Tires)	0.3%	197
Large Bulky Items	0.0%	0
Other Materials	0.0%	0
HAZARDOUS WASTE	0.4%	298
Paint / Adhesives / Solvents	0.1%	92
Cleaners	0.0%	0
Pesticides / Herbicides	0.0%	0
Non-Vehicle Batteries	0.1%	91
Other Hazardous Wastes	0.2%	115
SPECIAL WASTES	0.0%	0
Used Oil	0.0%	0
Tires	0.0%	0
Vehicle Batteries	0.0%	0
Ferrous Vehicle Parts	0.0%	0
Total Percent:	100.0%	Total Tons: 66,679

Table II-7
Combined WGA Material Type Summary for Washington State: Hotels/Motels

WASTE CATEGORIES Material	Mean Percentage of Total Disposal	Total Tons Disposed per Material
PAPER	38.9%	13,967
Newspaper	12.7%	4,543
Corrugated Paper	9.8%	3,500
Computer Paper	0.4%	132
Office Paper	0.8%	290
Mixed Recyclable Paper	5.8%	2,080
Milk/Juice Cartons	0.9%	316
Aseptic Juice Containers	0.0%	6
Frozen Food Containers	0.2%	62
Other Paper	8.5%	3,038
PLASTIC	9.8%	3,511
PET Containers (#1)	0.5%	193
HDPE Containers (#2)	1.0%	367
LDPE Plastics (#4)	0.1%	26
Polystyrene (#6)	0.9%	310
Plastic Bags	4.3%	1,538
Other Coded Plastic Packaging	0.3%	109
Other Plastics	2.7%	968
GLASS	12.5%	4,490
Clear Glass Containers	7.1%	2,535
Green Glass Containers	1.9%	680
Brown Glass Containers	3.4%	1,216
Refillable Beer Bottles	0.0%	0
Other Glass	0.2%	58
FERROUS METALS	2.9%	1,034
Tin Cans	2.1%	769
Bi-Metal Cans	0.0%	0
Mixed Metal & Other Materials	0.1%	41
White / Brown Goods	0.0%	0
Other Ferrous Metals	0.6%	225
NON-FERROUS METALS	2.3%	810
Aluminum Cans	2.1%	750
Other Aluminum	0.0%	13
Other Non-Ferrous Metals	0.1%	46
ORGANICS	24.0%	8,619
Food	14.6%	5,233
Yard Wastes	2.5%	914
Other Organics	6.9%	2,472
CONSTRUCTION DEBRIS	3.4%	1,216
Wood Wastes	1.0%	360
Gypsum Drywall	1.4%	494
Inert Solids/ Fines	0.0%	0
Other Construction Debris	1.0%	362
OTHER WASTES	5.1%	1,841
Disposable Diapers	2.4%	874
Textiles	2.3%	819
Rubber Products (except Tires)	0.2%	79
Large Bulky Items	0.0%	0
Other Materials	0.2%	69
HAZARDOUS WASTE	1.1%	393
Paint / Adhesives / Solvents	0.5%	192
Cleaners	0.0%	8
Pesticides / Herbicides	0.0%	0
Non- Vehicle Batteries	0.0%	17
Other Hazardous Wastes	0.5%	176
SPECIAL WASTES	0.0%	0
Used Oil	0.0%	0
Tires	0.0%	0
Vehicle Batteries	0.0%	0
Ferrous Vehicle Parts	0.0%	0
Total Percent:	100.0%	Total Tons: 35,881

Table II-7
Combined WGA Material Type Summary for Washington State: Education

WASTE CATEGORIES Material	Mean Percentage of Total Disposal		Total Tons Disposed per Material	
PAPER	48.2%		35,305	
Newspaper		2.5%		1,823
Corrugated Paper		5.2%		3,835
Computer Paper		2.1%		1,535
Office Paper		4.0%		2,955
Mixed Recyclable Paper		13.9%		10,201
Milk/Juice Cartons		4.1%		2,987
Aseptic Juice Containers		0.3%		236
Frozen Food Containers		0.1%		69
Other Paper		15.9%		11,666
PLASTIC	10.7%		7,806	
PET Containers (#1)		0.4%		260
HDPE Containers (#2)		0.7%		481
LDPE Plastics (#4)		0.0%		9
Polystyrene (#6)		1.2%		859
Plastic Bags		4.7%		3,456
Other Coded Plastic Packaging		0.3%		231
Other Plastics		3.4%		2,510
GLASS	3.3%		2,451	
Clear Glass Containers		2.6%		1,917
Green Glass Containers		0.2%		120
Brown Glass Containers		0.1%		40
Refillable Beer Bottles		0.0%		0
Other Glass		0.5%		374
FERROUS METALS	1.6%		1,181	
Tin Cans		1.3%		965
Bi-Metal Cans		0.0%		0
Mixed Metal & Other Materials		0.1%		41
White / Brown Goods		0.0%		0
Other Ferrous Metals		0.2%		175
NON-FERROUS METALS	1.7%		1,251	
Aluminum Cans		1.4%		1,039
Other Aluminum		0.2%		171
Other Non-Ferrous Metals		0.1%		41
ORGANICS	30.0%		21,970	
Food		23.9%		17,466
Yard Wastes		2.6%		1,937
Other Organics		3.5%		2,566
CONSTRUCTION DEBRIS	1.3%		969	
Wood Wastes		0.8%		595
Gypsum Drywall		0.0%		0
Inert Solids / Fines		0.0%		8
Other Construction Debris		0.5%		366
OTHER WASTES	2.3%		1,683	
Disposable Diapers		0.3%		199
Textiles		0.9%		690
Rubber Products (except Tires)		0.1%		43
Large Bulky Items		0.8%		611
Other Materials		0.2%		140
HAZARDOUS WASTE	0.8%		595	
Paint / Adhesives / Solvents		0.5%		345
Cleaners		0.0%		4
Pesticides / Herbicides		0.0%		0
Non- Vehicle Batteries		0.1%		98
Other Hazardous Wastes		0.2%		148
SPECIAL WASTES	0.0%		0	
Used Oil		0.0%		0
Tires		0.0%		0
Vehicle Batteries		0.0%		0
Ferrous Vehicle Parts		0.0%		0
Total Percent:	100.0%	Total Tons:	73,211	

During the course of Plan amendment preparation, numerous meetings were held with the SWAC to obtain their input and guidance. A complete draft of the Plan was reviewed by the SWAC, the City of Shelton and the Mason County Department of Community Development prior to the official review by the Public and Ecology.

Public hearings were held for the plan. The minutes from those meetings are included in Appendix together with letters generated during the public review period.

1.4.5 Plan Approval/Adoption

The Plan approval and adoption process was facilitated by the active participation by the SWAC and ongoing public involvement efforts. As discussed under 1.4.4, above, several "rounds" of official review were built into the planning process. The organizations which must approve the Plan include the City of Shelton (by adoption), Mason County (also by adoption) and the Washington Department of Ecology. Each of these agencies was informed of Plan progress and consulted during the planning effort.

Resolutions of adoption (included in Appendix) were obtained from the City of Shelton. The date of adoption was _____.

The Mason County Board of Commissioners approved and adopted the Plan by ordinance on _____, 1998. The final Plan was transmitted to Ecology for their approval on _____, 1998.

1.4.6 Plan Amendment, Review and Revision

Plan amendments should be reviewed by the SWAC and submitted to all affected jurisdictions for formal approval. In addition, the Mason County Board of Commissioners must review and approve the amendment. Final approval by the Department of Ecology would also be necessary.

According to R.C.W. 70.95.110 the Plan must be reviewed and revised at least once every five years. If moderate changes are required a plan update may be sufficient to revise the Plan, however if significant changes to the Plan are necessary a new plan would be required. To determine the extent of the revisions necessary, the Mason County Solid Waste Management Plan shall be reviewed by the Department of Community Development in April, 1997 to determine the scope of work necessary to revise it, as necessary. The completed update or revised plan, shall be developed within six months to one year after this date.

MASON COUNTY SOLID WASTE MANAGEMENT PLAN
CHAPTER 2A BACKGROUND OF THE PLANNING AREA

2.1 INTRODUCTION

The purpose of Chapter 2A is to provide amended information as it relates to the background of the planning area, against which solid waste handling and management occur in Mason County. Section 2.2 describes the natural and man-made conditions of the county including demographics and land use. Section 2.3, the last section of the chapter, describes the waste stream and is the basis for determining the solid waste handling needs for the planning period. Waste stream data and projections are provided.

2.2 DESCRIPTION OF THE ENVIRONMENT

A description of the existing environmental conditions is provided as a background for evaluating the environmental impact of proposed solid waste management activities. The description includes the following categories: land use and population, climate and air quality, and hydrogeology.

2.2.1 Land Use and Population

Land Use

In April, 1996 Mason County adopted a new Comprehensive Plan, replacing the Comprehensive Plan approved on November 16, 1970. The plan states the goals for the future that have been identified by the citizens of the County or specified by the state in the Growth Management Act as state-wide goals. The Growth Management Act requires counties planning under the act to adopt a comprehensive plan that includes a land use element and a rural element. The land use element should identify the proposed distribution of land uses and address other concerns such as the proposed distribution of land uses and address other concerns such as the protection of groundwater quality and quantity, drainage, flooding, and storm water run-off and potential mitigation measures. The rural element should address those rural lands in the county which are not specially designated for urban growth or natural resource use.

The land use element identifies the existing land use conditions throughout Mason County, projects the land requirements to the year 2014, and determines how that growth should be accommodated, given the goals and policies developed in the plan.

The lands of Mason County, which are within the jurisdiction of the County have been divided into three categories of performance districts. These are urban growth areas, resource lands, and rural lands.

The urban growth areas which are designated in Mason County include the City of Shelton, with a portion of its surrounding area, and the unincorporated community in Belfair. These communities currently support a mix of residential, commercial, industrial, civic, and public uses. Within Shelton and Belfair, residential uses provide a variety of housing choices including medium to high density single family and multifamily. Commercial development includes retail and other business uses. Industrial uses include light and heavy industry, production, manufacturing, and resource-based uses. In addition, a broad range of civic and public facilities such as schools, churches, libraries, parks, courts, and City and County government exist within these communities.

Rural lands are divided into several classifications. These classifications identify performance districts through which rural growth will be managed. These districts include: Rural Activity Centers, Rural Community Centers, Working Rural Areas, Resource Conservation Master Plan, Fully Contained Community and Rural Area (subject to future amendment)..

The Rural Activity Centers include Allyn, Union, Hoodsport, and Kamilche/Taylor Towne. Rural Community Centers include Mason/Benson, Matlock, Lilliwaup, Tahuya, Grapeview, Potlatch, Dayton, and the Skokomish Valley areas.

Table 2.1A Mason County Land Use/Percentage of Total County Acreage

Land Use	Total Acreage	Percent
Residential	17,298	3.78%
RURAL/VACANT	67,902	14.85%
Commercial	2,671	.58%
Industrial	439	.10%
Agriculture/ Aquaculture	8,277	1.81%
Forestry	344,517	75.35%
Mineral Extraction	36	.01%
Transportation	2,177	.48%
Utilities	1,177	.42%
Tax Exempt	12,024	2.62%
Total	456,518	100.00%

The planning instrument that controls land use in Mason County is the Comprehensive Plan and Development Regulations. The Comprehensive Plan recognizes the Solid Waste Management Plan and points out that it has to be reviewed and updated at least once every five years. It also

points out that the Solid Waste Plan lists specific recommendations for implementing and evaluating solid waste management efforts.

The Development Regulations provide a framework for the development of land in Mason County; and to assure that such development occurs in such a way that it protects private property rights and existing land uses while also protecting natural resources, promoting economic growth and assuring the compatibility of proposed land uses with existing ones. For example, wrecking yards and buy-back recycling centers are only allowed inside an Urban Growth Area (City of Shelton and Belfair).

In 1950 Mason County's population was 15,022, only slightly more than one third of the County's population in 1994. By 1970, Mason County's population had grown to 20,918. During the 1970's both the County and the State experienced the fastest rates of population increase in recent history. The County's rose by an average rate of 4.1% annually, totaling an increase of 49%. At the end of the decade the population had increased by 10,266 people bringing the total population to 31,184. The rate of population growth slowed somewhat during the eighties. Between 1980 and 1990, the County's population grew by an average annual rate of 2.1% amounting to a ten year increase of 23% and a total population of 38,241.

According to the Office of Fiscal Management figures, the actual County population as of April 1, 1994, was 44,300, which represents an increase of 15.5 percent of an increase average of 3.7% annually since 1990. During the 1990s Mason County has ranked fifth in the State in population growth rate. One thing that must be considered when looking at the County's current growth is that the current average annual growth rate (3.7%) is not much lower than the record 4.1% rate of growth experienced in the 1970's, when the County's population grew by 49%.

If the current growth rate maintains constant through the year 2014, the County's population can be estimated to approximate 65,277 people.

Most of the growth that has occurred in the county from 1990 to 1994 has been located in the unincorporated areas of the County, which is not surprising since the City of Shelton is the only established incorporated area thus far.

The percentage of County population growth occurring within the Shelton city limits has varied considerably over the past four years, ranging from a high of 4.4% between 1990 and 1991 to a low of 1.5% between 1991 and 1992. Between 1992 and 1993 the percentage of total population growth increased substantially over the previous year to 3.9% and then decreased again slightly between 1993 and 1994 to 3.1%.

Table 2.2A MASON COUNTY POPULATION PROJECTIONS-COUNTYWIDE GROWTH BY INCORPORATED/UNINCORPORATED STATUS 1990-1994

POPULATION

	1990	1991	1992	1993	1994
Incorporated (Shelton)	7,241	7,310	7,330	7,396	7,440
Un-incorporated	31,000	32,590	33,870	35,504	36,860
County	38,241	39,900	41,200	42,900	44,300

PERCENT OF TOTAL GROWTH

	90/91	91/92	92/93	93/94
Incorporated (Shelton)	4.4	1.5	3.9	3.1
Un-incorporated	95.6	98.5	96.1	96.9
County	100.0	100.0	100.0	100.0

Source: *Washington State Office of Financial Management*

Mason County experiences seasonal fluctuations in population. Although seasonal residents are not included in the County's population statistics, they must be considered since there is a definite increase in demand for certain types of capital facilities during the summer months when seasonal population is high and tourism is at its peak. These seasonal increases in population will have a number of long term impacts on the County, particularly along the County's waterfront areas. These increases will continue to place increased demands on County services. Those services, which are designed to accommodate the average and peak demands of the resident populations, are often under severe stress during seasonal population peaks.

According to PUD #1 and #3 billing records, roughly 30% of County utilities customers are seasonal. Using this indication of seasonal population, the County's population increases by 30% during the summer months. This seasonal population tends to be concentrated along the County's waterfront. Thus, in 1994, the population increased from 44,300 people in the off season, to 57,590 during the height of the season.

The future land use plan proposes four Urban Growth areas (UGA), three Rural Activity Centers (RAN), and several Rural Community Centers (RCC). The proposed UGA's include the City of Shelton, the community of Belfair, the urban portion of the Working Rural Area (WRA) and the new Fully Contained Community (FCC). The proposed Rural Activity Centers include the communities of Allyn, Union, Kamilche/Taylor Towne and Hoodsport.

MASON COUNTY SOLID WASTE MANAGEMENT PLAN
CHAPTER 1A INTRODUCTION

1.1 INTRODUCTION

In 1991 and 1992 Mason County took the steps necessary to comply with the Federal and State solid waste regulations that had changed substantially over the previous ten years. These new regulations required, among other things, increased monitoring and testing at solid waste disposal sites, provisions for reserve accounts for closure, and an emphasis on waste reduction and recycling. While the requirements of some of the new regulations were adequately handled by the Mason County Health Department in its monitoring, permitting and enforcement role, other mandates of the legislature required that policy issues be addressed through the solid waste management plan.

One such policy issue included a long-term approach to solid waste disposal consistent with the priorities established by the State (refer to Section 1.2.1). Other policy issues included the identification of waste reduction/recycling goals and programs, and an evaluation of potential landfill siting. This document was developed to provide decision makers in Mason County with the guidelines needed to implement, monitor and evaluate future solid waste activities within the context of a defined set of goals and policies. This update is in accordance with R.C.W. 70.95.110 which requires that a Plan be reviewed and revised every five years.

The Mason County Solid Waste Management Plan, (referred to hereafter as the Plan) adopted in May 1992, was intended to be an update of the preceding 1971 Solid Waste Management Plan. However, substantial changes in the solid waste system in Mason County and the solid waste regulations require that more investigation and planning be performed than that necessary for an update. Therefore, that document represented a new Plan that was developed to reflect new regulations, priorities, and goals. The 1992 Plan uses the former plan for historical information, as appropriate. This update is being prepared to reflect a continuation of the recommendations and goals agreed to in 1992.

The basic format of the Plan and this update follows those recommended in the Washington Department of Ecology's (Ecology) State Solid Waste Planning Guidelines (March 1990) as revised per R.C.W. 70.95 (1989) and the "Waste Not Washington" Act. This amendment is intended to meet the requirements of the March 1990 guidelines.

This introductory chapter provides information on the forces and participating elements behind the Plan--legislative mandate, goals and policies, Solid Waste Advisory Committee, and the planning process. In addition, the planning history is reviewed and procedural issues identified. The second chapter describes the background or context in which solid waste activities occur. The areas covered include: population and land use, geology, and waste stream analysis.

Chapters 3A through 9A, each address various solid waste handling systems:

3.0	Waste Reduction and Recycling
4.0	Energy Recovery/Incineration
5.0	Refuse Collection
6.0	Transfer and Import/Export
7.0	Landfilling and Storage/Treatment
8.0	Enforcement and Administration
9.0	Special Waste Streams

Each system is described in terms of the current level of service provided; the needs and opportunities for improvement; a discussion and evaluation of alternatives identified to resolve needs and address established goals; the recommendations for implementation; and a schedule and cost summary for implementing the recommendations.

1.2 PURPOSE AND AUTHORITY OF THE PLAN

In 1971, "A Comprehensive Plan for Solid Waste Management" was prepared as the planning guideline for solid waste handling activities in the County. This document was developed in response to the Solid Waste Management Recovery and Recycling Act, Chapter 70.95 of the Revised Code of Washington (R.C.W.) (1969), which states that:

> "Each county within the state, in cooperation with the various cities located within such county, shall prepare a coordinated, comprehensive solid waste management plan" (R.C.W. 70.95.080).

The 1971 plan satisfied this requirement. The Solid Waste Management Act goes further to state that the plan must be maintained in a current condition through periodic review and updating, if necessary, at least once every five years (R.C.W. 70.95.110). This 1991 Plan fulfills the requirement for updating and incorporates the most current (1989) revisions to R.C.W. 70.95.

The legal requirement as codified in Chapter 70.95 R.C.W. is the primary regulatory driving force behind development of a solid waste management plan or plan update. Associated regulations are included in Chapter 173-304 WAC (1988) and guidance is provided in the State Solid Waste Planning Guidelines (Ecology, March 1990).

In addition to regulatory requirements, a secondary, and equally compelling, motivator for plan development is the local (multi-County, County and municipal) need for a coordinated, comprehensive solid waste program based on established goals and policies. The solid waste management plan is intended to be the planning tool for the management of solid waste activities in the plan area for a twenty-year planning period, with updates and amendments every five years. It provides local decision makers with a context for evaluating proposed programs, facilities or policies which directly or indirectly impact any element of the solid waste system. County goals

and policies provide the local framework for the development of Plan recommendations which, in turn, provide the following:

- Guidelines for decision makers to develop programs, policy, and operating plans
- A basis for permitting decisions by the Mason County Health Department and other local government agencies,
- The support needed to obtain grants and funds for capital projects.

The remainder of Section 1.2 discusses the legal requirements and local goals and policies which provide the initiative and the inspiration for the development of the Mason County Solid Waste Management Plan.

1.2.1 Legal Requirements

In 1984, the Washington State Legislature amended the Solid Waste Management Act (Chapter 70.95 R.C.W.) to address issues relevant to the development of solid waste management plans. Further revision was made in 1989.

Solid Waste Management Priorities

In 1984, the Washington State Legislature established priorities for solid waste management. These priorities were revised in 1989 under ESHB 1671 and R.C.W. 70.95, to the following in order of descending importance:

1. Waste reduction,
2. Waste recycling with source separation as the preferred method,
3. Energy recovery, incineration or landfill of separated waste,
4. Energy recovery, incineration or landfill of mixed waste,

Although some waste will always require disposal through landfilling, the focus of the revised priorities is on reduction of the waste stream followed by source separated recycling. Landfilling and incineration options are given equal status. Under the new priorities, the solid waste system should be viewed as a whole, with an emphasis in reducing the waste stream that must be disposed.

The State priorities are addressed in the Mason County Solid Waste Management Plan through the goals and policies established for preparation of the Plan (discussed in Section 1.2.2) and through the planning process or sequence itself. The higher priorities of waste reduction and recycling are evaluated and recommendations made for implementation prior to examining the needs and developing recommendations for the lower priorities, i.e., energy recovery and landfilling.

Solid Waste Advisory Committee

The Solid Waste Management Reduction and Recycling Act (R.C.W. 70.95.165) specifies the formation, membership, and role of the Solid Waste Advisory Committee (SWAC). The

participation of a SWAC in the development of the Plan and its composition is discussed in Section 1.4.2 of the Plan.

Planning Requirements

The State Solid Waste Planning Guidelines (Ecology, March 1990) provide direction for the development of solid waste management plans. Specific requirements to be contained in such plans are listed in R.C.W. 70.95.090.

This document is intended to meet all current requirements as outlined in the March 1990 Solid Waste Planning Guidelines and the 1989 version of R.C.W. 70.95.

1.2.2 Solid Waste Goals and Policies

A list of issues were included in the 1992 Plan that identified some of the basic overall needs within the solid waste system as it existed. The overview of the system helped to determine some basic goals and policies that needed to be reevaluated or established. The following issues have been identified:

1. Solid waste disposal needs for the planning period must be met; programs should be consistent with the State's priorities with emphasis on waste reduction and recycling; associated costs should be minimized while maintaining an acceptable level of environmental protection consistent with the environmental goals and regulations of the County, State and Federal government.

2. The institutional and organizational structure under which the solid waste system operates needs to be evaluated for its ability to manage solid waste disposal issues at hand, minimize disposal costs and adverse environmental impacts of solid waste handling/processing activities, and address the priorities established by the State Legislature.

The first issue deals with the need to provide adequate, cost-effective and environmentally sound solid waste handling services. In 1993, the previously existing landfill was closed as required by the Department of Ecology. It was replaced with a transfer station which provides both the general public and commercial users the opportunity to dispose of their respective solid waste. The establishment of a replacement landfill is no longer considered a major issue. Future solid waste disposal and handling needs are being met by transporting it to an out-of-county site. In addition, Mason County has established a system of waste reduction and recycling which is being monitored by staff to determine methods of improvement.

With regard to the second issue, the solid waste management system in Mason County has evaluated the existing program on a yearly basis. At the present time adequate resources are available to manage the increasingly complex issues in the County. It is felt that over the next few years there would not be a need for additional staff unless steps are taken to construct a new drop box station or transfer station. Cost and staffing would need to be evaluated at that time.

Based on these two identified issues; six overall goals were established to provide the direction for development of the 1992 Plan:

- In recognition of the priorities set forth by the Washington State Legislature in R.C.W. 70.95.010, it shall be the goal of the Mason County Solid Waste Management Plan to implement, to the fullest extent possible and in descending order of priority, solid waste management processes that reduce the waste stream, promote recycling, and minimize the amount of land required for future disposal.

- To develop a solid waste program that promotes and maintains a high level of public health and safety; and which protects the natural and human environment of Mason County.

- To promote input and ensure the representation of the public in the planning process.

- To develop economically responsible means of solid waste management that recognize the cost and need for environmental protection and service to the citizens of the County.

- To promote the use of private industry expertise to carry out the components of the Solid Waste Management Plan. This does not mandate the use of private industry, nor does it preclude the involvement of Mason County in implementing the Plan.

- To be consistent with all existing resource management plans.

This update proposes to continue with the direction established in the 1992 Plan.

1,3 SOLID WASTE PLANNING HISTORY IN MASON COUNTY

The legislation requiring the development of County comprehensive solid waste management plans was enacted in R.C.W. 70.95.080 in 1969. The 1971 Comprehensive Solid Waste Management Plan was prepared by Mason County in response to this legislation.

1.3.1 The 1971 Comprehensive Plan for Solid Waste Management

In 1971, "A Comprehensive Plan for Solid Waste Management" was prepared for the Board of Mason County Commissioners and the City of Shelton as the planning guideline for solid waste handling activities in Mason County. The objective of the 1971 plan was to develop a program that was:

> "...based on a thorough and realistic evaluation of all aspects of solid waste generation, storage, collection, reduction and disposal. The program must be capable of being implemented. The program should be sufficiently flexible to adapt to changed conditions and new techniques that may occur or evolve."

1.3.2 Status of 1971 Recommendations

The major points of the 1971 plan have been implemented in Mason County, with some minor variations.

Closure of the six Mason County dumps occurred as recommended in the 1971 plan. In addition, one sanitary landfill was established for solid waste disposal in the County. However the landfill was not sited near Rex Lake but at the old Septage dump near the Airport and the Corrections Center. No grant was obtained to study anaerobic digestion and this alternative was not pursued further.

Three drop box station sites were established in the county: Belfair, Hoodsport and Union. These facilities serve public self-haulers only and are equipped with 40 cy drop boxes.

Mandatory collection was not made law in Washington State and was not implemented in Mason County. Refuse collection has remained as recommended by the plan. The City of Shelton collects City waste, Mason County Garbage and LeMay Enterprises collect from the unincorporated county.

1.4 CURRENT PLANNING PROCESS IN MASON COUNTY

Preparation of the 1992 Mason County Solid Waste Management Plan Update was initiated under the direction and guidance of the Mason County Department of General Services and the Solid Waste Advisory Committee (SWAC). In August 1990, responsibility for solid waste management shifted from the Department of General Services to the Mason County Department of Public Works, and in August, 1991, to the Department of Community Development. As a result, final administration tasks associated with this Plan were performed by the Department of Community Development as is this amendment.

The role and membership of the SWAC is discussed in Section 1.4.2. The remaining sections of this chapter describe the role of local government, the process of plan development, the approval and adoption process and the protocol for future plan revision and possible amendment.

1.4.1 Role of Local Government

Under State law, municipalities located within a county may fulfill their solid waste management planning responsibilities in one of three ways:

1. Prepare its own solid waste management plan for integration into the comprehensive County plan; or

2. Participate with the County in preparing a joint City-County plan for solid waste management; or

3. Authorize the County to prepare a plan for the City's solid waste management for inclusion in the comprehensive County plan.

The City of Shelton is the only municipality in Mason County. They have agreed to have the County prepare a joint City-County plan for solid waste management.

Municipalities and the County must adopt the completed plan through a formal adoption process. Both formal and informal communications and meetings were conducted during the preparation of the Mason County Solid Waste Management Plan to obtain input and guidance from the City prior to completing a draft for final review and adoption.

Resolutions passed by the City of Shelton adopting the Plan will be hereto when available. Implementation of the Plan may require interlocal agreements between Shelton and the County. These agreements will reference the Plan.

1.4.2 Role of the Solid Waste Advisory Committee

A key element of the public participation program required as part of the planning process is the Solid Waste Advisory Committee (SWAC). This committee functions in a review and advisory capacity throughout the planning process, facilitating subsequent adoption by the municipalities and acceptance by the public. The SWAC organized for Mason County's solid waste planning effort was established through an advertised request for participants and includes individuals representing various interests in solid waste issues.

The Mason County SWAC had representation from local government, private industry and citizens/public interest groups. Current SWAC membership is shown on Table 1.1A.

Table 1.1 SOLID WASTE ADVISORY COMMITTEE

Member	Affiliation
Luther and Linda Pittman	PRO Mason County
Gerry Hodge	Citizen
Rick Fredrickson	Mason County Garbage
Richard Read	Citizen
Jim Park	Skokomish Tribe
Janet O'Connor	Citizen
Earl Campbell	LeMay Enterprises
Don Melnick	Citizen
OPEN POSITION	
Staff	
Tom Moore	Project Manager - County
Toni Clement	Recycling Coordinator, City/County
Gary Yando	Director of Community Development

1.4.3 Relationship to Other Plans

The Solid Waste Management Plan must be viewed in the context of the overall planning process within all jurisdictions in the County. As such, it must function in conjunction with various other plans, planning policy documents, and studies which deal with related matters. Included among these are the Mason County Comprehensive Plan and the Hazardous Waste Plan.

1.4.4 Plan Development

The process of plan development has involved the following major steps:

1) Preparation of the Amended Document
2) Review by SWAC
3) Prepare complete draft Plan
4) Review by SWAC
5) Complete SEPA documentation and review
6) Review by public, municipalities, County including Public Hearing
7) Incorporate Public Comments into draft Plan
8) Submit draft Plan to Ecology
9) Address Ecology Comments and resubmit to Ecology
10) Obtain resolutions of adoption from municipalities and County
11) Submit final Plan to Ecology
12) Implementation

The SWAC participated in plan amendment by 1) reviewing draft chapters, 2) providing input and comment on all issues covered by the Plan, 3) acting as a liaison to their constituency and 4) assisting in public involvement programs.

Additional opportunities exist to reduce the waste stream through rate structure changes, commercial education and assistance programs, public agency procurement policies, on-site composting programs, and waste exchanges. These potential programs are discussed in the following section.

Issues raised regarding waste reduction programs are listed below.

ISSUE: What State or Federal waste reduction programs are available for County and City support? What level of effort is the County and City willing to expend to support and promote State or Federal programs?

The following section entitled Alternatives and Evaluation will discuss alternatives that the City or County could take to resolve the stated issues and meet goals. Resolution of these issues will provide solid waste management with a direction for implementation.

3.2.3 Alternatives and Evaluation

The Solid Waste Management Guidelines developed in March 1990 includes a list of waste reduction programs - both local and State or Federal - for evaluation and prioritization. This list was presented to the SWAC for their input and prioritization in preparation of the 1992 plan. The list was also presented as part of this update. A discussion of the alternatives, their feasibility within Mason County and their assigned priority by the SWAC, the Director of Development Services for the City of Shelton and the Department of Community Development in Mason County follows.

Program Options: A brief discussion of each of the program options included in the new guidelines follows:

a) Public awareness education - This option focuses on encouraging consumers to utilize secondhand, rental and repair businesses and bulk buying. The Department of Ecology has developed a comprehensive statewide public information program designed to encourage waste reduction and recycling. This provides the foundation for local information and education programs.

Specific waste reduction topics included in public education, both in schools and for adults, include:

- Home composting
- General problem awareness
- Reuse and Repair vs. Disposal
- Home practices to minimize waste
- Product ratings and good purchasing habits

To be effective, a public education and information program would require ongoing coordination between public agencies, schools, businesses, and the general public. These types of programs are most effectively implemented by a staff person that can dedicate a significant portion of time to the effort. For this reason a Recycling Coordinator has been retained by the City of Shelton and Mason County. Additional discussion of education programs is contained in Section 3.8.

b) School curricula - The "A-Way with Waste" program is currently in use in every school throughout Mason County, however success of this program requires continued coordination and commitment of school officials and the Recycling Coordinator. Presentations on worm bins, composting, recycling, and other related topics are available to all schools free of charge from the Shelton/Mason County recycling program.

c) Commercial, retail, and industrial education, and/or technical assistance - Waste reduction practices in business and industry may be accomplished by changing purchasing policies or modifying production processes to produce less waste. For some industries, technical advice and education programs may be available through trade associations or from the Waste Reduction and Recycling Office of the Department of Ecology.

Waste Audits are a form of education aimed at industry. Waste audits identify purchasing patterns, processes, and the final waste stream. They can offer an environmental and technical evaluation of the business with recommendations about how to reduce both the volume and toxicity of waste. The focus of such a program would present business people with possible waste reduction and recycling methods appropriate for their situation. A commercial waste reduction program is being adapted from the Business Waste Reduction and Recycling Handbook developed by the King County Solid Waste Division. If program funding is available, modification and implementation of the program is expected to occur in 1998. Currently, the Recycling Coordinator responds to business inquiries for technical assistance and Mason County Garbage and Recycling provides free commercial waste audits for customers. Waste Audits could also be coordinated through the Chamber of Commerce.

d) Variable garbage can rates (Rate Structure Changes) - An additional alternative to support waste reduction and recycling would be through rate structure changes. Garbage collection rates could be structured to reward customers for their waste reduction and recycling efforts.

Currently collection rates in the unincorporated County are determined by the Washington Utilities and Transportation Commission (WUTC). Garbage collection rates in unincorporated areas as set by the WUTC are cost based, the rate charged reflecting the cost of the service. This means the rate for single can service is not much less than for two or three cans because the cost to pickup an additional can is low. This type of rate structure encourages waste generation.

A rate structure change would increase the rate for two or more cans and reduce the single can rate. The total revenue of this type of arrangement must be the same for the collection company to maintain its fair profit as determined by the WUTC. Recent amendments to RCW 81.77 require all collection services to use rate structures that support the state solid waste management priorities, which place waste reduction as the first priority. Further discussion of this alternative is contained in Chapter 5.

In the City of Shelton, a biweekly program has influenced approximately 26% of the city customers to participate. Mason County Garbage and Recycling offers both biweekly and monthly service options to all county customers in an effort to encourage recycling while decreasing waste generation. The County and City follow the requirements of RCW 91.77 which requires rate structures that support state solid waste management priorities which focus on reduction. The City and County may study the economic long term viability and public demand of waste reduction practices and forecast how the program will evolve to meet future needs.

e) Procurement policies for durability, recyclability, reusability, and recycled material content - Waste reduction policies and practices could be implemented in public offices in the City and County. Methods of waste reduction could be developed and implemented which would alter the way employees use materials and resources at a small cost. A memorandum could be developed for circulation which outlines possible ideas and requests additional staff input to develop additional programs. Awards or recognition of innovative ideas could be given by department.

Possible waste reduction programs could consist of employee education, increased use of scrap paper, increased use of electronic mail, increased double-sided copying and printing, cloth towels or electric hand dryers in restrooms, increased use of recycled paper and recyclable paper, purchasing foods in glass containers, avoiding non-recyclable packaging and repair or reuse procedures. Policies could be adopted for City and County offices.

Local government procurement policies could also be used as a basis for general standards which could be developed and distributed to local residences, and businesses on request. County or City leadership in an "In-house" program could provide an example to others.

f) On-site composting - Individuals composting yard waste in their backyard is an effective method of waste reduction. The amount of composting that occurs in the County is unknown. However, yard waste appears to be a relatively small segment of the Mason County waste stream. It may be assumed that many residents already compost or dump yard waste in remote areas of the County. Although an education program may assist these groups to produce a more useable material, additional reduction of the waste stream from such a program may be small.

An on-site composting program supports local residents and business in developing their own "backyard" compost project. This type of program goes beyond typical forms of

education such as pamphlets. A demonstration composting site has been established at the Mason County Fairgrounds for conducting hands-on composting classes. The Recycling Coordinator and the Washington State University Agricultural Extension Service are available to answer composting questions. The County is not considering a large scale compost facility at this time, however, this alternative may be revisited in the future.

g) Product or product packaging prohibitions (after July 1, 1993) - Packaging materials which cannot be recycled or reused could be prohibited on a local level. Although the impact of such an action by a small county may not be substantial, combining such a prohibition with other counties could impact manufacturers and retailers.

h) Container product or packaging deposits (after July 1, 1993) -Deposits could also be placed on materials such as glass and plastic bottles at a local level. Such a program would require support and cooperation of retailers in the area.

i) Product use and reuse standards - In a similar fashion to option e), standards could be developed that focus on use and reuse. Standards may include ways to extend the use of materials and methods to reuse materials once the period of usefulness is past.

j) Encouragement of state and/or federal programs -In addition to the acquisition of a recycling staff person, the City and County can support State and/or Federal programs through resolution. The State guidelines for solid waste management plans also include a list of potential State or Federal program options which could be targeted:

- Container, product, or packaging deposit legislation
- Tax incentives
- Product or product packaging prohibitions
- Warranties on durable goods
- Product labeling for recycled content and recyclability
- Standardized packaging
- Product use and reuse standards
- Variable can rate structures

k) Waste exchanges - The County could assist in material reuse by offering a method of collecting and giving out data on reusable items available throughout the County. A waste exchange system could be computer or file card based. When a person needs some material they would contact the County and ask if the desired item is available. The County could access its database and inform the inquirer that the material is available and who to contact.

The success of a waste exchange is dependent on how well it is managed and promoted. Advertisements in local newspapers and flyers would be required to keep the waste exchange visible. The type of material and listing time should be restricted to prevent

overburdening the system. With good promotion a waste exchange may be an effective waste reduction measure.

Mason County is participating in a pilot waste exchange program funded by the Department of Ecology with Thurston and Pierce counties and the Energy Outreach Center. It is an on-line program called the Reusable Building Materials Exchange available free of charge through the internet. It is anticipated that the outcome of this pilot project will aid in shaping the future of waste exchanges in Mason County.

l) In-house programs - These programs could be conducted at County and City offices as an "example" to other businesses in the region. The programs could consist of employee education, increased use of scrap paper, increased use of electronic mail, increased double-sided copying and printing, cloth towels or electric hand dryers in restrooms and increased use of recycled paper and recyclable paper.

m) Awards and other forms of public recognition - An awards program could be developed through the County or City for groups which are leaders in waste reduction. Awards could take the form of plaques or newspaper coverage. In addition, recent legislation added to RCW 70.95 creates an awards program for school recycling. Awards will be granted each year to the schools that achieve the greatest level of waste reduction and recycling. Awards take population, distance to markets and other criteria into consideration.

SWAC members considered and prioritized each of the programs in the context of Mason County. The SWAC recognized all programs as having value. While it was agreed that effort should be focused on top priorities, it was also felt that lower priorities could be addressed as time and funding permit.

The top priority was given to public awareness education and school curricula. Interest was also shown in in-house programs for City and County agencies and businesses, encouragement of State and/or Federal programs, on-site composting and rate structure changes. State and Federal programs such as product labeling for recycled content and recyclability was given the widest support while programs such as deposit legislation, product and packaging prohibitions, standardized packaging and product use and reuse standards were also given support.

ISSUE: **What State or Federal waste reduction programs are available for County and City support? What level of effort is the County and City willing to expend to support and promote State or Federal programs?**

State or Federal waste reduction programs were listed under item j) above. The programs generally would be implemented through legislation aimed at manufacturers. Among the SWAC and City and County staff, the highest priority programs were product labeling for recycled content and recyclability followed by deposit legislation, product and packaging prohibitions, standardized packaging and product use and reuse standards. A program aimed at state and federal programs could focus on these options.

As stated, the County and City may take an active or passive role in supporting these programs: support through resolution or acquisition of a staff person actively involved in contacting agencies and lobbying legislators.

Support through Resolution. The County and City could take indirect action to support State and Federal programs by assuming a position on waste reduction and supporting that position with a resolution. Such a resolution passed by the respective County or City Council would make a statement in support of waste reduction legislation to elected officials. This resolution together with other such resolutions could provide additional impetus to legislators to support and sponsor waste reduction legislation.

Cost of this alternative would be negligible and require no additional staff to implement.

Lobbying Legislators. This alternative would involve work with State and Federal agencies, monitoring solid waste legislation, lobbying legislators and possibly drafting proposed legislation. Responsibility for these tasks on a State and Federal level could be assigned to one individual on a part-time or full-time basis. This individual could also be responsible for working with other Washington State Counties to promote solid waste issues.

The lobbying alternative is more costly than the indirect resolution and would require additional staff to implement. A major commitment to waste reduction would be required on the part of the City or County to make this alternative effective.

Table 3.1A provides a comparison between supported waste reduction alternatives and evaluates each on the basis of:

Applicability	-	Where would the alternative apply and who could implement it?
Level of Reduction	-	What level of waste reduction can be expected with this alternative if implemented?
Staff Requirements	-	What are staffing requirements for County or City government?
Annual Cost	-	What would the program cost if implemented?
Target Audience	-	Who would the program be aimed at?

3.2.4 Recommendations

Currently, the City has adopted a procurement policy for paper. It could be extended to other materials in the future. The County may adopt procurement policies with reasonable economic choices. Discussions with County and City employees indicate a limited staff and budget to implement new programs. Also employees indicate the desire to focus on limited programs with expansion to additional sophisticated programs as public participation increases. A great deal of interest was shown by SWAC members in public education for schools, adults, businesses and

government. In particular, expansion and support of the existing school program was given top priority. Other waste reduction programs were viewed as valuable (i.e. rate structure changes, in-house programs). While the broader spectrum of waste reduction programs were not given specific priority it was agreed that they should be implemented as funding allows.

Table 3.1A WASTE REDUCTION ALTERNATIVES EVALUATION

Waste Reduction Alternatives	Applicability	Level of Reduction	Staff Requirements	Annual Cost	Target Audience
Education Programs	Shelton & Mason County	None Directly, Increases Participation Rate	See Section 3.8	See Section 3.8	Public Schools, County Citizens & Businesses
In-house Programs	Public Agencies	<1%	.1 to .2 FTE	$3,000 to $6,000	Public Agencies
On-site Composting	Shelton & Mason County	Estimated 1-5%	Included in Education	Included in Education	County/City Citizens
Rate Structure Changes	Shelton & Private Haulers Thru WUTC	Unknown	.1 to .2 FTE	$3,000 to $6,000	Garbage Service Rate Payers
Technical Assistance	Shelton & Mason County	Unknown	.2 to .5 FTE	$6,000 to $15,000	County & City Businesses
Resolution of Support	Shelton & Mason County	None Directly	Little to None	Little to None	State & National Government
Lobbying Legislators	Shelton & Mason County	None Directly	.2 to .5 FTE	$6,000 to $15,000	State & National Government

Assumes: 1 Full Time Equivalent (FTE) = $30,000

Recommendation 3.1. Public Education should be a high priority in both Mason County and the City of Shelton. County and City should continue to support and enhance the existing school program. Adult education program should continue to focus on waste reduction practices and to supplement each new waste reduction and recycling program implemented. On-site composting programs should continue to be expanded and included as a topic for public education.

Recommendation 3.1 was given top priority, however Recommendations 3.2 through 3.5 are not listed according to any particular priority.

Recommendation 3.2. The County and the City should continue to support waste reduction by adopting resolutions of support for waste reduction practices and forward these to state and national senators and representatives. This resolution could address: future legislation, changes to existing legislation, packaging or labeling requirements, material deposits, market development or other topics.

Recommendation 3.3. In addition to the bi-weekly waste pick-up service that was implemented in conjunction with the City curbside recycling program, additional incentives and alternative rate structures supporting waste reduction could be considered.

Recommendation 3.4. Mason County should continue to seek waste collection rate structure programs that support waste reduction in the County (Refer to Chapter 5).

Recommendation 3.5. The County and City need to take the steps necessary to expand in-house waste reduction programs. Providing assistance to County and City businesses to implement such programs should also be considered.

Recommendation 3.6. Consideration should be given to other waste reduction programs and implemented as necessary and feasible.

In order to provide feedback for waste reduction efforts, some form of program measurement must be implemented. The Department of Community Development will maintain annual records of waste quantities collected at the Mason County solid waste facility and transfer stations, and recyclable materials collected through the County Drop Box program for evaluation. In addition, evaluation of individual programs may be accomplished as part of an overall public feedback program. The feedback program is discussed in Section 3.8.3 and Recommendation 3.18.

The SWAC and County staff recognized the difficulty of assigning specific target percentages to waste reduction programs at this time. As programs are developed and feedback collected, such targets may be considered and included in the next Plan update.

3.3 URBAN AND RURAL DESIGNATION

Under the new solid waste planning guidelines, local governments are to develop criteria for designating urban and rural areas within the County. Minimum service levels are required for urban and rural areas and these are to be taken into account when developing recycling programs for the Plan.

Methods of developing urban and rural designations can vary widely. Zoning or land-use plans may provide the basis for such designations as well as population densities, solid waste franchise or collection areas, incorporated areas and "common sense".

Consideration was given to these possible criteria in the case of Mason County. The County is typically rural with a population of 47,900 in 1997. The County includes only one incorporated area, the City of Shelton, although the Belfair area has some relative population density. Additional developments exist around the County with small localized population densities. Refuse collection in the unincorporated County is through two franchised haulers - Mason County Garbage and Harold LeMay Enterprises Inc. d/b/a Rural Garbage Service. The City of Shelton operates its own refuse collection service.

The guidelines for development of Solid Waste Management Plans (WDOE 90-11), contain six tests for evaluation of urban and rural area boundaries. The following tests are applied in determining the designation of Mason County:

i) Appears to meet the criteria selected by local government, including any performance levels that have been set

ii) Consistency with other urban and rural designations made by other up-to-date plans or set service levels in the area.

iii) The percentage of population that would be designated urban is essentially the same even after modification of the boundaries to form logical service areas.

iv) Service areas fit logically other city/county services, as applicable (water, fire, garbage, etc).

v) Rural "islands" in urban areas (and vice versa) are minimized.

vi) Common sense.

The SWAC discussed designating the City of Shelton as urban and the unincorporated County as rural. This designation made sense because of the higher relative population densities within the City and the existence of the City's collection service.

The City of Shelton, Mason County and SWAC have determined that for the purposes of this plan the urban and rural designations included in both the City's comprehensive plan and County's comprehensive plan shall be applicable.

The designation criteria as well as the urban and rural boundaries will be discussed and possibly revised by both the City and County as part of the Growth Management Act process. Future Solid Waste Management Plan amendments will show these revisions.

3.4 DESIGNATION OF RECYCLABLE MATERIALS

3.4.1 Recyclable Materials

The potential recyclables and their percentage of the total waste included in the following discussion, were taken from Best Management Practices, Vol. I, WDOE 1992. These percentages do not take into account those materials already being recycled. Local market discussion is as of Fall 1997.

Paper products such as mixed waste paper (8.2%), newsprint (4.0%), corrugated containers (7.3%) and high grade paper (0.4%) contribute a significant portion of the waste stream. Currently, the City collects newsprint, mixed waste paper, and corrugated cardboard through the curbside program. The County drop box program collects newsprint and corrugated containers at all eleven recycling sites and mixed paper at two sites. Markets for paper are low and unstable. Recycling paper products would not be expected to support itself and would require subsidizing.

Glass (4.6%), metals (5.6%) and aluminum (0.6%) represent a smaller portion of the waste stream. These materials, like papers are easily recognizable to the public as recyclables. Inclusion in the designated recyclable list would continue the program established. Local markets are typically stable for both ferrous and non-ferrous metals.

Two types of plastics are currently recycled through the County drop boxes and at the EFI buy-back center in Mason County - PET (0.4%) and HDPE (0.7%). These materials are less recognizable to the public. They make up a small portion of the waste stream. However plastics recycling is generally supported because of the life of plastic in a landfill. Markets are potentially strong for these materials depending on the success of collection programs. While plastic packaging/film (3.4%) is a larger portion of the waste stream, its market is very unstable. The cost of pilot recycling programs for this material has been high when collected in areas such as Seattle.

According to the waste stream survey conducted by Ecology, yard waste, consisting of grass, leaves and branches, makes up approximately (7.7%) of the waste stream. If this is true, an effective program to remove this waste could have a substantial impact on the overall waste stream. Properly composted the material could provide a beneficial product to residents of Mason County. However, Mason County employees believe the yard waste stream currently received at the landfill is less than the volume predicted in the Ecology survey. This difference is attributed

to the rural nature of the County and the fact that residents have room to compost, pile or dump yard waste on their property or in undeveloped areas. Stumps are not included as yard waste and would be considered a wood waste.

Food waste (11.8%) could also be a candidate for composting. The problems associated with a large scale food composting program such as odor, pests and the quality, usefulness and marketability of the end product should be given consideration, however, small scale on-site food waste composting techniques such as vermicomposting offer a viable alternative and should be implemented.

White goods (0.1%) are currently broken down and sold for scrap at the Mason County solid waste facility. Collection of these materials for recycling would continue a successful program as long as the market remains.

Demolition waste in Mason County is currently treated as municipal solid waste. At this time, development of disposal alternatives are in their infancy. Some removal of reusable demolition or other waste stream materials is discussed in Section 3.9. Biosolids are utilized in various land application projects. Tires are collected by private contractor for removal from the solid waste facility. Used oil, oil filters, transmission fluid, antifreeze, and batteries are collected at the solid waste facility for recycling.

To continue existing County and City programs the following materials are included on the list of designated recyclables for Mason County:

- newsprint,
- corrugated containers,
- high-grade paper,
- metals (ferrous and non-ferrous, tin cans),
- aluminum,
- glass, (brown, green, and clear)
- PET and HDPE and
- white goods
- magazines
- used motor oil and filters
- milk cartons and juice boxes
- tires
- automotive batteries
- antifreeze
- mixed paper

There is a general support for centralized yard waste composting among County staff and the SWAC. However, issues were identified regarding the environmental, economic and operational feasibility of such a program. Specific issues included the following:

- The likelihood of creating leachate and impacting groundwater if a relatively inexpensive, unsurfaced/uncontained operation is implemented.

- The high cost of installing required impervious surfacing and leachate collection and treatment programs that would protect groundwater.

Because of the drawbacks of large scale composting without groundwater protection and the anticipated costs of implementing protection measures, yard waste is listed in the category of a potential recyclable.

However, recognizing the value of compost, Mason County will continue to evaluate options available to promote a compost facility in the County. These options could include cooperative efforts between public sector agencies or providing technical support to a private sector operation.

Food waste composting was not viewed as a feasible program on the County level at this time. The SWAC supported food waste composting as part of the on-site composting program discussed in Section 3.2A.

The decision to include the potential materials in the list of designated recyclables will follow the procedure outlined in Section 3.4.3. With collection of the designated list of recyclables and potential recyclables, the waste stream could be reduced up to 49% (Table 3.2A). However no program can remove all recyclables and the actual reduction in the waste stream will be less than this. Methods to remove recyclables from the waste stream are discussed in Section 3.5.

Table 3.2A RECYCLABLE MATERIALS

Item	% of Waste West WGA (by weight)
Newsprint	4.0
Corrugated Containers	7.3
High-grade paper	0.4
Metals	5.6
PET and HDPE	1.1
Glass	4.6
Aluminum	0.6
White Goods	0.1
Mixed Paper	7.2
TOTAL	30.9%
Potential Recyclables	
Yard Waste	7.7
Mixed Paper	11.8
TOTAL	50.4%

Based on rates from Best Management Practices, Vol I (WDOE, 1992)

According to the most recent Department of Ecology Recycling survey, Mason County recycled approximately 8,628.84 tons of materials in 1996. The amount of solid waste collected in 1996 was 24,878.70 tons. Based on this data, the total recycling rate for Mason County is 34.68%.

3.4.2 Markets and Market Risk

Compared to other parts of the nation, market conditions for recycled materials are favorable in Washington State. Factors such as the existence of end-users in the region and export opportunities to international markets have tended to support and stabilize local markets. However continued growth of quantities collected through recycling programs and insufficient market development are reflected in generally falling market prices. In general, long term market stability is favorable although prices should be expected to fluctuate. Prices obtained for collected recyclables may be increased if constant, reliable quantities of materials are collected.

In their January 1990, Preliminary Report to the Legislature, the Washington Committee for Recycling Markets discussed the current market conditions for the region. They state that markets for newspaper, corrugated containers, glass, ferrous and non-ferrous metals, and tin cans are all adequate to support consistent, gradual expansion in supply. Although they recognized the current glut of newsprint, they believe that if planned regional mill capacity does come on line in the next three years the excess supply will be mitigated.

Other findings of the committee include the following:

- Mixed waste paper has the potential to be recovered in much greater quantities than at present. However markets are very problematic given the low material value, the supply-glut potential and ongoing quality control concerns.

- In general the current market for plastics is through export. However domestic capacity is beginning to expand with a focus on high-grade plastics. The committee believes the mixed low grade plastic market to be underdeveloped,

- Compost markets must be developed locally. The strength of these markets will depend on the quality and public acceptance of the compost product.

- The quality of recycled material influences the market and the price received. The better the processing and cleanliness of the material the more dependable the buyer will be. With increased quantities of collected materials however, levels of "contamination" are likely to increase, reducing market value and demand.

- Another issue concerns the comprehensive programs to increase collection of recyclables in Washington State and across the nation. Should market demand fall behind supply, it may become necessary to dispose of materials at a high cost. As a result, recycling would lose support and credibility in the community.

Markets for recycled materials are typically found at buy-back centers, recycling brokers or area processing centers. Currently there is one buy-back center in Mason County. Materials handled by EFI include (prices as of September 1997):

Material Accepted	Price $/lb
News print	donation
Corrugated	donation
Aluminum Cans	.27
Bulk Aluminum	.15
Brass	.15
Copper, All grades	.20 to .40
Stainless steel	.05
Lead	.04
Radiators (automobile)	.16

Since the original publication of this document, the recycling industry has grown to the point where listing all known material brokers would be impractical. The Washington State Recycling Association publishes a yearly directory which lists businesses by materials and activities.

No processing centers exist in Mason County. However, Pacific Disposal, Inc. owns and operates Allstar Recycling, a 75 tpd processing center in Thurston County and U.S. Waste owns and operates a 65 tpd processing center called Peninsula Recycling in Kitsap County. Markets for such materials as compost would have to be developed locally if an in-county program is established. A regional compost program may serve a larger regional market. Potential markets for compost material are discussed in Section 3.7.

3.4.3 Modification to Designated Recyclables List

The list of designated recyclables was based on existing practices in Mason County and the assumed feasibility of expansion of those practices. Future market conditions and technologies may make some materials more or less desirable from a recycling standpoint. As this occurs the list of recyclable materials will require updating.

A specific program for modifying the status of yard waste was given in Section 3.4.1. A more general modification procedure follows for other recyclables.

Certain conditions should trigger reevaluation of the designated list of recyclables. Conditions that would trigger inclusion of an additional item would be:

- Local markets and brokers expand their list of accepted items based on new uses for materials or technologies which increase demand.

- New regional processing or demand for a given material occurs.

Conditions that would trigger deletion of an item would be:

- Once collected no market can be found for a given item causing the material to stockpile.

The designated conditions should trigger an evaluation of the feasibility of collecting a new material, the expected stability of the new market, and the cost of including the new material in the designated list of recyclables. On the deletion side, the conditions should trigger an investigation of the reasons for the lack of market, possible local actions to revive the market and an evaluation of the permanence of the depressed market condition.

Recommendations should be developed for presentation to local governments and advisory committees. With concurrence, the list would be revised. Any revision of the designated recyclables list would be accompanied by some form of public information.

3.4.4 Collection Methods

Table 3.3A shows feasible methods for collection of each of the designated recyclables. Most of the recyclables may be collected in any of the alternative methods while some, such as white goods would be feasible for collection only at a central processing location.

Specific methods for collection are evaluated in Section 3.5 of this document. Section 3.5 will include recommendations for specific methods to collect each designated recyclable material.

3.5 RESIDENTIAL RECYCLING PROGRAMS

The solid waste planning goals developed for Mason County in the area of recycling are:

- To support private efforts in waste recycling in Mason County.
- To achieve an increase in waste recycling throughout Mason County.

3.5.1 Existing Practices

Recycling programs in Mason County are continuing to be developed. One buy back center operates near Shelton, a curbside collection program in the City of Shelton has been in operation for three years, and recycling drop boxes are located at eleven sites throughout Mason County. Two private haulers are collecting cardboard, mixed paper, glass, tin, and aluminum cans from businesses throughout the County. A few non-profit groups such as the Boy Scouts and Lions Club, and a couple of small private businesses are collecting newspaper at various locations in Mason County.

Buy Back Center

Exceptional Foresters Inc., (EFI) a non-profit organization, trains developmentally disabled persons in the processing of recyclables at the only buy back center located in Mason County. This center, started in 1979, is located in the Airport Industrial Park. Section 3.4 includes a list of materials and prices accepted at the buy-back center. Recyclable material is brought to the center by County residents and organizations. It should be noted that buy back centers are not a permitted use in the areas of Mason County designated 'rural'. Buy back recycling centers are only permitted within an 'urban growth area'.

TABLE 3.3A Recycling Methods for Recyclables

Method	Curbside	Buy-Back/ Drop-Box	Self-Haul to Central Loc
Recyclable Paper	X		X
Newsprint	X	X	X
Corrugated cont	X	X	X
Comp/Office Paper	X		
Mixed waste paper	X		
Glass	X		X
Aluminum Cans	X	X	X
Tin Cans	X		X
Ferrous and Non Ferrous metals		X	X
Plastics PET/HDPE Plastic Packaging	X	X	X
Yard Waste	X	X	X
White Goods			X
Tires			X
Food			X
Construction Debris			X
Batteries		X	X
Waste Oil			X

Adapted in part from: Best Management Practices Analysis for Solid Waste, Executive Summary - Ecology 1992.

Curbside Recycling

The City of Shelton has operated a residential single family curbside recycling program within the City limits since September, 1994. The curbside program uses three bins for collection; commingled, newspaper, and mixed paper. Steel and aluminum cans and glass bottles (clear, brown, and green) comprise the commingled bin. The curbside program is mandatory at a cost of $4.00 per household per month. To accompany the curbside program, the City established an optional biweekly refuse collection program to help participants offset the cost of the recycling program. The average participation rate is approximately 35.5% with a monthly collection average of 24 tons.

Recycling at Solid Waste Facility and Transfer Stations

In addition to the Solid Waste Facility, Mason County operates three transfer stations. In 1993, the County purchased collection containers and placed them at the Mason County Solid Waste Facility, in Matlock on County owned property, and the transfer stations in Belfair, Union, and Hoodsport. The containers in Union were relocated to the Union BP on McReavy and Dalby Roads to provide increased access.

In 1995, the drop box program expanded adding recycling stations at Taylor Towne, Bayshore BP, Shelton Red Apple, and Port of Allyn. The containers were moved from Bayshore BP to Johns Prairie Road to remedy contamination problems. During construction of a new building at the Port of Allyn site, the containers were moved to Grapeview.

Since completion in 1997, new containers have been placed at the Port of Allyn, allowing containers to remain in Grapeview as well. A site was added to Bucks Prairie bringing the number of drop box sites to eleven throughout the County.

Materials collected currently include:

Newspaper	PET and HDPE plastics
Magazines	Tetra pak - milk cartons and juice boxes
Corrugated cardboard	Steel/Tin cans
Brown bags	Aluminum cans
Glass: clear	Mixed paper (Red Apple and Grapeview only)
brown	
green	

Used oil, oil filters, transmission fluid, antifreeze, auto/household batteries, scrap metal, tires, and white goods are collected at the Mason County Solid Waste Facility and the Drop Stations in Belfair, Union, Hoodsport.

Other Practices

Metal recycling occurs in the County at several auto wrecking yards. These businesses accept most types of metals including steel, copper, nickel, brass, titanium and specialty metals. Information on the amount of material processed by these businesses is not available. Recycling by public service groups is also a factor in Mason County. In the Belfair area, the Lions operate two newspaper drop boxes.

3.5.2 Needs and Opportunities

Needs and opportunities for recycling are generated in this section in a similar manner to the waste reduction section. The needs and opportunities are generated based on recycling goals contained in the beginning of this section. As needs are generated, issues are raised whose solutions involve selection of alternatives or policy decisions. Like Section 3.2.3 on waste reduction, issues are presented at the end of this section.

GOAL: To support private efforts in waste recycling in Mason County.

In general, recycling in Mason County depends on the efforts of private recyclers. EFI is the major recycler in the County and is a non-profit organization. Recyclers of this type must support their programs with proceeds from recyclables, a fact that severely limits the programs and convenience they can offer to the residents of Mason County.

Because of the limited value of the recyclables, expansion of the current recycling system will require infusion of capital from a source other than the sale of recyclables. In many areas recycling is supported at least in part by solid waste tipping fees or collection fees. The City of Shelton Curbside Program is funded by a mandatory $4.00 monthly fee.

Currently all work related to solid waste is carried out by the Mason County Community Development staff and supported by solid waste tipping fees. However, as solid waste programs and recycling programs become more complex, the existing tip fees and staff may not be sufficient to support and coordinate programs with the recycling industry.

Issues related to support private recycling are listed at the end of this subsection. Discussion of the second goal follows.

GOAL: To achieve an increase in waste recycling throughout Mason County.

In Mason County the opportunities for increased participation and new programs are very good. One barrier to the implementation of increased recycling practices is the cost of new programs. Currently, Ecology is offering grants for public agencies which would help offset program costs.

Another barrier is related to the rural nature of the County. Because the population is spread out, it would be difficult and costly to provide a high level of recycling convenience to residents. This may impact the potential quantity of recyclables collected.

Issues related to the recycling goals are listed below.

ISSUE: What form should County or City support of private recycling efforts take?

ISSUE: What are funding options?

ISSUE: How can progress be measured?

The following section entitled Alternatives and Evaluation discusses directions that the City or County could take to resolve issues and meet goals.

3.5.3 Alternatives and Evaluation

To be successful, a recycling program should be designed to match the opportunities and limitations of the County and City. In particular, the convenience of the system will be an important contributor to its success as well as the extent to which the public is informed regarding the program.

According to the new State guidelines, an ideal recycling collection program would "mirror" garbage collection. However such an ideal program may not be financially feasible in Mason County. This section will discuss alternatives available to the City and County for elements of recycling programs.

ISSUE: What form should County or City support of private recycling efforts take?

Achieving the goals listed for recycling will require coordination between the City, County and private recyclers in the area. Methods of communication between involved parties, including the public will be crucial to the success of any expanded recycling program.

Specific alternatives for consideration include:

- Recycling and Waste Reduction Panel
- Education and Incentives

Recycling and Waste Reduction Panel. Under this alternative a panel of private industry representatives, City and County representatives, business people, the general public and other interested parties, including SWAC members could be established. This panel could be established as a sub-committee to the SWAC if needed, to focus particularly on recycling issues.

The panel could provide input to the SWAC on waste reduction and recycling issues and later to the City and County during implementation of the Plan. Industry representatives could provide feedback on programs and additional needs. Other interested parties could also provide feedback and ideas for additional programs. Overall the panel would help develop preferred alternatives and would be allowed to provide input to decision makers as part of setting solid waste policy.

County or City staff involvement would be necessary to keep meetings focused and to provide information on proposed alternatives. The cost of this alternative would be small if existing staff were available to participate. The City of Shelton used this method successfully in the firm of a City Recycling Task Force. This group assisted the Recycling Coordinator in developing and implementing the City curbside program.

Education and Incentives. Education can greatly increase participation in recycling programs by increasing public understanding and appreciation of the problems associated with solid waste.

Since effective waste management involves close coordination between the County, the public, collection services, and recyclers, it is essential to include public education in a recycling plan. The benefits of recycling, and how to recycle are primary elements in the education program. Education programs are further discussed in Section 3.8.

To motivate people to recycle, incentives must be provided. The most obvious type of incentive is financial. But other incentives include peer pressure, environmental awareness, and community pride.

ISSUE: What are funding options?

Recycling is not self supporting. Studies and actual pilot recycling programs show that the collection of recyclable materials is not a profitable enterprise because of the low value of the materials collected. Refer to Section 3.4.2 for local buy-back prices. In order to establish and maintain a recycling program large enough to have an impact on the waste stream a funding commitment must be made. Funding can occur through several means.

The County can impose a recycling surcharge to its tipping fee at the solid waste facility. The money generated through this surcharge can be diverted to support recycling programs throughout the County. This system has the advantage of flexibility. If increased funding of recycling programs is necessary, the surcharge can be increased. Or if recycling becomes more profitable and less County funding is necessary, then the surcharge can be reduced accordingly or profits can be donated to non-profit organizations.

Another option is for the County to contract for collection of recyclables. Counties can select collection companies, set rates and regulate their own collection of recyclables. One way of implementing this option would be to assign the refuse collection company the task of recyclable materials collection. The cost of the service could then be passed through to the public via their garbage bills.

Lastly, funding for design and implementation of recycling programs is available from Ecology. Grant funding may cover program planning, design and implementation costs.

ISSUE: **How can progress be measured?**

The "classic" alternatives for recycling programs assume recyclables are source separated by the resident. These alternatives include: drop boxes, buy-back centers, and curbside collection. Each is discussed below.

Progress for any program is an important element for measurement. Not only for the program as a whole but for given regions and individual facilities. In this way adjustment and refinement of the programs can be made. Measurement of quantities collected and processed would be included for all alternatives.

Drop Boxes. Drop boxes are the most common method of recycling in the United States today. Commercial areas are typical sites for drop boxes that accept newsprint, glass, cans and occasionally yard waste and plastics. These facilities generally provide no monetary benefit directly to the resident. Some proceeds may result from the sale of recyclables to larger markets. However, these proceeds are not expected to cover the cost of collection. Proceeds are used to cover a portion of the collection cost or they could be donated to non-profit groups.

Many factors contribute to the success of drop box recycling activity. The following factors must be considered in maintaining a drop box program:

- Who will provide the service, and how will it be paid for.
- Where should the boxes be located, such that they are convenient and secure.
- What materials will be accepted and how will the material be segregated.
- How will boxes be protected against vandalism and theft.
- The facility must be attractive, maintained and accessible by vehicle.
- Residents must be educated to locations of drop boxes and proper recycling procedures.

Each factor listed above must be considered as well as the costs vs. benefits of the program.

Drop box locations must be convenient and in areas with high traffic and visibility. This not only encourages participation but discourages vandalism and trash disposal in the drop boxes. Indications are that a drop box system can be very effective in increasing recycling if an adequate number of boxes are provided and are located at convenient locations. Drop boxes have been installed at the Mason County solid waste facility, transfer stations and other locations based on

population density, distance to the nearest drop box station and existing traffic. Such a drop box system would be geared toward County residents since City residents have mandatory collection and would be less likely to frequent the solid waste facility and transfer stations.

In addition to transfer stations, other good locations for drop boxes include grocery stores, shopping centers, fire and police stations. Locations should be readily accessible, lighted and kept free from debris. The drop boxes should be conspicuously painted and kept in good condition.

Drop box stations can be made to accept as many different materials as desired. Instructions are posted on the drop box explaining how to prepare materials prior to their deposit. At regular intervals, drop boxes are emptied, and the area around the box cleaned to maintain a neat and orderly appearance.

Equipment used to haul boxes or recyclables is costly and may range from $70,000 to $120,000.

The cost of hauling equipment has been mitigated by contracting with a private hauler for recyclable material collection and transport.

Buy Back Center. Materials are separated by homeowners and businesses and delivered to the buy back center. Based on the capacity of the existing buy-back center, if it is economically feasible for them to do so, EFI can absorb a significant increase in the supply of recyclable materials from Mason County.

However buy-back centers are generally a relatively ineffective method for reducing the waste stream because of the low level of convenience and resulting low participation rate. Because the centers are attended, they are more costly to operate than drop off stations. This added expense generally leads to one centrally located facility.

Residents located at some distance from the facility may not be able to cover the cost of transportation to the center with revenues from recyclables. However, some people like to see some compensation for their trouble and for these people buy back centers serve a useful function.

Curbside Collection. In the City of Shelton, curbside collection of recyclables is currently performed by a separate contractor. Recyclable materials are separated by the homeowner and placed at the curb in bins separate from other household refuse. The material is collected at regular advertised intervals by a collection truck specially designed for the purpose. The material is then delivered to a processing center.

The revenue generated by a curbside collection program will not cover program costs. To support such a program, residents are required to pay a fixed fee per household for curbside collection service.

Mandatory versus Voluntary Recycling. Recycling program success is measured, in part, by the participation rate, or the percentage of households that participate in the program. Mandatory programs have generally higher participation rates than voluntary programs. A typical participation rate for a mandatory program may be 75% and for a voluntary program, 30%. However some voluntary programs experience 50% or more participation. The County could possibly ban recyclable materials from the waste stream. This would require the haulers to make rules about recyclable material in the garbage. Alternatively the County can pass an ordinance requiring source separation of recyclables and work with the garbage haulers to enforce the ordinance.

Enforcement of mandatory programs can be difficult. Typically the hauler enforces the program by noting when cans contain recyclable materials. A warning is sent out for first violations, and fines or extra fees can be penalties for continued violations.

Voluntary recycling programs require effort to maintain high participation rates. The key to a successful voluntary recycling program is public education and promotion. Generally people are willing to recycle if it is convenient. Increasing people's knowledge of recycling methods and making sure they know how and where to take recyclables can help keep the participation rate high. Promotion of recycling must be a continual process.

Lack of enforcement or promotion can lead to failure of the program whether a recycling program is mandatory or voluntary. In some communities with mandatory recycling, participation rates have fallen below 30% because of lack of enforcement. The results of the pilot curbside program in Shelton bear out the importance of continual program promotion. The initially high rate of participation decreased significantly over time without promotion. Refer to section 3.5.1 for discussion of Existing Conditions.

Work with Non-Profit Organizations. Non profit organizations such as Boy Scouts, Lions, Kiwanis, VFW, and Churches routinely conduct recycling drives to raise money. The County can take advantage of this by recruiting members of these organizations to assist in recycling projects. Currently, cooperative agreements exist between the County and organizations which collect and sell material to fund community and scholarship programs. The County can assist this effort in many ways including education and information.

3.5.4 Recommendations

In order to meet the goal of increased recycling in Mason County, the existing recycling framework must be enhanced and promoted. To be successful, expanded recycling programs will require attention and support from local government.

Discussion with County and City employees indicate a continued interest and commitment to recycling programs. This interest was echoed by the members of the SWAC. Public education continues to be seen as a necessary element for successful program maintenance.

Existing programs such as curbside service in Shelton, drop boxes throughout the County, and local buy-back center are viewed as important elements of the recycling system.

Recommendation 3.7. Current interlocal agreement between the City and County should be maintained to control program costs and continue program coordination.

Recommendation 3.8. Public Education should continue to be a primary element of program maintenance in the City and County. Education associated with recycling programs should be focused on improving and expanding participation as well as generating feedback from the public.

Recommendation 3.9. Grant funding for recycling programs should be sought to supplement County funding and support new staff and programs. Additional funding options should be explored.

Recommendation 3.10. Additional drop box stations should be established as needed. Other locations for future consideration should include: shopping areas, fire and police stations, and Skokomish tribal lands. The County should encourage program participation from the private sector.

Recommendation 3.11. The City of Shelton should evaluate its curbside program to establish program effectiveness and direction for future expansion. The City should encourage program participation from the private sector.

Recommendation 3.12. The County should encourage market development for designated and potentially designated recyclable materials.

Mason County staff recognize that the anticipated 34.68% recovery rate does not meet the state's goal of 50%. It is the County's intention to evaluate program cost and effectiveness and modify existing program as feasible. The intent of any additional programs would be to increase recycling rates toward the state's 50% goal.

The guidelines include five criteria for evaluation of the recycling program. Each is discussed here in terms of the current and recommended program.

a) Household collection; or a fixed recycling center for every 5,000 to 10,000 population at convenient locations including solid waste facilities. Under recommendation 3.10, the County has established drop box stations at the solid waste facilities and other locations throughout the County. Given the County population of 35,000 to 40,000, there is a recycling center for every 3,200 to 3,700 people. The recommendation further includes consideration of additional centers to increase convenience.

b) Materials collected consistent with plan list or process to develop the list. All materials may be collected through recommended methods.

c) Consistent with local plan goals. The recommended program is consistent with the stated goals of supporting existing recyclers and increasing waste recycling in the County. The plan is also consistent with interim growth management planning within the County.

d) Waste diversion potential from program is maximized based on local waste stream characteristics and markets. Based on markets and existing recycled materials the list of designated recyclables has included all materials currently accepted at the local buy-back center. Quantities of recyclables collected could potentially be increased with increased use of curbside collection programs. This type program will continue to be evaluated in Shelton and may be expanded into other areas in the future.

e) Designed to achieve performance which is comparable to existing programs. The recommended program is designed to strengthen existing programs so that performance can exceed existing programs.

3.6 NONRESIDENTIAL WASTE STREAM MONITORING/COMMERCIAL RECYCLING PROGRAMS

The nonresidential waste stream in Mason County is comprised of waste from small businesses, restaurants and grocery stores, and waste from larger industry. The majority of waste from small businesses is collected by commercial collection companies and hauled to the Mason County solid waste facility. Waste generated by other industry may be self-hauled to the Mason County solid waste facility or handled through company owned and operated special waste landfills (i.e. Simpson Timber Company).

This section will focus on nonresidential waste hauled to the County solid waste facility. Special waste streams such as industrial waste are addressed in Chapter 9A of this document.

3.6.1 Nonresidential Waste Stream Monitoring

Nonresidential MSW is hauled by two collection companies in the County: Mason County Garbage and Rural Garbage Service (LeMay Inc.). Quantities of nonresidential MSW collected by each of the collection companies in 1996 is listed in Table 3.4A. Each of the services maintains records for nonresidential waste, thereby allowing ongoing monitoring of quantities collected.

Collection of nonresidential MSW in the City of Shelton is performed by the City. The City collects combined commercial and residential waste making it impossible to identify quantities of commercial waste from the total waste stream. However, a tally of the number of accounts the City serves and the bin size provides some indication of the yardage collected. As of September 1997, the City had 377 commercial accounts with quantities of refuse collected per week ranging from 90 to 1200 gallons.

In addition to collection services, some businesses haul their waste directly to the solid waste facility. Mason County has accounts with over 50 of these haulers. The largest of these accounts is with the Simpson Timber Company which hauls mixed wood waste and refuse to the solid waste facility.

Table 3.4A 1996 NON-RESIDENTIAL WASTE QUANTITIES

Collected By	Amount Collected	Description
City of Shelton	26,063.31 cy*	Compacted
Mason Co. Garbage	1,784.23 tons	Loose
Rural Garbage Service	5,515.20 tons	Compacted
Simpson	5,240 cy	Loose

* City of Shelton quantities based on number of accounts multiplied by refuse container capacity.

Monitoring of non-residential waste in the unincorporated County will be conducted annually. To monitor this waste stream the County would contact collection companies to obtain estimated quantities of nonresidential waste hauled. In some cases, the County may have to enter into an interlocal agreement with Ecology in order to obtain this information. In addition, the County maintains records of waste disposed by individual companies. These accounts would be included in the tabulation if they exceed 2000 cy (loose). Currently Simpson is the only account which exceeds this level and would be included in the tabulation. Other companies would be added as their waste stream becomes significant.

The City of Shelton nonresidential waste stream would be annually monitored through the number of accounts and size of refuse container used. While this method would be too rough to indicate effects of waste reduction or recycling, it could indicate growing or shrinking levels of business within the City limits.

3.6.2 Commercial Recycling Programs

Currently the County and City of Shelton have no plans to initiate a recycling program for nonresidential waste generators beyond those education programs described in Section 3.2 and 3.8. However both collection companies in Mason County are currently providing recycling opportunities to commercial customers.

EFI, Mason County Garbage, Pacific Disposal currently make up the list of recyclers and haulers who now offer, or could potentially offer, recycling services to the non-residential sector in Mason County. Mason County could establish a list of such services and make it available to businesses and industry. The availability of this list could be promoted through the commercial education process. The list would also be promoted as a service to recyclers to inform City and County businesses regarding the availability of recycling services. By providing such a service, recyclers would be encouraged to inform the County of their service, thereby updating the list.

3.6.3 Recommendations

The following recommendations were generated from discussion in the previous section.

Recommendation 3.13. The County and City of Shelton should continue to perform an annual tabulation of the source and quantities of nonresidential waste generated in Mason County.

Recommendation 3.14. The County and City of Shelton should continue to support and encourage private efforts to collect recyclables from non-residential sources. A list of non-residential recycling services should be compiled, updated and be made available to County and City businesses and industry.

3.7 YARD WASTE COLLECTION PROGRAMS

Yard waste is one of the potentially recyclable materials as identified in Section 3.4. Yard waste consists of grass, leaves and branches but does not include stumps. This section of the plan will discuss the feasibility of potential yard waste composting programs as well as collection methods for the material.

3.7.1 Existing Conditions

Currently yard waste is not collected for compost in Mason County. Conversations with County employees indicate that yard waste continues to be a relatively small segment of the total waste stream. This is attributed to the rural nature of the County. Some residents may be composting material on-site or dumping yard waste in remote areas of the County. It is estimated that up to 20% of residents maybe doing some form of backyard composting.

The County also indicates that the yard waste received contains a high proportion of branches and other material which would require chipping prior to composting.

3.7.2 Needs and Opportunities

Although yard waste is an easily identifiable material with a local benefit once composted it was included as a potential recyclable because of the unresolved issues discussed in Section 3.4.1. Should the County elect to proceed with a compost program the following needs would have to be met.

- It is a new program in the County and would require organization, education and promotion.
- Composting facilities would be required.
- Markets for the composted material would be required.

3.7.3 Alternatives

Waste composting can be an effective tool in reducing the solid waste stream. Programs include both backyard composting (discussed in Section 3.2) and larger scale county-wide programs.

Organization, Education and Promotion. Much of the market development strategy could be implemented through educational programs. Residents could be informed of the compost program, the types of waste accepted, the availability of the finished compost and locations where compost could be obtained. Mailings and media opportunities could be used to distribute this information.

Private individuals could be encouraged to separate yard waste through rate incentives. For example, the compost operator could accept yard waste free of charge, or charge less than a transfer station or solid waste facility for disposal. Alternatively, individuals who separate their yard waste from their garbage could receive a credit slip that entitles them to free or discounted compost. Local jurisdictions could also issue a "diversion credit" based on the estimated value of diverting a unit of waste from the solid waste facility. These diversion credits could be redeemed for cash or used to discount monthly refuse collection fees.

A disposal ban is an additional method of increasing the level of recycling through yard waste composting. A disposal ban would prohibit yard waste from being delivered to the transfer stations or solid waste facility. A flow control ordinance could require that all yard waste must be delivered to designated composting facilities.

Facility Alternatives. The available techniques for yard waste composting can be classed in three groups - minimum, low-level and high level technology. The site requirements, length of processing time, labor and machinery demands, and costs are different for each technology level, but the end product is essentially the same. The following is a description of the three basic technologies for composting yard waste:

- **Minimal Technology**: In this technology, yard waste is formed into long piles (windrows) about 12 ft high and 24 ft wide. The piles are turned infrequently, perhaps once every 2-3 months. Without frequent turning the piles become anaerobic, therefore decomposition is slow, taking up to 18 months to produce a ready-to-use material.

- **Low Level Technology**: This method produces compost more rapidly than the minimum technology. The yard waste is initially formed into smaller windrows, and water is added to achieve a moisture content of 50%. The windrows are combined into larger piles after the first burst of microbial activity, and periodically turned. The compost should be ready for use in eight to twelve months. More frequent turning can be employed to accelerate the compost process.

- **High-Level Technology**: This method is designed to achieve complete composting within 6 months. It involves forced aeration of the windrows during the first stage of composting by temperature controlled blowers. The piles are then turned mechanically to maintain a high rate of composting. A nitrogen source may be added to increase decomposition. The final product may be screened to produce a uniform particle size, which can improve marketability.

Site requirements for yard waste composting depend upon the amount of waste processed and the degree of technology. In general, the longer it takes for yard waste to decompose, the more land area needed to accommodate equal amount of material. A moderate program in Mason County could utilize existing equipment and staff for turning windrows and require addition of a chipper ranging from $50,000 to $150,000.

In addition, new regulations could require liner and leachate collection and treatment systems further adding to the cost of a program. However, if implemented together with a solid waste landfill, treatment costs could be shared. Under current regulations composting could be moderately expensive, but if successful could significantly reduce the volume of waste requiring landfilling. A composting operation in Mason County could range from $20 to $40 per ton to construct and operate in addition to purchase of a chipper or tub grinder. The Mason County Department of Public Works currently owns a chipper that could be used for small composting events but is inadequate for a County compost facility.

Either the County or a private company could implement a yard waste program. Alternatively, a regional processing operation could be developed with neighboring counties.

The alternatives for yard waste collection include establishing a drop-off system or implementing separate curbside collection. In a drop-off system, residents would take bagged or loose yard waste directly to a composting facility, existing solid waste facilities or sites set up expressly to collect yard waste.

Currently transfer stations do not accept yard materials such as branches because of their light, bulky nature. Collection of these materials in drop boxes may be most efficient if the material is chipped prior to transport. However, because of the fire hazard, caution should be used when collecting yard wastes in drop boxes.

The drop-off system would be similar to the recommended collection methods for other types of recyclables in the County. This type system would add approximately $3-5/ton to the cost of the compost operation, assuming vehicles are already available through other recycling programs. Added costs would cover drop boxes and their collection.

A separate curbside system would collect yard waste directly from the waste generator. A curbside program would be more efficient than the drop-off system, but at much greater cost. The Best Management Practices, Vol III estimates the cost to collect yard waste at curbside in an urban area at $60/ton. Costs expected in Mason County could be greater than this due to reduced quantities of yard waste collected. Costs would also increase if additional equipment were required.

Market Development. Markets do exist for composted yard waste, although they require extensive effort to develop. Any such program must include product testing, demonstration projects, and intensive marketing campaigns. This is frequently beyond the capabilities of a small governmental staff.

Development of markets for the composted product will be key in the success of the compost project. Some potential users of the finished compost product which could be targeted in market development include:

- Department of Community Development for maintenance of landfill cover
- Public agencies for park maintenance, road and highway projects
- Landscaping businesses and nurseries
- Homeowners
- Businesses involved in land reclamation projects.

The quality of the compost and the size of the local or regional market will determine the best marketing strategy. Businesses targeted as potential markets could receive "in-person" visits to promote the composted material. Some communities have found that, at least in the early stages of yard waste composting, it was not possible to charge for the product, and so revenues were not generated. However, yard waste composting could still be cost effective if collection and processing costs are less than disposal costs.

3.7.4 Evaluation

If a drop box system were implemented, cost for yard waste collection and transport would range between $3 and $5/ton. For curbside collection, collection and transport would be in the range of $60-$100/ton. Processing, assuming low-technology with an added grinder would amount to $20-$40/ton. Total expected cost for the yard waste system would be expected to range from $23-$45/ton for drop boxes and $80-$140/ton for curbside. For comparison purposes, current landfill tip fees are $63 per ton.

Collection of yard waste through drop boxes would be cost effective for the County relative to the landfill tip fee. Use of drop boxes would be similar to the recommended methods for recyclable collection. In addition a significant quantity of waste in the rural County is self-hauled to transfer stations and the solid waste facility. Receptacles for yard waste at these solid waste facilities would best serve these customers.

Issues remain for the collection of yard waste through drop boxes. Attention should be given to avoiding a fire hazard. Also drop boxes with yard waste may not be efficient to haul prior to chipping due to the bulky nature of some materials. A mobile chipper could be used so that larger more efficient loads could be hauled to the composting location. The County may wish to limit tipping locations for yard waste.

Curbside collection of yard waste could be tested in pilot curbside recyclable collection programs. However the cost of such an operation when projected over the expected small quantity collected would be very high. In addition, no market exists for composted yard waste. This market would have to be developed and may simply consist of a giveaway program.

3.7.5 Recommendations

Although the SWAC and County staff supported development of a yard waste compost program, concern was expressed over remaining issues and the small quantities of yard waste brought to the landfill. Also a chipper was identified as necessary for the program to utilize a larger portion of the yard waste. The County should proceed with steps outlined in Section 3.4.1 before a decision

to implement yard waste composting is made. If a yard waste program is implemented, collection of yard waste through drop boxes was preferred over curbside collection.

> **Recommendation 3.15.** A yard waste compost program should be evaluated. If a program is feasible, collection of yard waste should be through drop boxes. If unfeasible, an educational program promoting small scale on-site composting should be implemented. Additional opportunities and methods for collection and transfer should be evaluated.

The five criteria for evaluation of the recycling program are also used to evaluate the yard waste program. Each is discussed here in terms of the recommended action. However, since yard waste composting is under consideration the following evaluation assumes a potential program.

a) Household collection; or a fixed recycling center for every 5,000 to 10,000 population at convenient locations including solid waste facilities. The minimum collection of yard waste at transfer stations and the landfill would satisfy this criteria.

b) All residents in the applicable urban and rural areas eligible to participate. The minimum program of drop-boxes would allow all residents to participate.

c) Materials collected consistent with plan list or process to develop the list. Yard waste is included as a potential recyclable.

d) Consistent with local plan goals. The recommended program would be consistent with the stated goal of increasing waste recycling in the County. The plan is also consistent with interim growth management planning within the County.

e) Waste diversion potential from program is maximized based on local waste stream characteristics and markets. The County may initiate a program after further evaluation. If implemented, a yard waste program could maximize removal of yard waste from self-haul waste streams. Additional programs could then be evaluated to increase participation.

f) Designed to achieve performance which is comparable to existing programs. Implementation of a yard waste program would exceed existing programs.

3.8 EDUCATION PROGRAMS

Education programs will be critical to the success of the waste reduction and recycling program in Mason County. As discussed in Section 3.2 of this chapter, education was identified as the primary priority of the waste reduction program. Recommendations in that chapter involved education programs in schools, adult education and programs aimed at businesses.

Currently the "A-Way with Waste" program is used in Shelton schools.

A significant effort will be required to devise and implement an education program in Mason County. This section will expand on previous education discussion and discuss target audiences, techniques, program costs and evaluation.

The following objectives were established specifically for education programs:

- To educate and inform the public regarding waste reduction techniques.
- To educate and inform the public regarding existing and planned methods for recycling.
- To develop a sense of environmental responsibility in the public.
- To inform the public regarding community progress and to gain feedback on agency progress or needs.

3.8.1 Target Audiences

To increase the effectiveness of a particular educational technique it can be geared toward a specific audience. For example, material for self-haulers could discuss new programs available at the solid waste facilities. Material for collection customers could focus on reduced rates for: less frequent pickup, smaller cans or fewer cans along with general recycling facility information.

The following list contains some of the different groups which could be targeted in an education program:

- City collection customers*
- Private collection company customers*
- Self-haulers*
- Children
- Gardeners
- Apartment dwellers
- Businesses/Industry*
- Christmas Tree Industry
- Loggers
- Equipment Owners, Operators and Mechanics
- Construction Industry

* Primary Target Audiences

Methods to target a specific group vary. In some instances vehicles such as routine mailings already exist, while methods to target other audiences would have to be developed.

Residents of the City of Shelton are required to subscribe to refuse and recycling collection. This group could continue to be reached through routine utility billings.

Private collection company customers could be reached in a similar manner through the refuse collection company. However such a program would require the agreement, support and participation of the collection company.

Many County residents do not subscribe to refuse collection and self-haul their waste to the transfer stations or the solid waste facility. While this group could not be reached through an existing mailing, they could be effectively reached through materials distributed at the solid waste facility.

A program for children is currently in practice in Shelton schools and could be expanded throughout the County. Parents are also indirectly reached through their children.

Other groups could be also be reached. Materials for gardeners could be made available at nurseries, hardware stores or garden clubs. Apartment dwellers could be targeted through apartment managers or owners. Businesses and industry could be targeted through the Chamber of Commerce or the Economic Development Council.

As a group, adults could be targeted through community groups such as Kiwanis, Lions and Church groups. Mass mailings could also be used at some expense.

3.8.2 Information and Education Techniques

A multitude of options exist for public information and education campaigns. The cost and effectiveness of the programs vary widely. Many of the techniques have little cost for services or materials. However all would require a level of effort from the County or City to pursue media coverage, coordinate others and develop flyers, talks, exhibits and other materials. An aggressive education program would require a minimum of one part-time staff person to be successful.

Funding for education programs could be included as part of the recycling program. Grants have been secured which will cover education and promotion in addition to recycling equipment, however, continued grant funding for these activities is uncertain. The cost of an education program could also be included in the solid waste facility tip fee.

Responsibility for solid waste programs including waste reduction and recycling programs was shifted from the Department of Public Works to the Department of Community Development in 1997. The Director has specific responsibility for implementing solid waste related programs including education programs in the future. Refer to Chapter 8A for further discussion.

The following is a list of promotional techniques currently used for Mason County's program.

TV and Radio - Radio and television announcements are effective in reaching a large audience. Currently Ecology is using TV advertisements to support recycling. In addition, recycling programs in populated areas such as King County and Seattle are generating media interest. These programs also serve to inform Mason County residents at no cost to the County. TV coverage

specific to Mason County would be very expensive, an alternative could be to advertise over a local cable channel.

Radio is an effective tool in Mason County. Recycling information could be presented in the form of public service announcements, or interviews and broadcast over the local radio station at no cost. Paid advertisements could also be used at greater cost.

Direct Mailings - Direct mailings are a flexible form of public information. While mass mailings may be expensive and limited in effectiveness, mailings to specific target groups may increase the effectiveness and reduce the cost of this option. Mailings take advantage of monthly utility billings to reduce cost. Mailings in the City and County are coordinated with refuse collection bills or utility bills.

Information presented in mailings could cover a series of topics. Recycling facilities, preparation of materials for recycling, purchasing habits to support waste reduction, backyard composting, public "feedback" and recycling program progress are all topics which could be included in the direct mailings.

Presentations - Presentations are used to target volunteer groups, schools or church groups interested in recycling programs. Presentations are made to those who request them. Also slide shows, videos, and displays are made available to public and volunteer groups for presentations.

Exhibits - Exhibits currently used are mobile. A permanent exhibit could be set up at public buildings in the form of a demonstration project. A permanent exhibit could also carry a tally of quantities collected for recycling and be displayed on a sign or billboard at drop box stations. Materials necessary to develop an exhibit would have a minimal cost. Like other education methods the major cost would be in staff time to develop, set up and maintain the exhibit.

Door to door Canvassers - Canvassers would be an intensive method of contacting the public and informing them about recycling. This method might be best used to target the downtown Shelton area. Volunteers could be used to reduce the cost of canvassing.

School Programs - School programs consist of classroom educational materials such as the "A-Way with Waste" program currently used. The "A-Way with Waste" program can be obtained free from Ecology, however this program requires effort to coordinate and maintain.

Contests/Awards/Prizes - Contests, awards and prizes could be geared toward schools, public service groups or individuals. School award programs could be geared towards entire schools, individual classrooms or individual students. Ecology and Weyerhaeuser both implement an awards program for school recycling as discussed in Section 3.2.3.

Awards programs could also acknowledge community leaders or innovators in recycling. These awards could be given by the mayor or commissioners to businesses, agencies or individuals who make a significant contribution in recycling or waste reduction. Awards could take the form of plaques or certificates.

All contests or awards could be implemented at little cost.

Signs - Signs could consist of permanent notices at recycling facilities and provide information about methods for recycling and waste reduction. Signs could also keep a tally of material recycled.

Newspaper - Local newspapers are used for advertisements, interviews, inserts and news stories that pertain to recycling and waste reduction. Newspapers are informed regularly of developments in the recycling program to generate ongoing interest in the community. Development of recycling issues as "news topics" rather than advertisements would have little to no cost to the County or City.

Public involvement forums - Public meetings, advisory committee meetings, public workshops are all forums to involve the public in a community project. These may be used in Mason County, however greater success may be achieved if these forums are built around the meetings of existing public or volunteer groups.

Public Opinion Surveys - Public opinion surveys in the form of flyers could be used as part of the waste reduction and recycling evaluation program. Surveys could be mailed or distributed at solid waste facilities and request feedback on programs. Opinion surveys could be routinely circulated to obtain periodic input from the public.

Feedback could also be obtained through telephone surveys. Telephone surveys would be useful to obtain a random sampling of residents. The number of responses to a telephone survey could be controlled whereas response to flyers may be limited.

Flyers and surveys would be a method of obtaining direct feedback on the waste reduction, recycling and education program. Indirect evaluation of the programs could be conducted by examining the quantities of recyclables collected at each drop box location and the size of the disposed waste stream. A tabulation of collected recyclables could be made on a monthly, quarterly or annual basis.

3.8.3 Evaluation

To be effective a public education and information program will require ongoing coordination between public agencies, schools, businesses, and the general public. Education programs have been effectively implemented by a staff person that can dedicate a significant portion of time to the effort.

Difficulties involved with public education programs include the diversity of individuals targeted to receive the information; the multiple programs that compete for public attention, and the possibly high cost of an effective program. The effectiveness of education programs is also difficult to measure and hard to evaluate in terms of cost effectiveness.

As listed in Section 3.8.2 there are many options for education programs. Ongoing evaluation of the education program continues to be necessary to ensure that the most effective programs are being used so that funds are not wasted.

Indirect evaluation is conducted through observation of quantities collected in each drop box station, and the volume of the waste stream. This method would provide valuable information but is difficult to use to evaluate specific education programs.

3.8.4 Recommendations

Recommendations addressing education have been included in previous sections of this chapter. Recommendation 3.1 set education as a high priority in Mason County and the City of Shelton. It was also recommended that support be given to the existing school program and that a form of adult education be implemented. Recommendation 3.8 stated that public education should be included in each new recycling program expansion.

After discussion of the methods of education available, the SWAC reiterated their support of public education as a high priority. It was generally felt that programs should be implemented as practical and as funding and resources allow.

> **Recommendation 3.16.** Continue public information and education program should be devised to target a broad spectrum of the City and County population. Specific attention should continue to be devoted to school programs.
>
> **Recommendation 3.17.** Evaluation of the waste reduction, recycling and education programs should continue to be a routine part of the public information and education program. Evaluation should include public feedback, a tally of the performance of individual drop box stations, and a record of the waste stream.

3.9 PROCESSING OF MIXED WASTE FOR RECYCLABLES

Once source separation of recyclables has been performed and waste is collected and disposed at the solid waste facility; further separation of recyclables and other items may occur through mixed waste processing operations. These operations may be as formal as a mechanized mixed waste processing system or as informal as a manual "dump and pick" operation. Items to be targeted may also vary. Waste may be processed to separate almost all recyclables with the remainder being formed into a refuse derived fuel. Alternatively, a limited number of items may be targeted for manual removal.

Interest was shown by the SWAC for a limited dump and pick operation. This operation would target discarded materials which could be resold to the public in a type of permanent "rummage sale". Materials such as discarded televisions, bicycles, tools and lumber scraps could be removed from the waste stream, by solid waste facility personnel, for resale or giveaway. No salvaging by the public would be allowed.

Issues involved in implementing this type program include the following:

Staffing: The operation would potentially require two staff persons. One employee could be required to staff the "resale area" and another could be required to remove materials from the waste stream. Depending on the hours of operation, the positions could utilize existing staff or part-time staff.

Location: A central location would be required for the operation. If the "resale" area were made part of the existing solid waste site, it would have to be separate from current solid waste activities. Consideration could be given to a fenced area and a covered shelter for materials or staff.

Proceeds: Materials removed from the waste stream may be given away or sold at a low cost. If materials are sold, consideration should be given to the destination of the proceeds. Monies collected through this program may be used to offset other recycling program costs or may be donated to non-profit groups in the County. Proceeds could also be used to promote the resale program.

Market: Removal of materials for resale would be a new program in Mason County and no information on the likely demand or market for these materials exists. However, a pilot program could be initiated to test the quantities of materials that could be removed and their resale success.

Liability: Issues of liability and associated costs make it difficult to establish a dump and pick operation at the solid waste facility. A limited program is in place at this location and the transfer stations that allow people to set aside useable items for reuse at no charge.

> **Recommendation 3.18.** The County should consider implementation of a limited dump and pick operation at the solid waste facility.

3.10 IMPLEMENTATION

An implementation schedule (Table 3.5A) and planning level budget (Table 3.6A) is developed in this section for topics discussed in previous sections of this chapter.

Table 3.5A IMPLEMENTATION SCHEDULE - WASTE REDUCTION AND RECYCLING

1998-2003	The County and City continue to explore funding opportunities in coordination with private recyclers for both drop box and curbside programs. Draft and adopt waste reduction resolutions. Coordination of teachers and resources to enhance and expand on-going school reduction and recycling program need to be continued by Recycling Coordinator on behalf of both the City and County. Coordination with City, County and private recyclers to expand current recycling program. Public information and education programs continue to be developed and implemented. A yard waste compost program may be developed and implemented. Drop boxes could be established at the landfill and transfer stations for collection. A yard waste compost program may be developed and implemented. Drop boxes could be established at the solid waste facility and drop box stations for collection. Expand and enhance current on-site composting program. Expansion of a City/County waste reduction program for use in public offices. Continue the waste reduction, recycling and education programs annually and "fine tune" programs to increase participation and effectiveness. The yard waste compost program may be evaluated. Methods of obtaining increased quantities of yard waste, markets or better quality compost could be considered. Additional programs necessary to meet the 50% state recycling goal are investigated.

Table 3.6A IMPLEMENTATION COST SUMMARY*

• City/County Recycling Coordinator	$30-40,000
• Coordination with private recyclers and development of grant application.	$5,000 to $10,000
• Development and adoption of waste reduction resolutions.	Little to No Cost
• Coordination and expansion of on-going school waste reduction and recycling program.	$5,000 to $10,000
• Coordination with haulers to implement County waste collection rate structure changes.	$3,000 to $6,000
• Coordinate and implement new recycling and waste reduction programs.	$50-300,000 $10-30,000 Annually
• Coordinate and implement public information and education programs.	$30-60,000 Annually
• Implement County yard waste compost program.	$100-250,000 $20-50,000 Annually
• Develop in-house waste reduction program.	$3,000-$6,000 Annually
• Evaluation of waste reduction, recycling, education and compost programs.	$10-20,000 Annually

* Costs indicated have been developed for planning purposes only.

MASON COUNTY SOLID WASTE MANAGEMENT PLAN
CHAPTER 4A ENERGY RECOVERY/INCINERATION

4.1 INTRODUCTION

Regulations require stringent design of landfills. Costs have escalated to the point where it has become almost impossible to construct one that meets acceptable standards. In 1992 the rising costs and the increased difficulty in locating new landfill sites made volume reduction techniques such as energy recovery/ incineration viable options in some cases.

Energy Recovery/Incineration is also an element in solid waste management under state priorities. The 1989 revisions to RCW 70.95 listed energy recovery and incineration of waste at the same priority as landfilling. Higher priority is given to energy recovery and landfilling of separated waste than of mixed waste.

This chapter looks at the feasibility of burning garbage to produce energy (energy recovery) in Mason County. It describes the technology available for energy recovery systems, and makes recommendations on implementation of energy recovery in the short and long term. This chapter recognizes the priority of energy recovery and incineration of separated waste over mixed waste:

- To consider energy recovery as required in the State planning guidelines.
- Use energy recovery where feasible and cost effective to provide a balanced solid waste management system.

4.2 EXISTING PRACTICES

To date, no consideration has been given to energy recovery as a tool in solid waste management in Mason County. There are no existing plans, programs or facilities for utilizing municipal solid waste energy recovery in the County.

4.3 NEEDS AND OPPORTUNITIES

The purpose of this section is to evaluate the solid waste system based on energy recovery goals established in the beginning of this chapter. Through this evaluation, needs for the system will be generated as well as any issues that require resolution or policy decisions.

GOAL: **To consider energy recovery as required in the State planning guidelines.**

Energy recovery is one possible component of an integrated solid waste system. As such it will be evaluated to determine whether any economic or disposal benefits can be realized through an energy recovery program in Mason County.

GOAL: **Use energy recovery where feasible and cost effective to provide a balanced solid waste management system.**

Mason County currently has a low disposal rate in relation to neighboring counties. While cost of disposal will rise in the future, it is unlikely that cost increases associated with the transporting of solid waste will make energy recovery cost efficient on a large scale.

However, to determine the feasibility of energy recovery alternatives, background information will be provided in this section regarding:

- Criteria for determining future Waste to Energy needs
- The Impact of Energy Recovery on Waste Reduction and Recycling
- The Impact of Energy Recovery on Landfilling
- A Summary of Combustion Technologies

Energy recovery alternatives particularly suited to Mason County are discussed in Section 4.4 of this chapter.

4.3.1 Criteria for Determining Future Energy Recovery Needs

Energy Recovery is capital intensive and the need for it must be balanced against competing programs and resources. The following considerations will determine the feasibility of energy recovery in Mason County.

- Evaluation of the costs, environmental impacts, and public acceptability of landfill disposal versus energy recovery.
- The need to provide an environmentally safe, cost effective and reliable disposal system.
- The desirability of recovering an energy source that is otherwise not available with conventional municipal waste disposal methods.
- The availability of a stable end user for the energy produced, whether steam, electricity, or hot water.
- The real and perceived desirability of energy recovery over other waste management tools by the citizens of Mason County.

Under existing legislation, energy recovery is no longer given higher priority than landfilling but is placed at the same priority. In considering energy recovery as a viable element of the solid waste management system, Mason County must consider the risks and issues associated with energy recovery.

4.3.2 Impacts of Energy Recovery on Waste Reduction and Recycling

The Federal Resource Conservation and Recovery Act (RCRA) states in part that,

> "...in determining the size of a waste-to-energy facility, adequate provision shall be given to the present and reasonably anticipated future needs of the recycling and resource recovery interests within the area encompassed by the planning process."

This statement means that waste reduction and recycling will reduce the growth rate of the waste stream, and this impact must be accounted for in sizing an energy recovery program.

Failure to account for waste reduction and recycling may result in oversizing a facility and having to operate it at less than optimum capacity. Or worse yet, require recycling levels be reduced so that an adequate waste stream can be provided to the energy recovery facility. The latter problem could occur if the County entered into an agreement with an operator of an energy recovery facility to deliver a minimum waste flow.

Recycling and waste reduction could also change the heat content of the waste. If a disproportionate amount of paper and cardboard recycling occurs the heat content may drop. If more yard waste, glass, and metal recycling occurs the heat content may increase. Studies have shown however, that the overall impact on the ability of the waste to serve as a fuel should be minimal. But this impact should be evaluated for each individual waste stream.

4.3.3 Impacts of Energy Recovery on Landfilling

Energy recovery can reduce reliance on landfilling by reducing the amount of waste that must be landfilled. Therefore, implementing energy recovery in Mason County could reduce the amount of waste exported. However, implementing energy recovery does not mean that landfills will be eliminated. An energy recovery facility does not operate 365 days per year. Periodic maintenance and repairs must be made which may remove the incinerator from operation approximately 20% of the time. More frequent shut down periods may be required during "start up". While the facility is shutdown the waste that would have been burned must be landfilled.

Additionally, some waste is not suitable for burning. This material, called bypass waste, consists of such items as noncombustible demolition material, appliances, and large tree stumps. This material will still require a landfill for disposal. But, with energy recovery the landfill will have reduced size requirements or will last longer. Therefore less area would be devoted to landfills

over the long run. Bypass waste is typically 15 to 20 percent of the capacity of the waste-to-energy facility depending on the waste stream composition.

Ash from an energy recovery facility must also be disposed. At the present time, ash cannot be co-disposed with MMSW. Therefore a separate ash fill (ash monofill) must be constructed. In the short term this would be a burden because more than one landfill would need to be sited and built. In the long term however, the total quantity of waste requiring disposal by landfill (including ash) would be reduced.

One additional consideration is recovery of energy and resources through incineration. There are many materials in the solid waste stream that have value either as recyclable or because of energy content. When this material is landfilled the resource is lost. Energy recovery in conjunction with recycling extracts some of the value.

4.3.4 Summary of Combustion Technology

This section presents a summary of combustion technology that is presently in use and can serve as a source of general information for use in discussing energy recovery options for the future. The following technologies will be discussed: Mass Burn Incineration, Refuse Derived Fuel Production and Incineration, Pyrolysis, and Ethanol Production.

Mass Burn Incineration. Mass-burn incinerators consume municipal solid waste (MSW) by burning it at very high temperatures, leaving a by-product of ash. Historically, there has been no preprocessing of wastes except to remove large items such as stumps and appliances. However, technologies are available to remove materials for recycling as well as materials such as metals that may cause ash contamination or toxic air emissions.

Waste brought to the facility is either stored in a large pit or loaded directly onto the furnace where it is tumbled over moving grates or through a rotating drum, advancing the MSW toward the ash pit. To produce useful energy from the incineration process, a boiler is installed either as an appendage to, or as an integral part of the furnace. A boiler is a pressurized system in which water is vaporized to steam by applying heat. The steam can be used for heating or to generate electricity.

There are two basic types of furnaces used in mass-burn plants: refractory lined incinerators and waterwall incinerators.

Refractory lined incinerators: A refractory furnace is so named because of a 6- to 8- inch-thick heat-resistant coating (refractory) that lines the combustion chamber. The attributes of a refractory lined furnace are its low rate of heat loss through the furnace walls, and its ability to maintain steady combustion temperatures when subjected to wide variations in fuel quality. This type of furnace is used when low BTU and high moisture content waste is the predominant fuel.

A refractory lined incinerator can use excess-air or controlled-air combustion processes.

- **Excess air incineration**: The low rate of heat transfer through refractory is considered a positive attribute, but it can also become problem if temperatures within the combustion chamber get too high. Ash produced in temperatures above 1800 degrees F, becomes slag, an undesirable by-product. To keep the hot face of the refractory below this temperature, air is allowed to enter the combustion chamber at a volume and rate significantly greater than that needed for combustion (excess air). An excess air facility of between 400 and 700 tons per year can cost from $80,000 to $100,000 per ton of capacity.

- **Controlled-air incineration**: Some smaller (modular) mass-burn units use a method called controlled air (starved air). The principal of controlled air incineration is to use two combustion chambers. In the first chamber less air is supplied for combustion to slow down gas velocities. The gas is then introduced slowly into the second chamber where excess air is supplied. This system allows for more complete combustion of particulate matter.

  Modular systems are prefabricated in a factory and the components are transported to the site for assembly via railroad cars or trucks. Modules can be combined to develop facilities that have up to a 500 ton per day capacity. Single modules range in size from less than 20 tons/day up to more than 125 tons per day.

  The cost of modular incineration is about $50,000 to $100,000 per ton of installed capacity. This is highly variable however, because of differences in manufacturers, site conditions, and energy markets. The systems can be designed for expansion so that capacity can grow as the waste stream grows.

Waterwall Incinerators: A waterwall incinerator is so named because the walls of the combustion chamber are lined with tubes containing water. Therefore, unlike the refractory furnaces, where the boiler is a separate unit, the boiler in the waterwall system is an integral part of the combustion chamber. The steam produced by these facilities can be a higher quality than that produced by the waste heat boilers used with refractory lined incinerators. Also, waterwall tube surfaces absorb more heat than a comparably sized refractory furnaces, thereby reducing temperatures in the combustion chamber. However, temperatures may still need to be reduced through the introduction of excess air.

Overall, the waterwall design provides a higher thermal efficiency than the refractory-lined design. A disadvantage of the waterwall furnace is that the entire unit must come off-line if the boiler breaks down. This results in less operation time or higher costs for redundant systems to guard against unscheduled downtime.

Mass-burn systems reduce the volume of the incinerated waste by about 90% and the weight by about 70-75% on a dry weight basis. The net volume savings to a landfill following cover and compaction is approximately 70-75%, including disposal of ash and bypass waste.

Refuse Derived Fuel. The principle of Refuse Derived Fuel (RDF) is that through processing, waste is converted to a more uniform, better burning fuel for use with a dedicated incinerator or for use in existing coal or wood fired incinerators.

The options available in the area of refuse derived fuel are:

- Produce solid pellets for sale to an existing incinerator/ market.
- Produce fluff RDF for sale to an existing incinerator/ market.
- Produce RDF for a dedicated fluidized bed combustor.
- Produce RDF for a dedicated Spreader Stoker furnace. (Spreader Stoker is a type of furnace commonly used for burning coal and wood).

RDF is the end product of what is a very extensive waste processing effort. Raw waste is fed into the processing facility. The waste is shredded and subjected to magnetic and eddy current processes to remove metals, then the waste is typically sorted into light and heavy fractions through an air separation process, and finally the material is screened to produce a uniform size. This process produces recyclable materials and residue to be landfilled in addition to the RDF. RDF is typically an undensified fluff or densified into compressed pellets.

The success of an RDF system is dependent on having a reliable user of the material produced. One method of assuring a user is to build an incinerator in conjunction with the RDF facility. RDF can be used to fuel mass burn incinerators as discussed above or fluidized bed combustion, a more suitable technology for RDF, can be used.

In a fluidized bed combustor an inert, non combustible high melting point material such as sand is used as a substitute for a grate to assist combustion in the furnace. Combustion air is admitted through the bed, agitating the bed constantly. As the combustion process proceeds, the lighter materials float to the top and are incinerated while the heavy materials burn, sink to the bottom, and exit the combustion chamber as ash residue.

The advantages of the fluidized bed are low environmental emissions and relative insensitivity to fuel quality. The disadvantages include the fact that fuel preparation is required, and fluidized beds are not well demonstrated for less than 200 tons per day capacity.

An alternate method of burning RDF is the Spreader-Stoker boiler. In this system the RDF is fed into a boiler, and a portion is burned in suspension while the remainder burns on a traveling grate.

Pyrolysis. Pyrolysis involves the heating of waste in a limited oxygen environment to produce a fuel. The idea of using pyrolysis to produce a fuel that can be marketed is not new. In the early 1960's the idea was tried and abandoned as not being feasible because it seemed to take more energy to produce the product than the product was worth.

Pyrolysis has been considered for MSW, tires, wood products, and other wastes. It involves the thermal decomposition of organic matter at temperatures sufficient to volatize or gasify the matter in the absence of oxygen or any oxidizing agent. The resultant products are combustible gases, fixed carbon, heavy pyrolysis oil and waste water.

The following problems have been encountered in test pyrolysis projects:

- Equipment is inefficient, almost as much fuel is used in processing the waste as is recovered.
- Byproducts were very inconsistent in composition, which limited their market potential.
- No general markets existed for the byproducts as they are produced.

Without further research, pyrolysis is not considered technologically proven at this time.

Ethanol Production. This new energy recovery technology is presently in the pilot stages. The process starts with RDF fluff and upgrades to a refuse derived pulp through the addition of water and the imposition of a processing sequence in which non cellulosic substances are removed.

Because of the decontamination involved in its production, refuse derived pulp is a suitable source of cellulose for enzymatic and thermo-chemical hydrolysis into sugar (glucose substrate) for ethanol production.

This method is in the development stages but it has the advantage of producing a clean burning fuel and of treating wastes that are becoming increasingly difficult to dispose of.

The disadvantages of ethanol production are increased capital costs for processing facilities and disposal of a residual digested sludge. It is also not compatible with composting since the two processes compete for the same elements of the waste stream.

4.4 ALTERNATIVES AND EVALUATION

Because of the size of the Mason County waste stream the options involved with waste-to-energy are limited. If the County decides to consider waste-to-energy there are three options that could feasibly be considered:

1. Contract for construction of a modular incinerator sized to handle the Mason County waste stream after the effects of aggressive recycling programs are accounted for. It is estimated that the size of this facility would be about 40 tons per day. Serious consideration should be given to having the vendor operate the facility and provide financial assurances to minimize the risk to the County.

2. Work with other counties to develop a regional Mass Burn Waste to Energy Facility.

3. Develop a Refuse Derived Fuel facility and sell the material to existing power plants that can burn it.

The remainder of this section discusses these three alternatives in more detail.

Mason County Modular Waste To Energy Plant. In this alternative Mason County would contract for the design, and construction of a modular mass burn energy recovery facility. The facility would generate electricity for sale to the local Public Utility District (PUD). Operation of the facility would be either by the County or by a Contractor. It is estimated that about 10 employees would be required to operate the facility.

The siting, design, and construction of a modular facility for Mason County would take between 2 and 5 years. The site of the facility should be close to the new landfill and ash monofill. The ash monofill and landfill for bypass waste could be sited together to minimize operational costs. The waste stream could be reduced to about 70% of its initial volume in the landfill by incineration.

The estimated capital construction cost for a facility capable of burning the entire Mason County waste stream is about 2 million dollars. Estimated annual operation and maintenance costs would be about $250,000 to $350,000 per year.

The primary advantage of this alternative is that the amount of waste that requires landfilling will be significantly reduced.

Disadvantages include high capital and operating costs, risk associated with shutdowns, and potential environmental impacts due to operation of a waste to energy facility.

Regional Waste to Energy Plant. State guidelines for solid waste management emphasize the importance of regional solutions to solid waste problems. One alternative that may have been

feasible was a regional energy recovery facility. Mason County was involved with the Southwest Inter-County Solid Waste Advisory Board (SWICSWAB). SWICSWAB would provide an avenue for consideration of a regional energy recovery facility. It was determined that there were numerous issues surrounding the location of such a facility and no county stepped forward to request consideration.

This regional approach, while more difficult to implement, could have cost advantages to Mason County because of shared operational expenses for ash fills and facility operation. In addition the financial resources of multiple counties working on the same project would reduce the financial burden on any one of the counties working alone.

The advantages of this alternative are that the unit cost of operating and constructing a larger energy recovery facility would be less than a modular facility; the costs and risk would be shared between multiple counties; and the reliance on landfilling as the primary disposal means in the County would be minimized.

Disadvantages of this alternative include the increased cost over a strictly landfill alternative, the problems of working with other counties including inter-jurisdictional conflicts, and the potential environmental impacts of an energy recovery facility.

Mason County Refuse Derived Fuel Facility. One major obstacle to burning garbage is the perceived environmental impact due to air emissions and ash production. If the County could negotiate a contract with an existing facility that has the capability of burning Refuse Derived Fuel, then the specter of burning garbage within the County could be eliminated. In addition, the County would have an opportunity to reduce the amount of waste landfilled.

An RDF facility would need to produce a high quality fuel for sale. Equipment needed would include a shredder, trommel screen, fine screen, magnetic separation, and air classification. This process would have the potential of reducing the waste stream by about 50 to 60%. However a landfill would still be needed to handle bypass waste.

Some potential markets for the RDF include industrial power plants that could be retrofitted to burn a combination of RDF and coal, or RDF alone. Careful investigation of potential markets should be initiated prior to any development of this alternative.

If markets can be found for the fuel, the advantages of this alternative are that the waste stream would be reduced, thereby reducing the County's reliance on landfilling. In addition the refuse would be used to produce energy.

The disadvantages of this alternative are the capital and operating costs, and the reliance on outside markets to purchase the RDF.

Energy recovery requires large capital expenditures. Because of this the decision to pursue it must be based on the most recent, objective, and reliable information.

Table 4.1A summarizes and evaluates available waste reduction alternatives on the basis of:

Level of Reduction	-	What level of waste volume reduction can be expected with this alternative?
Manpower Requirements	-	What are staffing requirements?
Annual Cost	-	What would the program cost to operate each year?
Capital Cost	-	What is the cost to construct facilities and purchase equipment?
Revenue	-	What are estimated dollars generated by the sale of the product?

4.5 RECOMMENDATIONS

Interest in developing an energy recovery facility in Mason County is negligible. This opinion is expressed by the SWAC and County and City solid waste management agencies for the following reasons:

1) the existing waste export system developed in 1993 is capable of meeting the present and future needs of the country.

2) the waste stream in Mason County is small, making the large volume reductions available through incineration less attractive than for some highly populated counties, and

3) the regulatory atmosphere is uncertain for disposal of ash both on a national and state level.

Table 4.1A WASTE-TO-ENERGY ALTERNATIVES EVALUATION

Alternative	Level of Reduction	Manpower Requirements	Annual Cost	Capital Cost	Revenue
Modular Mass Burn Facility (40 TPD)	60% to 70%	10 to 15 FTE	$300,000 to $500,000	$1.5 to $3 million	$200,000 to $300,000 (Electricity)
Refuse Derived Fuel Facility (Processing Only) (40 TPD)	50% to 60%	6 to 10 FTE	$250,000 to $300,000	$1 to $3 million	$100,000 to $200,000 (RDF for Sale)
Regional Mass Burn Facility (400 TPD) (Note 1)	60% to 70%	40 to 50 FTE	$3 to $4 million	$10 to $15 million	$2.5 to $3 million (Electricity)

NOTE (1) These costs shared between participating counties.

Although development of an incinerator to serve Mason County would be an unlikely scenario, there may be future consideration given to a joint effort between counties interested in regional alternatives.

4.6 IMPLEMENTATION

No recommendations have been included for implementation of an energy recovery facility in Mason County.

MASON COUNTY SOLID WASTE MANAGEMENT PLAN
CHAPTER 5A REFUSE COLLECTION

5.1 INTRODUCTION

Approximately half of the cost of garbage disposal service is related to collection. This chapter takes a comprehensive look at the collection system in Mason County and recommends ways to improve it while ensuring that the goals listed below are met. Existing practices are reviewed, then needs and opportunities are established, and finally specific recommendations and methods of implementing those recommendations are made.

The solid waste planning goals for refuse collection in Mason County are as follows:

- To ensure that all residents of Mason County have access to refuse collection services.
- To ensure that collection practices are compatible with the other elements of the solid waste system established by this Plan.

The Washington Utilities and Transportation Commission (WUTC) regulates garbage haulers outside of incorporated cities (RCW 81.77). These haulers must be franchised by the Commission to collect garbage in a given county. Within incorporated cities such as Shelton however, the WUTC has no jurisdiction. Cities have the option to provide City collection services, contract with a collection service or allow the WUTC to award a franchise in their area.

5.2 EXISTING PRACTICES

5.2.1 Municipalities and Other Jurisdictions

The jurisdictions within Mason County include: the City of Shelton, National Forest Service, Squaxin Indian Tribe, Skokomish Indian Tribe, Washington State Correctional Center, Washington State Patrol Academy, and several State Parks.

City of Shelton

Shelton is the only incorporated city in Mason County. It operates its own garbage collection system which serves approximately 3100 residential and commercial customers. Table 5.1A includes a breakdown of garbage service provided by the City of Shelton.

Table 5.1A: CITY OF SHELTON REFUSE COLLECTION SERVICE
(as of February 1, 1997)

Type of Service	Number Served	Rate per Can
	Residential Service	
90 gal can per week	588	$19.63/mo
60 gal can per week	1233	$13.09/mo
60 gal bi-weekly	573	$9.49/mo
90 gal bi-weekly	80	$14.23/mo
	Midweek service is available by request	
	Commercial Service	
90 gal can per week	127	$19.63/mo
300 gal can per week	229	$65.43/mo
Shared 300 gal can per week	26	$32.72 ea/mo
	Extra cans are charged at per can rate	
	60 gal @ $8.00 - 90 gal @ $9.50 - 300 gal @ $20.00	
	Midweek service is available by request	

Refuse collection in Shelton is mandatory. All residents pay for the service, whether they use it or not. Residents are expected to place their cans at the curb or in the alley on their designated collection day, and retrieve the can after collection has occurred. Trucks will collect from houses at ends of long driveways if special arrangements are made with the City.

The City has three 20 yard compactor trucks. One truck, the oldest one, serves as a backup in case one of the other trucks breaks down. The two newer trucks are less than five years old and the third truck is ten years old. The City plans to purchase a replacement truck this year.

The City has an automated collection system. The trucks are designed with hydraulic "arms" to lift the cans into the compactor. Because of this the cans for each resident are purchased by the City and provided at no cost. Currently the City is shifting to 60 gallon cans from the 90 gallon cans now in use. The 60 gallon cans are the smallest size that the automatic arms can accommodate. The shift will occur slowly as old cans are replaced and new residents request cans from the City. All refuse collected in the City is delivered to the Mason County Solid Waste Facility for disposal.

National Forest Service

Refuse collection from National Forest Service land is performed by the U.S. Forest Service. Mason County Garbage hauls refuse from Forest Service offices. Cascade Shower, Inc. is under contract to the U.S. Forest Service, to haul waste from fire camps on an "as needed" basis. All refuse collected on National Forest Service land is delivered to the Mason County Solid Waste Facility for disposal. The amount of refuse generated is small, with peaks during the summer when tourism increases.

Squaxin and Skokomish Indian Tribes

The Squaxin and Skokomish Indian Tribes do not have their own garbage collection system. Garbage service to the Tribal lands is provided by both Mason County Garbage and Rural Garbage Service (LeMay Enterprises). Garbage collection is voluntary for the Tribal lands, as it is in the remainder of the County.

Washington State Parks and Facilities

The State of Washington operates several facilities within Mason County. These include several State Parks, a State Penitentiary, and the State Patrol Academy.

Refuse from the State penitentiary is collected by the State and disposed of at the Mason County Solid Waste Facility.

Refuse generated from State Parks is collected by Mason County Garbage and delivered to the Mason County Solid Waste Facility for disposal.

The Washington State Patrol Academy's waste is delivered to the Mason County Solid Waste Facility by Mason County Garbage. Approximately one dumpster per week is generated by the Academy.

5.2.2 Franchise Holders

Garbage service in the unincorporated portions of the County is voluntary. Two disposal companies provide garbage service; Mason County Garbage and Rural Garbage Service. These companies have been granted certificates by the WUTC to provide collection service for Mason County.

Twelve other garbage certificates have been issued for haulers to operate in Mason County. These certificates have been issued for specialized waste hauling services that provide for disposal of specific types of waste such as radioactive, industrial, demolition and ash. Table 5.2A summarizes the permits authorized for hauling wastes in Mason County.

Table 5.2A CERTIFICATES GRANTED BY WUTC FOR MASON COUNTY

Company Name and Address	Area Serviced
Mike Johnson, Mason County Garbage G-88 E. 1210 Johns Prairie Road Shelton, WA 98584 426-8729	Garbage and Collection Services in Mason County.
Harold LeMay Enterprises, Inc. G-98 13502 Pacific Ave., POB 44459 Tacoma, WA 98444 537-8687	Authorized to collect and drop boxes.
Emerald City Disposal Company G-124 POB 24625 Seattle, WA 632-2200	Sewage and/or Dewatered Sludge and Sewage Hauling for Municipality of Seattle to any location in the State.
John S. McFarland, Demolition Haulers G-148 8081 Occidental Ave. S. Seattle, WA 98108 938-1174	Demotion debris, rubble, and brush from demolition or clearing projects to any location in the State.
United Drain Oil Services G-175 2203 Airport Way S. Seattle, WA 98134 284-0903	Authorized to haul waste liquid petroleum products to any location in the State.
Resource Recovery Corporation G-176 5501 Airport Way S. Seattle, WA 98108 767-0355	Authorized to haul liquid industrial waste unsuitable for ordinary landfill disposal to any location in the State. Also authorized to haul hazardous and chemical wastes not suitable for disposal at ordinary landfill sites in the State.
Ralph M. Baltzo, Professional Services Corporation G-195 3841 NE 87th St. Seattle, WA 98115 525-6499	Authorized to haul radioactive sources, scientific process wastes, and other related hazardous technical waste in specialized containers to Hanford, WA.
G.J. Daniels, Inc. G-177 POB 5116 Lynnwood, WA 98046 775-9448	Sewage and sewage sludge for the Municipality of Seattle to any location in the State.

Table 5.2A CERTIFICATES GRANTED BY WUTC FOR MASON COUNTY (continued)

O'Neill and Sons, Inc. G-196 POB 4128 Tumwater, WA 98502 352-1388	Sludge and/or Dewatered Sludge for the Municipality of Seattle, Solganic Services Corp. and Pierce County Utilities Dept. to any location in the State.
Cascade Shower Inc. G-218 POB 3915 Seattle, WA 98124 628-4833	Authorized to haul garbage and refuse under a combination of services for the US Forest Service to any location in the State.

Mason County Garbage provides residential and commercial garbage collection service for the majority of Mason County. The company was founded in 1951 and was under the same ownership for over 30 years. The company came under new ownership in 1983.

Mason County Garbage provides residential service to 7976 residential and 539 commercial accounts. 772 of these accounts are active in the summer only. The breakdown of commercial and residential customers by the type of service provided is presented in Table 5.3.A (1997).

Mason County Garbage has fourteen compactor garbage trucks, two drop box trucks and one hook lift truck. The equipment utilizes mechanical means for dumping commercial containers ranging in size from 1 ½ to 4 yards and manual dumping for residential cans. Drop box trucks are used for commercial accounts requiring 20 yard or compactor service.

Mason County Garbage provides residential and commercial garbage service to all areas of the county. They collect five days a week using twelve trucks and twelve drivers each day. The company also employs two full time mechanics and two secretaries in its Shelton Office.

Harold LeMay Enterprises also has a certificate authorizing it to collect garbage in Mason County and operates out of Centralia in Lewis County. It has accounts with numerous commercial activities in Mason County and provides collection service for 20 yard drop boxes. The cost of pickup is $100 for the first pickup and then $50 per trip thereafter. The drop boxes are collected when the commercial customer calls the Centralia Office requesting pick up. All waste picked up by Rural Garbage Service in Mason County is delivered to the Mason County Solid Waste Facility for disposal.

Refuse collection is voluntary in the unincorporated County. And not all citizens elect to subscribe to garbage service.

Table 5.3A RESIDENTIAL & COMM. SERVICE BY MASON COUNTY GARBAGE

Residential Service

Type of Service	# of Accounts	% of Total	Rate
Weekly pickup			
• Set out/Set back	5707	64.3	11.55
• Walk-in	140	1.6	13.65
• Drive-in	343	3.9	15.55
• Other service	12	0.1	18.00
Every other week pickup			
• Set out/Set back	1806	20.3	6.75
• Walk-in	32	0.4	7.80
• Drive-in	205	2.3	8.75
• Other service	11	0.1	10.65
Monthly pickup			
• Set out/Set back	417	4.7	3.80
• Walk-in	4	0.1	4.30
• Drive-in	77	0.9	4.75
• Other service	1	0.0	5.83
As needed per can	124	1.3	3.80
Totals	8879	100.0	

Commercial Service

	# of Accounts			
	% of			
Type of Service	1.5 yd	2 yd	4 yd	Total
Weekly	105	131	5	44.7
Bi-Weekly	19	56	0	13.9
Every other Week	112	76	1	35.1
Monthly	11	10	0	3.9
On Call	6	7	0	2.4
Totals	253	280	6	100.0

Data as of April 1997.

5.3 NEEDS AND OPPORTUNITIES

The criteria for determining needs for the collection system are the goals established at the beginning of this chapter. Any issues arising from the generated needs are listed at the end of this section.

GOAL: **To ensure that all residents of Mason County have access to refuse collection services.**

At this time, refuse collection appears adequate for the residents of Mason County.

Collection services in the City of Shelton are provided by the City on a mandatory basis. Commercial pickup is also provided by the City. No deficiencies have been identified at this time, service is provided to all generators at adequate levels.

Collection services to the remainder of the County are provided by franchised hauler. Collection services are available throughout the County on a voluntary basis. Currently, no deficiencies have been identified in the unincorporated County and service appears adequate.

Requirements for future collection services will depend on population growth rates. Growth in the City of Shelton is projected to increase. In 1994, the population in the City of Shelton was 7,440. In the year 2014 it is anticipated that the population, within the existing city limits, will increase to 13,022. Based on these figures the City of Shelton will realize an increase in growth of 5,582 residents. In 1994, the population in the unincorporated area of Mason County was 36,860. This makes the total population in 1994 for Mason County a total of 44,300. The population of Mason County as a whole in the year 2014 is estimated by the Office of Fiscal Management (OFM) at 73,477 (High Series) or 63,685 (Medium Series). Mason County has proposed to allocate 20,977 growth in population in total for the years 1994 to 2014, which adds up to a total of 65,277 people (44,300 + 20,997). It appears safe to assume that this level of growth will require additional collection routes in both the City and County. However, increased population will also aid collection by increasing the cost effectiveness of the routes through increased population density.

GOAL: **To ensure that collection practices are compatible with the other elements of the solid waste system established by this Plan.**

Ensuring that all residents have access to refuse collection appears to be possible during the planning period. However, new challenges are presented by the need to provide a level and type of service that is compatible with recycling and other solid waste programs.

Local governments can work with the WUTC and the hauler to determine how to adapt rates to the solid waste management priorities of waste reduction and recycling. In addition, Counties now have the authority to contract for the collection of source separated recyclables (RCW

36.58.040). This authority allows the County to manage, regulate and fix the price of the source separated collection service. Under RCW 36.58.045, counties may also impose a fee upon solid waste collection services to fund compliance with solid waste plans.

ISSUE: What level of service alternatives are available to the County? Are they feasible?

ISSUE: What actions could the County take to implement source separated recyclable collection?

ISSUE: How can collection rates support waste reduction and recycling?

5.4 ALTERNATIVES AND EVALUATION

This section presents collection system alternatives that could be implemented in the County. Collection generally refers to the collection of solid waste. However, with new legislation and increased emphasis on recycling, recyclable material collection is also discussed in this section.

ISSUE: What level of service alternatives are available to the County? Are they feasible?

As discussed, the level of solid waste collection service in the County is adequate, however, county-wide mandatory collection would be an alternative approach to collection. Mandatory collection could be imposed to limit self-haul activity and/or limit illegal dumping and littering. Implementation of mandatory collection has the potential to significantly impact the private haulers in terms of equipment, travel time and related costs.

Mason County has the authority to require mandatory collection of solid waste in unincorporated areas. Mandatory collection would require that all residents of the County pay for some minimum level of garbage service, whether they use it or not. Under mandatory collection, the hauler would continue to bill customers for garbage service. However, if a customer refused to pay, the County would be obligated to pursue payment of the delinquent account.

To implement mandatory collection, the County would need to form solid waste collection districts, obtain approval of the Board of County Commissioners, and hold public hearings. Formation of solid waste collection districts require the county to request a commission review per 36.58A RCW to determine whether certificated haulers are willing and able to extend service to all residences within a proposed district.

Solid waste collection districts would be established based on population density, illegal dumping problem areas, and proximity to disposal facilities. Some areas with very low population densities may not be required to have garbage collection service.

Mandatory collection is one method of reducing the amount of illegal dumping that may occur when disposal rates increase. If people pay for a service, the chances are better that they will use it. But the advantages of mandatory collection should be weighed against the cost of implementing it and the possible complaints that will be received from people that self-haul or dispose of their waste by other means. In addition, the County currently relies on outlying transfer stations for self-haulers who elect not to use the voluntary collection service. A mandatory system would make these facilities redundant.

ISSUE: **What actions could the County take to implement source separated recyclable collection?**

Counties now have the authority to contract for the collection of source separated recyclables. This authority allows the County to manage, regulate and fix the price of the service.

Alternatively, the County can notify the WUTC if it does not elect to contract for the collection of source separated recyclables from residences. The WUTC will then have the responsibility for carrying out the provisions of the waste reduction and recycling element of the Solid Waste Management Plan.

The advantage of retaining County authority is that the County will remain in control of the system. The County can choose haulers, set rates, and set method of collection. By retaining control they can be more flexible, and adjust the program as it develops to best meet the goals of the recycling program. If the WUTC is given authority County participation will be indirect and as allowed by law.

If the County contracts for a recycling service, then the County will bear the cost of administration. It may be necessary to assess a fee for solid waste collection services to fund the recycling program, according to regulations set in RCW 36.58.

Contracting for collection of recyclables includes drop box collection as well as curbside collection. However, the County cannot prohibit other recyclers and non-profit groups from also putting out drop boxes.

The City of Shelton may contract out recycling service or provide the service itself. If the City does contract for recycling service it will be responsible for administration. If the City provides the service then additional resources will be required, including additional staff. In either alternative, the cost of the recycling collection service will need to be met through garbage rate increases.

For additional discussion of recycling and recyclable material collection see Chapter 3A, Waste Reduction and Recycling.

ISSUE: How can collection rates support waste reduction and recycling?

Three basic alternatives are available to implement a rate structure that would support waste reduction and recycling:

1) Under RCW 36.58, the County has authority to apply fees to refuse collection that will support waste reduction and recycling programs. This fee could be structured so that a second or larger can is more expensive than a first or smaller can.

   Haulers would bill and collect these fees for the County as part of their regular billings. Some administration costs could be available to the hauler for administrating the collection of fees. In addition the hauler would notify customers of the new rate structure and its purpose.

2) RCW 81.77 requires collection services to use rate structures which support waste reduction and recycling as solid waste management priorities. This requirement will permit the WUTC to restructure the method by which rates are set.

   As an alternative, the County could draft and adopt its own rate structure or guidelines as part of the solid waste plan. The new rate structure would then be developed in conformance with the solid waste plan guidelines, and implemented by the hauler.

   Rate structure guidelines that would support waste reduction and recycling in Mason County are included in Table 5.4A. In this structure no savings are realized through pickup of more than one can or by pickup at different frequencies (i.e. monthly vs. weekly). Rather, a flat rate would be applied to each can collected. Customers would select a level of collection service based on the quantity of waste generated.

   Using this rate structure, the hauler would be required to determine the amount of the Base Rate, upon which the fee structure would be based. Similar rate structure changes at the landfill and transfer stations could also be implemented to support rate changes made by the hauler.

   Implementation of a rate structure change will require coordination between the hauler and the County during the initial stages of development. In one scenario, the County and hauler could develop and agree on details of the new rate structure before the Base Rate is established. WUTC involvement in an advisory capacity at this level would assist the development of an approvable program. After agreement between the parties is reached, the hauler could proceed to develop the Base Rate. The program would then be reviewed and approved by the WUTC. Collection rates could then be implemented in coordination with changes to landfill and transfer station rates.

Table 5.4A RATE STRUCTURE GUIDELINES FOR SUPPORT OF WASTE REDUCTION AND RECYCLING

Type of Service	Annual Rate
Weekly Pickup	
One Can	52 x Base Rate
Two Cans	2(52 x Base Rate)
Every Other Week Pickup	
One Can	26 x Base Rate
Two Cans	2(26 x Base Rate)
Monthly Pickup	
One Can	12 x Base Rate
Two Cans	2(12 x Base Rate)
As needed per can (Rate is per each)	(Base Rate)

3) One final alternative is available to the County for a rate structure change and would rely on the WUTC to develop guidelines for rates. Under this scenario, the County and haulers would take no action to change the rate structure, but allow the WUTC to develop new procedures which could then be implemented.

5.5 RECOMMENDATIONS

Discussion of voluntary versus mandatory collection with the Department of Community Development and the SWAC indicated little interest in pursuing mandatory collection at this time. Although it was felt that mandatory collection could reduce illegal dumping in some cases, it was also felt that County funds would better utilized to strengthen enforcement. Some interest was expressed for evaluating the mandatory alternative in the next plan update, possibly using mandatory collection in areas where other enforcement efforts were not effective.

Both county staff and SWAC agreed that control of recyclable collection should remain with County government. No interest was shown in deferring this authority to the WUTC.

Rate structure changes which support waste reduction and recycling were viewed as a necessary part of the overall solid waste system. Of the three alternatives, a rate structure which could be adopted as part of the solid waste plan was preferred over an applied fee or implementation of a program after the WUTC develops new rate of guidelines and procedures. It was recognized that a new structure would be challenging to develop and implement and that County and hauler coordination would be required. The need for balanced landfill and collection rates as well as a method of insuring collection revenues was identified. Education was also viewed as a necessary part of the rate structure change.

Recommendation 5.1. Voluntary collection of refuse should be continued in Mason County. Evaluation of mandatory collection should be included as part of the next Solid Waste Management Plan Update as a possible method for controlling illegal dumping.

Recommendation 5.2. The County, rather than the WUTC, should manage the collection of recyclables. The County should evaluate whether to provide these services through contract or through County staff.

Recommendation 5.3. The County should adopt the rate structure guidelines included in Table 5.4A for implementation within the unincorporated County. The County should support and coordinate with private haulers to implement a new rate structure in conformance with these guidelines. The county and haulers should agree on a general rate program with input from the WUTC prior to final review and approval by WUTC. Rate structure changes implemented by the haulers should also be reflected in landfill and transfer station rate structures. A public information and education program should be executed with the change in rate structure.

5.6 IMPLEMENTATION

An implementation schedule and planning level budget is developed in this section for refuse collection.

Table 5.5A IMPLEMENTATION SCHEDULE - COLLECTION

1998-2003	The County continues to evaluate rate structure guidelines supporting waste reduction and recycling as part of the SWMP.
1998-2003	Private haulers develop proposed rates within the adopted rate structure guidelines for approval by the WUTC. The County assists in the development and approval process. New rates structures are applied to collection, landfills and transfer stations. Public Education and Information is coordinated with implementation of the new rates. Recyclable collection programs are developed and implemented by the County (See Chapter 3A).
1998-on-going	Illegal dumping complaints are examined and mandatory collection is re-evaluated as part of the Solid Waste Management Plan Update.

Table 5.6A IMPLEMENTATION COST SUMMARY*

•	County coordination with haulers in the rate development and review process.	$3,000-6,000
•	Public education and information program for the new rate structure.	$5,000-10,000
•	Coordinate and implement recyclable collection programs.	See Ch. 3A

* Costs indicated have been developed for planning purposes only.

MASON COUNTY SOLID WASTE MANAGEMENT PLAN
CHAPTER 6A TRANSFER AND IMPORT/EXPORT

6.1 INTRODUCTION

This chapter discusses the existing drop box and transfer system within Mason County. It will also evaluate the need for additional transfer facilities and discuss the exporting of solid waste to out-of-county disposal sites in neighboring counties, Eastern Washington or Eastern Oregon.

The solid waste planning goals for Mason County in the area of transfer and import/export are:

- To use drop box station, transfer station facilities and import/export practices where and how appropriate for cost benefits and operational efficiency.
- Provide recycling opportunities at drop box, transfer station facilities and other approved sites in Mason County.
- Ensure the public safety at drop box and transfer station locations.

6.2 EXISTING PRACTICES

Mason County has four drop box stations that each contain two 40 cubic yard drop boxes. The drop box stations provide for public disposal only. Commercial compactor trucks are prohibited from using the facilities because of the drop box sizes and the lack of a tipping floor. Mason County has one transfer station facility where solid waste is placed on a tipping floor and then loaded into open-top trailers for shipping to Klickitat County. As solid waste facilities, all transfer stations will be required to comply with WAC 173-304, Minimum Functional Standards for Solid Waste Handling.

Belfair, Union and Hoodsport each have a drop box station. These locations are near rural population centers to increase the convenience for residents in these areas to deliver their wastes to a disposal site. The fourth drop box station is located at the Mason County Solid Waste Facility near Shelton and is used by the public only. The transfer station facility is also located at the Mason county Solid Waste Facility and is used by commercial haulers and at times for the public. Each location is indicated on Figure 6.1A.

The Hoodsport Drop Box Station is located about 1 mile west of Hoodsport on the road to Lake Cushman. It is in an isolated location surrounded by clearcuts. Access to the site is controlled through a locked gate at the entrance. A county employee works at the toll booth and collects a fee for refuse disposal. The drop boxes are picked up by private contractor when they are full (about once a week). An estimated 1,300 cubic yards of refuse were collected at the transfer station in 1997.

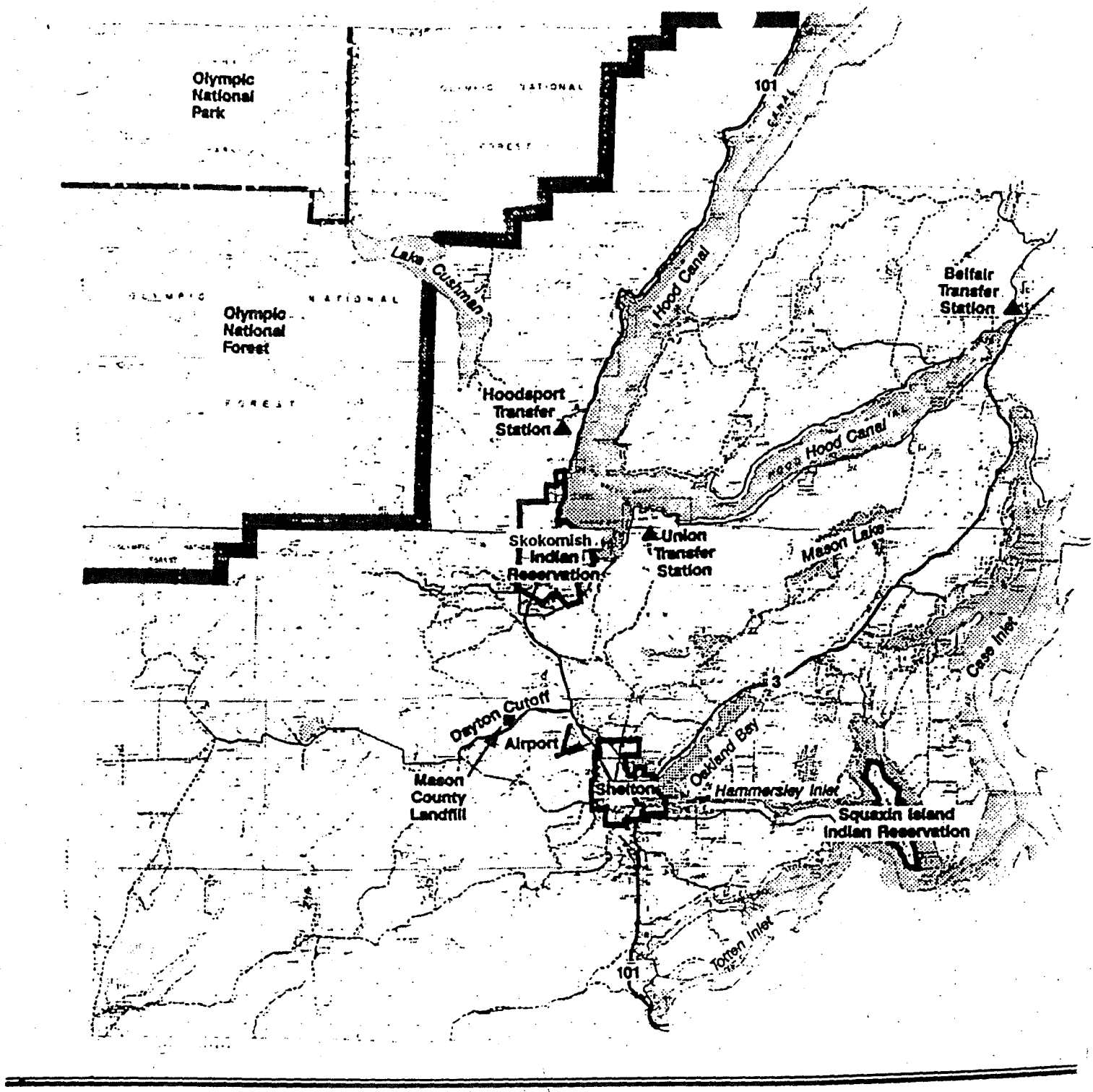


Figure 6.1A: Drop Box Station Location

The Belfair Drop Box Station is located approximately 1 mile North of Belfair. It is the most heavily used drop box station in the system. Approximately 7,700 cubic yards of refuse were collected in 1997.

The Union Drop Box Station is located just East of the town of Union. Estimated yardage collected in 1997 will be 1,400 cubic yards.

Waste collected at all drop box stations is transported to the Mason County Solid Waste Facility.

The Belfair and Hoodsport Drop Box Stations have recycling receptacles for public use. Numerous items are collected as part of the Mason county Recycling Program (see Chapter 3A).

The transfer station at the landfill is used to collect waste and that which is self-hauled by the public. It is estimated that approximately 25,500 tons of solid waste will be disposed at the Solid Waste Facility. This figure includes the amounts collected at each of the drop box stations.

Currently a small portion of the commercial waste collected by Mason County Garbage is hauled into Kitsap County for disposal. All other waste generated in Mason County is disposed of in the Mason County Solid Waste Facility.

Mason County does not accept any waste generated in other counties.

6.3 NEEDS AND OPPORTUNITIES

The transfer and import/export system is evaluated in this section based on goals developed at the beginning of this chapter. Evaluation of the system based on listed goals generates needs and opportunities. Issues raised during this process are presented at the end of this section.

GOAL: To use drop box station, transfer station facilities and import/export practices where and how appropriate for cost benefits and operational efficiency.

The decision to use a drop box station facility rather than hauling waste via collection vehicle is typically based on economics. This is due to the fact that it is cheaper to haul waste in large increments over a distance than it is to haul waste in small increments over the same distance.

In Mason County, only the solid waste facility is capable of accepting refuse from commercial or municipal collection vehicles. There is currently no transfer component of the solid waste system for waste hauled in collection vehicles except Mason County has a transfer station located at the solid waste facility where solid waste is accepted for transport out of county. Waste transfer in the County is geared towards the public self-hauler and four small drop box stations and one transfer station are provided for these customers. The drop box stations and transfer station are currently manned by County employees. However, waste is collected from each station by a private hauler as necessary.

A general rule for evaluating the need for collection vehicle transfer is based on the haul distance. When considering a one-way haul distance of between 15 and 30 miles, transfer should be evaluated. However, it is unlikely that transfer will be cost effective in this range except in areas with large waste streams. When haul distances exceed 30 miles, transfer will become more economical for moderate and small waste streams.

The City of Shelton has no transfer program at this time. All waste is carried by collection vehicle directly to the solid waste facility. Shelton has the most concentrated waste stream in the County and might be a potential location for a transfer station based on waste stream. However, the distance from Shelton to the existing solid waste facility is approximately five miles, too short to economically incorporate transfer.

Currently there is no economic need for transfer of commercial or municipally collected waste in Mason County. Opportunities for increasing the economics of the system through transfer may occur at some time in the future if a less centrally located solid waste facility is sited. If a regional solution to solid waste disposal is implemented with the service area being multiple counties, transfer could also provide cost efficiency.

GOAL: Provide recycling opportunities at drop box stations.

The existing Mason County drop box stations provide additional recycling opportunities. Recycling bins placed at the drop box stations are monitored by toll booth attendants. Access to the bins is restricted by gates which guards against the dumping of refuse into the bins. Currently we have the bins located at Belfair, Hoodsport and the Mason County Solid Waste Facility. In addition to those located at drop box station sites Mason County has located bins at eight additional sites throughout the county (see Chapter 3A).

GOAL: Ensure the public safety at transfer stations.

Signs at existing facilities direct the public to the tipping area in an orderly manner. Stations are kept clean of debris. There have been no accidents involving injury to the public at the existing drop box and transfer station facilities.

Issues raised in the preceding discussion of needs are as follows:

ISSUE: When should additional drop box stations and transfer facilities be installed or existing stations be upgraded? What is the criteria? Should the County consider collection of waste from the stations or continue contracting?

ISSUE: What level of recycling effort should drop box station facilities include? How should the material be collected and sold? What arrangements are available for servicing recyclables at the drop box stations?

ISSUE: **What import/export options would be available and feasible for County waste?**

The following section will evaluate alternatives which provide solutions to these issues.

6.4 ALTERNATIVES AND EVALUATIONS

6.4.1 Drop Box Stations And Transfer Stations

Drop box stations and transfer stations can serve any or all of the following functions:

- Provide disposal convenience for the public and reduce illegal dumping when solid waste facilities are located at great distances.
- Provide economic benefits to a refuse collection company.
- Provide a cost-effective means of transferring waste from collection vehicles to long haul transfer vehicles for disposal outside the County.

This section will discuss drop box station and transfer station alternatives available if and when additional transfer facilities are required in the County. Also discussed will be alternative solutions to identified needs.

ISSUE: **When should additional transfer facilities be installed or existing drop box stations be upgraded? What is the criteria? Should the County consider collection of waste from the stations or continue contracting?**

As solid waste rates increase, illegal dumping may increase. If it becomes a serious problem the County may want to increase the number of locations throughout the County where solid waste can be disposed. The following criteria provides a guideline for consideration of the need for additional drop box station facilities.

- Waste is hauled more than 30 miles to a disposal site, possibly a regional site.
- The waste stream for an area is large enough to support a drop box station facility.
- Illegal dumping and large amounts of litter have created problems in areas without a local disposal site. Construction of a drop box facility may increase convenience and minimize the illegal dumping and litter.

Two areas that are not served by drop box facilities now are Hartstene Island and the southwestern portion of the County. The County may wish to consider construction of drop box station facilities of similar design to the existing facilities at Belfair, Union, and Hoodsport in these areas.

The County could also consider purchasing its own transfer truck and roll-off drop boxes rather than continuing to rely on contracted haul of this waste. An economic evaluation of the cost of continued private sector service versus the cost of the County providing the service should be the basis for making a change. As the number of drop boxes requiring disposal at the solid waste facility increases the potential for a cost savings is realized by hiring a driver and purchasing equipment to deliver drop boxes to the solid waste facility.

Another alternative that may be cost effective would be for the County to privatize the drop box station and transfer station operation. Under privatization, the booth would be operated by a private contractor selected through competitive bid. Any revenue generated through tipping fees could go to the County for administration of the system and payment of the contractor.

Full Service Transfer Stations. At some point, the waste stream in outlying areas of the County may grow to the point where a full-service transfer station, capable of accepting waste from collection vehicles becomes feasible. One method of providing commercial transfer service is to expand existing public convenience drop box stations to accommodate packer trucks.

If a new full service transfer station were needed, a director dump or compactor type station could be constructed. For the direct dump facility, compactors would tip into open top containers. The containers would be located below grade.

Another option or consider for a small capacity transfer station is a compactor station. In this type of station the packer trucks dump into the hopper of a stationary compactor. The stationary compactor packs a roll-off container of up to 100 cubic yards capacity. This has the advantage of requiring a longer time between hauls to the solid waste facility because of the compaction of the waste.

Transfer Station for Out-of-County Disposal Option. In 1993 a competitive bidding process was conducted by Lewis County and Grays Harbor County on behalf of those counties and additional counties including Mason County. Through this process Regional Disposal Company (RDC) was selected to own, provide, and operate for the term of the contract, facilities to accept acceptable waste in loaded trailers at the Mason County Solid Waste Transfer Station Facility and to transport to and dispose of that acceptable waste at the disposal site for the county. This disposal site is currently located in Klickitat County, Washington.

In the existing program Mason County loads the transport trailers to the acceptable weight which averages approximately 29 tons per load. The transport trailers are taken from Mason County to Lewis County by LeMay Inc., a subcontractor for RDC, where the trailers are then transferred to rail and taken to Klickitat County for disposal.

ISSUE: **What level of recycling effort should transfer facilities include? How should the material be collected and sold? What arrangements are available for servicing recyclables at the transfer stations?**

By placing easily accessible bins for aluminum, glass, metals, newsprint, and other materials at the drop box stations and other off-site locations, a "one-stop" disposal and recycling operation has been created for self-haulers.

6.4.2 Import/Export

ISSUE: What import/export options would be available and feasible for County waste?

Import of Waste into Mason County. Currently Mason County is not accepting solid waste from outside its county boundaries.

Export to Remote Disposal Site. Mason County has determined that it is in the county's best interest to transport solid waste out of county because of the regulations and costs associated with construction of a new and acceptable landfill. Solid waste is transported by trailer to Lewis County where it is transferred to rail and taken to Klikitat County, Washington. This landfill is owned and operated by the Rabanco Company of Seattle.

On November 18, 1997 the Board of County Commissioners agreed to extend the existing Contract between Regional Disposal Company and Mason County through the year 2013.

6.5 RECOMMENDATIONS

Discussions with County staff and SWAC indicate no immediate need for an upgrade of existing drop box station facilities or a need for construction of new facilities. It was recognized that future growth in some outlying areas may eventually occur, generating a need for an expansion of the existing solid waste system. Population growth was identified as a key indicator for future evaluation of new or upgraded drop box stations or transfer station facilities.

Establishment of recycling drop boxes at the drop box stations was considered a high priority of the recycling and drop box station program. Mason County has eleven sites located in strategic locations throughout the area. It was felt that some form of public information needs to remain an important part of the recycling program and that effort should be made to try and not charge for recycling.

At this time Mason County is not pursuing landfilling within the County. It is felt that it would be difficult to locate and pay for a landfill that would meet existing regulations. Because of this difficulty both staff and SWAC members realize that the best option available for the disposal of solid waste is that which pertains to out-of-county options.

> **Recommendation 6.1.** Drop box bins have been placed at drop box stations and at other sites in Mason County to facilitate recycling. Mason County should continue to provide public information regarding the drop box program. If the need arises for locating

additional drop boxes the County should pursue grant funding to pay for a portion of the costs.

Recommendation 6.2. Mason County has participated in numerous meetings regarding solid waste disposal in the past and should continue to do so.

Recommendation 6.3. Mason County recognizes the fact that significant population increases play an important role in the amount of solid waste generated. Staff should evaluate this to determine if there is a need for additional drop box sites or transfer stations. This would be completed before the next revision of this document.

6.6 IMPLEMENTATION

An implementation schedule and planning level budget is developed in this section for the transfer system.

Table 6.2A IMPLEMENTATION SCHEDULE - TRANSFER AND IMPORT/EXPORT

1998-2003	Drop box stations are established at the drop box sites and transfer facilities through coordination with private recyclers and the County, public information is coordinated with drop box establishment (See Chapter 3). Staff will continue to monitor existing program to determine feasibility of establishing additional recycling site. The County continues to participate in regional meetings for solid waste disposal.
2003	Expansion or upgrade of the drop box station and or the transfer system is re-evaluated in the Solid Waste Management Plan Update.

MASON COUNTY SOLID WASTE MANAGEMENT PLAN
CHAPTER 7A LANDFILLING AND STORAGE/TREATMENT

7.1 INTRODUCTION

This chapter provides an update as to where Mason County is and how they have elected to proceed with regard to landfilling, including storage and treatment, if applicable. Because standards and regulations for landfill construction and operation, along with closure/post closure maintenance, have become almost impossible to meet and the costs associated with each phase are more than most counties can afford, a number of counties, including Mason County, have elected to transport its solid waste to a site outside its respective boundaries.

In 1993 Mason County closed its landfill site located on Eels Hill Road. At the present time there has been no additional consideration given to the construction of a landfill, to accept solid waste, in Mason County.

7.2 PRE - EXISTING PRACTICES

Solid waste, in Mason County, is no longer disposed of in the County landfill located on Eels Hill Road. Mason County does continue to accept solid waste at its transfer station facility on Eels Hill Road and also accepts salvageable metals, including white goods, that are temporarily stored on site. These items are removed and recycled by an independent company under contract with the county. Mason County no longer accepts and stores septage at the landfill site. These materials are now received at a permitted site in Mason County where it is treated and applied on land with adherence to State and Federal regulations. Each of these special waste streams and their handling methods, needs, and alternations are discussed in Chapter 9A of this document.

The Mason County Landfill was a 77 acre site located about two miles west of the airport as shown on Figure 7.1A. Refuse occupied approximately 8 acres of the southeast portion of the site. It had a minimum 300 foot buffer zone. A locked gate controlled access to the site during non-working hours and continues to do so today as part of the Solid Waste Transfer Station Facility operation. The landfill was not lined nor did it have any provision for leachate collection or treatment. This being the case the applicable rules and regulations pertaining to landfill operation and construction could not be met. Thus, the need for closure. Because of the requirements and costs associated with an expansion of an existing landfill or construction of a new one it was determined that it would be in the counties best interest to transport its solid waste to an approved site outside of Mason County.

Waste from outside the boundaries of Mason County is no longer accepted at the Solid Waste Facility nor at the Drop Box Stations located at Belfair, Hoodsport, nor Union.

The landfill site is underlain by gravelly sand with about 40 feet to ground water. The groundwater flow is from the landfill site toward the southeast.

Mason County has installed nine groundwater monitoring wells in compliance with Washington State regulations. These wells are sampled quarterly under the requirements of Chapter 173-304, Minimum Functional Standards for Solid Waste Handling, and the Solid Waste Handling Permit for the site issued by the Mason County Department of Environmental Health. Current monitoring events include the following parameters: Field Parameters (temperature, pH, specific conductivity), Conventional (ammonia, nitrite, nitrate, chloride, chemical oxygen demand, total organic carbon, sulfate), Metals (arsenic, zinc, iron, manganese), Organics (volatile organic compounds, vinyl chloride).

Mason County, as part of the landfill closure process, elected to install an active gas system. Gas migration is monitored with condensation collected and treated. The closed landfill area and existing transfer station facility is owned and operated by the County. The County subcontracts, to Regional Disposal Company, the transporting of solid waste out of county. Following the closure of the landfill, the site has been maintained and monitored in compliance with the applicable rules and regulations. This "post-closure" period may last twenty or more years. Mason County is a public entity involved in handling the solid waste of Mason County. Mason County has no plans to privatize this solid waste responsibility.

7.3 EXISTING PRACTICES.

Disposal outside Mason County. One alternative described in the 1992 Solid Waste Plan related to the use of regional landfills that would take refuse from the counties around the state and Pacific Northwest. As discussed in Chapter 6A, this alternative was implemented in 1993 when Mason County completed construction of its main transfer station on Eels Hill Road. At that time the county entered into a five year contract with Regional Disposal Company (RDC) whereby they were responsible for the transporting of solid waste from Mason County to Klickitat County. In November 1997, Mason County elected to extend the contract for solid waste export and disposal services through the year 2013. Through December 31, 1998, Mason County will pay RDC $40.88 per ton. The base unit price shall be adjusted annually on January 1st of each year commencing on January 1, 1999, based on the percentage change in the Consumer Price Index in accordance with the formula described in the approved 1997 Addendum.

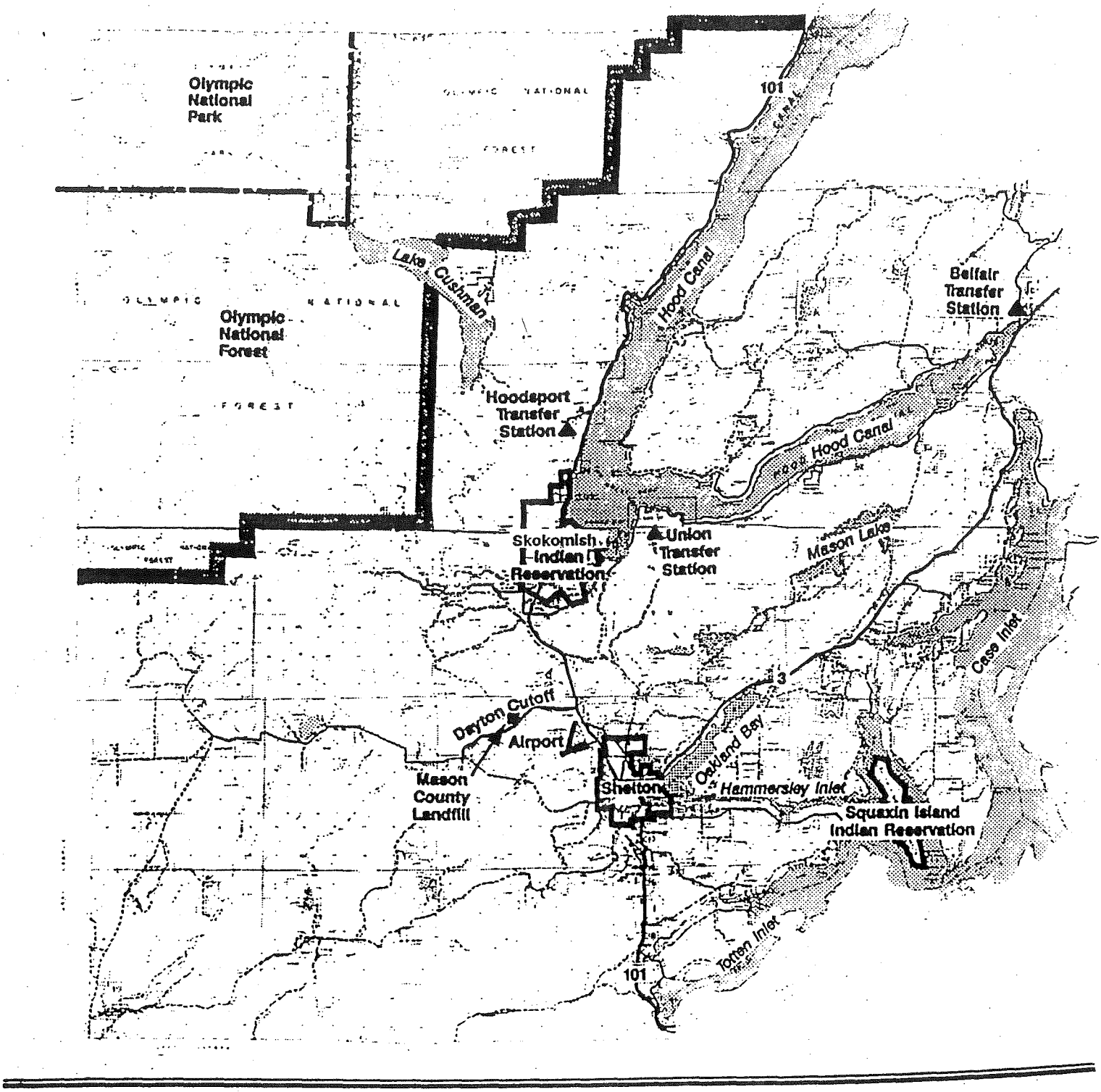


Figure 7.1A: TRANSFER LOCATION

MASON COUNTY SOLID WASTE MANAGEMENT PLAN
CHAPTER 8A ENFORCEMENT AND ADMINISTRATION

8.1 INTRODUCTION

This section describes and evaluates enforcement and administration of the solid waste system for Shelton and Mason County. It also provides alternatives for the solid waste administrative system to better perform solid waste management.

The solid waste planning goals for Mason County are:

- To ensure that the Office of Environmental Health's permitting, monitoring and compliance programs for solid waste are adequately funded, staffed, managed, and enforced.

- To ensure the Department of Community Development is adequately staffed, trained, and managed for coordination of solid waste activities.

8.2 EXISTING PRACTICES

8.2.1 Organizational Structure

Mason County

In August 1991, the solid waste management organization in Mason County underwent structural changes. Prior to August 1990, solid waste, including the Office of Environmental Health, was managed through the Department of General Services. The General Services Director and his assistant managed operation of all solid waste facilities along with other responsibilities. A landfill operations manager was employed by the Department to work exclusively at the landfill. Also each transfer station was staffed with a toll booth attendant and the landfill with two attendants.

During August 1990 responsibility for management of solid waste facilities, in addition to water and sewer, was transferred to the Public Works Department. A "Utilities Administrator" position was created and staffed. Under the Public Works organization, the landfill operations manager as well as toll booth and landfill attendants reported to the Utilities Administrator, who in turn reported directly to the Director of Public Works.

Currently, solid waste is managed under the Department of Community Development. Planning and Utilities are also managed under this Department. A "Project Manager's" position (previously called "Utilities Administrator") was created. This position along with the Landfill Attendants report to the Director of Community Development.

Mason County Environmental Health has been placed under the management of the Department of Health. Environmental Health is actively involved in solid waste matters within the County. They permit new solid waste facilities, monitor and inspect existing facilities, and respond to health related complaints from the public.

Illegal dumping is investigated by Environmental Health and evaluated on the basis of existing solid waste disposal regulations.

City of Shelton

The City of Shelton's solid waste utility is included with other functions of the City's Department of Development Services. The Director of Development Services is responsible for sewer, water, roads, and garbage service. Garbage, water, and sewer billings are performed by the City Clerk's office.

8.2.2 Monitoring and Enforcement

Enforcement of solid waste and health related laws in the County and City of Shelton is the responsibility of the Office of Environmental Health and the City of Shelton Code Enforcement Office. Under the litter control ordinance, illegal dumping is the responsibility of the Sheriff's Department, although the Office of Environmental Health may become involved when health related issues arise. The Sheriff's Department and the Office of Environmental Health may request assistance from the Prosecuting Attorney if necessary. Illegal dumping and litter control within the City of Shelton is also enforced through the City of Shelton Municipal Code in addition to the Uniform Housing Code as it applies to nuisance abatement.

The Office of Environmental Health monitors and inspects the landfill, solid waste facility and drop box stations, and other facilities that may impact human health. Whenever the situation is not covered by the County's ordinances, the Office of Environmental Health enforces state regulations.

Overall review and enforcement of state solid waste regulations is provided by the Washington Department of Ecology (Ecology). Mason County is under the jurisdiction of the southwest regional office.

8.2.3 Financing and Funding

Mason County solid waste services are funded through fees collected at the solid waste facility, drop box stations and a solid waste combined grant managed by the Department of Community Development. Mason County raised landfill rates in early 1995 to fund increased solid waste activities in the County.

City of Shelton refuse programs are funded through refuse collection fees.

8.3 NEEDS AND OPPORTUNITIES

The needs and opportunities for enforcement and administration are generated in this section based on goals listed in the beginning of this chapter. As needs are generated, issues are raised and presented at the end of this section.

GOAL: **To ensure that the Office of Environmental Health's permitting, monitoring and compliance programs for solid waste are adequately funded, staffed, managed, and enforced.**

With one solid waste specialist, the Office of Environmental Health is minimally staffed for current permitting and monitoring needs. However, as solid waste programs expand and become more complex, further staff and funding may be required.

Illegal dumping, unapproved storage of hulk and inoperable vehicles, and solid wastes on private property are primary targets of compliance enforcement. The rural nature of the County provides a multitude of locations for illegal dumping and makes it difficult for these sites to be identified other than by complaints. Complaints are typically received both by the Sheriff's Department and the Office of Environmental Health. Once a complaint is received, the landowner is approached for site cleanup.

Enforcement capabilities in the Office of Environmental Health are limited due to staff size, ordinance structure, absence of zoning, and limited legal support. Funding supports the county solid waste specialist in identifying illegal dump sites. Identified sites are then required to become compliant through the Office of Environmental Health by permitting, proper closure, or abatement.

To enforce illegal dumping ordinances the Office of Environmental Health responds to complaints, investigates, and enforces compliance through a legal process starting with Notice and Orders. This is not always timely since compliance is dependent upon mutual cooperation.

There are several non-permitted landfills operating in Mason County. These non-permitted landfills are typically wood waste and demolition fills. Office of Environmental Health staff have identified and are enforcing permitting requirements for these facilities.

In addition to enforcement of illegal dumping, there is an increasing emphasis on utilization of sewage solids as a resource in land application. This has already impacted Office of Environmental Health activities and has the potential for additional staff involvement.

GOAL: **To ensure the Department of Community Development is adequately staffed, trained, and managed in its solid waste activities.**

Staffing is currently adequate to handle the existing solid waste facility and drop box station system. However, additional staff may be required as programs for solid waste grow and become more complex.

In addition to the potential need for more staff, the County may also require funding to support new programs. A rate increase was passed in 1995 to fund post closure costs associated with the landfill and the Solid Waste Management Plan. However, further funds for new programs may be required.

ISSUE: **If the solid waste management workload begins to exceed existing staff capabilities how should the Department of Community Development respond? New staff? Privatization?**

ISSUE: **How can the County better enforce laws and ordinances? As a preliminary step, should the County evaluate the programs being enforced? Would a permanent enforcement person under the Office of Environmental Health be feasible? Warranted? Are other ordinances appropriate?**

ISSUE: **Where should funding to support new programs and staff be obtained? What are alternatives?**

8.4 ALTERNATIVES AND EVALUATION

Complex environmental issues, increased emphasis on recycling and waste reduction programs, more complicated operational requirements at sanitary landfills, and the need to coordinate all aspects of the solid waste system including infectious and household hazardous waste has drawn attention to administration and enforcement.

Laws have been passed and new technologies have been developed that affect how a County deals with its solid waste. The burden of tracking these changes and implementing the requirements they entail are demanding. Considering the changing environment, the County and the City of Shelton may want to consider enhancing their ability to administer the solid waste system and enforce solid waste regulations.

This section discusses alternatives available to the County and City for administration and enforcement within the solid waste system. Administration options include increased staffing/ organization, temporary measures, and privatization. Within enforcement, the options include program evaluation, more and better ordinances, more authority for Office of Environmental Health and other County officials to enforce solid waste laws, increasing manpower, redefining enforcement roles, and increasing coordination between agencies.

Each alternative is discussed separately, but more than one of the alternatives can be implemented together. For example the County may increase its staff, and privatize some elements of the system.

8.4.1 Administration Alternatives

ISSUE: If the solid waste management workload begins to exceed existing staff capabilities how should the Department of Community Development respond? New staff? Privatization?

Maintain Existing Staffing. Under this alternative the existing management organization and manpower would perform all solid waste management responsibilities. At present, staff is handling the solid waste system. However, future demands, including increased recycling efforts, educational programs, and possible new regulations will continue to put increasing demands on staff.

If this alternative is to be effective, the County may need to rely more on consultants, private and non-profit organizations, and the general public to implement programs. A well coordinated effort for defining responsibilities and establishing community action groups could allow this alternative to succeed. Therefore, the demands on County employees may be extreme.

Enhanced Staffing. If the County wishes to continue its role as solid waste managers, then increased staff may be required. There currently exists a staff person who coordinates recycling efforts between the County and the City of Shelton. Responsibilities include coordinating public education programs, recycling contracts, performing waste audits for businesses, tracking recycling rates, monitoring legislation and lobbying. An additional staff member could also assist in developing and implementing hazardous waste alternatives.

Increased Privatization. To reduce the strain on County government, particularly if a decision is made not to increase staff, privatization of some elements of the solid waste system may be desirable. Three areas have potential for privatization:

- Landfill ownership, operation, and management
- Recycling program development and operation
- Solid Waste Facility and Drop Box Station operations

By pursuing privatization the County may be able to keep staff levels at or below their existing levels and decrease their requirements for administration. Conversely, greater attention would be given to development of contracts. Enforcement of solid waste operations would probably need to be boosted to ensure that contractors, or private operators are performing their responsibilities in accordance with laws and County contracts.

Several communities have landfills operated by private enterprise. The County can continue to derive funding for its solid waste programs through a surcharge on landfill tipping fees, but all other responsibility for landfill construction, operation, and maintenance could be provided by a private company.

The County can privatize the recycling system through several means. One is to issue a Request for Proposals (RFP) for collection of recyclable materials and negotiate a contract for collection and sale of materials to include curbside collection or drop boxes. The County could work with the contractor to define service areas and minimum levels of service. The City of Shelton presently has a curbside recycling program where a private company collects the recyclables.

Another means of privatizing the recycling industry is to require the hauling company to provide recycling service to County residents. One method of doing this is to require the collection company to meet a certain recovery rate for recyclable materials and leave it up to the hauler to decide how to go about achieving that level. This method has the advantage of utilizing the haulers knowledge of his collection area to implement programs in the most effective way. The hauler would need to petition the WUTC for a rate increase to cover the cost of collecting recyclables as required by the County. Haulers in other counties have expressed their approval of this approach to privatize recycling.

Instead of County employees operating the solid waste facility and drop box stations, the stations would be leased to a private contractor who would provide all services for the facility including collecting recyclables, contracting for drop box removal, and performing day to day operations.

With recycling, and station operations privatized, the County would be in the position of providing enforcement and overall contract administration services for these three areas. Responsibilities in the area of special waste streams and public education would be maintained and some staff whose positions are eliminated by privatization could assist in these areas.

City of Shelton Increased Staffing. The City of Shelton should be able to continue operating its solid waste division through its Department of Development Services. Present staffing is adequate to manage existing waste disposal programs. The present recycling program did require an additional staff member. As discussed previously, the recycling staff member is shared with the County.

8.4.2 Monitoring and Enforcement Alternatives

ISSUE: **How can the County better enforce laws and ordinances? As a preliminary step, should the County evaluate the programs being enforced? Is the permanent enforcement person under the Office of Environmental Health feasible? Warranted? Are other ordinances appropriate?**

Several alternatives for increasing the monitoring and enforcement activity of the County in the area of solid waste will be discussed in this section in addition to the benefits of program evaluation. Specifically of concern is enforcement of special waste regulations, littering and illegal dumping, and new solid waste facility permits. With any potential new landfill and the environmental monitoring and operations requirements associated with it, more activity will be needed from the Office of Environmental Health.

Program Evaluation. In addition to classic methods of increasing authority, staff and funding for enforcement, consideration could also be given to the solid waste system itself. Large increases in illegal dumping could be viewed as public dissatisfaction with the system.

Evaluation of the solid waste system structure and development of methods to make the system more acceptable could be one method of avoiding the need for extensive enforcement.

A lack of public information and education could also contribute to poor understanding of County actions and an increase in enforcement requirements. However, some level of illegal dumping should be expected regardless of the level of public support and enforcement methods.

Civil Penalties. The Office of Environmental Health can work with the Department of Community Development to propose a civil penalties ordinance to include ticket-writing authority.

The solid waste management plan can be used in conjunction with WAC 173-304, MFS and other environmental regulations to develop a coordinated approach to ordinances regarding solid waste. Examples of ordinances from other counties can be used as a guideline for developing Mason County's ordinances.

Improve interagency coordination. The large number of different law enforcement agencies having jurisdiction in the County makes interagency cooperation in the enforcement of solid waste regulations essential. The County Sheriff, City of Shelton Police, City of Shelton Code Enforcement Office, Mason County Office of Environmental Health, Washington State Patrol, State and National Park Rangers, and Tribal Police, and Natural Resources Department all have areas of jurisdiction. Each agency could be made aware of the correct routine for reporting what appears to be illegal dumping, even if enforcement of illegal dumping laws is not a priority.

Increase Office of Environmental Health Staffing and Training. The Office of Environmental Health is the agency responsible for monitoring and enforcing solid waste laws and regulations as well as permitting solid waste facilities. As laws change this task becomes more and more demanding and may require the Office of Environmental Health to increase its staffing level and provide additional specialized training to some staff.

The Office of Environmental Health maintains a staff person whose primary job is solid waste enforcement. This person is responsible for keeping up to date on all applicable regulations and is responsive to all enforcement requests related to solid waste. The Office of Environmental

Health is currently partially funding this position by a grant for an employee of this nature (2 year grant).

Mandatory Collection in Unincorporated Areas. Solid Waste tipping fees and garbage collection rates will inevitably continue to increase. With rising rates will come the possibility of increased illegal dumping and the enforcement concerns associated with this. One option available to the County for handling this problem is to pass a mandatory collection law. Under a mandatory collection ordinance all County residents would be charged for a minimum level of refuse service whether they use it or not. This could reduce the likelihood of illegal dumping.

Mandatory collection could take several forms. A fee could be applied to all County residents and free tipping could be implemented at the landfill and transfer stations. Those residents subscribing to collection services could continue while self-haul customers could be charged through utility or other billings.

However, mandatory collection could be strongly opposed by residents who self-haul refuse, burn refuse, or simply dislike mandatory programs. The benefits of mandatory collection must be weighed against the opposition of these individuals.

8.4.3 Funding Alternatives

ISSUE: Where should funding to support new programs and staff be obtained? What are alternatives?

Funding for solid waste programs, administration, enforcement and monitoring can be provided by several means. Capital improvements can be financed through internal financing, general obligation bonds, revenue bonds, industrial development bonds, grant funding, and private financing, with payback during operation. Operations can be funded through an enterprise fund or general funds.

In the past, revenue has been generated through tipping fees at the solid waste facility for the County and through collection rates for the City of Shelton. Other alternatives exist for generating revenue for solid waste administration and enforcement. These include charging through the collection system, funding through general funds, and private funding for private operations. Fees collected from tickets and penalties could also be included in solid waste funding. The use of private collection agencies could be explored to collect outstanding civil penalties due the County.

Internal Financing. Internal financing involves collecting funds from whatever revenue source is preferred and paying for programs directly from this revenue or from a capital improvements fund established expressly for the purpose. In this alternative, the County would place a surcharge on the tipping fee at the landfill or a surcharge on the collection bill and any funds generated that are surplus to the current needs of the system are placed in a capital improvements fund. As the fund grows, the opportunity for additional capital improvements to the system grows. This

method is not well suited for financing large capital expenditures because of the long period of time required for the fund to reach the required size. However, the capital improvements fund can be used to finance small scale projects, studies, and pilot programs.

General Obligation Bonds. General obligation bonds are the typical method of financing large scale capital improvements to a solid waste system. Under this method, the County is obligated to the bond holders for repayment. Repayment of the bonds would be made through whatever means of generating operating revenue for the solid waste system is used. The amount of General Obligation Debt a County may have is regulated by the State.

Revenue Bonds. Revenue bonds are similar to general obligation bonds except that repayment is guaranteed through funds collected as part of a revenue producing activity (for example a landfill tipping fee). Revenue bonds may incur additional obligations such as flow ordinances and higher tipping fees than a general obligation bond because repayment of the bonds is not tied to the County as a whole, but rather to the revenue stream generated by solid waste activities.

Industrial Development Bonds. For joint ventures between private enterprise and the County, Industrial Development Bonds (IDB's) may be used for funding capital improvements. IDB's are particularly common in financing waste to energy projects; however, other joint ventures may be amenable to this form of joint cooperation. There is a statewide cap for such bonds, so any project would have to compete with other projects throughout the state.

Grant Funding. The County and City of Shelton have received grant monies for projects. More grant monies are available from the Department of Ecology under the Coordinated Prevention Grant program. The current cycle of this program provides funds for 1998 and 1999.

Private Financing. Private solid waste projects can be financed through private sources. This method of funding capital improvements and programs is more expensive than the previously mentioned programs. But for private projects, private financing is preferred. The cost of privately financed projects is recovered through charges to customers using the facility.

For example, if the County pursued privatization of its transfer station operations and the private contractor wanted to upgrade the facilities to handle collection vehicles, these improvements could be financed through private sources and the funds recovered through charging the collection company for the service rendered.

Enterprise Fund. This is the current method of funding daily solid waste activities by the County. The enterprise fund is established under provisions of the Governmental Accounting Standards Board's 1987 Codification of Governmental Accounting and Financial Reporting Standards, Section 1300.104. In this method a special fund is established and revenues collected are deposited in the fund. As funds accumulate they may be used to provide for internal financing of less capital intensive projects. The enterprise fund monies can also be obligated to repaying revenue bonds for large capital projects.

Portions of the enterprise fund may also be dedicated to funding specific enforcement programs in the Office of Environmental Health and the Sheriff's Department.

General Fund. General fund financing of solid waste activities is an additional option although it has significant drawbacks. In this alternative a solid waste budget would be developed and approved through normal County methods. The solid waste activities would compete with other projects for available funds. All revenues collected from the landfill or from enforcement actions would be directed to the County's general fund.

However to provide the required funds to establish solid waste programs under this alternative may require a general tax increase. In general a tax increase is difficult to implement even for the most needy programs, and no guarantee can be made as to its ability to be implemented. Without a tax increase, other County programs would suffer to pay for solid waste activities.

This alternative allocates the cost of the solid waste system to all citizens of the County whether they have garbage service or not. General fund financing of solid waste programs would make it difficult to establish a rate incentive for recycling and would make it more difficult to add future programs because of the process that must be followed to establish a budget and fund it.

General fund financing of some activities related to solid waste could be considered. These activities would be in areas where responsibilities are shared with other departments such as enforcement by the Sheriff's Department or Office of Environmental Health. General Fund financing may be the best alternative for these programs because it is consistent with the existing funding mechanism for those agencies. In addition it would be difficult to define exactly how much of the cost of such a program is directly related to solid waste. However, as discussed, general fund financing is limited and programs may not have sufficient priority in relation to other programs to receive adequate funding.

Sources of Solid Waste Revenue. Revenue to fund either an enterprise fund or the general fund for solid waste programs can come from several sources including general taxes, transfer station tipping fees, collection rates, or a combination thereof.

The existing County funding structure relies on transfer station tipping fees to fund solid waste activities. This is a common method of funding solid waste programs.

To accommodate the long term financial obligations related to managing the County's solid waste system rate reviews and adjustments may be required. Rate reviews should reflect the cost of new programs, development of new facilities, closure costs and ongoing maintenance and monitoring during the post closure period. In general, all costs associated with construction, operation, closure of old landfills, post closure costs, and management of the solid waste system in the County could be paid for with funds collected at the transfer stations. However, it is likely to require continual rate increases.

With rate increases, the risk of increased illegal dumping is possible. Mandatory collection could help minimize this risk. The transfer station tipping fee should be equitable and reflect the actual cost of the solid waste handling system.

A surcharge could also be placed on any waste that is disposed from outside of Mason County. This surcharge could reflect the non-quantifiable costs associated with having to site and have a landfill within the County. However, it is likely that import of solid waste will be prohibited under an ordinance in the future.

Another option for funding solid waste programs is to collect funds through the collection companies. Any collection company operating within the County could be required to charge a County administration fee. This revenue would be turned over directly to the County.

If a private landfill was permitted, a similar method could be used to place a surcharge on the landfill tipping fee that would fund County programs. This is the method that has been used in several counties including Pierce, Kitsap, and Whatcom.

Aside from charging for all County administration fees through collection, there is the option of charging for specific services through a surcharge on the tipping fee, charging for other services through the collection company and still other through the general fund. This arrangement has the advantage of being flexible to the demands being placed on solid waste managers, but still utilizing incentives and providing for several means of meeting program requirements.

8.5 RECOMMENDATIONS

Solid waste management responsibilities in Mason County are shared between the Department of Environmental Health and Department of Community Development. Each department is familiar with their individual staffing, training and management needs.

Revenues collected at the solid waste facility and drop box stations are the major funding source for solid waste activities. In order to properly comply with regulations there has historically been a need to increase fees as well as a need for additional funding sources for major construction.

Continuation of a staff member within the Office of Environmental Health to monitor and enforce against illegal dumping is strongly supported by the SWAC. The Office of Environmental Health has acquired funding and employs an enforcement staff member to identify illegal dump sites (presently a 2 year grant).

No needs or changes to the existing Solid Waste system were identified for the City of Shelton.

> **Recommendation 8.1.** The County should maintain its existing Community Development structure.

Recommendation 8.2. The County should continue to examine and adjust tipping fees in light of future solid waste programs.

Recommendation 8.3. The County should evaluate and develop additional funding sources for future major capital expenditures.

Recommendation 8.4. The County should investigate the establishment of a civil penalty ordinance allowing the ticketing of violators.

Recommendation 8.5. The County should continue employing a permanent enforcement staff member for illegal dump site identification.

8.6 IMPLEMENTATION

An implementation schedule and planning level budget is developed in this section for enforcement and administration.

Table 8.1A IMPLEMENTATION SCHEDULE - ENFORCEMENT AND ADMINISTRATION

1998-2002	The County evaluates additional funding mechanisms for major capital expenditures.
	The County investigates potential ticket writing compliance enforcement within the Office of Environmental Health. Funding needs are considered.
	The County continues to staff programs as required.
	The County periodically examines tipping fees for adjustment.

Table 8.2A IMPLEMENTATION COST SUMMARY*

• Evaluation of additional funding mechanisms for major capital expenditures.	Little to No added Cost
• Funding of enforcement personnel in the the Office of Environmental Health.	$20-30,000 Annually
• The County continues to staff programs as required and periodically examines tipping fees for adjustment.	$30,000 per added Employee

*Costs indicated have been developed for planning purposes only. As activities are begun, costs should be re-evaluated for more accurate estimates.

MASON COUNTY SOLID WASTE MANAGEMENT PLAN
CHAPTER 9A SPECIAL WASTE STREAMS

9.1 INTRODUCTION

This section evaluates existing and proposed methods of handling various non-hazardous solid waste streams other than mixed municipal waste. These waste streams include biosolids, septic tank pumpings, demolition wastes, wood wastes, industrial wastes, tires, infectious waste, white goods, and asbestos. Management of these special wastes is an important aspect of the solid waste system and this section recommends alternative methods of dealing with them.

The solid waste planning goals for Mason County in the area of special waste streams are:

- To provide guidelines and strategies for disposal of all special wastes.
- To ensure that special wastes are disposed in a manner that complies with all state and federal regulations.

9.2 EXISTING PRACTICES

9.2.1 Biosolids

Mason County operates two sewage treatment plants. Bio-solids from these plants are collected by private hauler and transported to Bio-Recycling, a Centralia based company.

Biosolids from the City of Shelton sewage treatment plant is land applied to an 80 acre parcel of treed land owned by the Simpson Timber Company. This land is permitted through the 1990s for biosolids application. Approximately 184 tons of sludge is generated each year by the City treatment plant and land applied in Mason County. The site is monitored by the City of Shelton and the Mason County Department of Health Services.

The Washington State Corrections Center also has its own small wastewater treatment plant on-site. Biosolids from this plant is land applied on grassland and non-merchantable timber within corrections center property. The Corrections Center is currently investigating the construction of a composting facility.

Sludge from outside the County is imported and applied to 700 acres of Christmas tree land. This operation is run by Bio-Recycling. A chemical analysis of all imported sludge is provided before it is land applied in Mason County.

All biosolid application within Mason County is subject to review by the Health Department and the requirements established by Ecology and EPA. Currently a moratorium has been placed on all new biosolid land application permits in Mason County.

9.2.2 Septic Tank Pumpings

Approximately 1,300,000 tons of septic tank pumpings are generated in Mason County each year. The past practice of disposing of the septage waste in trenches was ceased as of January 1990. Currently septage wastes generated in Mason County are disposed of at the Bio-Recycling facility in Mason County. Some septage generated outside of Mason County is also accepted.

Old septage trenches on the landfill site have been excavated and the material stockpiled with temporary cover for future use as topsoil over the existing landfill.

9.2.3 Demolition Wastes

Demolition waste consists of inert waste resulting from the demolition or razing of buildings, roads, and other man-made structures. Demolition wastes includes concrete, brick, bituminous concrete, wood, masonry, roofing paper, steel, and minor amounts of metals such as copper. Material other than wood demolition waste that is likely to produce leachate, such as plaster, is not considered demolition waste. Stumps, yard waste and the by-products from wood products manufacturing are also not considered demolition wastes.

The production of demolition waste peaks in the spring and summer. Demolition wastes are currently exported along with other MSW generated within the County.

There are a number of non-permitted or illegal dumps in Mason County. As these sites become known to MCDHS they are brought into compliance. These sites contain demolition wastes, wood wastes and other materials which may or may not include MSW.

9.2.4 Wood Waste

Wood waste is defined as solid waste that is a by product of wood products manufacturing. It includes saw dust, shavings, stumps, wood chunks, hog fuel, pulp, and log sort yard waste. It is unknown how much of this type of waste is generated in Mason County each year from various sources. However the Simpson Timber Company is the largest producer of wood waste.

To eliminate a large portion of their wood waste, the Simpson Timber Company operates a hog fuel fired boiler at their Shelton headquarters. The plant can produce 140,000 lbs of steam while burning 12 to 15 tons of wood waste per hour. It came on line in March 1986 at a cost of six million dollars and is capable of producing steam 24 hours a day during the winter.

In the past, some wood waste was delivered to the Mason County Landfill for disposal. It was occasionally used as daily cover at the landfill and the remainder was disposed in a separate location away from the active face of the landfill.

Simpson Timber Company has its own 40 acre wood waste disposal site located West of Shelton near Dayton. Simpson disposes of ash from its boiler, wood waste and slaker ash from its Tacoma mill on this site. Groundwater is monitored at the site. Simpson has contracted with a private company to recover prepare, and utilize clean woodwaste for use as soil amendment, bulking agent, and other appropriate and beneficial uses.

9.2.5 Industrial Waste

Industrial solid waste, means waste byproducts from manufacturing operations such as scraps, trimmings, packing, and other discarded materials that are not considered dangerous wastes.

Other than Simpson, there are few manufacturing firms in the County; therefore, little industrial waste is generated. If any industrial waste is brought to the Solid Waste Facility the Health Department is notified to verify that the waste is not hazardous and is acceptable for disposal.

9.2.6 Tires

Approximately 1425 tires are accepted at the Mason County Solid Waste Facility per year. Tires present a special problem for landfill operations in that they tend to "float". Because of their shape and tendency to hold air, tires will work their way to the surface of a landfill over time. Tires also cause problems for compaction equipment and can disrupt the final landfill cover. For these reasons tires are usually not accepted at landfills.

Currently the Solid Waste Facility operators stack the tires in piles. These are removed by a private contractor and recycled.

9.2.7 Infectious Wastes

Infectious wastes are those wastes generated by hospitals, medical clinics, dental offices and veterinary clinics. These wastes are contaminated with human or animal blood or other body fluids. Other infectious wastes that present a physical hazard to solid waste personnel include sharps such as needles and scalpels.

All infectious wastes generated in Mason County, including those from the Corrections Center and Mason General Hospital are removed and disposed of by private contractors.

9.2.8 White Goods/Appliances

Currently white goods and appliances are temporarily stored at the Solid Waste Facility. A private contractor strips the switches and removes the salvageable metal from the site. Non-salvageable materials are exported.

The County requires the salvageable metal contractor to provide approved CFC disposal services.

9.2.9 Asbestos

Currently asbestos is disposed of at the solid waste facility under the following conditions:

The asbestos contractor obtains and completes the appropriate Department of Community Development form which describes the source and quantity of asbestos to be disposed.

Asbestos is double bagged and wetted.

The landfill operator is notified prior to bringing asbestos on-site.

A special trailer will need to be obtained to transport asbestos in accordance with DOT and United States Environmental Protection Agency regulations promulgated at 40 CFR part 61.141, or any other applicable law.

Handlers of asbestos wastes are required to wear protective clothing and filter masks.

9.3 NEEDS AND OPPORTUNITIES

Special waste stream disposal practices are evaluated in this section on the basis of the previously developed goals. Needs and opportunities are developed from the evaluation. Policy issues are raised as each waste stream is discussed and are presented at the end of each subsection.

The goals which each special waste stream are evaluated by are reiterated below:

GOAL: To provide guidelines and strategies for disposal of all special wastes.

GOAL: To ensure that special wastes are disposed in a manner that complies with all state and federal regulations.

9.3.1 Biosolids

Currently the Mason County Health Department provides guidance and review of all biosolid land application in Mason County based on requirements established by Ecology and the Environmental Protection Agency. According to these requirements, land disposal of sludge meets all state and federal regulations for biosolids disposal. Utilization of biosolids is supported under RCW 70.95.255 which allows Ecology to prohibit disposal of biosolids. Ecology has established a policy that biosolids shall be utilized as a resource rather than disposed in landfill.

Currently there is a moratorium on new biosolids land application permits and expansion of existing facilities in Mason County. Three generators of biosolids exist in Mason County, the County, Shelton and the Corrections Center. Mason County biosolids is handled by a private contractor. Shelton has a permitted land application site that is authorized through the 1990s. However, if not resolved, the moratorium may affect Shelton once the permit expires on the existing land application site. The Corrections Center applies its biosolids on its own property.

Bio-Recycling also has a land application site for local and imported biosolids in Mason County. While this site can continue operating under the existing permit, future permits or expansion of the program would be affected by the moratorium.

The remainder of the County is served by septic systems. Should more sewer systems be installed in populated areas of the County, biosolids quantities could increase and aggravate this problem.

ISSUE: **How will biosolids be handled in Mason County? Will the County continue to accept biosolids from out of County? What are alternatives to land application?**

9.3.2 Septic Tank Pumpings

No immediate planning needs exist for septic tank pumpings since the County has established a strategy for handling the waste stream. However, the County is investigating alternative methods of disposal of the waste stream. Some opportunities may exist for alternate uses of the material.

ISSUE: Is lime stabilization and land application the most viable disposal option for septic tank pumpings? Are there other alternatives?

9.3.3 Demolition Wastes

Disposal of demolition wastes are specifically addressed in WAC 173-304-461, MFS. Under that regulation, the requirements for demolition sites are significantly reduced from those required for solid waste landfills. For example, no liners, leachate collection or treatment systems are required for demolition fills. The less stringent requirements would result in cost savings in all aspects of construction, operation and maintenance of the demolition fill. Under the old solid waste disposal standards, solid waste landfills also had no liner, leachate collection or treatment requirements and no significant cost savings were realized by separating demolition and MSW.

Demolition and solid waste streams can be co-disposed. Currently Mason County exports demolition wastes received at the Solid Waste Facility for disposal at the regional MSW landfill.

There is a continued need for identification of illegal and non-permitted dumps in the County. These dumps contain demolition, wood and other materials. Chapters 7 and 8 discuss this need and make recommendations.

ISSUE: **What strategy should be adopted for disposal of demolition materials? Should the County develop a demolition disposal and recovery site? Where?**

9.3.4 Wood Waste

The majority of wood wastes are burned and/or disposed of in private landfills. Currently wood wastes are not accepted at the transfer stations in large quantities, however small quantities may still be disposed. These methods comply with all regulations concerning disposal of this waste stream.

The need for permitting and/or closure of illegal dumps which may contain wood waste is discussed in Chapter 8A.

Composting of wood wastes could become a future option by either a public or private entities in Mason County.

There are several private wood waste recycling operations in Mason County.

9.3.5 Industrial Waste

Little industrial waste is generated in Mason County other than wood wastes and wood production byproducts. The current process of inspection of questionable wastes by the Health Department meets requirements for solid waste disposal and is an adequate program at this time.

As manufacturing increases in the County and other industrial waste streams are added, other programs may be required to assist industry in identifying hazardous wastes and developing methods of treatment and disposal.

Industry and businesses in the County also provide a focus for waste reduction and recycling programs. Chapter 3A addresses the issue of commercial education programs and waste audits.

9.3.6 Tires

Tire disposal presents a problem not only in Mason County but across the state and nation. The storage of tires poses significant fire hazards, environmental contamination hazards from runoff, and public health problems associated with the breeding of mosquitoes and rodents. In addition tires also pose a significant disposal problem. To date solutions to the problem are generally experimental and costly. Tire chipping operations have closed in Thurston County and Centralia leaving the nearest such facility in Portland, Oregon. Cost to transport tires this distance plus the cost of the chipping operation is high. In addition capacity at the plant is limited.

One tire company in the County was providing a solution to the immediate tire problem by retreading or burying tires. Currently tires brought to the Solid Waste Facility are collected by a private contractor. This solution is currently meeting tire disposal requirements.

ISSUE: **What existing disposal programs are available for tires? What potential future programs would assist in disposal?**

9.3.7 Infectious Wastes

Major generators are disposing of these wastes through private infectious and medical waste contractors. At this time there have been no problems with infectious or hospital wastes nor identification of infectious wastes disposed improperly in the waste stream. Although no problem has been identified, the potential could exist for improper disposal of these wastes. Should problems develop or be identified County guidance or strategy may be required for this waste stream. Also, federal regulations concerning this waste are currently being developed and may require action in the future.

ISSUE: **What form should the overall strategy take? Ordinance?**

Mason County does not accept infectious wastes at the Solid Waste Facility. Several private disposal companies serve infectious waste generators in Mason County.

9.3.8 White Goods/Appliances

Currently white goods and appliances are stockpiled on the Solid Waste Facility site and a private contractor breaks them down for salvage. This program is operating satisfactorily and no additional needs have been identified at this time. The County requires the salvage metal contractor to be certified in the removal of CFC's or utilize certified personnel for the removal of CFC's in accordance with all state and federal regulations.

9.3.9 Asbestos

No immediate planning needs exist for asbestos since the County has a method and strategy for handling the waste stream. In addition, no need exists for future solid waste handling methods such as export of solid waste since all existing regional disposal facilities will accept asbestos.

9.4 ALTERNATIVES AND EVALUATION

This section presents alternatives for managing special waste streams generated within Mason County. Alternatives are discussed and evaluated for each special waste.

9.4.1 Biosolids

ISSUE: **How will biosolids be handled in Mason County? Will the County continue to accept biosolids from out of County? What are alternatives to land application?**

The first two questions involve policy decisions. Biosolid management alternatives include land application, composting, and landfill disposal. Land application and composting require the biosolids to be stabilized prior to utilization.

Land Application. Land application of biosolids has become the standard method of biosolids management in the United States. This includes application on agricultural lands, forest lands, and as a land reclamation tool to upgrade poor soil conditions.

Successful land application of biosolids requires a carefully managed program that allows biosolids to be applied at rates that meet state guidelines. For agricultural applications the nitrogen and phosphorous needs of the particular plant species determines the rate of application. Even stricter requirements apply for metal concentrations if the biosolids will be applied to areas that grow food for human consumption. Forest lands have higher rates of application for biosolids because forests are more tolerant to the metals that can be found in biosolids and the concerns associated with a food crop are not present.

Land application of biosolids for land reclamation allows the greatest application rates. Biosolid quality is less of a constraint for land reclamation applications, however future plant tolerance to metal concentrations must be considered.

Continued land application of biosolids within limits established by the State and Federal Government offers significant benefits to agricultural and forest product industries in the County. The great abundance of forest lands and tree farms provides readily available locations for biosolids application.

Since the amount of biosolids generated within Mason County is relatively small, limited areas of application are needed to dispose of in-county biosolids. Out-of-county biosolids, however, can be used to benefit Mason County lands, while helping to solve the problem of biosolid disposal in larger Puget Sound communities such as Pierce and King Counties. Importation of biosolids is a politically sensitive issue, but can provide benefits to the County.

Co-Composting of biosolids. Biosolids have been converted to a good quality compost material through mixing with municipal solid waste, yard debris, or wood waste. Biosolids are mixed with other wastes, turned frequently to prevent anaerobic conditions; and allowed to age into compost. The compost produced can be of very high quality and can be utilized for landscaping or as a soil amendment at nurseries.

A composting project must be well planned and monitored to be successful. Concentrations of metals, nitrogen, phosphorous and other constituents should be tested for and provided to potential end-users. Market development efforts should be aimed at nurseries, landscapers, and home gardeners.

While market development efforts must initially be very intensive and may include pilot projects and advertising, eventually the material may become popular. In some composting projects the material has become very popular with demand exceeding supply during the spring and summer months.

Landfill Disposal. The Department of Ecology has listed landfill disposal of biosolids as the lowest priority utilization method and has reserved the right to prohibit landfill disposal if

necessary (RCW 70.95.255). The Department will generally allow biosolid utilization at landfill sites for cover applications only. The landfill operated by RDC will not accept bio-solids that can be utilized.

Typically raw biosolids are too wet to work with for landfill cover. In this case, mixing the biosolids with soil, wood waste or processed yard debris can improve the consistency and make it a useful source of daily or final cover. Stabilized biosolids and septage may also be combined and mixed with wood waste or processed yard debris to solve the problem of septage disposal.

9.4.2 Septic Tank Pumpings

ISSUE: Is lime stabilization and land application of treated septic tank pumpings the most viable alternative? Are there other alternatives?

Alternative methods for managing septic tank pumpings within Mason County include stabilization and composting or land application, co-treatment with wastewater and chlorine oxidation. Landfill disposal of septage is not considered because the Department of Ecology through RCW 70.95.255 has established that landfill disposal of septage is the lowest priority method of utilization. Landfill disposal is to be considered as a "last resort" alternative and only through utilization as a cover material. The landfill cover alternative was discussed under section 9.4.1.

Septic tank pumpings are becoming an increasing problem within the state and across the country. As treatment plants approach capacity they are increasingly refusing to take septage wastes. No definitive guidelines have been established by the State regarding management of septage, so solutions are "patchwork" at best.

Stabilization and Composting or Land Application. Stabilization of septic tank pumpings involves mixing the septage with some chemical or treating it by other means to render it non-pathogenic (disease causing) and to reduce its odor. One typical method of stabilization is the addition of lime. This method is approved by the Department of Ecology and renders the septage relatively safe and odorless.

Stabilized septage can be composted like biosolids. The septage can be mixed with wood waste, processed yard debris, or processed mixed waste. The mix is stockpiled in windrows and turned occasionally to maintain aerobic conditions. If frequently turned and aerated the compost is ready after about 21 days. Typically the material is left in windrows for an additional 2 to 10 weeks to ensure that all portions of the pile are composted. The composted septage can be land applied to agricultural or forest lands as a fertilizer or may be used for land reclamation purposes in areas with poor soils.

Co-Treatment with Wastewater. A common method of managing septage waste in many counties, is to deliver it to a wastewater treatment plant. The septage is pumped into the treatment plant and subjected to the same processes as the wastewater.

This alternative assumes that adequate capacity is available at the Sewage treatment plant to handle the septage. Currently there are no wastewater facilities in Mason County willing to take septic pumpings.

Mason County could consider establishing an agreement with neighboring counties to haul septage wastes to their treatment facilities. This alternative may be feasible as a short term solution.

Chlorine Oxidation. This treatment method involves adding chlorine in sufficient quantities to kill pathogenic bacteria in the septage. The septage would still need to be land applied as a final utilization method.

Because of the high bacterial populations in septage and the large percentage of solids, large quantities of chlorine would need to be added to the septage to render it free of bacteria. This method is not preferred, but could be used as a preliminary step to land application to satisfy health concerns.

9.4.3 Demolition Waste

ISSUE: What strategy should be adopted for disposal of demolition materials? Continued disposal in solid waste landfills? Develop a separate demolition disposal/recovery site? Where?

Co-Disposal with MSW. In this alternative, demolition waste and construction debris continues to be disposed of in the Regional MSW landfill. This waste would be treated just as other solid wastes are treated in terms of disposal. This is the existing method of disposing of demolition wastes in Mason County.

In general, continued disposal of demolition waste in new MFS compliant landfills would be unnecessarily expensive and an inefficient use of landfill capacity. Although demolition waste could be co-disposed with solid waste, the capacity of the landfill is better reserved for other solid wastes that cannot be disposed of elsewhere.

Demolition Landfill. A demolition landfill is beneficial because it has less strict construction and operational requirements. The landfill does not require a liner, and cover is only required at closure or during summer months for wastes that pose a fire hazard. Because there is no leachate treatment, daily cover, environmental monitoring, or final cover requirements the cost of disposal is significantly less than an MSW landfill.

Smaller, private, demolition fills located throughout the County in locations that are convenient for local construction activity have certain advantages. If a contractor has to travel a long distance to get to a demolition landfill there is a temptation to illegally dump construction debris. Local demolition landfills provided by private individuals could help alleviate this problem.

Even if the County promotes development of community based demolition sites, they may still want to establish a County demolition site or continue to accept demolition wastes for export to make sure a disposal option is always available.

9.4.4 Wood Wastes

Wood wastes in Mason County provide a potential resource for composting other waste streams such as sludge or septic tank pumpings. Composting of both of these waste streams is discussed in Sections 9.4.1 and 9.4.2.

9.4.5 Industrial Wastes

No needs or issues were identified for this waste stream in the previous section. Refer to Chapter 3A for commercial waste recommendations.

9.4.6 Tires

ISSUE: What existing disposal programs are available for tires? What potential future programs would assist in disposal?

At present tire disposal in Mason County is not a problem. However, if the existing program ends, the County would need to have some alternative method of handling waste tires. Alternatives considered in this section include shredding/landfilling, recycling, and exporting tires out-of-county.

Shredding and Energy Recovery. Landfill disposal of used tires is not an option. Tires can be shredded, and the chips used to augment hog fuel, this practice has been found to benefit the operation and efficiency of these facilities.

Some types of tires can be a problem for a shredding machine, such as some steel belted tires. Segregation of problem tires would be required based on the shredder manufacturer's recommendations. These non-shreddable tires could be recycled or disposed of separately.

Recycling Tires. There are a number of recycling options for used tires. Whole tires can be used for artificial reefs, erosion control, floating breakwaters, highway guards, dock bumpers, concrete base forms for poles or fences, and in playgrounds. One method currently being used involves cutting tires into strips and weaving these strips into mats. These mats can be used for erosion control, landscaped areas, and trail stabilization. All of these options are being pursued before tires are landfilled.

Out-of-County Exporting of Tires. The tire disposal problem is common to many counties in the State. Problems of this magnitude have generated some creative alternatives.

9.4.7 Infectious Wastes

ISSUE: What form should the overall strategy take? Ordinance?

Alternatives for managing the infectious wastes generated in Mason County include incineration, controlled landfill disposal, and sterilization with uncontrolled landfill disposal. Although no problems are currently identified, the County may consider an ordinance at some future date.

A County ordinance on infectious waste could include a definition of infectious wastes, handling methods, disposal requirements, acceptable sterilization and incineration methods, and requirements for each generator to have an infectious waste management permit and plan. One model of an infectious waste regulation is the Tacoma-Pierce County Health Department's regulations.

Incineration. Incineration of infectious wastes is currently used in hospitals throughout the United States. Currently there are no known infectious waste incinerators located in Mason County. An initial accounting of infectious waste generators, including a waste stream survey would enable the County to determine if this is a feasible alternative.

Controlled Landfill Disposal. This alternative involves landfilling of infectious wastes. All generators would be required by ordinance to segregate infectious waste from the rest of their waste stream for delivery to the Solid Waste Facility. The material could be stored in colored bags similar to the method used by the correctional center. At the Solid Waste Facility, the material would be loaded in special containers and immediately shipped.

Sterilization and Uncontrolled Landfill Disposal. All infectious wastes could be required to be sterilized using appropriate measures as spelled out in a County ordinance. Methods that would be appropriate include steam, chemical, thermal, and irradiation sterilization. Once the wastes were sterilized they would be allowed to be disposed in the landfill through the normal solid waste collection service.

9.4.8 White Goods/Appliances

No needs or issues were identified for this special waste stream in the previous section.

9.4.9 Asbestos

No needs or issues were identified for this special waste stream in the previous section.

Table 9.1A summarizes existing County policies and evaluates available alternatives based on advantages and disadvantages.

9.5 RECOMMENDATIONS

9.5.1 Biosolids

The SWAC recognized the unpopularity of biosolid land application with the Mason County public, while also recognizing the potential benefits of land application in the County. Concern was voiced over the misunderstandings and lack of public education associated with this issue. The SWAC supported land application of biosolids and expressed a desire to see a policy developed which would allow land application of biosolids within Mason County.

Recommendation 9.1. Mason County should proceed with a public awareness and education program for biosolids utilization in land application. The County should continue to investigate alternative methods for biosolids handling, including possible regional solutions.

Recommendation 9.2. The County government should support land application of biosolids. The County should develop clear policies and guidelines for biosolid land application. These should include EPA requirements as well as guidelines for site selection.

9.5.2 Septic Tank Pumpings

Septic pumpings generated in Mason County are currently disposed of at the Bio-Recycling lime stabilization/land application facility located in the Webb Hill area.

Table 9.1A summarizes existing County policies and evaluates available alternatives based on advantages and disadvantages.

AL WASTE STREAM ALTERNATIVES EVALUATION

Special Waste	Existing County Policy?	Alternatives	Benefits	Disadvantages
Biosolids	yes	Land Application	• Benefits Lands	• Adverse Public Opinion
		Co-Composting	• Under Development	• Adequate quantities of septage available
				• Cost of program
		Landfill Disposal	• No new program required	• May be prohibited by WDOE
				• Wasted resource
Septic Tank Pumpings	Yes Dispose by Pvt Contractor	Stabilization/Compost	• Produces useable resource	• Cost of program
		Co-Treatment in WWTP	• No new program required	• Increases sludge quantities
				• Inadequate capacity in county, high cost of export
		Chlorine Oxidation	• Stabilization Method	• Large quantities of chlorine required
				• Requires end use or disposal
Demolition Waste	Yes research recycling options.	Co-Disposal w/MMSW	• One Landfill needed	• Uses capacity permitted for MMSW
		Demolition LF		• Two LFs needed
			• Conserves MMSW Capacity	

Special Waste	Existing County Policy?	Alternatives	Benefits	Disadvantages
Wood Waste	Yes Limit Quantities Accepted	Potential use in composting other waste streams	• Production of useable resource	• Uncertain marketability of product • Cost of Program
Industrial Waste	Yes LF Disposal w/Health Dept. Approval	None Identified		
Tires	Yes Collected by Contractor	Shredding and Landfilling	• In-County program • Prevents tires floating in LF	• Costly shredding equipment • Wasted resource
		Recycling	• Takes advantage of resources	• Costly programs • No current local programs
		Out-of-County Export	• Current program requires no new program	• Possible wasted resource • Dependent on out-of county contractors
Infectious Waste	Yes out of county by private contractor.	Incineration	• Current program • Effective means of volume reduction and sterilization	• Incinerator air impacts

Table 9.1A SPECIAL WASTE STREAM ALTERNATIVES EVALUATION (Cont.)

Special Waste	Existing County Policy?	Alternatives	Benefits	Disadvantages
Infectious Waste (Cont.)		Controlled LF Disposal	• No incinerator or sterilization method required • Reduces tasks for LF operator	• No sterilization, attention to disposal required • Some wastes may bypass sterilization and present a hazard in the LF
White Goods/Appliances	Yes Breakdown and Recycle, develop method to handle CFCs.	Landfill	• Existing practice	• Wastes resource
		"Breakdown" and Recycle	• Uses resource, reduces waste stream	• Labor intensive • Requires adequate market
Asbestos	Yes, export/landfill disposal	None Identified		

Recommendation 9.3. The County should continue utilize the private sector while evaluating alternative methods of septage handling.

9.5.3 Demolition Waste

The SWAC and County staff both support source separation of recyclable demolition wastes where feasible. However, the current solid waste export program is not conducive to separating wastes to be landfilled.

Recommendation 9.4. The County should continue to investigate the feasibility of utilizing certain recyclable demolition wastes and divert those materials to the appropriate facilities.

9.5.4 Wood Wastes

Support was given to conservation of landfill capacity and reduction of solid waste quantities through acceptance of limited amounts of industrially generated wood waste. Support was given to use of a chipper to reduce stumps and branches for use in a possible compost operation.

Recommendation 9.5. County policy should limit wood waste quantities that are disposed with solid waste.

9.5.5 Industrial Wastes

The method for screening the industrial waste stream through notification of the Health Department in cases of "suspicious wastes" was deemed adequate. However, the SWAC was also interested in business and commercial waste from a recycling standpoint. Both the SWAC and County were interested in a program of waste audits in which the City/County Recycling Coordinator would educate businesses regarding waste reduction and recycling programs appropriate for their situation. A recommendation to this effect is contained in Chapter 3A.

9.5.6 Tires

Concern was voiced over the lack of programs available for disposal of waste tires. Development of additional programs and facilities was viewed as necessary to management of this waste stream. Both the SWAC and County staff supported continuation of the existing disposal method in which a private contractor collects waste tires.

Recommendation 9.6. Mason County should support development of tire recycling methods in Washington State and monitor new programs for possible implementation within the County.

9.5.7 Infectious Wastes

Incineration of hospital wastes was judged to be an acceptable method for treatment of infectious wastes prior to disposal. However, concern was shown for the impacts of the hospital incinerator on the environment and the need for ongoing monitoring by the Health Department was identified.

> **Recommendation 9.8.** The County should continue to require stringent compliance with all state and federal regulations to reduce exposure to solid waste utility workers and prevent any possible environmental damage.

9.5.8 White Goods/Appliances

The current method for handling bulky appliances and white goods received SWAC support.

> **Recommendation 9.8.** County policy should support the current program for breakdown and recycling of white goods and appliances.

> **Recommendation 9.9.** Continue the existing handling program for the proper storage, handling and disposal of the fluorocarbons (CFCs).

9.5.9 Asbestos

The current method of landfilling asbestos received support.

> **Recommendation 9.10.** The County should continue the transportation and disposal practices for asbestos.

9.6 IMPLEMENTATION

An implementation schedule and planning level budget is developed in this section for special waste handling and disposal in Mason County.

Table 9.2A IMPLEMENTATION SCHEDULE - SPECIAL WASTE STREAMS

Biosolids

1998-2003	Mason County together with the City of Shelton continues to develop public awareness and education programs for land application of biosolids.
1998-2003	Mason County proposes and adopts a biosolid land application policy which includes application and site selection guidelines.

Septic Tank Pumpings

1998-2003	The County investigates alternative methods for septage waste handling.

Demolition Waste

1998-2003	The County continues to accept certain demolition wastes for export while investigating recycling and recovery options.

Wood Wastes

1998-2003	The County continues to accept limited amounts of wood waste for handling.

Industrial Waste - Refer to Chapter 3A

Tires

1998-2003	The County continues to dispose of waste tires through private contractor. The County investigates new programs for tire recycling or disposal and evaluates them for possible implementation.

Infectious Wastes

1998-2003	The County enforces new requirements.

White Goods/Appliances

1998-2003	The County continues to support separation and breakdown of white goods/appliances at the landfill.

Asbestos

1998-2003	The County continues regional landfill disposal of asbestos.

Table 9.3A IMPLEMENTATION COST SUMMARY*

Biosolids

• Public awareness and education program for land application of biosolids.	$2-10,000
• Adoption of a biosolids land application policy	Little to no added cost

Septic Tank Pumpings

Investigation of alternate septage handling programs.	$5-10,000

Demolition Waste

Continue to investigate recovery and recycling options while exporting these wastes along with MSW to the regional facility.	No additional cost

Wood Wastes - No added costs

Industrial Waste - Refer to Chapter 3A

Tires - Little to no added costs

Infectious Wastes - Little to no added costs

White Goods/Appliances - Little to no added costs

Asbestos - Little to no added costs

*Costs indicated have been developed for planning purposes only. As activities are begun, costs should be re-evaluated for more accurate estimates.

APPENDIX A

DETERMINATION OF NON-SIGNIFICANCE

SEP98-0026

MASON COUNTY
DEPARTMENT OF COMMUNITY DEVELOPMENT

Planning-Landfill-Utilities

DETERMINATION OF NONSIGNIFICANCE
(WAC 197-11-340)

Description of Proposal:
MASON COUNTY SOLID WASTE MANAGEMENT PLAN - UPDATE

Proponent: **MASON COUNTY**

Location of Proposal: **MASON COUNTY**

PARCEL#:MASON COUNTY
All of Mason County
INCORPORATED AND UNINCORPORATED AREAS OF MASON COUNTY

Lead Agency: **MASON COUNTY**

The Lead Agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed Environmental Checklist and other information on file with the Lead Agency. This information is available to the public upon request.

Please contact GARY YANDO at ext. 270 with any questions.

This DNS is issued under 197-11-340(2), the Lead Agency will not act on this proposal for 15 days from the date below. Comments must be submitted by **04/08/98.**

DATE: 03/24/98

Gary D. Yando
Signature of responsible official

3-20-98
Date

Responsible Official: **Gary Yando**
Director of Community Development
426 W. Cedar,
PO BOX 578
Shelton, WA 98584
(360)427-9670

NON_SIG, rev: 08/23/96

MASON CO. ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of proposed project, if applicable: *Mason County Solid Waste Management Plan Amendment*

2. Name of applicant: *Mason County, Washington*

3. Address and phone number of applicant and contact person:
Gary J. Yando - Director of Community Development
P.O. Box 578
Shelton, WA 98584

4. Date checklist prepared:

5. Agency requesting checklist: *Mason County*

6. Proposed timing or schedule (including phasing, if applicable):
This amendment is basically providing information regarding where we are in our solid waste process. It also provides current figures regarding waste reduction recycling. We also provide information which relates to recommendations covering the next five years.

7. Do you have any plans for future expansion, or further activity related to or connected with this proposal? If yes explain.
Mason County has elected to contract out for the next 15 years the transporting of solid waste to an out-of-county site as they have for the past 5 years. There may be an expansion of the Belfair Drop Box Station in the future. We may also look at construction of a new Drop Box Station in SE Mason County.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
None known.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. *None known.*

10. List any government approvals or permits that will be needed for your proposal, if known. *We have worked closely with the City of Shelton in this process. They will be required to approve the plan amendment as will the Maso County Board of Commissioners.*

11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) *The Plan is intended to be the planning tool for future decisions regarding solid waste.*

12. What is the location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.
The solid waste plan is applicable to all areas within the boundaries of Mason County.

B. ENVIRONMENTAL ELEMENTS:

1. EARTH:

a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other ____
N/A

b. What is the steepest slope on the site (approximate percent slope)?
N/A

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland. *N/A*

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.*N/A*

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.*N/A*

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.*N/A*

g. About what percent of the site will be covered with impervious surfaces after project constructions (for example, asphalt or buildings)?*N/A*

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:*N/A*

2. AIR:

a. What types of emissions to the air would result from the proposal (i.e. dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities, if known.*N/A*

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.*N/A*

c. Proposed measures to reduce or control emissions or other impacts to air, if any:*N/A*

3. WATER:*N/A*

a. Surface:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.*N/A*

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.*N/A*

3) Estimate the amount of fill and dredge material that would be place in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.*N/A*

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. *N/A*

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.*N/A*

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.*N/A*

b. Ground:

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities, if known.*N/A*

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example, Domestic sewage: industrial, containing the following chemicals . . .; agricultural, etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.*N/A*

c. Water Runoff (including storm water):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.*N/A*

2) Could waste materials enter ground or surface waters? If so, generally describe.*N/A*

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:*N/A*

4. PLANTS:

a. Check or circle types of vegetation found on the site:*N/A*

__ deciduous tree: alder, maple, aspen, other
__ evergreen tree: fir, cedar, pine, other
__ shrubs
__ grass
__ pasture
__ crop or grain
__ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
__ water plants: water lily, eelgrass, milfoil, other
__ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?*N/A*

c. List threatened or endangered species known to be on or near the site.*N/A*

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:*N/A*

5. ANIMALS

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:*N/A*

birds: hawk, heron, eagle, songbirds, other . . . . . .
mammals: deer, bear, elk, beaver, other . . . . . .
fish: bass, salmon, trout, herring, shellfish, other . . . . . .

b. List any threatened or endangered species known to be on or near the site.

c. Is the site part of a migration route? If so, explain.*N/A*

d. Proposed measures to preserved or enhance wildlife, if any:*N/A*

6. ENERGY AND NATURAL RESOURCES:

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.*N/A*

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.*N/A*

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:*N/A*

7. ENVIRONMENTAL HEALTH:

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.*N/A*

1) Describe special emergency services that might be required.
N/A

2) Proposed measures to reduce or control environmental health hazards, if any:

N/A

b. Noise.

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?*N/A*

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site
N/A

3) Proposed measures to reduce or control noise impacts, if any:*N/A*

8. LAND AND SHORELINE USE:

a. What is the current use of the site and adjacent properties? *N/A*

b. Has the site been used for agriculture? If so, describe.

N/A

c. Describe any structures on the site.

N/A

d. Will any structures be demolished? If so, what?
N/A

e. What is the current zoning classification of the site?

N/A

f. What is the current comprehensive plan designation of the site?

N/A

g. If applicable, what is the current shoreline master program designation of the site?
N/A

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify. *N/A*

i. Approximately how many people would reside or work in the completed project?

N/A

j. Approximately how many people would the completed project displace?
N/A

k. Proposed measures to avoid or reduce displacement impacts, if any:
N/A

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
N/A

9. HOUSING:

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. *N/A*

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. *N/A*

c. Proposed measures to reduce or control housing impacts, if any: *N/A*

10. AESTHETICS:

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?
N/A

b. What views in the immediate vicinity would be altered or obstructed?
N/A

c. Proposed measures to reduce or control aesthetic impacts, if any:

N/A

11. LIGHT AND GLARE

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
N/A

b. Could light or glare from the finished project be a safety hazard or interfere with views?
N/A

c. What existing off-site sources of light or glare may affect your proposal:
N/A

d. Proposed measures to reduce or control light and glare impacts, if any:
N/A

12. RECREATION:

a. What designated and informal recreational opportunities are in the immediate vicinity?
N/A

b. Would the proposed project displace any existing recreational uses? If so, describe.
N/A

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
N/A

13. HISTORIC AND CULTURAL PRESERVATION:

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe. *N/A*

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.
N/A

c. Proposed measures to reduce or control impacts, if any:
N/A

14. TRANSPORTATION:

A. Identify public streets and highways serving the site and describe proposed access to the existing street system. Show on site plans, if any.
N/A

b. Is site currently served by public transit? If not, what is the approximate distance to the existing street system. Show on site plans, if any.
N/A

c. How many parking spaces would the completed project have? How many would the project eliminate?
N/A

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).
N/A

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.
N/A

f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

N/A

g. Proposed measures to reduce or control transportation impacts, if any:

N/A

15. PUBLIC SERVICES:

a. Would the project result in an increased need for public service (for example: fire protection, police protection, health care, schools, other)? If so, generally describe:

N/A

b. Proposed measures to reduce or control direct impacts on public services, if any:
N/A

16. UTILITIES:

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:
N/A

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed:
N/A

c. Signature:

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Gary Gaveb

Date Submitted: 3-24-98