Wyoming Solid Waste Diversion Study

Conducted by LBA Associates

Commissioned by the

Wyoming Department of Environmental Quality

January 3, 2013

BASELINE QUANTITIES - 2010 TONNAGES

REGIONAL PLANNING AREA	2010 POPU-LATION[1]	2010 QUANTITY ESTIMATES (tons)[2] MSW Landfill Disposal	MSW Diverted Recyclables[3]	MSW Diverted Organics[4]	NON-MSW Disposed[5]	NON-MSW Diverted[6]	TOTAL WASTE GENERATION RATE (ppcd)[7]	WASTE DIVER-SION RATE[8]	COMMENTS
BIG HORN BASIN									
BHCSWDD		9,781	83	0	0	0			Some BHCSWDD recyclables incl in Powell tons
Thermopolis		4,523	90	0	541	0			ISWMP projections for 2010
WCSWDD #1		6,385	487	0	1,628	0			Disposed tons - ISWMP projections for 2010, recyclables - quantities escalated to 2010
WCSWDD #2		676	14	0	82	0			ISWMP projections for 2010
RPA Total/Average	**25,013**	**21,365**	**674**	**0**	**2,251**	**0**	**5.3**	**2.8%**	
EAST CENTRAL									
Casper[9]		95,300	5,466	4,390	36,500	0			Incl Glenrock & SCJPB waste tons - incl ARK recyclables
Douglas		10,320	550	NA	in MSW	0			
GASWDD[10]		*4,329*	*0*	*0*	*2,597*	*0*			*Landfill tons not counted (incl in Casper), 2006 quantities escalated by 1.029*
HCJPB[10]		1,380	5	0	550	0			
Kaycee		272	NA	0	68	0			
Lusk[10]		1,421	111	NA	356	NA			Incl WY Women's Prison & OK Wrecking recyclables (both ARK), 2008 quantities escalated by 1.013
Manville		108	0	0	0	0			Quantities estimated from TDS collection volumes
Rawlins[10]		7,817	1,082	0	4,998	0			Incl Rawlins Prison recyclables (ARK)
SCJPB[10]		240	NA	0	0	0			Quantities based on high monthly tonnage, recyclables managed by WY Steel & Recycling (tons not available)
RPA Total/Average	**104,989**	**116,858**	**7,214**	**4,390**	**42,472**	**0**	**8.9**	**6.8%**	**Incl 80% Carbon County, 6% Johnson County - GASWCC incl in Casper tons**
EASTERN									
Wheatland		4,676	112	0	699	0			Incl Guernsey recyclables (managed by ARK)
TDS[9,11]		16,992	900	0	0	0			Incl recycled scrap metal - *Manville tons excluded*
LaGrange		*201*	*0*	*0*	*0*	*0*			*Landfill tons not counted (incl in TDS), 2007 quantities escalated by 1.003*
Torrington		7,359	288	7	0	0			
RPA Total/Average	**21,916**	**29,027**	**1,300**	**7**	**699**	**0**	**7.8**	**4.2%**	**LaGrange tons incl in TDS tons**
I-80									
BSWDD[10]		587	NA	0	320	0			Some recyclables incl in Rawlins/ARK tons
EVSWDD[10]		240	75	0	100	0			Other recyclables incl in SCSWDD #1 quantities
Green River[9,10]		9,838	4,619	0	6,022	7,104			Disposal incl 2 tons glass used as ADC
SCSWDD #1		42,441	2,022	2,000	18,240	300			
SCSWDD #2		2,474	NA	0	2,474	0			Some recyclables incl in SCSWDD #1 tons
UPRSWDD[10]		1,891	31	0	2,581	0			2008 quantities escalated by 1.026% to 2010
RPA Total/Average	**46,983**	**57,471**	**6,747**	**2,000**	**29,737**	**7,404**	**12.1**	**15.6%**	
NORTH CENTRAL									
Buffalo/Johnson County[10,12]		5,611	633	224	873	0			

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Gillette/Camp-bell County		40,462	2,502	2,271	12,740	0			Current FY year quantities adjusted to 2010
Sheridan		21,191	4,213	11,161	9,756	1,278			
RPA Total/Average	**83,304**	**67,264**	**7,348**	**13,656**	**23,369**	**1,278**	**7.4**	**19.7%**	
NORTH EAST									
Hulett		613	0	0	0	0			
Moorcroft		1,637	52	0	0	0			
Newcastle		3,029	174	0	1,885	0			
Osage		465	0	0	178	0			
Sundance[10]		1,328	172	0	120	0			
Upton[10]		1,001	12	0	630	0			
RPA Total/Average	**14,291**	**8,073**	**410**	**0**	**2,813**	**0**	**4.3**	**3.6%**	
PARK									
Clark		193	17	282	174	0			
Cody[9]		5,659	1,827	2,159	18,453	0			
Meeteetse		0	0	0	0	0			Landfill tons incl in Cody
Powell[9]		7,048	2,125	1,324	40,676	0			Excludes C&D/PCS mtls landfilled prior to 2010 from 5-yr Greybull project
RPA Total/Average	**28,205**	**12,900**	**3,969**	**3,765**	**59,303**	**0**	**15.5**	**9.7%**	and also excluded landfarmed PCS quantities
SOUTH EAST									
Cheyenne[9]		58,481	5,777	34,255	63,987	4,725			Incl MCE recyclables
ELCSWDD[10]		3,534	118	0	1,777	0			
Laramie/AC		27,892	2,167	2,188	17,744	712			Incl Rock River waste; incl city, Univ of WY & other ARK recyclables
RPA Total/Average	**128,037**	**89,907**	**8,062**	**36,443**	**83,508**	**5,437**	**9.6**	**22.4%**	
WESTERN									
Lincoln County[9,10]		11,112	841	0	10,447	0			
Sublette County		2,004	633	0	4,470	3,183			*Teton tons excluded*
Teton County		25,754	4,976	6,732	1,440	1,081			
Uinta County[10]		24,139	639	0	in MSW	362			
RPA Total/Average	**70,765**	**63,009**	**7,089**	**6,732**	**16,357**	**4,626**	**7.6**	**18.9%**	
WIND RIVER									
Dubois[10]		0	0	0	281	0			Landfill tons and recyclables incl in Lander
Lander[9,10]		12,948	1,763	0	2,999	48			Lander/Riverton recyclables combined (incl some Thermopolis recyclables)
Sand Draw/Riverton[9]		18,407	0	1,005	7,136	0			
Shoshoni		0	0	0	10	0			Landfilled, diverted MSW incl in Sand Draw/Riverton
RPA Total/Average	**40,123**	**31,355**	**1,763**	**1,005**	**10,426**	**48**	**6.1**	**6.3%**	
AVERAGE FOR ALL RPAS BASED ON 2010 DISPOSAL QUANTITIES					**42,080**				
	563,626	**497,229**	**44,576**	**67,998**	**270,935**	**18,793**	**8.7**	**14.6%**	

BASELINE QUANTITIES - 2010 TONNAGES

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PERCENTAGES									
current tip fees) reflec of Disposed		65%					as % Diverted & Disposed	5%	
Non-MSW as % of Disposed		35%	MSW Recyclables as % of Diverted			34%	as % Diverted & Disposed	8%	
			Non-MSW Diverted Materials as % of Diverted			14%	as % Diverted & Disposed	2%	
Non-MSW Generation Rate (ppcd)		2.8	Disposal Quantity ppcd			7.5			
			Diverted Quantity ppcd			1.3			

Notes:

1 - WDAI source = http://eadiv.state.wy.us/Demog_data/pop2010/Profile/2010Profiles_WY.html.
2 - Where actual calendar/fiscal year 2010 data were not available, quantities were escalated using WDAI projections (source = http://eadiv.state.wy.us/pop/wyc&sc30.htm).
3 - Diverted Recyclables includes any reused materials; traditional fiber/container recyclables; materials diverted at landfill (e.g., scrap metal/appliances/cars, tires, domestic animals); other materials (e.g., e-waste, HHW, used oil, anti-freeze, cooking fuels).
4 - Diverted Organics includes yard/green waste, clean wood, food waste, food-contaminated paper, textiles, compost feedstock).
5 - Non-MSW Disposed includes clean fill, landfilled C&D, agricultural and industrial waste (including O&G waste).
6 - Non-MSW Diverted includes C&D; agricultural waste (e.g., large animals, manures, wood, plastics); industrial (e.g., biosolids/sludges, forestry, biofuels, combustion products, food residuals).
7 - Calculated from population and quantity estimates in this table. The average RPA value is prorated based on population.
8 - Based on landfill disposal data provided by WDEQ and information provided by landfills. The average RPA value is prorated based on disposal tons.
9 - Uses recyclables/other materials in landfill operations (may include glass, contaminated soil, clean fill materials) - as daily cover, animal pit vector protection, etc.
10 - Wood and/or yard waste organics burned (disposal).
11 - TDS service Platte & Goshen County communities (excepting Wheatland, Torrington) plus unincorporated areas, Camp Guernsey, reservoirs, parks.
12 - Incineration of animal carcasses.

Abbreviations

ADC - alternative daily cover
ARK - ARK Regional Services
C&D - construction/demolition debris
Incl - includes
ISWMP - Integrated Solid Waste Management Plan
MCE - Magic City Enterprises
MSW - municipal solid waste
PC - petroleum-contaminated soil
PPCD - pounds per capita-day
RPA - regional planning area
WDAI - WY Department of Administration and Information, Economic Analysis Division
WDEQ - WY Department of Environmental Quality, Solid Waste

CURRENT LANDFILL TIP FEES and ESTIMATED FUTURE DISPOSAL COSTS

REGIONAL PLANNING AREA	DISPOSAL (2010 tons)[1]	MAY 2011 STATUS	2011 TIP FEE ($/ton)[2]	SHORT-TERM IMPROVEMENTS TO DISPOSAL SYSTEM (within 5 years)		COMMENTS[4]
				Improvement Description	Estimated Cost ($/ton)[3]	
BIG HORN BASIN						
BHCSWDD	9,781	Unlined cells	$80	Maintain status quo	$89	
Thermopolis	5,064	Unlined cells	Sanitation bill fee $19/hh-mo	Maintain status quo	$82	
WCSWDD #1	8,013	Unlined cells	$0	Maintain status quo	$82	
WCSWDD #2	758	Unlined cells	$0	Possible future transfer to Worland or Thermopolis	$182	Mill levy may reduce cost, to be re-estimated
RPA Average	**23,616**				**$88**	
EAST CENTRAL						
Casper	131,800	Lined MSW balefill, lined C&D	$45 in county $58.50 out	Maintain status quo	$45	Adjusted for GASWDD tons
Douglas	10,320	Unlined cells	$63	TS/bale MSW for future transfer to Casper, maintain unlined C&D	$143	Costs to be re-estimated
GASWDD	6,926	New TS, transfer loose MSW to Casper since 8/11, unlined C&D	$58 for out of district only	Maintain status quo	$127	Pay in-county Casper fee
HCJPB	1,930	Unlined cells	$48	Future transfer to unknown landfill, C&D management unknown	$202	Costs to be re-estimated
Kaycee	340	New TS, still operating unlined cells	$30 (30-cy load)	Future MSW transfer to Casper, maintain unlined C&D	$279	will incl out of county Casper fee
Lusk	1,777	Unlined cells	$10	Future MSW transfer to unknown landfill, maintain unlined C&D	$155	Costs to be re-estimated
Manville	108	Landfill closed - all waste hauled to TDS	Utility bill fee $20/hh-mo	Maintain status quo	$319	
Rawlins	12,815	Transfer baled MSW to Casper since 2/11, unlined C&D	$90	Maintain status quo	$90	Tip fee value - full costs unknown
SCJPB	240	New TS, landfill closed, transfer all waste hauled to Casper	$30-$40 self haul only	Maintain status quo	$105	Incl Casper fee
RPA Average	**159,330**				**$62**	**Adjusted for GASWDD tons**
EASTERN						
Wheatland	5,375	Unlined cells	$109	Landfill closure 2014 - new TS/transfer to unknown landfill	$109	
TDS[5]	16,992	Regional landfill, unlined MSW balefill/C&D	$39.50	Line MSW, add scale system	$40	
LaGrange	201	Landfill closed - all waste hauled to TDS	$0	Maintain status quo	$0	TDS bills customers directly for collection/disposal
Torrington	7,359	Transfer baled MSW to unlined cell, unlined C&D	$26.22	Line MSW, add scale system	$65	
RPA Average	**29,726**				**$59**	**Adjusted for LaGrange tons**

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				Improvement Description	Estimated Cost ($/ton)[3]	
I-80						
BSWDD	907	Transfer baled MSW to Casper since 5/11, unlined C&D	$13 for basket trailers	Maintain status quo	$207	Incl Casper fee, cost reduced by mill levy
EVSWDD	340	New TS, still operating unlined cells	$0, don't accept out of district	Future MSW/C&D transfer to SCSWDD #1	$200	Cost reduced by mill levy
Green River	15,860	Unlined cells	$37.45 in city $69.55 out of city	Future MSW transfer to SCSWDD #1	$75	Incl SCSWDD #1 fee
SCSWDD #1	60,681	Unlined cells	$55 out of district	Regional landfill with lined MSW	$55	Tip fee value, cost reduced by mill levy
SCSWDD #2	4,948	Unlined cells	$10 (10 cy load)	Line MSW	$202	Cost reduced by mill levy
UPRSWDD	4,472	Unlined cells	Generator fee $15/hh-month	MSW lining or transfer decision unknown	$177	Costs to be re-estimated
RPA Average	**87,208**				**$75**	
NORTH CENTRAL						
Buffalo/Johnson County	6,484	Unlined cells	$75	Line MSW	$90	Costs reduced by sales tax income
Gillette/Campbell County	53,202	Lined MSW balefill, unlined C&D	$60	TS/transfer MSW to Campbell County Landfill, add scale system	$75	Future enterprise fund, capital facilities tax
Sheridan	30,947	New lined MSW, unlined C&D	$76	Need for new landfill unknown	*$76*	Add $40 if new landfill required
RPA Average	**90,633**				**$76**	
NORTH EAST						
Hulett	613	Landfill closed - all waste hauled to Belle Fourche, SD (hauler bills customers directly)	$0	Potentially transfer all waste to regional Moorcroft landfill in future	$93	Costs to be re-estimated
Moorcroft	1,637	Unlined cells	$56	Regional MSW balefill potentially serving Pine Haven, Hulett, Sundance & Upton	$83	Costs to be re-estimated
Newcastle	4,914	Unlined cells	$0	New scale system 7/11, may create sanitary district with Upton & Osage	$145	Costs to be re-estimated
Osage	643	Unlined cells	$0	Maintain status quo	$109	
Sundance	1,448	Unlined cells	$48	Maintain status quo	$48	Costs to be re-estimated
Upton	1,631	Unlined cells	$48	Maintain status quo	$46	
RPA Average	**10,886**				**$103**	
PARK						
Clark	367	Unlined cells	$90	Landfill closure 2012 - will transfer all waste to Cody	see below	
Cody	24,112	Lined MSW, unlined C&D	$90	Maintain status quo	see below	

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REGIONAL PLANNING AREA	DISPOSAL (2010 tons)[1]	MAY 2011 STATUS	2011 TIP FEE ($/ton)[2]	SHORT-TERM IMPROVEMENTS TO DISPOSAL SYSTEM (within 5 years)		COMMENTS[4]
				Improvement Description	Estimated Cost ($/ton)[3]	
Meeteetse	0	Landfill closed - all waste hauled to Cody	$0	Maintain status quo	see below	
Powell	47,724	Unlined cells	$90	Landfill closure 2012 - TS/transfer to Cody or BHCSWDD	see below	Tip fee value, costs to be re-estimated
RPA Average	**72,203**			**Park County Landfill**	**$97**	**incl planned 8% increase during short-term**
SOUTH EAST						
Cheyenne	122,468	Maintain MSW transfer to CO, lined C&D in Cheyenne	Landfill $47.5O TS $52.50	New C&D processing 2012	$57	Incl $20/top Ault, CO fee
ELCSWDD	5,311	Unlined cells	$30	Line both MSW/C&D, new recycling DOC bins	$135	Costs to be re-estimated
Laramie	45,636	Unlined cells	$32	Baled/lined MSW, maintain unlined C&D baler	$61	
RPA Average	**173,415**				**$60**	
WESTERN						
Lincoln County	21,559	All unlined cells - Thayne's baled MSW to Cokeville, LaBarge's loose MSW to Kemmerer	$50	Line MSW balefill at regional Kemmerer facility (Thayne/Cokeville MSW transfer), all maintain unlined C&D	$82	Costs to be re-estimated
Sublette County	6,474	Unlined cells	$10	Line MSW	$37	
Teton County	27,194	Transfer MSW/C&D to Sublette	$80	New campus for MSW/C&D transfer, other	$140	Incl future Sublette County lining/tip fee, costs to be re-estimated
Uinta County	24,139	Unlined cells both landfills	$40	Lining/transfer station decisions unknown	$50	Costs to be re-estimated, pro-rated based on disposed tons for both landfills
RPA Average	**79,366**				**$88**	
WIND RIVER						
Dubois	281	Transfer loose MSW to Lander, unlined C&D	$80	Maintain status quo	$99	Cost reduced by mill levy
Lander	15,947	Unlined MSW balefill, unlined C&D	$80	Maintain status quo	$75	Cost reduced by mill levy
Sand Draw/Rivertor	25,543	Unlined MSW balefill, unlined C&D	$80	Maintain status quo	$74	Cost reduced by mill levy
Shoshoni	10	Transfer loose MSW to Sand Draw, unlined C&D	$80	Maintain status quo	$72	Cost reduced by mill levy
RPA Average	**41,781**				**$75**	
AVERAGE FOR ALL RPAS BASED ON 2010 DISPOSAL QUANTITIES					**$73**	

1 - Total of disposed MSW and non-MSW quantities estimated in 2010 Baseline Quantities Table.
2 - Fee for MSW unless otherwise noted (volume-based fee converted to $/ton based on 500#/cubic yard density).
3 - Average RPA disposal cost prorated based on disposal quantities.
4 - "Costs to be re-estimated" - indicates planning entities' need to confirm future disposal option, schedule and ultimate costs, "cost reduced by mill levy" of "by sales tax income" - indicates future disposal costs (and often current tip fees) reflect only net costs (i.e., gross costs have been modified by other funding).
5 - TDS service Platte & Goshen County communities (excepting Wheatland, Torrington) plus unincorporated areas, Camp Guernsy, reservoirs, parks.

Abbreviations:
C&D - construction/demolition debris
HH - household
MSW - municipal solid waste
Incl - includes
RPA - regional planning area
Mo - month
TS - transfer station

WASTE DIVERSION BARRIERS/NEEDS and POTENTIAL OPTIONS FOR IMPROVEMENT

	BARRIER/NEED	OPTIONS FOR IMPROVEMENT	RPA NOTES [1]
I	MARKETS		
IA	**Market Development**		
1	Lack of local markets - general	Identify material/locate/design pilot for new business/industry using recycled feedstock	
2		Establish reduced compliance requirements, fees, taxes, etc. incentive for new/existing businesses	
3		Create recycling market development zone incentive program	
	Lack of local brokers/markets - specific materials	Research/share markets info for existing recyclables	
4		Change state/local specifications to allow materials in roads base (glass, tires, etc.)	ECPL, NC, PARK
5		Change building codes to allow recycled materials in construction (paper)	
6		Create other local uses (backfill, drainage, sandblasting, septic, sound walls - animal pits, ADC, etc.)	
7		Create local markets for tires	
		Research/share markets info for new recyclables	
8		Identify logistics of expanding paper diversion (paperboard, aseptic packaging, etc.)	I-80
9		Identify logistics of recycling plastics 1-7	
		Research/share markets info for mulch/compost/digestion products	
10		Create local markets for mulch & compost	I-80
11		Promote grass-cycling and backyard composting	
12		Evaluate feasibility for diverted food waste, manures & mortalities through anaerobic digestion	
13		Change state/local specifications to prioritize locally-produced compost on road projects	
		Research/share markets info for diverted C&D materials	
14		Expand market for recycled concrete	
15		Work with Habitat for Humanity to develop more ReStores statewide	SE
16		Create new markets for C&D shingles, drywall, etc.	
17		Require state/local new/remodeled/demolished govt buildings to follow LEED-like standards	
18	Support local markets/brokers	Develop tools for helping rehabilitation organizations grow/offer more recycling opportunities	
19		Develop BMP for working with rehabilitation organizations without sacrificing diversion potential	
20		Research strength of Natures Composites market	SE
IB	**Understanding Market Opportunities**		
	Need to understand markets & develop effective strategies	Develop BMPs [2]	
21		Market options (spot markets, contracts, etc.) & revenue sharing options	
22		Collaborating with other local government/non-profit recyclers	
23		Collaborating with retailers (e.g., plastics/Walmart)	WEST, I-80
24		Identify potential regional marketing structure (for each RPA or group of RPAs)	
25		Identify optimal broker/end-market strategies for each material/each region	

WASTE DIVERSION BARRIERS/NEEDS and POTENTIAL OPTIONS FOR IMPROVEMENT

	BARRIER/NEED	OPTIONS FOR IMPROVEMENT	RPA NOTES [1]
IC	**State Guidance**		
26	Minimal coordination/sharing of information about national brokers/markets	New/expanded state-level position/function to i) develop training/networking opportunities to share 2011 baseline marketing info from Task 5 & future updates ii) conduct on-going research/update info regularly iii) serve as central source for new broker/market, material, equipment, programs, etc. info	WEST, I-80
27		Develop a statewide collaborative for marketing	
28	Inadequate stakeholder involvement	Improve power of Citizen Action Group (not allow Minerals Board to dilute)	WEST
29		Increase diversion as a priority of WSWRA	WEST
30		Develop a strong state recycling organization (expanded WSWRA or other)	
II POLICY			
IIA	**State Policy - *note that evaluation can consider actual state-level policy OR state leadership for policy development at local level***		
31	No state commitment to waste diversion	Develop policy specifying a waste diversion priority	WEST, I-80
32		Develop a diversion goal with enforcement/penalties	
33		Develop regional/state plans with focus on waste diversion	
34		Develop statewide focus on source reduction & reuse	I-80, PARK
35	Lack of incentives for waste diversion	Develop a purchasing/procurement policy	
36		Streamline state compliance requirements (allow facility integration, reduce amendment reqts, etc.)	SE
37		Establish beneficial use list so materials can be added to permit with notification only	
38		Make state permit amendments easier for adding recovered materials (possibly use BMPs)	
39		Enforce closure of targeted landfills	
40		Develop a recognition program for communities, businesses, industry	
41		Implement Recycle Bank or Think Green type reward programs	
42		Develop local PAYT policy (many landfills changing rates in short-term)	PARK
43		Create tip fee incentive for segregating C&D loads & recyclables	
44		Address conflict over "diversion" of clean fill materials	
45		Consider options for addressing issue of fewer cars being recycling under new law	I-80, ECPL, NC
46	Need to force diversion	Establish state producer responsibility framework (start with e-waste, paint, sharps, etc.)	BH
47		Evaluate a bottle bill	SE, BH
48		Establish mandatory recycling of traditional materials	SE
49		Require trash haulers to provide recyclables collection	I-80, ECPL, NE
50		Develop policy for minimal levels of C&D diversion	
51		Develop policy to prohibit burning of organics	
52		Evaluate ban on materials "easily" recycled statewide (e.g., cardboard, aluminum cans)	PARK

WASTE DIVERSION BARRIERS/NEEDS and POTENTIAL OPTIONS FOR IMPROVEMENT

	BARRIER/NEED	OPTIONS FOR IMPROVEMENT	RPA NOTES [1]
53	Low disposal costs	Implement state landfill tip fee surcharge (apply to waste diversion programs)	
54		Require landfills to estimate full, gross cost of future disposal (identify subsidies)	H, I-80, NE, WES
IIB	**State Resources**		
55	Lack of materials & quantity data	Develop policy to define diverted materials, establish standard measurement (consistent with EPA8 guidance), require reporting of programs, facilities, haulers	
56		Require landfills to measure MSW separate from non-MSW	
57	Lack of adequate funding for waste diversion programs & facilities	Develop a new state grant program for waste diversion	
58		Implement litter tax on fast food/convenience store sales (apply to waste diversion programs)	
59		Implement plastic bag single use tax	
60		Implement other funding sources (e.g., landfill tip fee surcharge, unredeemed bottle bill deposits)	
61		Tie diversion success & reporting compliance with ability to obtain future funding	BH
62	Need for additional state policy leadership/coordination	New/expanded state-level position/function to i) assist in local policy development (general guidance & example language) ii) provide technical assistance for implementation & enforcement	
III	**IMPLEMENTATION**		
IIIA	**Local Planning**		
63	Difficulty demonstrating the benefits of waste diversion	Develop training/networking opportunities to share benefits information developed in Recycling Plan Tasks 4/6 (avoided landfill disposal, relative net costs of disposal versus diversion, GHG reductions, job creation, etc.)	PARK
64	Challenges raising public awareness & participation	Develop clear recycling brand for WY that can be customized locally	
65		Develop education tools/materials for general public that reflect branding (materials should address "sage rebellion" perspectives of WY)	
66		Develop education materials specific to tourism industry	
67		Develop a school recycling program	WEST
68		Consider solid waste campus for "one stop shopping"	ECPL
69	Lack of clarity in organizational development	Regionalize to increase tons managed/unit costs	
70		Develop training on components and pros/cons of different organizational models (IGAs, joint powers, authorities, etc.)	
71		Discuss the pros/cons of waste organization doing both disposal & diversion	BH
72		Discuss the value of recycling organization being part of versus separate from government	WEST, EAST
73	Lack of awareness about funding options	Develop training/networking opportunities to share benefits information developed in Recycling Plan Task 7 (capital improvements; collection/processing/transportation equipment; operations & transportation)	

WASTE DIVERSION BARRIERS/NEEDS and POTENTIAL OPTIONS FOR IMPROVEMENT

	BARRIER/NEED	OPTIONS FOR IMPROVEMENT	RPA NOTES [1]
	Low tons diverted	Develop BMPs	BH
74		Commingled versus source-separated collection	
75		"Hub and spoke" approach to collection & processing	
76		PAYT implementation to incentive waste diversion	
77		Reducing free trash pick-ups/trash collection frequency	ECPL
78		Privatization	
79		Public/private partnerships	
		Develop BMPs for hard-to-manage materials	
80		HHW collection	
81		E-waste collection	PARK
		Develop BMPs for commercial waste diversion	
82		Businesses, retail & wholesale operations (audits, technical assistance, reqts)	
83		Big box stores & groceries	
84		Institutions (schools, libraries, govt buildings, etc.)	
85		Multi-family unit recycling (technical assistance, recycling space in all new/rebuilds)	
		Develop BMPs for industrial waste diversion	
86		O&G waste diversion	I-80, PARK
87		Non-MSW waste diversion at industrial operations	ECPL
		Develop BMPs for organics recovery	
88		Controlling contamination at drop sites	I-80
89		Mulching options for trees, limbs, stumps	
90		Managing food/food-contaminated paper	
91		Managing beetle kill	
92		Management miscellaneous organics (mortalities, biosolids, etc.)	
93		Composting options (technologies, materials, water needs, products)	
94		Anaerobic digestion options (with/without WWTP biosolids)	
		Develop BMPs for C&D diversion	
95		Recycle "easy materials" (e.g., clean wood, metal, cardboard, asphalt/concrete)	
96		Evaluate diverting harder to recycle materials (e.g., asphalt shingles, drywall, etc.)	
97		Local recognition program for "green" building construction	
	High cost to transfer materials to market	Develop transportation BMPs or fact sheets	
98		Contracting equipment & service	
99		Back-haul	ECPL, I-80

WASTE DIVERSION BARRIERS/NEEDS and POTENTIAL OPTIONS FOR IMPROVEMENT

	BARRIER/NEED	OPTIONS FOR IMPROVEMENT	RPA NOTES [1]
100		Rail haul	BH
101		Regionalizing with other government/non-profit recyclers	PARK
IIIB	**Equipment & Infrastructure**		
	Minimal coordination/sharing of operational information		
		Develop fact sheets/cost info for collection options	
102		Drop-site equipment (roll-offs & hoists versus trailers & pick-ups, etc.)	
103		Material-specific trailers/compactors (OCC)	WEST
104		Automated versus semi-automated collection	
105		Curbside collection containers & collection vehicles	ECPL
106		Transfer facilities & equipment	
		Develop fact sheets/cost info for processing options	
107		Mobile crusher/pulverizer for glass	
108		Mobile document shredder	I-80
109		Mobile grinder for organics	ECPL
110		Mobile crusher for C&D	ECPL
111		Commingled recyclables sorting	
112		Vertical versus horizontal balers	
113		Co-locating compost facilities & landfills	WEST, NE, EAST
114		C&D processing options	
		Develop fact sheets/cost info for facility & storage options	
115		Drop-site space needs	
116		Dedicated processing facility needs	I-80, WEST
117		Plastic storage needs	WEST
118		Alternative storage (indoors, outdoors, trailers, open-sided buildings, etc.)	
		Develop fact sheets/cost info for transfer options	
119		Trailers, tractors or roll-offs, hoist	
120		Transfer containers, pallets, forklift, pallet jack, etc.	
	Lack of specific design & cost information		
121		Model typical DOC (source-separated, possibly including trash collection)	ECPL
122		Model typical curbside collection program (single-stream)	
123		Model typical recyclables transfer/processing facility (regional)	
124		Model regional "hub and spoke" collection/processing (compatible equipment regionally)	
125		Model mobile equipment operations (shared regional ownership, operation, maintenance)	

WASTE DIVERSION BARRIERS/NEEDS and POTENTIAL OPTIONS FOR IMPROVEMENT

BARRIER/NEED		OPTIONS FOR IMPROVEMENT	RPA NOTES [1]
IIIC	**State Guidance**		
126	Need for expanded state waste diversion guidance	Increase amount of waste diversion staff dedicated to i) serving as central source for maintaining/updating/sharing operational information ii) maintaining/implementing/creating new BMPs and fact sheets iii) coordinating training/networking	

NOTES:

1 This column identifies RPAs that specifically mentioned this barrier or option, or RPAs where researchers observed the need first-hand. A listing of a limited number of RPAS or no RPAs in this column is not intended to mean that other RPAs are not impacted.

2 BMP - Best Management Practice

PROJECTED WYOMING'S MSW GENERATED WASTE STREAM (tons/year)
rounded to nearest 1,000 tons/year

MATERIALS	ASSUMED COMPOSITION		EXISTING 2010(1)		PROJECTED QUANTITIES (2) 2015		2020		2025		2030	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Paper												
Cardboard/Kraft Paper	10%	14%	73,000	102,000	77,000	108,000	80,000	113,000	83,000	117,000	86,000	121,000
Office Paper/High Grade (incl shreds)	3%	4%	22,000	29,000	23,000	31,000	24,000	32,000	25,000	33,000	26,000	35,000
Newsprint	2%	3%	15,000	22,000	15,000	23,000	16,000	24,000	17,000	25,000	17,000	26,000
Magazines	2%	3%	15,000	22,000	15,000	23,000	16,000	24,000	17,000	25,000	17,000	26,000
Mixed Paper (incl other recyclable paper - paperboard, books, direct mail)	5%	7%	37,000	51,000	38,000	54,000	40,000	56,000	42,000	58,000	43,000	61,000
Other Paper (incl non-recyclable paper - aseptic packaging, tissues, napkins)	3%	5%	22,000	37,000	23,000	38,000	24,000	40,000	25,000	42,000	26,000	43,000
Total Paper	***25%***	***36%***	***183,000***	***263,000***	***192,000***	***277,000***	***201,000***	***290,000***	***208,000***	***300,000***	***216,000***	***311,000***
Plastics												
PET #1 Bottles	1%	2%	7,000	15,000	8,000	15,000	8,000	16,000	8,000	17,000	9,000	17,000
HDPE #2 Bottles	1%	2%	7,000	15,000	8,000	15,000	8,000	16,000	8,000	17,000	9,000	17,000
#3-7 Bottles	1%	2%	7,000	15,000	8,000	15,000	8,000	16,000	8,000	17,000	9,000	17,000
Plastic Film/Wrap/Bags	3%	4%	22,000	29,000	23,000	31,000	24,000	32,000	25,000	33,000	26,000	35,000
Other Plastic (incl expanded polystyrene & rigid plastics)	3%	5%	22,000	37,000	23,000	38,000	24,000	40,000	25,000	42,000	26,000	43,000
Total Plastic	***9%***	***15%***	***66,000***	***110,000***	***69,000***	***115,000***	***72,000***	***121,000***	***75,000***	***125,000***	***78,000***	***130,000***
Glass												
Mixed Containers (all colors)	2%	3%	15,000	22,000	15,000	23,000	16,000	24,000	17,000	25,000	17,000	26,000
Other Glass	0%	1%	0	7,000	0	8,000	0	8,000	0	8,000	0	9,000
Total Glass	***2%***	***4%***	***15,000***	***29,000***	***15,000***	***31,000***	***16,000***	***32,000***	***17,000***	***33,000***	***17,000***	***35,000***
Metals												
Aluminum Cans	0%	1%	0	7,000	0	8,000	0	8,000	0	8,000	0	9,000
Steel/Tin Cans (incl aerosol cans)	1%	2%	7,000	15,000	8,000	15,000	8,000	16,000	8,000	17,000	9,000	17,000
Other Metals (incl white goods)	4%	6%	29,000	44,000	31,000	46,000	32,000	48,000	33,000	50,000	35,000	52,000
Total Metals	***5%***	***9%***	***37,000***	***66,000***	***38,000***	***69,000***	***40,000***	***72,000***	***42,000***	***75,000***	***43,000***	***78,000***
Organics												
Food Scraps	8%	10%	58,000	73,000	61,000	77,000	64,000	80,000	67,000	83,000	69,000	86,000
Debris	7%	9%	51,000	66,000	54,000	69,000	56,000	72,000	58,000	75,000	61,000	78,000
Clean Wood/Pallets	5%	7%	37,000	51,000	38,000	54,000	40,000	56,000	42,000	58,000	43,000	61,000
Other Organics (incl diapers, sanitary products, textiles, rubber, leather)	4%	6%	29,000	44,000	31,000	46,000	32,000	48,000	33,000	50,000	35,000	52,000
Total Organics	***24%***	***32%***	***175,000***	***234,000***	***184,000***	***246,000***	***193,000***	***257,000***	***200,000***	***266,000***	***207,000***	***277,000***

PROJECTED WYOMING'S MSW GENERATED WASTE STREAM (tons/year)
rounded to nearest 1,000 tons/year

MATERIALS	ASSUMED COMPOSITION		EXISTING 2010(1)		PROJECTED QUANTITIES (2) 2015		2020		2025		2030	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
C&D Waste												
Aggregates (concrete, ashpalt pavement)	4%	5%	29,000	37,000	31,000	38,000	32,000	40,000	33,000	42,000	35,000	43,000
Asphalt Shingles	2%	3%	15,000	22,000	15,000	23,000	16,000	24,000	17,000	25,000	17,000	26,000
Wood (incl treated & untreated)	2%	4%	15,000	29,000	15,000	31,000	16,000	32,000	17,000	33,000	17,000	35,000
Drywall (clean/used)	2%	4%	15,000	29,000	15,000	31,000	16,000	32,000	17,000	33,000	17,000	35,000
Carpet	0%	2%	0	15,000	0	15,000	0	16,000	0	17,000	0	17,000
Other C&D Waste (incl insulation, interior finishes,hardwood flooring, ceiling tiles, fines, etc.)	0%	1%	0	7,000	0	8,000	0	8,000	0	8,000	0	9,000
Total C&D	***10%***	***19%***	***73,000***	***139,000***	***77,000***	***146,000***	***80,000***	***153,000***	***83,000***	***158,000***	***86,000***	***164,000***
Other Waste												
Electronics	0%	1%	0	7,000	0	8,000	0	8,000	0	8,000	0	9,000
Scrap Tires	0%	1%	0	7,000	0	8,000	0	8,000	0	8,000	0	9,000
Household Hazardous Waste	0%	1%	0	7,000	0	8,000	0	8,000	0	8,000	0	9,000
products, used oil, anti-freeze, cooking oils,	2%	4%	15,000	29,000	15,000	31,000	16,000	32,000	17,000	33,000	17,000	35,000
Total Other	***2%***	***7%***	***15,000***	***51,000***	***15,000***	***54,000***	***16,000***	***56,000***	***17,000***	***58,000***	***17,000***	***61,000***
Total	77%	122%	***562,000***	***891,000***	***592,000***	***938,000***	***619,000***	***981,000***	***641,000***	***1,015,000***	***666,000***	***1,054,000***
	Mid (100%)		*727,000*		*765,000*		*800,000*		*828,000*		*860,000*	

Notes

MSW = **73%** of total solid waste generated (2010 survey)

1 Based on assumed total waste generation of 1M tons/year - based on **9.7 ppcd** from project 2010 baseline survey (http://eadiv.state.wy.us/Demog_data/pop2010/Profile/2010Profiles_WY.html, adjusted with 2010 census data)

2 Based on WDAI population projections at http://eadiv.state.wy.us/pop/wyc&sc30.htm (adjusted by 2010 census data)

Projected 2015 WDAI population, escalated as noted =	594,710
Projected 2020 WDAI population =	622,360
Projected 2025 WDAI population =	644,050
Projected 2030 WDAI population =	668,830

RANGE OF 2010 DIVERSION RATES FOR EACH MATERIAL IN WYOMING MSW STREAM (tons/year)
rounded to nearest 1,000 tons/year

MATERIALS		2010 PROJECTED QUANTITIES																			
		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Paper																					
Cardboard/Kraft Paper	Lo (10%)	4,000	7,000	11,000	15,000	18,000	22,000	26,000	29,000	33,000	37,000	40,000	44,000	47,000	51,000	55,000	58,000	62,000	66,000	69,000	73,000
	Hi (14%)	5,000	10,000	15,000	20,000	26,000	31,000	36,000	41,000	46,000	51,000	56,000	61,000	66,000	71,000	77,000	82,000	87,000	92,000	97,000	102,000
Office Paper/High Grade/Shreds	Lo (3%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (4%)	1,000	3,000	4,000	6,000	7,000	9,000	10,000	12,000	13,000	15,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000
Newsprint	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (3%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
Magazines	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (3%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
Mixed Paper	Lo (5%)	2,000	4,000	6,000	7,000	9,000	11,000	13,000	15,000	17,000	19,000	20,000	22,000	24,000	26,000	28,000	30,000	31,000	33,000	35,000	37,000
	Hi (7%)	3,000	5,000	8,000	10,000	13,000	15,000	18,000	20,000	23,000	26,000	28,000	31,000	33,000	36,000	38,000	41,000	43,000	46,000	48,000	51,000
Other Paper	Lo (3%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (5%)	2,000	4,000	6,000	7,000	9,000	11,000	13,000	15,000	17,000	19,000	20,000	22,000	24,000	26,000	28,000	30,000	31,000	33,000	35,000	37,000
Total Paper	**Lo (25%)**	**9,000**	**18,000**	**27,000**	**37,000**	**46,000**	**55,000**	**64,000**	**73,000**	**82,000**	**92,000**	**101,000**	**110,000**	**119,000**	**128,000**	**137,000**	**146,000**	**156,000**	**165,000**	**174,000**	**183,000**
	Hi (36%)	**13,000**	**26,000**	**39,000**	**53,000**	**66,000**	**79,000**	**92,000**	**105,000**	**118,000**	**132,000**	**145,000**	**158,000**	**171,000**	**184,000**	**197,000**	**210,000**	**224,000**	**237,000**	**250,000**	**263,000**
Plastics																					
PET #1 Bottles	Lo (1%)	0	1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
HDPE #2 Bottles	Lo (1%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
#3-7 Bottles	Lo (1%)	0	1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
Plastic Film/Wrap/Bags	Lo (3%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (4%)	1,000	3,000	4,000	6,000	7,000	9,000	10,000	12,000	13,000	15,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000
Other Plastic	Lo (3%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (5%)	2,000	4,000	6,000	7,000	9,000	11,000	13,000	15,000	17,000	19,000	20,000	22,000	24,000	26,000	28,000	30,000	31,000	33,000	35,000	37,000
Total Plastic	**Lo (9%)**	**3,000**	**7,000**	**10,000**	**13,000**	**17,000**	**20,000**	**23,000**	**26,000**	**30,000**	**33,000**	**36,000**	**40,000**	**43,000**	**46,000**	**50,000**	**53,000**	**56,000**	**59,000**	**63,000**	**66,000**
	Hi (15%)	**6,000**	**11,000**	**17,000**	**22,000**	**28,000**	**33,000**	**39,000**	**44,000**	**50,000**	**55,000**	**61,000**	**66,000**	**72,000**	**77,000**	**83,000**	**88,000**	**94,000**	**99,000**	**105,000**	**110,000**
Glass																					
Mixed Containers (all colors)	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (3%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
Other Glass	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
Total Glass	**Lo (2%)**	**1,000**	**2,000**	**2,000**	**3,000**	**4,000**	**5,000**	**5,000**	**6,000**	**7,000**	**8,000**	**8,000**	**9,000**	**10,000**	**11,000**	**11,000**	**12,000**	**13,000**	**14,000**	**14,000**	**15,000**
	Hi (4%)	**1,000**	**3,000**	**4,000**	**6,000**	**7,000**	**9,000**	**10,000**	**12,000**	**13,000**	**15,000**	**16,000**	**17,000**	**19,000**	**20,000**	**22,000**	**23,000**	**25,000**	**26,000**	**28,000**	**29,000**
Metals																					
Aluminum Cans	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
Steel/Tin Cans	Lo (1%)	0	1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
Other Metals	Lo (4%)	1,000	3,000	4,000	6,000	7,000	9,000	10,000	12,000	13,000	15,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000
	Hi (6%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
Total Metals	**Lo (5%)**	**2,000**	**4,000**	**6,000**	**7,000**	**9,000**	**11,000**	**13,000**	**15,000**	**17,000**	**19,000**	**20,000**	**22,000**	**24,000**	**26,000**	**28,000**	**30,000**	**31,000**	**33,000**	**35,000**	**37,000**
	Hi (9%)	**3,000**	**7,000**	**10,000**	**13,000**	**17,000**	**20,000**	**23,000**	**26,000**	**30,000**	**33,000**	**36,000**	**40,000**	**43,000**	**46,000**	**50,000**	**53,000**	**56,000**	**59,000**	**63,000**	**66,000**

RANGE OF 2010 DIVERSION RATES FOR EACH MATERIAL IN WYOMING MSW STREAM (tons/year)
rounded to nearest 1,000 tons/year

MATERIALS		2010 PROJECTED QUANTITIES																			
		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Organics																					
Food Scraps	Lo (8%)	3,000	6,000	9,000	12,000	15,000	17,000	20,000	23,000	26,000	29,000	32,000	35,000	38,000	41,000	44,000	46,000	49,000	52,000	55,000	58,000
	Hi (10%)	4,000	7,000	11,000	15,000	18,000	22,000	26,000	29,000	33,000	37,000	40,000	44,000	47,000	51,000	55,000	58,000	62,000	66,000	69,000	73,000
Yard Trimmings & Land Clearing	Lo (7%)	3,000	5,000	8,000	10,000	13,000	15,000	18,000	20,000	23,000	26,000	28,000	31,000	33,000	36,000	38,000	41,000	43,000	46,000	48,000	51,000
	Hi (9%)	3,000	7,000	10,000	13,000	17,000	20,000	23,000	26,000	30,000	33,000	36,000	40,000	43,000	46,000	50,000	53,000	56,000	59,000	63,000	66,000
Clean Wood/Pallets	Lo (5%)	2,000	4,000	6,000	7,000	9,000	11,000	13,000	15,000	17,000	19,000	20,000	22,000	24,000	26,000	28,000	30,000	31,000	33,000	35,000	37,000
	Hi (7%)	3,000	5,000	8,000	10,000	13,000	15,000	18,000	20,000	23,000	26,000	28,000	31,000	33,000	36,000	38,000	41,000	43,000	46,000	48,000	51,000
Other Organics	Lo (4%)	1,000	3,000	4,000	6,000	7,000	9,000	10,000	12,000	13,000	15,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000
	Hi (6%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
Total Organics	**Lo (24%)**	**9,000**	**18,000**	**26,000**	**35,000**	**44,000**	**53,000**	**61,000**	**70,000**	**79,000**	**88,000**	**96,000**	**105,000**	**114,000**	**123,000**	**131,000**	**140,000**	**149,000**	**158,000**	**166,000**	**175,000**
	Hi (32%)	**12,000**	**23,000**	**35,000**	**47,000**	**59,000**	**70,000**	**82,000**	**94,000**	**105,000**	**117,000**	**129,000**	**140,000**	**152,000**	**164,000**	**176,000**	**187,000**	**199,000**	**211,000**	**222,000**	**234,000**
C&D Waste																					
Aggregates	Lo (4%)	1,000	3,000	4,000	6,000	7,000	9,000	10,000	12,000	13,000	15,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000
	Hi (5%)	2,000	4,000	6,000	7,000	9,000	11,000	13,000	15,000	17,000	19,000	20,000	22,000	24,000	26,000	28,000	30,000	31,000	33,000	35,000	37,000
Asphalt Shingles	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (3%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
Wood	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (4%)	1,000	3,000	4,000	6,000	7,000	9,000	10,000	12,000	13,000	15,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000
Drywall (clean/used)	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (4%)	1,000	3,000	4,000	6,000	7,000	9,000	10,000	12,000	13,000	15,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000
Carpet	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
Other C&D Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
Total C&D	**Lo (10%)**	**4,000**	**7,000**	**11,000**	**15,000**	**18,000**	**22,000**	**26,000**	**29,000**	**33,000**	**37,000**	**40,000**	**44,000**	**47,000**	**51,000**	**55,000**	**58,000**	**62,000**	**66,000**	**69,000**	**73,000**
	Hi (19%)	**7,000**	**14,000**	**21,000**	**28,000**	**35,000**	**42,000**	**49,000**	**56,000**	**63,000**	**70,000**	**76,000**	**83,000**	**90,000**	**97,000**	**104,000**	**111,000**	**118,000**	**125,000**	**132,000**	**139,000**
Other Waste																					
Electronics	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
Scrap Tires	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
Household Hazardous Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000
Other Waste	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (4%)	1,000	3,000	4,000	6,000	7,000	9,000	10,000	12,000	13,000	15,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000
Total Other	**Lo (2%)**	**1,000**	**2,000**	**2,000**	**3,000**	**4,000**	**5,000**	**5,000**	**6,000**	**7,000**	**8,000**	**8,000**	**9,000**	**10,000**	**11,000**	**11,000**	**12,000**	**13,000**	**14,000**	**14,000**	**15,000**
	Hi (7%)	**3,000**	**5,000**	**8,000**	**10,000**	**13,000**	**15,000**	**18,000**	**20,000**	**23,000**	**26,000**	**28,000**	**31,000**	**33,000**	**36,000**	**38,000**	**41,000**	**43,000**	**46,000**	**48,000**	**51,000**
Total	**Lo (77%)**	***29,000***	***58,000***	***84,000***	***113,000***	***142,000***	***171,000***	***197,000***	***225,000***	***255,000***	***285,000***	***309,000***	***339,000***	***367,000***	***396,000***	***423,000***	***451,000***	***480,000***	***509,000***	***535,000***	***564,000***
	Hi (122%	***45,000***	***89,000***	***134,000***	***179,000***	***225,000***	***268,000***	***313,000***	***357,000***	***402,000***	***448,000***	***491,000***	***535,000***	***580,000***	***624,000***	***670,000***	***713,000***	***759,000***	***803,000***	***848,000***	***892,000***
	Mid (100%)	37000	74000	109000	146000	184000	220000	255000	291000	329000	367000	400000	437000	474000	510000	547000	582000	620000	656000	692000	728000

RANGE OF 2015 DIVERSION RATES FOR EACH MATERIAL IN WYOMING MSW STREAM (tons/year)
rounded to nearest 1,000 tons /year

MATERIALS		2015 PROJECTED QUANTITIES																			
		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Paper																					
Cardboard/Kraft Paper	Lo (10%)	4,000	8,000	12,000	15,000	19,000	23,000	27,000	31,000	35,000	39,000	42,000	46,000	50,000	54,000	58,000	62,000	65,000	69,000	73,000	77,000
	Hi (14%)	5,000	11,000	16,000	22,000	27,000	32,000	38,000	43,000	49,000	54,000	59,000	65,000	70,000	76,000	81,000	86,000	92,000	97,000	103,000	108,000
Office Paper/High Grade/Shreds	Lo (3%)	1,000	2,000	3,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	20,000	21,000	22,000	23,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000	31,000
Newsprint	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (3%)	1,000	2,000	3,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	20,000	21,000	22,000	23,000
Magazines	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (3%)	1,000	2,000	3,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	20,000	21,000	22,000	23,000
Mixed Paper	Lo (5%)	2,000	4,000	6,000	8,000	10,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	30,000	32,000	34,000	36,000	38,000
	Hi (7%)	3,000	5,000	8,000	11,000	14,000	16,000	19,000	22,000	24,000	27,000	30,000	32,000	35,000	38,000	41,000	43,000	46,000	49,000	51,000	54,000
Other Paper	Lo (3%)	1,000	2,000	3,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	20,000	21,000	22,000	23,000
	Hi (5%)	2,000	4,000	6,000	8,000	10,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	30,000	32,000	34,000	36,000	38,000
Total Paper	**Lo (25%)**	**10,000**	**19,000**	**29,000**	**38,000**	**48,000**	**58,000**	**67,000**	**77,000**	**86,000**	**96,000**	**106,000**	**115,000**	**125,000**	**134,000**	**144,000**	**154,000**	**163,000**	**173,000**	**182,000**	**192,000**
	Hi (36%)	**14,000**	**28,000**	**42,000**	**55,000**	**69,000**	**83,000**	**97,000**	**111,000**	**125,000**	**139,000**	**152,000**	**166,000**	**180,000**	**194,000**	**208,000**	**222,000**	**235,000**	**249,000**	**263,000**	**277,000**
Plastics																					
PET #1 Bottles	Lo (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
HDPE #2 Bottles	Lo (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
#3-7 Bottles	Lo (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
Plastic Film/Wrap/Bags	Lo (3%)	1,000	2,000	3,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	20,000	21,000	22,000	23,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000	31,000
Other Plastic	Lo (3%)	1,000	2,000	3,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	20,000	21,000	22,000	23,000
	Hi (5%)	2,000	4,000	6,000	8,000	10,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	30,000	32,000	34,000	36,000	38,000
Total Plastic	**Lo (9%)**	**3,000**	**7,000**	**10,000**	**14,000**	**17,000**	**21,000**	**24,000**	**28,000**	**31,000**	**35,000**	**38,000**	**41,000**	**45,000**	**48,000**	**52,000**	**55,000**	**59,000**	**62,000**	**66,000**	**69,000**
	Hi (15%)	**6,000**	**12,000**	**17,000**	**23,000**	**29,000**	**35,000**	**40,000**	**46,000**	**52,000**	**58,000**	**63,000**	**69,000**	**75,000**	**81,000**	**86,000**	**92,000**	**98,000**	**104,000**	**109,000**	**115,000**
Glass																					
Mixed Containers (all colors)	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (3%)	1,000	2,000	3,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	20,000	21,000	22,000	23,000
Other Glass	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Total Glass	**Lo (2%)**	**1,000**	**2,000**	**2,000**	**3,000**	**4,000**	**5,000**	**5,000**	**6,000**	**7,000**	**8,000**	**8,000**	**9,000**	**10,000**	**11,000**	**11,000**	**12,000**	**13,000**	**14,000**	**14,000**	**15,000**
	Hi (4%)	**2,000**	**3,000**	**5,000**	**6,000**	**8,000**	**9,000**	**11,000**	**12,000**	**14,000**	**16,000**	**17,000**	**19,000**	**20,000**	**22,000**	**23,000**	**25,000**	**26,000**	**28,000**	**29,000**	**31,000**
Metals																					
Aluminum Cans	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Steel/Tin Cans	Lo (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
Other Metals	Lo (4%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000	31,000
	Hi (6%)	2,000	5,000	7,000	9,000	12,000	14,000	16,000	18,000	21,000	23,000	25,000	28,000	30,000	32,000	35,000	37,000	39,000	41,000	44,000	46,000
Total Metals	**Lo (5%)**	**2,000**	**4,000**	**6,000**	**8,000**	**10,000**	**11,000**	**13,000**	**15,000**	**17,000**	**19,000**	**21,000**	**23,000**	**25,000**	**27,000**	**29,000**	**30,000**	**32,000**	**34,000**	**36,000**	**38,000**
	Hi (9%)	**3,000**	**7,000**	**10,000**	**14,000**	**17,000**	**21,000**	**24,000**	**28,000**	**31,000**	**35,000**	**38,000**	**41,000**	**45,000**	**48,000**	**52,000**	**55,000**	**59,000**	**62,000**	**66,000**	**69,000**

RANGE OF 2015 DIVERSION RATES FOR EACH MATERIAL IN WYOMING MSW STREAM (tons/year)
rounded to nearest 1,000 tons /year

Organics																					
Food Scraps	Lo (8%)	3,000	6,000	9,000	12,000	15,000	18,000	21,000	24,000	27,000	31,000	34,000	37,000	40,000	43,000	46,000	49,000	52,000	55,000	58,000	61,000
	Hi (10%)	4,000	8,000	12,000	15,000	19,000	23,000	27,000	31,000	35,000	39,000	42,000	46,000	50,000	54,000	58,000	62,000	65,000	69,000	73,000	77,000
Yard Trimmings & Land Clearing	Lo (7%)	3,000	5,000	8,000	11,000	14,000	16,000	19,000	22,000	24,000	27,000	30,000	32,000	35,000	38,000	41,000	43,000	46,000	49,000	51,000	54,000
	Hi (9%)	3,000	7,000	10,000	14,000	17,000	21,000	24,000	28,000	31,000	35,000	38,000	41,000	45,000	48,000	52,000	55,000	59,000	62,000	66,000	69,000
Clean Wood/Pallets	Lo (5%)	2,000	4,000	6,000	8,000	10,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	30,000	32,000	34,000	36,000	38,000
	Hi (7%)	3,000	5,000	8,000	11,000	14,000	16,000	19,000	22,000	24,000	27,000	30,000	32,000	35,000	38,000	41,000	43,000	46,000	49,000	51,000	54,000
Other Organics	Lo (4%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000	31,000
	Hi (6%)	2,000	5,000	7,000	9,000	12,000	14,000	16,000	18,000	21,000	23,000	25,000	28,000	30,000	32,000	35,000	37,000	39,000	41,000	44,000	46,000
Total Organics	**Lo (24%)**	**9,000**	**18,000**	**28,000**	**37,000**	**46,000**	**55,000**	**64,000**	**74,000**	**83,000**	**92,000**	**101,000**	**110,000**	**120,000**	**129,000**	**138,000**	**147,000**	**156,000**	**166,000**	**175,000**	**184,000**
	Hi (32%)	**12,000**	**25,000**	**37,000**	**49,000**	**62,000**	**74,000**	**86,000**	**98,000**	**111,000**	**123,000**	**135,000**	**148,000**	**160,000**	**172,000**	**185,000**	**197,000**	**209,000**	**221,000**	**234,000**	**246,000**
C&D Waste																					
Aggregates	Lo (4%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000	31,000
	Hi (5%)	2,000	4,000	6,000	8,000	10,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	30,000	32,000	34,000	36,000	38,000
Asphalt Shingles	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (3%)	1,000	2,000	3,000	5,000	6,000	7,000	8,000	9,000	10,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	20,000	21,000	22,000	23,000
Wood	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000	31,000
Drywall (clean/used)	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000	31,000
Carpet	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
Other C&D Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Total C&D	**Lo (10%)**	**4,000**	**8,000**	**12,000**	**15,000**	**19,000**	**23,000**	**27,000**	**31,000**	**35,000**	**39,000**	**42,000**	**46,000**	**50,000**	**54,000**	**58,000**	**62,000**	**65,000**	**69,000**	**73,000**	**77,000**
	Hi (19%)	**7,000**	**15,000**	**22,000**	**29,000**	**37,000**	**44,000**	**51,000**	**58,000**	**66,000**	**73,000**	**80,000**	**88,000**	**95,000**	**102,000**	**110,000**	**117,000**	**124,000**	**131,000**	**139,000**	**146,000**
Other Waste																					
Electronics	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Scrap Tires	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Household Hazardous Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Other Waste	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	5,000	6,000	7,000	8,000	8,000	9,000	10,000	11,000	11,000	12,000	13,000	14,000	14,000	15,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	16,000	17,000	19,000	20,000	22,000	23,000	25,000	26,000	28,000	29,000	31,000
Total Other	**Lo (2%)**	**1,000**	**2,000**	**2,000**	**3,000**	**4,000**	**5,000**	**5,000**	**6,000**	**7,000**	**8,000**	**8,000**	**9,000**	**10,000**	**11,000**	**11,000**	**12,000**	**13,000**	**14,000**	**14,000**	**15,000**
	Hi (7%)	**3,000**	**5,000**	**8,000**	**11,000**	**14,000**	**16,000**	**19,000**	**22,000**	**24,000**	**27,000**	**30,000**	**32,000**	**35,000**	**38,000**	**41,000**	**43,000**	**46,000**	**49,000**	**51,000**	**54,000**
Total	**Lo (77%)**	***30,000***	***60,000***	***89,000***	***118,000***	***148,000***	***178,000***	***205,000***	***237,000***	***266,000***	***297,000***	***324,000***	***353,000***	***385,000***	***414,000***	***443,000***	***472,000***	***501,000***	***532,000***	***560,000***	***590,000***
	Hi (122%	***47,000***	***95,000***	***141,000***	***187,000***	***236,000***	***282,000***	***328,000***	***375,000***	***423,000***	***471,000***	***515,000***	***563,000***	***610,000***	***657,000***	***705,000***	***751,000***	***797,000***	***844,000***	***891,000***	***938,000***
	Mid (100%)	39000	78000	115000	153000	192000	230000	267000	306000	345000	384000	420000	458000	498000	536000	574000	612000	649000	688000	726000	764000

RANGE OF 2020 DIVERSION RATES FOR EACH MATERIAL IN WYOMING MSW STREAM (tons/year)
rounded to nearest 1,000 tons/year

MATERIALS		2020 PROJECTED QUANTITIES																			
		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Paper																					
Cardboard/Kraft Paper	Lo (10%)	4,000	8,000	12,000	16,000	20,000	24,000	28,000	32,000	36,000	40,000	44,000	48,000	52,000	56,000	60,000	64,000	68,000	72,000	76,000	80,000
	Hi (14%)	6,000	11,000	17,000	23,000	28,000	34,000	40,000	45,000	51,000	57,000	62,000	68,000	73,000	79,000	85,000	90,000	96,000	102,000	107,000	113,000
Office Paper/High Grade/Shreds	Lo (3%)	1,000	2,000	4,000	5,000	6,000	7,000	8,000	10,000	11,000	12,000	13,000	14,000	16,000	17,000	18,000	19,000	20,000	22,000	23,000	24,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
Newsprint	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
	Hi (3%)	1,000	2,000	4,000	5,000	6,000	7,000	8,000	10,000	11,000	12,000	13,000	14,000	16,000	17,000	18,000	19,000	20,000	22,000	23,000	24,000
Magazines	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
	Hi (3%)	1,000	2,000	4,000	5,000	6,000	7,000	8,000	10,000	11,000	12,000	13,000	14,000	16,000	17,000	18,000	19,000	20,000	22,000	23,000	24,000
Mixed Paper	Lo (5%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
	Hi (7%)	3,000	6,000	8,000	11,000	14,000	17,000	20,000	22,000	25,000	28,000	31,000	34,000	36,000	39,000	42,000	45,000	48,000	50,000	53,000	56,000
Other Paper	Lo (3%)	1,000	2,000	4,000	5,000	6,000	7,000	8,000	10,000	11,000	12,000	13,000	14,000	16,000	17,000	18,000	19,000	20,000	22,000	23,000	24,000
	Hi (5%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
Total Paper	**Lo (25%)**	**10,000**	**20,000**	**30,000**	**40,000**	**50,000**	**60,000**	**70,000**	**80,000**	**90,000**	**101,000**	**111,000**	**121,000**	**131,000**	**141,000**	**151,000**	**161,000**	**171,000**	**181,000**	**191,000**	**201,000**
	Hi (36%)	**15,000**	**29,000**	**44,000**	**58,000**	**73,000**	**87,000**	**102,000**	**116,000**	**131,000**	**145,000**	**160,000**	**174,000**	**189,000**	**203,000**	**218,000**	**232,000**	**247,000**	**261,000**	**276,000**	**290,000**
Plastics																					
PET #1 Bottles	Lo (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
HDPE #2 Bottles	Lo (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
#3-7 Bottles	Lo (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
Plastic Film/Wrap/Bags	Lo (3%)	1,000	2,000	4,000	5,000	6,000	7,000	8,000	10,000	11,000	12,000	13,000	14,000	16,000	17,000	18,000	19,000	20,000	22,000	23,000	24,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
Other Plastic	Lo (3%)	1,000	2,000	4,000	5,000	6,000	7,000	8,000	10,000	11,000	12,000	13,000	14,000	16,000	17,000	18,000	19,000	20,000	22,000	23,000	24,000
	Hi (5%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
Total Plastic	**Lo (9%)**	**4,000**	**7,000**	**11,000**	**14,000**	**18,000**	**22,000**	**25,000**	**29,000**	**32,000**	**36,000**	**40,000**	**43,000**	**47,000**	**50,000**	**54,000**	**58,000**	**61,000**	**65,000**	**68,000**	**72,000**
	Hi (15%)	**6,000**	**12,000**	**18,000**	**24,000**	**30,000**	**36,000**	**42,000**	**48,000**	**54,000**	**61,000**	**67,000**	**73,000**	**79,000**	**85,000**	**91,000**	**97,000**	**103,000**	**109,000**	**115,000**	**121,000**
Glass																					
Mixed Containers (all colors)	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
	Hi (3%)	1,000	2,000	4,000	5,000	6,000	7,000	8,000	10,000	11,000	12,000	13,000	14,000	16,000	17,000	18,000	19,000	20,000	22,000	23,000	24,000
Other Glass	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Total Glass	**Lo (2%)**	**1,000**	**2,000**	**2,000**	**3,000**	**4,000**	**5,000**	**6,000**	**6,000**	**7,000**	**8,000**	**9,000**	**10,000**	**10,000**	**11,000**	**12,000**	**13,000**	**14,000**	**14,000**	**15,000**	**16,000**
	Hi (4%)	**2,000**	**3,000**	**5,000**	**6,000**	**8,000**	**10,000**	**11,000**	**13,000**	**14,000**	**16,000**	**18,000**	**19,000**	**21,000**	**22,000**	**24,000**	**26,000**	**27,000**	**29,000**	**30,000**	**32,000**
Metals																					
Aluminum Cans	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Steel/Tin Cans	Lo (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
Other Metals	Lo (4%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
	Hi (6%)	2,000	5,000	7,000	10,000	12,000	14,000	17,000	19,000	22,000	24,000	26,000	29,000	31,000	34,000	36,000	38,000	41,000	43,000	46,000	48,000
Total Metals	**Lo (5%)**	**2,000**	**4,000**	**6,000**	**8,000**	**10,000**	**12,000**	**14,000**	**16,000**	**18,000**	**20,000**	**22,000**	**24,000**	**26,000**	**28,000**	**30,000**	**32,000**	**34,000**	**36,000**	**38,000**	**40,000**
	Hi (9%)	**4,000**	**7,000**	**11,000**	**14,000**	**18,000**	**22,000**	**25,000**	**29,000**	**32,000**	**36,000**	**40,000**	**43,000**	**47,000**	**50,000**	**54,000**	**58,000**	**61,000**	**65,000**	**68,000**	**72,000**

RANGE OF 2020 DIVERSION RATES FOR EACH MATERIAL IN WYOMING MSW STREAM (tons/year)
rounded to nearest 1,000 tons/year

Organics																					
Food Scraps	Lo (8%)	3,000	6,000	10,000	13,000	16,000	19,000	22,000	26,000	29,000	32,000	35,000	38,000	42,000	45,000	48,000	51,000	54,000	58,000	61,000	64,000
	Hi (10%)	4,000	8,000	12,000	16,000	20,000	24,000	28,000	32,000	36,000	40,000	44,000	48,000	52,000	56,000	60,000	64,000	68,000	72,000	76,000	80,000
Yard Trimmings & Land Clearing	Lo (7%)	3,000	6,000	8,000	11,000	14,000	17,000	20,000	22,000	25,000	28,000	31,000	34,000	36,000	39,000	42,000	45,000	48,000	50,000	53,000	56,000
	Hi (9%)	4,000	7,000	11,000	14,000	18,000	22,000	25,000	29,000	32,000	36,000	40,000	43,000	47,000	50,000	54,000	58,000	61,000	65,000	68,000	72,000
Clean Wood/Pallets	Lo (5%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
	Hi (7%)	3,000	6,000	8,000	11,000	14,000	17,000	20,000	22,000	25,000	28,000	31,000	34,000	36,000	39,000	42,000	45,000	48,000	50,000	53,000	56,000
Other Organics	Lo (4%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
	Hi (6%)	2,000	5,000	7,000	10,000	12,000	14,000	17,000	19,000	22,000	24,000	26,000	29,000	31,000	34,000	36,000	38,000	41,000	43,000	46,000	48,000
Total Organics	**Lo (24%)**	**10,000**	**19,000**	**29,000**	**39,000**	**48,000**	**58,000**	**68,000**	**77,000**	**87,000**	**97,000**	**106,000**	**116,000**	**125,000**	**135,000**	**145,000**	**154,000**	**164,000**	**174,000**	**183,000**	**193,000**
	Hi (32%)	**13,000**	**26,000**	**39,000**	**51,000**	**64,000**	**77,000**	**90,000**	**103,000**	**116,000**	**129,000**	**141,000**	**154,000**	**167,000**	**180,000**	**193,000**	**206,000**	**218,000**	**231,000**	**244,000**	**257,000**
C&D Waste																					
Aggregates	Lo (4%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
	Hi (5%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
Asphalt Shingles	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
	Hi (3%)	1,000	2,000	4,000	5,000	6,000	7,000	8,000	10,000	11,000	12,000	13,000	14,000	16,000	17,000	18,000	19,000	20,000	22,000	23,000	24,000
Wood	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
Drywall (clean/used)	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
Carpet	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
Other C&D Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Total C&D	**Lo (10%)**	**4,000**	**8,000**	**12,000**	**16,000**	**20,000**	**24,000**	**28,000**	**32,000**	**36,000**	**40,000**	**44,000**	**48,000**	**52,000**	**56,000**	**60,000**	**64,000**	**68,000**	**72,000**	**76,000**	**80,000**
	Hi (19%)	**8,000**	**15,000**	**23,000**	**31,000**	**38,000**	**46,000**	**54,000**	**61,000**	**69,000**	**77,000**	**84,000**	**92,000**	**99,000**	**107,000**	**115,000**	**122,000**	**130,000**	**138,000**	**145,000**	**153,000**
Other Waste																					
Electronics	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Scrap Tires	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Household Hazardous Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	0	1,000	1,000	2,000	2,000	2,000	3,000	3,000	4,000	4,000	4,000	5,000	5,000	6,000	6,000	6,000	7,000	7,000	8,000	8,000
Other Waste	Lo (2%)	1,000	2,000	2,000	3,000	4,000	5,000	6,000	6,000	7,000	8,000	9,000	10,000	10,000	11,000	12,000	13,000	14,000	14,000	15,000	16,000
	Hi (4%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
Total Other	**Lo (2%)**	**1,000**	**2,000**	**2,000**	**3,000**	**4,000**	**5,000**	**6,000**	**6,000**	**7,000**	**8,000**	**9,000**	**10,000**	**10,000**	**11,000**	**12,000**	**13,000**	**14,000**	**14,000**	**15,000**	**16,000**
	Hi (7%)	**3,000**	**6,000**	**8,000**	**11,000**	**14,000**	**17,000**	**20,000**	**22,000**	**25,000**	**28,000**	**31,000**	**34,000**	**36,000**	**39,000**	**42,000**	**45,000**	**48,000**	**50,000**	**53,000**	**56,000**
Total	**Lo (77%)**	***32,000***	***62,000***	***92,000***	***123,000***	***154,000***	***186,000***	***217,000***	***246,000***	***277,000***	***310,000***	***341,000***	***372,000***	***401,000***	***432,000***	***464,000***	***495,000***	***526,000***	***556,000***	***586,000***	***618,000***
	Hi (122%	***51,000***	***98,000***	***148,000***	***195,000***	***245,000***	***295,000***	***344,000***	***392,000***	***441,000***	***492,000***	***541,000***	***589,000***	***638,000***	***686,000***	***737,000***	***786,000***	***834,000***	***883,000***	***931,000***	***981,000***
	Mid (100%)	42000	80000	120000	159000	200000	241000	281000	319000	359000	401000	441000	481000	520000	559000	601000	641000	680000	720000	759000	800000

PROJECTED WYOMING'S TOTAL GENERATED WASTE STREAM (tons/year)
rounded to nearest 1,000 tons/year

MATERIALS	ASSUMED COMPOSITION		EXISTING 2010(1)		PROJECTED QUANTITIES (2) 2015		2020		2025		2030	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Paper												
Cardboard/Kraft Paper	10%	14%	100,000	140,000	105,000	147,000	110,000	154,000	114,000	160,000	118,000	166,000
Office Paper/High Grade (incl shreds)	3%	4%	30,000	40,000	32,000	42,000	33,000	44,000	34,000	46,000	36,000	47,000
Newsprint	2%	3%	20,000	30,000	21,000	32,000	22,000	33,000	23,000	34,000	24,000	36,000
Magazines	2%	3%	20,000	30,000	21,000	32,000	22,000	33,000	23,000	34,000	24,000	36,000
Mixed Paper (incl other recyclable paper - paperboard, books, direct mail)	5%	7%	50,000	70,000	53,000	74,000	55,000	77,000	57,000	80,000	59,000	83,000
Other Paper (incl non-recyclable paper - aseptic packaging, tissues, napkins)	3%	5%	30,000	50,000	32,000	53,000	33,000	55,000	34,000	57,000	36,000	59,000
Total Paper	***25%***	***36%***	***250,000***	***360,000***	***263,000***	***379,000***	***275,000***	***397,000***	***285,000***	***410,000***	***296,000***	***426,000***
Plastics												
PET #1 Bottles	1%	2%	10,000	20,000	11,000	21,000	11,000	22,000	11,000	23,000	12,000	24,000
HDPE #2 Bottles	1%	2%	10,000	20,000	11,000	21,000	11,000	22,000	11,000	23,000	12,000	24,000
#3-7 Bottles	1%	2%	10,000	20,000	11,000	21,000	11,000	22,000	11,000	23,000	12,000	24,000
Plastic Film/Wrap/Bags	3%	4%	30,000	40,000	32,000	42,000	33,000	44,000	34,000	46,000	36,000	47,000
Other Plastic (incl expanded polystyrene & rigid plastics)	3%	5%	30,000	50,000	32,000	53,000	33,000	55,000	34,000	57,000	36,000	59,000
Total Plastic	***9%***	***15%***	***90,000***	***150,000***	***95,000***	***158,000***	***99,000***	***165,000***	***103,000***	***171,000***	***107,000***	***178,000***
Glass												
Mixed Containers (all colors)	2%	3%	20,000	30,000	21,000	32,000	22,000	33,000	23,000	34,000	24,000	36,000
Other Glass	0%	1%	0	10,000	0	11,000	0	11,000	0	11,000	0	12,000
Total Glass	***2%***	***4%***	***20,000***	***40,000***	***21,000***	***42,000***	***22,000***	***44,000***	***23,000***	***46,000***	***24,000***	***47,000***
Metals												
Aluminum Cans	0%	1%	0	10,000	0	11,000	0	11,000	0	11,000	0	12,000
Steel/Tin Cans (incl aerosol cans)	1%	2%	10,000	20,000	11,000	21,000	11,000	22,000	11,000	23,000	12,000	24,000
Other Metals (incl white goods)	4%	6%	40,000	60,000	42,000	63,000	44,000	66,000	46,000	68,000	47,000	71,000
Total Metals	***5%***	***9%***	***50,000***	***90,000***	***53,000***	***95,000***	***55,000***	***99,000***	***57,000***	***103,000***	***59,000***	***107,000***
Organics												
Food Scraps	8%	10%	80,000	100,000	84,000	105,000	88,000	110,000	91,000	114,000	95,000	118,000
Debris	7%	9%	70,000	90,000	74,000	95,000	77,000	99,000	80,000	103,000	83,000	107,000
Clean Wood/Pallets	5%	7%	50,000	70,000	53,000	74,000	55,000	77,000	57,000	80,000	59,000	83,000
Other Organics (incl diapers, sanitary products, textiles, rubber, leather)	4%	6%	40,000	60,000	42,000	63,000	44,000	66,000	46,000	68,000	47,000	71,000
Total Organics	***24%***	***32%***	***240,000***	***320,000***	***253,000***	***337,000***	***264,000***	***353,000***	***274,000***	***365,000***	***284,000***	***379,000***

PROJECTED WYOMING'S TOTAL GENERATED WASTE STREAM (tons/year)
rounded to nearest 1,000 tons/year

C&D Waste												
Aggregates (concrete, ashpalt pavement)	4%	5%	40,000	50,000	42,000	53,000	44,000	55,000	46,000	57,000	47,000	59,000
Asphalt Shingles	2%	3%	20,000	30,000	21,000	32,000	22,000	33,000	23,000	34,000	24,000	36,000
Wood (incl treated & untreated)	2%	4%	20,000	40,000	21,000	42,000	22,000	44,000	23,000	46,000	24,000	47,000
Drywall (clean/used)	2%	4%	20,000	40,000	21,000	42,000	22,000	44,000	23,000	46,000	24,000	47,000
Carpet	0%	2%	0	20,000	0	21,000	0	22,000	0	23,000	0	24,000
Other C&D Waste (incl insulation, interior finishes,hardwood flooring, ceiling tiles, fines, etc.)	0%	1%	0	10,000	0	11,000	0	11,000	0	11,000	0	12,000
Total C&D	***10%***	***19%***	***100,000***	***190,000***	***105,000***	***200,000***	***110,000***	***209,000***	***114,000***	***217,000***	***118,000***	***225,000***
Other Waste												
Electronics	0%	1%	0	10,000	0	11,000	0	11,000	0	11,000	0	12,000
Scrap Tires	0%	1%	0	10,000	0	11,000	0	11,000	0	11,000	0	12,000
Household Hazardous Waste	0%	1%	0	10,000	0	11,000	0	11,000	0	11,000	0	12,000
products, used oil, anti-freeze, cooking oils,	2%	4%	20,000	40,000	21,000	42,000	22,000	44,000	23,000	46,000	24,000	47,000
Total Other	***2%***	***7%***	***20,000***	***70,000***	***21,000***	***74,000***	***22,000***	***77,000***	***23,000***	***80,000***	***24,000***	***83,000***
Total	77%	122%	***770,000***	***1,220,000***	***811,000***	***1,284,000***	***848,000***	***1,344,000***	***878,000***	***1,391,000***	***912,000***	***1,444,000***
	Mid level (100%)		***995,000***		***1,048,000***		***1,096,000***		***1,135,000***		***1,178,000***	

Notes

1 Based on assumed total waste generation of 1M tons/year - based on **9.7 ppcd** from project 2010 baseline survey (http://eadiv.state.wy.us/Demog_data/pop2010/Profile/2010Profiles_WY.html, adjusted with 2010 census data)

2 Based on WDAI population projections at http://eadiv.state.wy.us/pop/wyc&sc30.htm (adjusted by 2010 census data)

Projected 2015 WDAI population, escalated as noted =	594,710
Projected 2020 WDAI population =	622,360
Projected 2025 WDAI population =	644,050
Projected 2030 WDAI population =	668,830

RANGE OF 2010 DIVERSION RATES FOR EACH MATERIAL IN WYOMING TOTAL STREAM (tons/year)
rounded to nearest 1,000 tons /year

MATERIALS		2010 PROJECTED QUANTITIES																			
		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Paper																					
Cardboard/Kraft Paper	Lo (10%)	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	65,000	70,000	75,000	80,000	85,000	90,000	95,000	100,000
	Hi (14%)	7,000	14,000	21,000	28,000	35,000	42,000	49,000	56,000	63,000	70,000	77,000	84,000	91,000	98,000	105,000	112,000	119,000	126,000	133,000	140,000
Office Paper/High Grade/Shreds	Lo (3%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	15,000	17,000	18,000	20,000	21,000	23,000	24,000	26,000	27,000	29,000	30,000
	Hi (4%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
Newsprint	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
	Hi (3%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	15,000	17,000	18,000	20,000	21,000	23,000	24,000	26,000	27,000	29,000	30,000
Magazines	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
	Hi (3%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	15,000	17,000	18,000	20,000	21,000	23,000	24,000	26,000	27,000	29,000	30,000
Mixed Paper	Lo (5%)	3,000	5,000	8,000	10,000	13,000	15,000	18,000	20,000	23,000	25,000	28,000	30,000	33,000	35,000	38,000	40,000	43,000	45,000	47,000	50,000
	Hi (7%)	4,000	7,000	11,000	14,000	18,000	21,000	25,000	28,000	32,000	35,000	39,000	42,000	46,000	49,000	53,000	56,000	60,000	63,000	66,000	70,000
Other Paper	Lo (3%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	15,000	17,000	18,000	20,000	21,000	23,000	24,000	26,000	27,000	29,000	30,000
	Hi (5%)	3,000	5,000	8,000	10,000	13,000	15,000	18,000	20,000	23,000	25,000	28,000	30,000	33,000	35,000	38,000	40,000	43,000	45,000	47,000	50,000
Total Paper	**Lo (25%)**	**13,000**	**25,000**	**38,000**	**50,000**	**63,000**	**75,000**	**88,000**	**100,000**	**113,000**	**125,000**	**138,000**	**150,000**	**163,000**	**175,000**	**188,000**	**200,000**	**213,000**	**225,000**	**238,000**	**250,000**
	Hi (36%)	**18,000**	**36,000**	**54,000**	**72,000**	**90,000**	**108,000**	**126,000**	**144,000**	**162,000**	**180,000**	**198,000**	**216,000**	**234,000**	**252,000**	**270,000**	**288,000**	**306,000**	**324,000**	**342,000**	**360,000**
Plastics																					
PET #1 Bottles	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	9,000	10,000
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
HDPE #2 Bottles	Lo (1%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
#3-7 Bottles	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	9,000	10,000
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
Plastic Film/Wrap/Bags	Lo (3%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	15,000	17,000	18,000	20,000	21,000	23,000	24,000	26,000	27,000	29,000	30,000
	Hi (4%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
Other Plastic	Lo (3%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	15,000	17,000	18,000	20,000	21,000	23,000	24,000	26,000	27,000	29,000	30,000
	Hi (5%)	3,000	5,000	8,000	10,000	13,000	15,000	18,000	20,000	23,000	25,000	28,000	30,000	33,000	35,000	38,000	40,000	43,000	45,000	47,000	50,000
Total Plastic	**Lo (9%)**	**5,000**	**9,000**	**14,000**	**18,000**	**23,000**	**27,000**	**32,000**	**36,000**	**41,000**	**45,000**	**50,000**	**54,000**	**59,000**	**63,000**	**68,000**	**72,000**	**77,000**	**81,000**	**85,000**	**90,000**
	Hi (15%)	**8,000**	**15,000**	**23,000**	**30,000**	**38,000**	**45,000**	**53,000**	**60,000**	**68,000**	**75,000**	**83,000**	**90,000**	**98,000**	**105,000**	**113,000**	**120,000**	**128,000**	**135,000**	**143,000**	**150,000**
Glass																					
Mixed Containers (all colors)	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
	Hi (3%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	15,000	17,000	18,000	20,000	21,000	23,000	24,000	26,000	27,000	29,000	30,000
Other Glass	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	9,000	10,000
Total Glass	**Lo (2%)**	**1,000**	**2,000**	**3,000**	**4,000**	**5,000**	**6,000**	**7,000**	**8,000**	**9,000**	**10,000**	**11,000**	**12,000**	**13,000**	**14,000**	**15,000**	**16,000**	**17,000**	**18,000**	**19,000**	**20,000**
	Hi (4%)	**2,000**	**4,000**	**6,000**	**8,000**	**10,000**	**12,000**	**14,000**	**16,000**	**18,000**	**20,000**	**22,000**	**24,000**	**26,000**	**28,000**	**30,000**	**32,000**	**34,000**	**36,000**	**38,000**	**40,000**
Metals																					
Aluminum Cans	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	9,000	10,000
Steel/Tin Cans	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	9,000	10,000
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
Other Metals	Lo (4%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
	Hi (6%)	3,000	6,000	9,000	12,000	15,000	18,000	21,000	24,000	27,000	30,000	33,000	36,000	39,000	42,000	45,000	48,000	51,000	54,000	57,000	60,000
Total Metals	**Lo (5%)**	**3,000**	**5,000**	**8,000**	**10,000**	**13,000**	**15,000**	**18,000**	**20,000**	**23,000**	**25,000**	**28,000**	**30,000**	**33,000**	**35,000**	**38,000**	**40,000**	**43,000**	**45,000**	**47,000**	**50,000**
	Hi (9%)	**5,000**	**9,000**	**14,000**	**18,000**	**23,000**	**27,000**	**32,000**	**36,000**	**41,000**	**45,000**	**50,000**	**54,000**	**59,000**	**63,000**	**68,000**	**72,000**	**77,000**	**81,000**	**85,000**	**90,000**

RANGE OF 2010 DIVERSION RATES FOR EACH MATERIAL IN WYOMING TOTAL STREAM (tons/year)
rounded to nearest 1,000 tons /year

Organics																					
Food Scraps	Lo (8%)	4,000	8,000	12,000	16,000	20,000	24,000	28,000	32,000	36,000	40,000	44,000	48,000	52,000	56,000	60,000	64,000	68,000	72,000	76,000	80,000
	Hi (10%)	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	65,000	70,000	75,000	80,000	85,000	90,000	95,000	100,000
Yard Trimmings & Land Clearing	Lo (7%)	4,000	7,000	11,000	14,000	18,000	21,000	25,000	28,000	32,000	35,000	39,000	42,000	46,000	49,000	53,000	56,000	60,000	63,000	66,000	70,000
	Hi (9%)	5,000	9,000	14,000	18,000	23,000	27,000	32,000	36,000	41,000	45,000	50,000	54,000	59,000	63,000	68,000	72,000	77,000	81,000	85,000	90,000
Clean Wood/Pallets	Lo (5%)	3,000	5,000	8,000	10,000	13,000	15,000	18,000	20,000	23,000	25,000	28,000	30,000	33,000	35,000	38,000	40,000	43,000	45,000	47,000	50,000
	Hi (7%)	4,000	7,000	11,000	14,000	18,000	21,000	25,000	28,000	32,000	35,000	39,000	42,000	46,000	49,000	53,000	56,000	60,000	63,000	66,000	70,000
Other Organics	Lo (4%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
	Hi (6%)	3,000	6,000	9,000	12,000	15,000	18,000	21,000	24,000	27,000	30,000	33,000	36,000	39,000	42,000	45,000	48,000	51,000	54,000	57,000	60,000
Total Organics	**Lo (24%)**	**12,000**	**24,000**	**36,000**	**48,000**	**60,000**	**72,000**	**84,000**	**96,000**	**108,000**	**120,000**	**132,000**	**144,000**	**156,000**	**168,000**	**180,000**	**192,000**	**204,000**	**216,000**	**228,000**	**240,000**
	Hi (32%)	**16,000**	**32,000**	**48,000**	**64,000**	**80,000**	**96,000**	**112,000**	**128,000**	**144,000**	**160,000**	**176,000**	**192,000**	**208,000**	**224,000**	**240,000**	**256,000**	**272,000**	**288,000**	**304,000**	**320,000**
C&D Waste																					
Aggregates	Lo (4%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
	Hi (5%)	3,000	5,000	8,000	10,000	13,000	15,000	18,000	20,000	23,000	25,000	28,000	30,000	33,000	35,000	38,000	40,000	43,000	45,000	47,000	50,000
Asphalt Shingles	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
	Hi (3%)	2,000	3,000	5,000	6,000	8,000	9,000	11,000	12,000	14,000	15,000	17,000	18,000	20,000	21,000	23,000	24,000	26,000	27,000	29,000	30,000
Wood	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
	Hi (4%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
Drywall (clean/used)	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
	Hi (4%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
Carpet	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
Other C&D Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	9,000	10,000
Total C&D	**Lo (10%)**	**5,000**	**10,000**	**15,000**	**20,000**	**25,000**	**30,000**	**35,000**	**40,000**	**45,000**	**50,000**	**55,000**	**60,000**	**65,000**	**70,000**	**75,000**	**80,000**	**85,000**	**90,000**	**95,000**	**100,000**
	Hi (19%)	**10,000**	**19,000**	**29,000**	**38,000**	**48,000**	**57,000**	**67,000**	**76,000**	**86,000**	**95,000**	**105,000**	**114,000**	**124,000**	**133,000**	**143,000**	**152,000**	**162,000**	**171,000**	**181,000**	**190,000**
Other Waste																					
Electronics	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	9,000	10,000
Scrap Tires	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	9,000	10,000
Household Hazardous Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	9,000	10,000
Other Waste	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000
	Hi (4%)	2,000	4,000	6,000	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
Total Other	**Lo (2%)**	**1,000**	**2,000**	**3,000**	**4,000**	**5,000**	**6,000**	**7,000**	**8,000**	**9,000**	**10,000**	**11,000**	**12,000**	**13,000**	**14,000**	**15,000**	**16,000**	**17,000**	**18,000**	**19,000**	**20,000**
	Hi (7%)	**4,000**	**7,000**	**11,000**	**14,000**	**18,000**	**21,000**	**25,000**	**28,000**	**32,000**	**35,000**	**39,000**	**42,000**	**46,000**	**49,000**	**53,000**	**56,000**	**60,000**	**63,000**	**66,000**	**70,000**
Total	**Lo (77%)**	***40,000***	***77,000***	***117,000***	***154,000***	***194,000***	***231,000***	***271,000***	***308,000***	***348,000***	***385,000***	***425,000***	***462,000***	***502,000***	***539,000***	***579,000***	***616,000***	***656,000***	***693,000***	***731,000***	***770,000***
	Hi (122%	***63,000***	***122,000***	***185,000***	***244,000***	***307,000***	***366,000***	***429,000***	***488,000***	***551,000***	***610,000***	***673,000***	***732,000***	***795,000***	***854,000***	***917,000***	***976,000***	***#######***	***#######***	***#######***	***#######***
	Mid (100%)	52000	100000	151000	199000	251000	299000	350000	398000	450000	498000	549000	597000	649000	697000	748000	796000	848000	896000	945000	995000

RANGE OF 2015 DIVERSION RATES FOR EACH MATERIAL IN WYOMING TOTAL STREAM (tons/year)
rounded to nearest 1,000 tons /year

MATERIALS		2015 PROJECTED QUANTITIES																			
		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Paper																					
Cardboard/Kraft Paper	Lo (10%)	5,000	11,000	16,000	21,000	26,000	32,000	37,000	42,000	47,000	53,000	58,000	63,000	68,000	74,000	79,000	84,000	89,000	95,000	100,000	105,000
	Hi (14%)	7,000	15,000	22,000	29,000	37,000	44,000	51,000	59,000	66,000	74,000	81,000	88,000	96,000	103,000	110,000	118,000	125,000	132,000	140,000	147,000
Office Paper/High Grade/Shreds	Lo (3%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
	Hi (4%)	2,000	4,000	6,000	8,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	32,000	34,000	36,000	38,000	40,000	42,000
Newsprint	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
	Hi (3%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
Magazines	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
	Hi (3%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
Mixed Paper	Lo (5%)	3,000	5,000	8,000	11,000	13,000	16,000	19,000	21,000	24,000	27,000	29,000	32,000	34,000	37,000	40,000	42,000	45,000	48,000	50,000	53,000
	Hi (7%)	4,000	7,000	11,000	15,000	19,000	22,000	26,000	30,000	33,000	37,000	41,000	44,000	48,000	52,000	56,000	59,000	63,000	67,000	70,000	74,000
Other Paper	Lo (3%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
	Hi (5%)	3,000	5,000	8,000	11,000	13,000	16,000	19,000	21,000	24,000	27,000	29,000	32,000	34,000	37,000	40,000	42,000	45,000	48,000	50,000	53,000
Total Paper	**Lo (25%)**	**13,000**	**26,000**	**39,000**	**53,000**	**66,000**	**79,000**	**92,000**	**105,000**	**118,000**	**132,000**	**145,000**	**158,000**	**171,000**	**184,000**	**197,000**	**210,000**	**224,000**	**237,000**	**250,000**	**263,000**
	Hi (36%)	**19,000**	**38,000**	**57,000**	**76,000**	**95,000**	**114,000**	**133,000**	**152,000**	**171,000**	**190,000**	**208,000**	**227,000**	**246,000**	**265,000**	**284,000**	**303,000**	**322,000**	**341,000**	**360,000**	**379,000**
Plastics																					
PET #1 Bottles	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
HDPE #2 Bottles	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
#3-7 Bottles	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
Plastic Film/Wrap/Bags	Lo (3%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
	Hi (4%)	2,000	4,000	6,000	8,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	32,000	34,000	36,000	38,000	40,000	42,000
Other Plastic	Lo (3%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
	Hi (5%)	3,000	5,000	8,000	11,000	13,000	16,000	19,000	21,000	24,000	27,000	29,000	32,000	34,000	37,000	40,000	42,000	45,000	48,000	50,000	53,000
Total Plastic	**Lo (9%)**	**5,000**	**10,000**	**14,000**	**19,000**	**24,000**	**29,000**	**33,000**	**38,000**	**43,000**	**48,000**	**52,000**	**57,000**	**62,000**	**67,000**	**71,000**	**76,000**	**81,000**	**86,000**	**90,000**	**95,000**
	Hi (15%)	**8,000**	**16,000**	**24,000**	**32,000**	**40,000**	**47,000**	**55,000**	**63,000**	**71,000**	**79,000**	**87,000**	**95,000**	**103,000**	**111,000**	**119,000**	**126,000**	**134,000**	**142,000**	**150,000**	**158,000**
Glass																					
Mixed Containers (all colors)	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
	Hi (3%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
Other Glass	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Total Glass	**Lo (2%)**	**1,000**	**2,000**	**3,000**	**4,000**	**5,000**	**6,000**	**7,000**	**8,000**	**9,000**	**11,000**	**12,000**	**13,000**	**14,000**	**15,000**	**16,000**	**17,000**	**18,000**	**19,000**	**20,000**	**21,000**
	Hi (4%)	**2,000**	**4,000**	**6,000**	**8,000**	**11,000**	**13,000**	**15,000**	**17,000**	**19,000**	**21,000**	**23,000**	**25,000**	**27,000**	**29,000**	**32,000**	**34,000**	**36,000**	**38,000**	**40,000**	**42,000**
Metals																					
Aluminum Cans	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Steel/Tin Cans	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
Other Metals	Lo (4%)	2,000	4,000	6,000	8,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	32,000	34,000	36,000	38,000	40,000	42,000
	Hi (6%)	3,000	6,000	9,000	13,000	16,000	19,000	22,000	25,000	28,000	32,000	35,000	38,000	41,000	44,000	47,000	50,000	54,000	57,000	60,000	63,000
Total Metals	**Lo (5%)**	**3,000**	**5,000**	**8,000**	**11,000**	**13,000**	**16,000**	**19,000**	**21,000**	**24,000**	**27,000**	**29,000**	**32,000**	**34,000**	**37,000**	**40,000**	**42,000**	**45,000**	**48,000**	**50,000**	**53,000**
	Hi (9%)	**5,000**	**10,000**	**14,000**	**19,000**	**24,000**	**29,000**	**33,000**	**38,000**	**43,000**	**48,000**	**52,000**	**57,000**	**62,000**	**67,000**	**71,000**	**76,000**	**81,000**	**86,000**	**90,000**	**95,000**

RANGE OF 2015 DIVERSION RATES FOR EACH MATERIAL IN WYOMING TOTAL STREAM (tons/year)
rounded to nearest 1,000 tons /year

Organics																					
Food Scraps	Lo (8%)	4,000	8,000	13,000	17,000	21,000	25,000	29,000	34,000	38,000	42,000	46,000	50,000	55,000	59,000	63,000	67,000	71,000	76,000	80,000	84,000
	Hi (10%)	5,000	11,000	16,000	21,000	26,000	32,000	37,000	42,000	47,000	53,000	58,000	63,000	68,000	74,000	79,000	84,000	89,000	95,000	100,000	105,000
Yard Trimmings & Land Clearing	Lo (7%)	4,000	7,000	11,000	15,000	19,000	22,000	26,000	30,000	33,000	37,000	41,000	44,000	48,000	52,000	56,000	59,000	63,000	67,000	70,000	74,000
	Hi (9%)	5,000	10,000	14,000	19,000	24,000	29,000	33,000	38,000	43,000	48,000	52,000	57,000	62,000	67,000	71,000	76,000	81,000	86,000	90,000	95,000
Clean Wood/Pallets	Lo (5%)	3,000	5,000	8,000	11,000	13,000	16,000	19,000	21,000	24,000	27,000	29,000	32,000	34,000	37,000	40,000	42,000	45,000	48,000	50,000	53,000
	Hi (7%)	4,000	7,000	11,000	15,000	19,000	22,000	26,000	30,000	33,000	37,000	41,000	44,000	48,000	52,000	56,000	59,000	63,000	67,000	70,000	74,000
Other Organics	Lo (4%)	2,000	4,000	6,000	8,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	32,000	34,000	36,000	38,000	40,000	42,000
	Hi (6%)	3,000	6,000	9,000	13,000	16,000	19,000	22,000	25,000	28,000	32,000	35,000	38,000	41,000	44,000	47,000	50,000	54,000	57,000	60,000	63,000
Total Organics	**Lo (24%)**	**13,000**	**25,000**	**38,000**	**51,000**	**63,000**	**76,000**	**89,000**	**101,000**	**114,000**	**127,000**	**139,000**	**152,000**	**164,000**	**177,000**	**190,000**	**202,000**	**215,000**	**228,000**	**240,000**	**253,000**
	Hi (32%)	**17,000**	**34,000**	**51,000**	**67,000**	**84,000**	**101,000**	**118,000**	**135,000**	**152,000**	**169,000**	**185,000**	**202,000**	**219,000**	**236,000**	**253,000**	**270,000**	**286,000**	**303,000**	**320,000**	**337,000**
C&D Waste																					
Aggregates	Lo (4%)	2,000	4,000	6,000	8,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	32,000	34,000	36,000	38,000	40,000	42,000
	Hi (5%)	3,000	5,000	8,000	11,000	13,000	16,000	19,000	21,000	24,000	27,000	29,000	32,000	34,000	37,000	40,000	42,000	45,000	48,000	50,000	53,000
Asphalt Shingles	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
	Hi (3%)	2,000	3,000	5,000	6,000	8,000	10,000	11,000	13,000	14,000	16,000	18,000	19,000	21,000	22,000	24,000	26,000	27,000	29,000	30,000	32,000
Wood	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
	Hi (4%)	2,000	4,000	6,000	8,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	32,000	34,000	36,000	38,000	40,000	42,000
Drywall (clean/used)	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
	Hi (4%)	2,000	4,000	6,000	8,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	32,000	34,000	36,000	38,000	40,000	42,000
Carpet	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
Other C&D Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Total C&D	**Lo (10%)**	**5,000**	**11,000**	**16,000**	**21,000**	**26,000**	**32,000**	**37,000**	**42,000**	**47,000**	**53,000**	**58,000**	**63,000**	**68,000**	**74,000**	**79,000**	**84,000**	**89,000**	**95,000**	**100,000**	**105,000**
	Hi (19%)	**10,000**	**20,000**	**30,000**	**40,000**	**50,000**	**60,000**	**70,000**	**80,000**	**90,000**	**100,000**	**110,000**	**120,000**	**130,000**	**140,000**	**150,000**	**160,000**	**170,000**	**180,000**	**190,000**	**200,000**
Other Waste																					
Electronics	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Scrap Tires	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Household Hazardous Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Other Waste	Lo (2%)	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000	11,000	12,000	13,000	14,000	15,000	16,000	17,000	18,000	19,000	20,000	21,000
	Hi (4%)	2,000	4,000	6,000	8,000	11,000	13,000	15,000	17,000	19,000	21,000	23,000	25,000	27,000	29,000	32,000	34,000	36,000	38,000	40,000	42,000
Total Other	**Lo (2%)**	**1,000**	**2,000**	**3,000**	**4,000**	**5,000**	**6,000**	**7,000**	**8,000**	**9,000**	**11,000**	**12,000**	**13,000**	**14,000**	**15,000**	**16,000**	**17,000**	**18,000**	**19,000**	**20,000**	**21,000**
	Hi (7%)	**4,000**	**7,000**	**11,000**	**15,000**	**19,000**	**22,000**	**26,000**	**30,000**	**33,000**	**37,000**	**41,000**	**44,000**	**48,000**	**52,000**	**56,000**	**59,000**	**63,000**	**67,000**	**70,000**	**74,000**
Total	**Lo (77%)**	***41,000***	***81,000***	***121,000***	***163,000***	***202,000***	***244,000***	***284,000***	***323,000***	***364,000***	***409,000***	***447,000***	***488,000***	***527,000***	***569,000***	***609,000***	***648,000***	***690,000***	***732,000***	***770,000***	***811,000***
	Hi (122%	***65,000***	***129,000***	***193,000***	***257,000***	***323,000***	***386,000***	***450,000***	***515,000***	***579,000***	***644,000***	***706,000***	***770,000***	***835,000***	***900,000***	***965,000***	*******	*******	*******	*******	*******
	Mid (100%)	53000	105000	157000	210000	263000	315000	367000	419000	472000	527000	577000	629000	681000	735000	787000	838000	891000	945000	995000	1048000

RANGE OF 2020 DIVERSION RATES FOR EACH MATERIAL IN WYOMING TOTAL STREAM (tons/year)
rounded to nearest 1,000 tons /year

MATERIALS		2020 PROJECTED QUANTITIES																			
		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%
Paper																					
Cardboard/Kraft Paper	Lo (10%)	6,000	11,000	17,000	22,000	28,000	33,000	39,000	44,000	50,000	55,000	61,000	66,000	72,000	77,000	83,000	88,000	94,000	99,000	105,000	110,000
	Hi (14%)	8,000	15,000	23,000	31,000	39,000	46,000	54,000	62,000	69,000	77,000	85,000	92,000	100,000	108,000	116,000	123,000	131,000	139,000	146,000	154,000
Office Paper/High Grade/Shreds	Lo (3%)	2,000	3,000	5,000	7,000	8,000	10,000	12,000	13,000	15,000	17,000	18,000	20,000	21,000	23,000	25,000	26,000	28,000	30,000	31,000	33,000
	Hi (4%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
Newsprint	Lo (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (3%)	2,000	3,000	5,000	7,000	8,000	10,000	12,000	13,000	15,000	17,000	18,000	20,000	21,000	23,000	25,000	26,000	28,000	30,000	31,000	33,000
Magazines	Lo (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (3%)	2,000	3,000	5,000	7,000	8,000	10,000	12,000	13,000	15,000	17,000	18,000	20,000	21,000	23,000	25,000	26,000	28,000	30,000	31,000	33,000
Mixed Paper	Lo (5%)	3,000	6,000	8,000	11,000	14,000	17,000	19,000	22,000	25,000	28,000	30,000	33,000	36,000	39,000	41,000	44,000	47,000	50,000	52,000	55,000
	Hi (7%)	4,000	8,000	12,000	15,000	19,000	23,000	27,000	31,000	35,000	39,000	42,000	46,000	50,000	54,000	58,000	62,000	65,000	69,000	73,000	77,000
Other Paper	Lo (3%)	2,000	3,000	5,000	7,000	8,000	10,000	12,000	13,000	15,000	17,000	18,000	20,000	21,000	23,000	25,000	26,000	28,000	30,000	31,000	33,000
	Hi (5%)	3,000	6,000	8,000	11,000	14,000	17,000	19,000	22,000	25,000	28,000	30,000	33,000	36,000	39,000	41,000	44,000	47,000	50,000	52,000	55,000
Total Paper	**Lo (25%)**	**14,000**	**28,000**	**41,000**	**55,000**	**69,000**	**83,000**	**96,000**	**110,000**	**124,000**	**138,000**	**151,000**	**165,000**	**179,000**	**193,000**	**206,000**	**220,000**	**234,000**	**248,000**	**261,000**	**275,000**
	Hi (36%)	**20,000**	**40,000**	**60,000**	**79,000**	**99,000**	**119,000**	**139,000**	**159,000**	**179,000**	**199,000**	**218,000**	**238,000**	**258,000**	**278,000**	**298,000**	**318,000**	**337,000**	**357,000**	**377,000**	**397,000**
Plastics																					
PET #1 Bottles	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
	Hi (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
HDPE #2 Bottles	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
	Hi (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
#3-7 Bottles	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
	Hi (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
Plastic Film/Wrap/Bags	Lo (3%)	2,000	3,000	5,000	7,000	8,000	10,000	12,000	13,000	15,000	17,000	18,000	20,000	21,000	23,000	25,000	26,000	28,000	30,000	31,000	33,000
	Hi (4%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
Other Plastic	Lo (3%)	2,000	3,000	5,000	7,000	8,000	10,000	12,000	13,000	15,000	17,000	18,000	20,000	21,000	23,000	25,000	26,000	28,000	30,000	31,000	33,000
	Hi (5%)	3,000	6,000	8,000	11,000	14,000	17,000	19,000	22,000	25,000	28,000	30,000	33,000	36,000	39,000	41,000	44,000	47,000	50,000	52,000	55,000
Total Plastic	**Lo (9%)**	**5,000**	**10,000**	**15,000**	**20,000**	**25,000**	**30,000**	**35,000**	**40,000**	**45,000**	**50,000**	**54,000**	**59,000**	**64,000**	**69,000**	**74,000**	**79,000**	**84,000**	**89,000**	**94,000**	**99,000**
	Hi (15%)	**8,000**	**17,000**	**25,000**	**33,000**	**41,000**	**50,000**	**58,000**	**66,000**	**74,000**	**83,000**	**91,000**	**99,000**	**107,000**	**116,000**	**124,000**	**132,000**	**140,000**	**149,000**	**157,000**	**165,000**
Glass																					
Mixed Containers (all colors)	Lo (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (3%)	2,000	3,000	5,000	7,000	8,000	10,000	12,000	13,000	15,000	17,000	18,000	20,000	21,000	23,000	25,000	26,000	28,000	30,000	31,000	33,000
Other Glass	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Total Glass	**Lo (2%)**	**1,000**	**2,000**	**3,000**	**4,000**	**6,000**	**7,000**	**8,000**	**9,000**	**10,000**	**11,000**	**12,000**	**13,000**	**14,000**	**15,000**	**17,000**	**18,000**	**19,000**	**20,000**	**21,000**	**22,000**
	Hi (4%)	**2,000**	**4,000**	**7,000**	**9,000**	**11,000**	**13,000**	**15,000**	**18,000**	**20,000**	**22,000**	**24,000**	**26,000**	**29,000**	**31,000**	**33,000**	**35,000**	**37,000**	**40,000**	**42,000**	**44,000**
Metals																					
Aluminum Cans	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Steel/Tin Cans	Lo (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
	Hi (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
Other Metals	Lo (4%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
	Hi (6%)	3,000	7,000	10,000	13,000	17,000	20,000	23,000	26,000	30,000	33,000	36,000	40,000	43,000	46,000	50,000	53,000	56,000	59,000	63,000	66,000
Total Metals	**Lo (5%)**	**3,000**	**6,000**	**8,000**	**11,000**	**14,000**	**17,000**	**19,000**	**22,000**	**25,000**	**28,000**	**30,000**	**33,000**	**36,000**	**39,000**	**41,000**	**44,000**	**47,000**	**50,000**	**52,000**	**55,000**
	Hi (9%)	**5,000**	**10,000**	**15,000**	**20,000**	**25,000**	**30,000**	**35,000**	**40,000**	**45,000**	**50,000**	**54,000**	**59,000**	**64,000**	**69,000**	**74,000**	**79,000**	**84,000**	**89,000**	**94,000**	**99,000**

RANGE OF 2020 DIVERSION RATES FOR EACH MATERIAL IN WYOMING TOTAL STREAM (tons/year)
rounded to nearest 1,000 tons /year

Organics																					
Food Scraps	Lo (8%)	4,000	9,000	13,000	18,000	22,000	26,000	31,000	35,000	40,000	44,000	48,000	53,000	57,000	62,000	66,000	70,000	75,000	79,000	84,000	88,000
	Hi (10%)	6,000	11,000	17,000	22,000	28,000	33,000	39,000	44,000	50,000	55,000	61,000	66,000	72,000	77,000	83,000	88,000	94,000	99,000	105,000	110,000
Yard Trimmings & Land Clearing	Lo (7%)	4,000	8,000	12,000	15,000	19,000	23,000	27,000	31,000	35,000	39,000	42,000	46,000	50,000	54,000	58,000	62,000	65,000	69,000	73,000	77,000
	Hi (9%)	5,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	54,000	59,000	64,000	69,000	74,000	79,000	84,000	89,000	94,000	99,000
Clean Wood/Pallets	Lo (5%)	3,000	6,000	8,000	11,000	14,000	17,000	19,000	22,000	25,000	28,000	30,000	33,000	36,000	39,000	41,000	44,000	47,000	50,000	52,000	55,000
	Hi (7%)	4,000	8,000	12,000	15,000	19,000	23,000	27,000	31,000	35,000	39,000	42,000	46,000	50,000	54,000	58,000	62,000	65,000	69,000	73,000	77,000
Other Organics	Lo (4%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
	Hi (6%)	3,000	7,000	10,000	13,000	17,000	20,000	23,000	26,000	30,000	33,000	36,000	40,000	43,000	46,000	50,000	53,000	56,000	59,000	63,000	66,000
Total Organics	**Lo (24%)**	**13,000**	**26,000**	**40,000**	**53,000**	**66,000**	**79,000**	**92,000**	**106,000**	**119,000**	**132,000**	**145,000**	**158,000**	**172,000**	**185,000**	**198,000**	**211,000**	**224,000**	**238,000**	**251,000**	**264,000**
	Hi (32%)	**18,000**	**35,000**	**53,000**	**71,000**	**88,000**	**106,000**	**124,000**	**141,000**	**159,000**	**177,000**	**194,000**	**212,000**	**229,000**	**247,000**	**265,000**	**282,000**	**300,000**	**318,000**	**335,000**	**353,000**
C&D Waste																					
Aggregates	Lo (4%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
	Hi (5%)	3,000	6,000	8,000	11,000	14,000	17,000	19,000	22,000	25,000	28,000	30,000	33,000	36,000	39,000	41,000	44,000	47,000	50,000	52,000	55,000
Asphalt Shingles	Lo (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (3%)	2,000	3,000	5,000	7,000	8,000	10,000	12,000	13,000	15,000	17,000	18,000	20,000	21,000	23,000	25,000	26,000	28,000	30,000	31,000	33,000
Wood	Lo (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (4%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
Drywall (clean/used)	Lo (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (4%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
Carpet	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
Other C&D Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Total C&D	**Lo (10%)**	**6,000**	**11,000**	**17,000**	**22,000**	**28,000**	**33,000**	**39,000**	**44,000**	**50,000**	**55,000**	**61,000**	**66,000**	**72,000**	**77,000**	**83,000**	**88,000**	**94,000**	**99,000**	**105,000**	**110,000**
	Hi (19%)	**10,000**	**21,000**	**31,000**	**42,000**	**52,000**	**63,000**	**73,000**	**84,000**	**94,000**	**105,000**	**115,000**	**125,000**	**136,000**	**146,000**	**157,000**	**167,000**	**178,000**	**188,000**	**199,000**	**209,000**
Other Waste																					
Electronics	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Scrap Tires	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Household Hazardous Waste	Lo (0%)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hi (1%)	1,000	1,000	2,000	2,000	3,000	3,000	4,000	4,000	5,000	6,000	6,000	7,000	7,000	8,000	8,000	9,000	9,000	10,000	10,000	11,000
Other Waste	Lo (2%)	1,000	2,000	3,000	4,000	6,000	7,000	8,000	9,000	10,000	11,000	12,000	13,000	14,000	15,000	17,000	18,000	19,000	20,000	21,000	22,000
	Hi (4%)	2,000	4,000	7,000	9,000	11,000	13,000	15,000	18,000	20,000	22,000	24,000	26,000	29,000	31,000	33,000	35,000	37,000	40,000	42,000	44,000
Total Other	**Lo (2%)**	**1,000**	**2,000**	**3,000**	**4,000**	**6,000**	**7,000**	**8,000**	**9,000**	**10,000**	**11,000**	**12,000**	**13,000**	**14,000**	**15,000**	**17,000**	**18,000**	**19,000**	**20,000**	**21,000**	**22,000**
	Hi (7%)	**4,000**	**8,000**	**12,000**	**15,000**	**19,000**	**23,000**	**27,000**	**31,000**	**35,000**	**39,000**	**42,000**	**46,000**	**50,000**	**54,000**	**58,000**	**62,000**	**65,000**	**69,000**	**73,000**	**77,000**
Total	**Lo (77%)**	***43,000***	***85,000***	***127,000***	***169,000***	***214,000***	***256,000***	***297,000***	***340,000***	***383,000***	***425,000***	***465,000***	***507,000***	***551,000***	***593,000***	***636,000***	***678,000***	***721,000***	***764,000***	***805,000***	***847,000***
	Hi (122%	***67,000***	***135,000***	***203,000***	***269,000***	***335,000***	***404,000***	***471,000***	***539,000***	***606,000***	***675,000***	***738,000***	***805,000***	***873,000***	***941,000***	*******	*******	*******	*******	*******	*******
	Mid (100%)	55000	110000	165000	219000	275000	330000	384000	440000	495000	550000	602000	656000	712000	767000	823000	877000	931000	987000	1041000	1096000

Metals - Wyoming

Star Valley Steel Supply
4231 State Hwy 241
Afton, WY 83110-9757 (307) 886-3820

Pacific Steel & Recycling
3080 W Yellowstone Hwy
Casper, WY 82604 (307) 234-6006
All ferrous and non-ferrous

Yates Iron
5920 W Yellowstone Hwy
Casper, WY 82604 (307) 237-5551
Contacts: Ed Yates

Cheyenne Recycling
501 S Greeley Hwy
Cheyenne, WY 82001 (307) 635-5986
Contacts: Lee Bradley (Owner), Norman Bradley (Owner)

Lincoln Valley Auto Salvage
2607 Whitney Rd
Cheyenne, WY 82001 (307) 638-0076

Tri State Oil Reclaimers
1770 Otto Rd
Cheyenne, WY 82007 (307) 635-5332
Contacts: Charles R. Welty

Demtech Inc.
65 Bald Mountain Road
Dubois, WY 82513 (307) 455-2829

Jim's Service
1443 US Hwy 30 E & 1-80
Evanston, *WY* 82930
(307) 789-9546
Contacts: Jim Cook

Pacific Steel & Recycling
P.O. Box 1869
Gillette. *WY* 82716 (307) 686-2764
Contacts: Mason Mikkola (Mgr)
All ferrous and non-ferrous

Turner Iron & Metal
E of City
Greybull, *WY* 82426 (307) 765-4353

Rocky Mountain Steel
P.O. Box 1251
Laramie, *WY* 82070
(307) 745-3004
Contacts: Pal Ryan

Pacific Steel & Recycling
P.O. Box 160
Mills, *WY* 82644
(307) 234-6006
FAX: 307/472-2910
Contacts: Chad Elliott (Mgr)

Wyoming Recycling Iron
P.O. Box 159
Mills, *WY* 82644
(307) 237-6615

Reed's Hide & Metal
701 E Monroe Ave
Riverton, *WY* 82501 (307) 856-7172
kereed@wyoming.com

Skaggs Auto Rebuilding
1100 E Monroe Ave
Riverton, *WY* 82501 (307) 856-3305

Auto Recyclers
StarRte2 E
Rock Springs, *WY* 82901 (307) 382-9710
Contacts: Tom Liggett (Mgr)

Pacific Steel & Recycling
P.O. Box 129
Rock Springs, *WY* 82902 (307) 382-7970
FAX: 307/382-7972
Contacts: Lou Beyer (Mgr)

Southwest Wyoming Rehabilitation Center
4509 Foothill Blvd
Rock Springs, *WY* 82901
307) 382-3042
FAX: 307/362-4615
Contacts: Kathy Hom-Dalton (Pres), Tina Spiegel, Susan Dimick

Renew Recycling
245 Broadway
Sheridan, *WY* 82801
(307) 672-7481
Contacts: Tom Slater (Recycling Mgr)

Big Horn Enterprises Inc.
641 Warren St
Thermopolis, *WY* 82443
(307) 864-2153
Contacts: Tyler Paris (Dir/Mktg)

B & M Salvage
12 Sawmill Rd
Wheatland, *WY* 82201
(307) 322-2420

Metals – Out of State

Anheuser Busch
Denise Burrell
Denise.Burrell@anheuser-busch.com
510-471-4776

Multi-Materials
Erik Neilson
erikneilson@yahoo.com
(435) 752-5665 Office

Western Metals
Clint Payne
czp@wmrecycling.com
435-760-4712 Mobile

Fiber

OCC, OMG, ONP, OP1
International Paper
Lynnette Mathisen, Lynnette.Mathisen@cbpr.ipaper.com, 503-520-4148

ONP
Hamilton Manufacturing - Twin Falls, ID
Barbara Martinez, barbara@hmi-mfg.com, 800-777-9689

OTD
Dex Recycling- Denver, CO but local programs exist
Heather Mungle, GreenCycle@henrywurst.com, 888-610-2800

Compost / Compost programs

ACRES
University of Wyoming 1000 E. University Ave. Laramie, WY 82071, (307) 766-1121

REUSE MARKETS

ORGANIZATION	LOCATION	MATERIALS	FEES/ REVENUES	ACCESS BY	HOW MANAGED
The Salvation Army Thrift Store	Casper	Clothing, small appliances, books, toys	No	General public	Charity resell
Goodwill	Casper	Clothing, small appliances, books, toys	No	General public	Charity resell
Two Tymers	Casper	Clothing	Consignment fee	General public	Consignment
Kim's Closet	Casper	Clothing	Consignment fee	General public	Consignment
First on Second	Casper	Furniture	Consignment fee	General public	Consignment
Heather's Baby Exchange	Casper	Baby clothing and items	Consignment fee	General public	Consignment
Once Upon a Child	Casper	Baby clothing and items	Consignment fee	General public	Consignment
Goodwill Industries of Wyoming	Cheyenne	Clothing, small appliances, books, toys	No	General public	Charity resell

ORGANIZATION	LOCATION	MATERIALS	FEES/ REVENUES	ACCESS BY	HOW MANAGED
Browse & Buy	Jackson	Clothing, small appliances, books, toys	No	General public	Charity resell
Beautiful Thrifty Rich	Jackson	Clothing	Consignment fee	General public	Consignment
Community Entry Services/Neat Repeat	Lander, Riverton	Clothing, small appliances, books, toys	No	General public	Charity resell
1st Methodist Thrift Store	Lander	Clothing, small appliances, books, toys	No	General public	Charity resell
The Barn	Lander	Furniture	Consignment fee	General public	Consignment
Salvation Army	Laramie	Clothing, small appliances, books, toys	No	General public	Charity resell
Nu 2 U	Laramie, Evanston	Clothing	Consignment fee	General public	Consignment
St John's Episcopal Thrift Shop	Rock Springs	Clothing, small appliances, books, toys	No	General pubic	Charity resell
Broadway Bargains	Rock Springs	Clothing, small appliances, books, toys	No	General public	Charity resell
Southwest WY Rehabilitation Center	Rock Springs	UBCs, clothing	No	General public	Charity resell
Salvation Army	Sheridan	Clothing, small appliances, books, toys	No	General public	Charity resell
Holy Name Thrift Store	Sheridan	Clothing, small appliances, books, toys	No	General public	Charity resell
Habitat for Humanity ReStores (see list below for full contact information)	Casper, Cheyenne, Jackson, Laramie, Mills, Powell, Riverton, Sheridan	Furniture, C&D materials, household goods, sporting goods (varies by location)	No - provide some collection at no cost	General public	Charity resell

ReStore Locations (C&D Reuse for Habitat for Humanity)

- Heart of Wyoming ReStore, 535 W Midwest Ave, Casper, WY 82601 (307) 265-3365
- Cheyenne Laramie County ReStore, 1805 Ames Ave, Cheyenne, WY 82001 (307) 637-8067, donations@cheyennehfh.org
- Jackson Greater Teton Area ReStore, 854 W Broadway, Jackson, WY 83001 (307) 734-0389, restore@tetonhabitat.org

- Laramie Albany County ReStore, 302 S 2nd St., Laramie, WY 82070 (307) 745-4130, habitat.albanycowy@gmail.com
- Mills Heart of Wyoming ReStore 2, 302 Van Horn Ave, Mills, WY 82644 (307) 265-3365, restorecasper@hotmail.com
- Powell Mountain Spirit HFH ReStore, 509 Gtwy Dr., Powell, WY 82435 (307) 527-9339
- Riverton Wind River Country ReStore, 305 East Main St., Riverton, WY (307) 857-6430, rivertonrestore@tribcsp.com
- Sheridan Eastern Bighorns ReStore, 1141 Crook St., Sheridan, WY 82801 (307) 672-3848, jessica@sheridanhabitat.org

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Recycling Drop Site - Recyclables and Yard/Wood Waste
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	READ ME

READ ME Guide to Drop-Site Cost Model:

Worksheet	Function
Inputs	Provides assumptions & cost basis for all cost modeling analyses. Lists assumptions made/factors used to describe existing conditions, rates, costs, feedstock, design, operations, etc. This analysis establishes 3 separate DOC scenarios based on assumed service area & distance to markets. Values in red can be changed to revise the modeling scenario.
Capital Cost Site #1 Capital Cost Site #1 Capital Cost Site #1	Includes capital cost analysis based on measureable units and unit costs, includes containers and contingency. All dollars are 2011. Values in red can be changed as costs vary over time.
Operations & Maintenance Costs	Asseses labor, equipment and utility cost on an annual basis in 2011$. Values in red can be changed.
Hauling Costs	Calculates hauling costs for all 3 DOCs (labor, equipment, fuel, maintenance) based on assumed INPUTS distance to markets. Values in red can be changed as costs vary.

Note: To view specific calculations, simply click on the cell value in the Excel spreadsheet.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Recycling Drop Site - Recyclables and Yard/Wood Waste
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	INPUTS

Revise items in red for program and site specific information.

GENERAL INPUT ASSUMPTIONS

Interest Rate	5%			
Annual Escalation Rate	3%			
Labor Categories & Rates - U.S. Bureau of Labor Statistics for Wyoming				
Landfill Supervisor	$26	per hour		
Facilities Project Manager	$35	per hour		
Equipment Operator	$15	per hour		
Collection Vehicle Driver	$18	per hour		
General Laborer	$8	per hour		
Maintenance Labor	$22	per hour		
			Labor Fringe Benefits =	35%
Compost Facility Tip Fee	$0	per ton		
MRF/Recycling Processing Tip Fee	$0	per ton		

DROP SITE ASSUMPTIONS

Serves Residential Only - Service Area

Co-located with existing solid waste facilities (Transfer Station, Landfill, etc.) or land donated for use.

Roll-off Truck =	1	Assume shared operations with other activities	
	$130,000	Based on 2008 vendor data/budgetary quotes, escalated	
Spare Roll-Offs (stored off-site) =	0		
Min. Area Required for Drop-Site =	3000	Sq. Ft. per roll-off container	(Allows for roll-off and manuevering)
Drop-Site Surfacing:	For site development/improvements		
Gravel/Crushed Rock	YES	Insert NO if current site surfacing adequate	
Concrete	NO		
Asphalt	NO		
Access Stairs/Platforms?	NO		
Additional Security Fencing?	NO	NO - assumes existing sufficient	
	0	LF	If YES, identify lineal feet required
Video Survellience Package?	NO		
Personnel Convience Building?	NO	NO - assumes adjacent to existing facilities or unstaffed	

Multi-Drop Site Input:

	Site #1	Site #2	Site #3	
No. of Covered Recycling Roll-Offs	1	2	1	
No. of Yard Waste Roll-Offs	1	1	2	
Area Required (SF)	6000	9000	9000	
* Distance to MRF/Recycling (miles)	15	20	25	
* Distance to Compost Facility (miles)	15	20	25	
Average Speed to Facilities (mph)	40	45	50	
Tonnages: Year 2015				
Drop-Site Service Population	5000	10000	20000	Do not include population served by curbside collection
Recyclables (avg lbs/capita/yr)	50	50	50	Can range from 25 to 75 lbs/capita/yr
Yard/Wood Waste (avg lbs/capita/yr)	200	200	200	Assumes approx. 50% of per capita YW/WW generation
Estimated Recovery:				
Commingled Recyclables (tpy)	125	250	500	
Yard/Wood Waste (tpy)	500	1000	2000	

* Distance is one-way miles.

Assumed Roll-Off Sizes:	40	CY	Open-Top Yard Waste
	30	CY	Covered Multi-Material Container
Typical % Full at Collection =	85%		
Average YW/WW Density =	350	lbs/CY	Adjust for actual local data, if available
Average Recyclables Density =	250	lbs/CY	Adjust for actual local data, if available
Assumed hook-up & unload time =	25	minutes per roll-off container haul	

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Recycling Drop Site - Recyclables and Yard/Wood Waste
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	CAPITAL COST SITE #1

Revise items in red for program and site specific information.

DROP-SITE CAPITAL COST **Site #1**

Item	Quantity	Units	Unit Cost	Total
Land Purchase (1)	0.14	Acres	$0	$0
Final Grading (1)	670	SY	$5	$3,400
Concrete Pad (2)	0	CY	$400	$0
Asphalt Pad (2)	0	SY	$30	$0
Steel Rails (3)	2	sets	$1,500	$3,000
Crushed Rock/Gravel (4)	540	SY	$10	$5,400
Access Stairs/Platform	0	EA	$2,500	$0
Site Lighting (5)	0	EA	$5,000	$0
Drop-Site Signage	2	EA	$500	$1,000
Security Fencing (6)	0	LF	$24	$0
Video Surveillance System - Basic	0	EA	$4,000	$0
Personnel Convience Building (7)	0	EA	$10,000	$0
Subtotal Site Improvements				$12,800
Contingency (10%)				$1,300
			Drop-Site Improvements	$14,100
Mobile Equipment - Containers (8):				
Covered Recycling Roll-Off	1	EA	$9,000	$9,000
Yard Waste Roll-Off	1	EA	$5,000	$5,000
Spare Roll-Off	0	EA	$5,000	$0
Subtotal Mobile Equipment				$14,000
Contingency (10%)				$1,400
			Mobile Equipment	$15,400
			Total Drop-Site Capital Cost	**$29,500**

Assumptions:

1 Land assumed to be existing city/county property or donated use.
See INPUTS sheet for area requirements.
2 No concrete slab on grade or asphalt under roll-offs; unpaved surface. See INPUTS sheet.
3 Steel rails to be placed under each roll-off container - 2 rails per set.
4 Crushed rock/gravel cover over remaining area.
5 Assumes site lighting provided by co-location.
6 Perimeter 6-ft chain link fence and gate. Co-location with existing solid waste facilities may not require.
7 Pre-fabricated convenience building (8'x8') installed. Electricity assumed available at site(s) selected.
No convenience building if unstaffed and/or co-located with existing facilities. See INPUTS sheet.
8 Unit price assumes standard 40-CY roll-off.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Recycling Drop Site - Recyclables and Yard/Wood Waste
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	CAPITAL COST SITE #2

Revise items in red for program and site specific information.

DROP-SITE CAPITAL COST **Site #2**

Item	Quantity	Units	Unit Cost	Total
Land Purchase (1)	0.21	Acres	$0	$0
Final Grading (1)	1000	SY	$5	$5,000
Concrete Pad (2)	0	CY	$400	$0
Asphalt Pad (2)	0	SY	$30	$0
Steel Rails (3)	3	sets	$1,500	$4,500
Crushed Rock/Gravel (4)	800	SY	$10	$8,000
Access Stairs/Platform	0	EA	$2,500	$0
Site Lighting (5)	0	EA	$5,000	$0
Drop-Site Signage	2	EA	$500	$1,000
Security Fencing (6)	0	LF	$24	$0
Video Surveillance System - Basic	0	EA	$4,000	$0
Personnel Convience Building (7)	0	EA	$10,000	$0
Subtotal Site Improvements				$18,500
Contingency (10%)				$1,900
			Drop-Site Improvements	$20,400
Mobile Equipment - Containers (8):				
Covered Recycling Roll-Off	2	EA	$9,000	$18,000
Yard Waste Roll-Off	1	EA	$5,000	$5,000
Spare Roll-Off	0	EA	$5,000	$0
Subtotal Mobile Equipment				$23,000
Contingency (10%)				$2,300
			Mobile Equipment	$25,300
			Total Drop-Site Capital Cost	**$45,700**

Assumptions:

1 Land assumed to be existing city/county property or donated use.
See INPUTS sheet for area requirements.
2 No concrete slab on grade or asphalt under roll-offs; unpaved surface. See INPUTS sheet.
3 Steel rails to be placed under each roll-off container - 2 rails per set.
4 Crushed rock/gravel cover over remaining area.
5 Assumes site lighting provided by co-location.
6 Perimeter 6-ft chain link fence and gate. Co-location with existing solid waste facilities may not require.
7 Pre-fabricated convenience building (8'x8') installed. Electricity assumed available at site(s) selected.
No convenience building if unstaffed and/or co-located with existing facilities. See INPUTS sheet.
8 Unit price assumes standard 40-CY roll-off.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Recycling Drop Site - Recyclables and Yard/Wood Waste
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	CAPITAL COST SITE #3

Revise items in red for program and site specific information.

DROP-SITE CAPITAL COST **Site #3**

Item	Quantity	Units	Unit Cost	Total
Land Purchase (1)	0.21	Acres	$0	$0
Final Grading (1)	1000	SY	$5	$5,000
Concrete Pad (2)	0	CY	$400	$0
Asphalt Pad (2)	0	SY	$30	$0
Steel Rails (3)	3	sets	$1,500	$4,500
Crushed Rock/Gravel (4)	800	SY	$10	$8,000
Access Stairs/Platform	0	EA	$2,500	$0
Site Lighting (5)	0	EA	$5,000	$0
Drop-Site Signage	2	EA	$500	$1,000
Security Fencing (6)	0	LF	$24	$0
Video Surveillance System - Basic	0	EA	$4,000	$0
Personnel Convience Building (7)	0	EA	$10,000	$0
Subtotal Site Improvements				$18,500
Contingency (10%)				$1,900
			Drop-Site Improvements	$20,400
Mobile Equipment - Containers (8):				
Covered Recycling Roll-Off	1	EA	$9,000	$9,000
Yard Waste Roll-Off	2	EA	$5,000	$10,000
Spare Roll-Off	0	EA	$5,000	$0
Subtotal Mobile Equipment				$19,000
Contingency (10%)				$1,900
			Mobile Equipment	$20,900
			Total Drop-Site Capital Cost	**$41,300**

Assumptions:

1 Land assumed to be existing city/county property or donated use.
See INPUTS sheet for area requirements.
2 No concrete slab on grade or asphalt under roll-offs; unpaved surface. See INPUTS sheet.
3 Steel rails to be placed under each roll-off container - 2 rails per set.
4 Crushed rock/gravel cover over remaining area.
5 Assumes site lighting provided by co-location.
6 Perimeter 6-ft chain link fence and gate. Co-location with existing solid waste facilities may not require.
7 Pre-fabricated convenience building (8'x8') installed. Electricity assumed available at site(s) selected.
No convenience building if unstaffed and/or co-located with existing facilities. See INPUTS sheet.
8 Unit price assumes standard 40-CY roll-off.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Recycling Drop Site - Recyclables and Yard/Wood Waste
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	OPERATIONS & MAINTENANCE COSTS

Revise items in red for program and site specific information.

Item Description		Quantity	Units	Unit Cost		Total
LABOR						
Job Classification	**Qty**	**Labor Rate**	**Hrs/Yr (1)**			**Total**
Collection Driver	1	$24	104 hrs		$	2,500
				Subtotal	$	2,500
Notes:						
Existing personnel/driver checks drop-site and performs minor clean-up at specified # hrs per week =						2 hrs/week
Labor rate assumes fringe benefits	35%					
SITE MAINTENANCE & UTILITIES						
Item		**Quantity**		**Unit Price**		**Total**
Site Maintenance	2%	$14,100			$	300
Container Maintenance	2%	$15,400			$	300
Building Repair & Depreciation	3%	$0			$	-
Electricity		000 kwh		$0.10	$	-
Heating (Bldg Space Heater)		000 kwh		$0.10	$	-
Sanitary Service	0	port-a-let service/month		$500 /month	$	-
Water	0	Existing on-site water/bottled water provided			$	-
Mobile Phone	0	phone		$100 /month	$	-
				Subtotal	$	600
Notes:						
Site co-located with existing facility; no separate building or utilities.						
Buildings at Drop-Site	0					
Building lighting based on	1.66	watts/sf	2080	hours/year		
Site Lighting	0	1000W Lights	620	hours/year		
				ANNUAL TOTAL O&M per Drop-Site	**$**	**3,100**

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Recycling Drop Site - Recyclables and Yard/Wood Waste
	Hauling Recyclables from Drop-Site to Regional MRF
	Hauling Yard Waste from Drop-Site to Local Compost Facility
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	HAULING COSTS

	Drop-Site #1		Drop-Site #2		Drop-Site #3		
Drop-Site Collection	**MRF**	**Compost**	**MRF**	**Compost**	**MRF**	**Compost**	***Comments***
No of 40-CY Roll-Off Containers:	1	1	2	1	1	2	*From INPUTS sheet*
Container Payload (tons):	3.2	6.0	3.2	6.0	3.2	6.0	*Roll-off CY, % full, density from INPUTS sheet*
Tonnages (tpy): Yr 2015	**125**	**500**	**250**	**1,000**	**500**	**2,000**	
Hook-Up & Unload Time (minutes):	25	25	25	25	25	25	
One-Way Distance (miles)	**15**	**15**	**20**	**20**	**25**	**25**	
Average Speed (mph):	40	40	45	45	50	50	
Average Trips/Year:	40	84	79	167	157	334	
Average Trips/Month:	3.4	7.0	6.6	14.0	13.1	27.9	
Average Trips/Week:	0.8	1.7	1.6	3.3	3.1	6.5	
Hours Per Trip	1.2	1.2	1.3	1.3	1.4	1.4	
Weekly Freight Hours:	0.9	2.0	2.1	4.3	4.4	9.2	
Wkly Prorated Veh Inspect/Breaks:	0.2	0.4	0.4	0.8	0.8	1.7	*Ratio wkly freight hrs to Total wkly inspect'ns/breaks*
Annual Freight Hours:	48.5	103.1	108.6	224.0	228.4	478.8	*Freight hours only for vehicle fuel, oil & grease cost*
Total Miles/Yr	1,200	2,520	3,160	6,680	7,850	16,700	
Annual Costs Assumptions:							
Fuel, Oil & Grease							
Fuel Cost per Gallon	$4.00	$4.00	$4.00	$4.00	$4.00	$4.00	*Diesel prices, March 2012*
Miles per Gallon	5	5	5	5	5	5	*Estimate based on collection vehicles*
Oil & Grease ($/freight hour)	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	
Tires							
New Tires Price	$700	$700	$700	$700	$700	$700	
# New Tires Per 50,000 Miles	2	2	2	2	2	2	
Retread Tires	$300	$300	$300	$300	$300	$300	*2008 retread tire prices escalated*
# Retread Tires Per 25,000 Miles	8	8	8	8	8	8	
Maintenance & Repairs							
Mechanic Labor annual salary	$45,800	$45,800	$45,800	$45,800	$45,800	$45,800	*See INPUTS sheet*
Mechanic Labor % per Truck	10%	10%	10%	10%	10%	10%	
Parts, Repairs, Overhaul ($/mile)	$0.50	$0.50	$0.50	$0.50	$0.50	$0.50	
Driver Labor							
Driver % (based on freight time)	3%	6%	7%	13%	14%	28%	
Driver annual salary	$37,400	$37,400	$37,400	$37,400	$37,400	$37,400	*See INPUTS sheet*
Fringe benefits (% of salary)	35%	35%	35%	35%	35%	35%	*Benefits included in annual cost calculation*
Truck Amortization							
Capital Cost - per RO truck chassis+hoist	$130,000	$130,000	$130,000	$130,000	$130,000	$130,000	*See INPUTS sheet*
Resale Value (% of truck $)	20%	20%	20%	20%	20%	20%	
Replacement Miles	200,000	200,000	200,000	200,000	200,000	200,000	
Replacement Schedule (years)	5	5	5	5	5	5	
Interest Rate	5%	5%	5%	5%	5%	5%	*See INPUTS sheet*
Capital Recovery Factor (A/P,i,n)	0.2213	0.2213	0.2213	0.2213	0.2213	0.2213	
Roll-Off Container Purchase							
Capital Cost -- Roll-Off Containers	$0	$0	$0	$0	$0	$0	*Included in capital cost*
Replacement Schedule (years)	10	10	10	10	10	10	
Interest Rate	5%	5%	5%	5%	5%	5%	*See INPUTS sheet*
Capital Recovery Factor (A/P,i,n)	0.1295	0.1295	0.1295	0.1295	0.1295	0.1295	
Insurance (per yr/RO truck) @ 2.5% $	$3,300	$3,300	$3,300	$3,300	$3,300	$3,300	*Estimate % of capital cost*
License Fees (per yr/truck)	$300	$300	$300	$300	$300	$300	*Estimate - varies by community ordinance*
Pro-Rated % of Time	3%	6%	7%	13%	14%	28%	

	Drop-Site #1		Drop-Site #2		Drop-Site #3		
Annual YW Drop-Site Haul Costs:	**MRF**	**Compost**	**MRF**	**Compost**	**MRF**	**Compost**	**Comments**
Fuel, Oil & Grease	$980	$2,070	$2,580	$5,460	$6,390	$13,600	Mileage & Time Based
Tires	$150	$310	$390	$830	$970	$2,070	Mileage Based
Maintenance & Repairs	$790	$1,630	$2,010	$4,140	$4,790	$10,080	Mileage & Time Based Pro-Rated
Driver Labor	$1,510	$3,030	$3,530	$6,560	$7,070	$14,140	Time Based
Truck Replacement*	$690	$1,380	$1,610	$2,990	$3,220	$6,450	Pro-Rated
Roll-Off Container Amortization	$0	$0	$0	$0	$0	$0	Included in Capital Cost
Insurance	$100	$200	$230	$430	$460	$920	Pro-Rated
Licensing & Taxes	$10	$20	$20	$40	$40	$80	Pro-Rated
Drop-Site Haul Cost	**$4,230**	**$8,640**	**$10,370**	**$20,450**	**$22,940**	**$47,340**	
Avg Haul Cost per Trip	**$106**	**$103**	**$131**	**$122**	**$146**	**$142**	

* Assumes roll-off truck is borrowed from other operations or community, with pro-rated replacement contribution.

SAMPLE RECYCLING DROP-SITE ORDINANCE LANGUAGE

Most recycling ordinances in other communities contain provisions related to land use regulations. Ordinances vary in complexity from just amending city code to allow recycling drop-off centers in all zoning districts as conditional uses, to identifying specific land uses for all types of recycling facilities. Cities with recycling-related land use ordinances and amendments as far back as 1999 include:

- Boulder, Colorado;
- Edmonds, Washington;
- Asheville, North Carolina;
- York County, Virginia;
- Jackson, Michigan; and
- Montebello, Carlsbad, and Santa Cruz County, California.

The State of California, Division of Recycling, had developed a model zoning ordinance to assist communities in siting recycling facilities. The sample ordinance language below is primarily based on California's zoning ordinance, but also includes provisions from other ordinance amendments. This ordinance language focuses on recyclables collected at the drop-sites and does not include yard waste. Siting of drop-sites with yard waste will need to consider greater limitations for locations.

"Recycling collection facilities shall be allowed in all commercial and industrial zones upon approval of a Conditional Use Permit subject to the operating requirements in {Chapter/Article} _____ of the City Municipal Code and the following:

(a) Recycling Drop-Off Facilities

(1) Shall be established in conjunction with, and clearly incidental and subordinate to, an existing commercial use or community service facility which is in compliance with the zoning and building codes of the City;

(2) Shall be no larger than {3000} square feet and occupy no more than {twenty} parking spaces not including space periodically needed for removal of materials or exchange of containers;

(3) Shall be set back at least ten (10) feet from any street line and shall not obstruct pedestrian or vehicular circulation;

(4) Containers shall be screened from adjacent properties by a 6-foot opaque fence and/or vegetation. Screening requirements may be modified or waived by the Director upon a finding that the design and configuration of the containers in which the recyclable materials are to be deposited are such that screening is not necessary;

(5) Shall accept only glass, metals, plastic containers, papers and reusable items;

(6) Shall use no power-driven processing equipment except for reverse vending machines;

(7) Shall use containers that are constructed and maintained with durable waterproof and rust-proof material, painted, covered, and meet operating requirements in {Chapter/Article} _____ of the City Municipal Code. Containers shall be of a capacity sufficient to accommodate materials collected and collection schedule;

(8) Shall store all recyclable material in containers or in mobile unit vehicle, and shall not leave materials outside of containers, when an attendant is present;

(9) Recycling collection area shall be kept clean with no accumulation of trash or debris outside of designated containers;
(10) Noise levels shall comply with City ordinance and applicable standards;
(11) Containers shall be clearly marked to identify the type of recyclable materials which may be deposited;
(12) Facility shall be clearly marked to identify the name and telephone number of the facility operator;
(13) The facility shall not impair any required landscaping;
(14) Signs shall be provided pursuant the {Chapter/Article} _____ of the City Municipal Code. Directional signs, bearing the recycling logo, may be installed with approval of the Conditional Use Permit if necessary to facilitate efficient and desirable traffic circulation;
(15) Four off-street parking places shall be provided adjacent to the collection area for undeveloped sites. No additional parking spaces are required for customers of a recycling drop-off facility located at the established parking lot of a host use, but one additional space shall be provided for an attendant, if needed;
(16) Occupation of parking spaces by the facility and by any attendant shall not reduce available parking spaces below the minimum number required for the primary host use unless a parking study shows the existing parking capacity is not already fully utilized during the time the recycling facility will be on the site;
(17) The applicant shall furnish written evidence of the approval of the owner of the property on which the facility is to be located."

Recycling space allocation ordinance may also provide space for recycling. These requirements are directed at new development projects, including commercial, industrial or institutional building, multi-residential development of five units or more, and new or improved public facilities. Minimum space requirements refer to bins (separate bins for rubbish and recyclables) ranging from 2 cubic yards to 40 cubic yards depending upon an incremental number of units or square feet occupied by the development buildings. Thus, recycling space allocation requirements ensures space for only in-house recycling programs.

Since some developers may not be willing to consider space for recycling, the concept of recycling space allocation can be applied to community drop-sites similar to convenience zones and set aside requirements. Space allocation could be based on gross sales or development square footage under an amendment to commercial development ordinances. The set-aside requirements can be tied to a percentage of parking area, building area, or development area. In addition, variances for set-back requirements may need to be incorporated into the ordinance language. Existing practices for minimum parking requirements in business district zones may provide guidance in developing language for minimum recycling drop-off site requirements. The following sample language is adapted based on the recyclables drop-sites design requirement (approximately 3000 square feet) for two different business district zones.

"Any new development within the {_____ Business District} shall provide an adequate, accessible, and convenient area for a recycling drop-off location. This minimum space requirement shall be as follows:

(a) 1,500 square feet for developments with buildings and structures occupying more than 50,000 square feet;

(b) An additional 500 square feet for each additional 25,000 square feet of buildings, but no more than a maximum of {3,000} square feet for any one recycling drop-off location.

Such space shall be located at least 100 feet from any residential property.

Recycling convenience zones shall be established for any supermarket development in a _____ zone anticipated to gross over two million dollars in sales a year. These developments shall either provide a minimum of {3,000} square feet for recycling drop-off facility on-site or a minimum {2,000} square feet of area within a one-half mile radius of the supermarket to serve as the recycling drop-off site."

"Any new development within the {_____ Business District} shall provide an adequate, accessible, and convenient area for recycling drop-off location. This minimum space requirement shall be as follows:

(a) 2,000 square feet for developments with buildings and structures occupying more than 100,000 square feet;
(b) An additional 500 square feet for each additional 25,000 square feet of buildings, but no more than a maximum of {3,000} square feet for any one recycling drop-off location.

Such space shall be located at least 100 feet from any residential property."

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Multi-Family Recycling - Common Recycling Collection Point
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	READ ME

READ ME Guide to Drop-Site Cost Model:

Worksheet	Function
Inputs	Provides assumptions & cost basis for all cost modeling analyses. Lists assumptions made/factors used to describe existing conditions, rates, costs, feedstock, design, operations, etc. This analysis establishes a MFU recycling scenario based on assumed container number/size to serve the MFU - includes costs for both dumpster and roll-off containers. Values in red can be changed to revise the modeling scenario.

Note: To view specific calculations, simply click on the cell value in the Excel spreadsheet.
No capital or operating costs are included in the model as it is assumed that contractor hauler service will include.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Multi-Family Recycling - Common Recycling Collection Point
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	INPUTS

Revise items in red for program and site specific information.

GENERAL INPUT ASSUMPTIONS - RECYCLING DUMPSTERS - SIZING

Interest Rate 5%
Annual Escalation Rate 3%

Area Requirements - Recycling Dumpster Bins:	**2-CY**	**4-CY**	**6-CY**	**8-CY**
Front-Load Dumpster Dimensions*: Length (ft) =	6	6	6	7.2
Depth/Width (ft) =	2.8	4.25	5.5	5.9
Height (ft) =	3.75	4	6.8	6.8
Add to width (2x) and length (1.5x), Clearance (ft) =	2	2	2	2

*Dimensions can vary on dumpster bins depending upon manufacturer.

No. Dumpsters for Commingled Containers =	2	2	1	1
No. Dumpsters for Papers =	2	2	1	1
Area Required Per Dumpster (square feet)=	62	74	86	101
Calculated Area Required (square feet) =	248	296	172	202
Final Area Required (square feet) =	**250**	**300**	**170**	**200**
Final Area Dimensions: Length (ft) =	35	37	17	20
Depth/Width (ft) =	7	8	10	10

Collection Vehicle, Straight-Approach Access to the Recycling Area:

Minimum Width (ft) =	28	28	16	18
Minimum Length (ft) =	50	50	50	50

CAPITAL COST ESTIMATE - RECYCLING DUMPSTERS BINS (2011$)

Construction Item	**Unit Price**	**Recycling Area by Dumpster Size**			
		2-CY	**4-CY**	**6-CY**	**8-CY**
Land Area Requirement (1), SF		250	300	170	200
Vehicle Access Requirement (1), SF		1400	1400	800	917
Screening Fencing, LF		56	62	38	42
Number of Recycling Areas at Complex		1	1	1	1
Land - Existing Area - Cost	$0	$0	$0	$0	$0
Pad Area:					
Concrete Pad (2) - 8" thick, CY	$400	$0	$0	$0	$0
Asphalt Pad (2), SY	$30	$0	$0	$0	$0
Fencing - 6' high wood (3), LF	$29	$1,600	$1,800	$1,100	$1,200
Gate (4), EA - 16' wide swing gate	$1,200	$2,100	$2,100	$1,200	$1,700
Signage, 2 at Each Recycling Area	$500	$1,000	$1,000	$1,000	$1,000
Dumpsters (6):					
2-CY Dumpsters, Front-Load	$450	$0	$0	$0	$0
4-CY Dumpsters, Front-Load	$650	$0	$0	$0	$0
6-CY Dumpsters, Front-Load	$850	$0	$0	$0	$0
8-CY Dumpsters, Front-Load	$1,100	$0	$0	$0	$0
Access Improvements (2), SY	$30	$0	$0	$0	$0
Site Lighting (5), EA	$5,000	$0	$0	$0	$0
Subtotal Site Improvements		$4,700	$4,900	$3,300	$3,900
Contingency (10%)		$500	$500	$300	$400
Multi-Family Recycling Area Improvements		$5,200	$5,400	$3,600	$4,300

Assumption Notes:

1 Determine availability of existing area at Multi-Family complex.
2 Assume existing area has adequate surfacing. Only add quantity if require pad/access road improvements.
3 Fencing assumes 6' high, wood fence, cedar, 3-rail, posts set in concrete. Unit pricing from 2011 MEANS Sitework manual.
4 Double-swing, manual wood gate. Estimate unit price is gate width times 2.5x fencing price per lineal foot.
Based on ratio of 6' high vinyl privacy gate to the 6' high vinyl privacy fence price in 2011 MEANS Sitework costing manual.
Larger areas may require wider or multiple gates; wider gates require more structural design. Pro-rate price.
5 Assumes existing site lighting adequate - no additional installed.
6 Recycling dumpster bins owned and provided by contract hauler as part of collection services.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Multi-Family Recycling - Common Recycling Collection Point
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	INPUTS

ALTERNATE: ROLL-OFF CONTAINER - MFU RECYCLING COLLECTION POINT

ALTERNATE SIZING: Area Requirements - Multi-Material Roll-Off:

For 25-CY Recycle Roll-Off, Gable-Top (square feet) = 448

Base Roll-Off Dimensions:

Length (ft) =	24	
Width (ft) =	8	
Clearance (ft) =	4	added to length (1x) and width (2x) for recycling access

Roll-Off Truck, Straight-Approach Access to the Recycling Area:

Minimum Width (ft) =	12
Minimum Length (ft) =	120

ALTERNATE: CAPITAL COST - Roll-Off Container (2011$):

Construction Item	Quantity	Units	Unit Cost	Total
Land - Existing Area (1)	448	SF	$0	$0
Pad Area:				
Concrete Pad (2)	0	CY	$400	$0
Asphalt Pad (2)	0	SY	$30	$0
Fencing - 6' high wood (3)	76	LF	$29	$2,200
Gate - 12' wide swing gate (4)	1	EA	$900	$900
Signage	2	EA	$500	$1,000
25-CY Recycling Roll-Off, Gable-Top (6)	0	EA	$7,000	$0
Access Improvements (2)	0	SY	$30	$0
Site Lighting (5)	0	EA	$5,000	$0
Subtotal Site Improvements				$4,100
Contingency (10%)				$400
Multi-Family Recycling Area Improvements - Roll-Off				$4,500

Assumption Notes:

1 Determine availability of existing area at Multi-Family complex.
2 Assume existing area has adequate surfacing. Only add quantity if require pad/access road improvements.
3 Fencing assumes 6' high, wood fence, cedar, 3-rail, posts set in concrete. Unit pricing from 2011 MEANS Sitework manual.
4 Double-swing, manual wood gate. Estimate unit price is gate width times 2.5x fencing price per lineal foot.
Based on ratio of 6' high vinyl privacy gate to the 6' high vinyl privacy fence price in 2011 MEANS Sitework costing manual.
5 Assumes existing site lighting adequate - no additional installed.
6 Recycling Roll-off Container owned and provided by contract hauler as part of collection services.
Unit price assumes multi-compartment roll-off. Estimate single compartment at $4000.

Additional Notes on Fencing Options (Source-2011 MEANS Sitework and Landscape costing manual):

Fabric fencing on 2" chain link, 6' high = $13.55/LF + Posts set in Concrete $40 each / post spacing 8 ft (i.e. Total = $19/LF)
Non-cedar wood fence, 6' high = $22.50/LF + Posts set in Concrete $40 each / post spacing max. 8 ft (i.e. Total = $28/LF)
Vinyl privacy fence, 6' high = $45/LF + Posts set in Concrete $60 each / post spacing max. 8 ft (i.e. Total = $53/LF)
Chain-link fence, 6' high, posts set in concrete = $23.50/LF + Privacy slats, vinyl at approx. $15/LF (i.e. Total = $39/LF)

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12
Cost Estimate Basis:	Diversion Data from StateWide Projections
	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	INPUTS

REGIONAL MRF INPUT SHEET

Revise items in red for program and site specific information.

GENERAL INPUT ASSUMPTIONS

Interest Rate	5%			
Annual Escalation Rate	3%			
Labor Categories & Rates - U.S. Bureau of Labor Statistics for Wyoming				
Landfill Supervisor/MRF Supervisor	$26	per hour		
Facilities Project Manager	$35	per hour		
Mobile Equipment Operator	$15	per hour		
Baler/Recycling Equipment Operator	$15	per hour		
Collection Vehicle/Truck Driver	$18	per hour		
General Laborer	$8	per hour		
Maintenance Labor	$22	per hour		
			Labor Fringe Benefits =	35%
MRF/Recycling Processing Tip Fee	$0	per ton		
Days of Operation =	5	days/week		
	254	days/year	No. of Holidays/Yr (Closed) =	6
Hours of Operation =	8	hours/day		
Office Area in MRF Building?	YES	(YES/NO)		
Scale House/Scales?	NO	(YES/NO)		

REGIONAL MRF - TRAFFIC ASSUMPTIONS

Recyclables Traffic to MRF:	Adjust percentages if greater curbside service		
% Roll-Offs Tons to MRF =	60%	From remote Drop-Off Sites; Assumes Hub-and-Spoke model	
% Curbside Tons (Separated) =	20%	Multi-material trailer	
% Curbside Tons (Single-Stream) =	20%	Rear-loader or automated collection	
Vehicle Payload:			
Divided Roll-Offs (20-CY) =	2.6	tons/load	NO
Divided Roll-Offs (30-CY) =	3.2	tons/load	YES
Divided Roll-Offs (40-CY) =	4.3	tons/load	NO
Curbside Collection (Separated):			
Is curbside vehicle multi-material trailer?	YES	(YES/NO)	
20-cy multi-material trailer =	2	tons/load	
Curbside Collection (Single-Stream):			
Is curbside vehicle rear-loader?	YES	(YES/NO)	
25-CY rear-loader =	6	tons/load*	
30-CY rear-loader =	7	tons/load*	
Is curbside vehicle automated collection?	NO	(YES/NO)	
26-CY automated side loader =	6	tons/load*	
32-CY automated side loader =	7	tons/load*	

* Assumes compacted payload approx. 500 to 600 lbs/CY for mixed recyclables.

MRF Roadway Surfacing:		
Gravel/Crushed Rock	YES	(YES/NO)
Concrete	NO	(YES/NO)
Asphalt	NO	(YES/NO)

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12
Cost Estimate Basis:	Diversion Data from StateWide Projections
	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	INPUTS

REGIONAL MRF - RECYCLABLES ASSUMPTIONS

Design Year = 2020

	Diversion Rates/Average Tonnages				Avg Regional*
Statewide Diversion- Year 2020	**20%**	**30%**	**40%**	**50%**	**40%**
Paper					
Cardboard/Kraft Paper	19000	29000	36500	48000	3650
Office Paper/High Grade/Shreds	5500	8500	11500	14000	1150
Newsprint	4000	6000	8000	10000	800
Magazines	4000	6000	8000	10000	800
Mixed Paper	9500	14500	19000	24000	1900
Plastics					
PET #1 Bottles	2500	3500	4500	6000	450
HDPE #2 Bottles	2500	3500	4500	6000	450
#3-7 Bottles	2500	3500	4500	6000	450
Glass					
Mixed Containers (all colors)	4000	6000	8000	10000	800
Metals					
Aluminum Cans	1000	1000	1500	2000	150
Steel/Tin Cans	2500	3500	4500	6000	450
				TOTAL	11050

* Statewide annual tonnage projections (avg) divided by number of regional planning areas = 10
Actual will vary by region population and recycling programs implemented.

Single-Stream Sorting Station? YES (YES/NO)
Percentage of Materials Received Single-Stream and Requiring Sorting = 20%
Note: Drop-Off Sites could also receive recyclables commingled.
Adjust percentage accordingly.

Average Sorter Processing (average across mix of recyclables) = 1.8 tons per sorter per shift
Shift adjusted for breaks = 90%
No. of sorting hours/day = 7.2
Average Tonnage sorted/day = 8.7 tpd

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	SUMMARY

CAPITAL COST OPINION SUMMARY

Major Cost Component	Size	Cost Estimate
Site Acquisition	2.0 acres	$0
Site Work, Utilities & Survey		$589,000
Concrete & Foundations		$441,000
MRF Building	10,300 SF	$1,322,000
Optional: Office Area (Interior to MRF Building)		$43,000
Estimated General Contractor Fees		$196,000
Estimated Contingency (20%)		$518,000
Subtotal Direct Construction Costs		**$3,109,000**
Development Costs		**Cost Estimate (as percentage of direct construction)**
Design/Engineering		$311,000
Soils Report & Permitting		$93,000
Construction Inspection		$311,000
Subtotal Development Costs		**$715,000**
Potential Project Totals (before equipment)		**$3,824,000**

Optional: Scale House (200 SF) & Scale	**$201,400**

MOBILE & PROCESSING EQUIPMENT COSTS SUMMARY

Equipment Costs	Capital Cost Estimate	
Front-End Loader	$250,000	$200K - $350K
Forklift	$50,000	$40K-$70K
Baler - Closed Door, Manual Tie	$120,000	$95K-$145K
Baler - Infeed Conveyor	$25,000	$25K-$50K
Optional: Sorting Line/Platform	$148,000	$120K-$160K
Optional: Drum Magnet/Belt Magnet	$50,000	$25K-$70K
Optional: Skid Loader	$60,000	$50K-$75K
Estimated Contingency (20%)	$141,000	$110K-$184K
Subtotal Mobile/Processing Equipment Costs (w/ Optional Equip)	**$844,000**	$665K - $1,104K
Subtotal Mobile/Processing Equipment Costs (w/out Optional Equip)	**$504,000**	$432K - $738K

PROJECT TOTALS (w/ Equipment incl. Optional)	**$4,668,000**
PROJECT TOTALS (w/ Equipment - no Optional)	**$4,328,000**

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	SUMMARY

POTENTIAL O&M COST OPINION SUMMARY

Major Cost Component	Capital Cost Estimate
Labor	$345,000
Insurance	$21,000
Facility Maintenance & Utilities	$127,000
Equipment O&M	$138,000
Estimated Contingency (20%)	$63,000
Annual Debt Service - MRF	$307,000
Annual Debt Service - Mobile/Process Equipment	$100,000
Total O&M Cost Opinion	**$1,101,000**

POTENTIAL REVENUE SUMMARY

Recovered Material	Quantity (tpy)	Unit Price ($/ton)	Revenue Estimate
OCC	3,650	$100	$365,000
Office Paper/Shreds	1,150	$100	$115,000
ONP	800	$100	$80,000
Magazines	800	$100	$80,000
Mixed Paper	1,900	$100	$190,000
Plastics #1 PET	450	$700	$315,000
Plastics #2 HDPE	450	$700	$315,000
Plastics #3-#7	450	$400	$180,000
Glass	800	$0	$0
Alum UBCs	150	$700	$105,000
Steel/Tin Cans	450	$100	$45,000
		Subtotal Gross Revenues	**$1,790,000**
		Less, Potential Recycling Haul	**$362,000**
		POTENTIAL NET REVENUES	**$1,428,000**

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	MULTI-STREAM ANALYSIS

RECYCLABLES & TRAFFIC QUANTITIES

ASSUMPTIONS: Revise items in red for program and site specific information.

Design Year =	**2020**		
Design Year Tonnage =	11050	tons per year	(from INPUTS sheet)
	44	tons per day	(based on days operation below)

INCOMING TO MRF

% Roll-Offs Tons to MRF =	**60%**	Obtain from INPUTS sheet	
% Curbside Tons to MRF (separated) =	**20%**		
% Curbside Tons (single-stream) =	**20%**		
Avg Divided Roll-Off Payload=	3.2	tons/load	Obtain from INPUTS sheet
Avg Curbside Payload (multi-trailer) =	2	tons/load	
Avg Curbside Payload (single-stream) =	7	tons/load	

Days of Operation =	**5**	days/week	Obtain from INPUTS sheet
	254	days/year	Obtain from INPUTS sheet
Hours of Operation =	**8**	hours/day	
Daily Peak Factor =	1.5		
Hourly Peak Factor =	1		

MRF TOTAL ANNUAL QUANTITIES					Loose Densities Mat'l Density (lb/cy)	Mat'l Volume (cy)	
	Recyclables Quantities		Traffic Quantities				
Recyclables Stream		**2020**		**2020**			
OCC		3,650			70	104,290	50-100 lbs/cy, stacked
Office Paper/Shreds		1,150			250	9,200	
ONP		800			400	4,000	350-500 lbs/cy
Magazines		800			600	2,670	
Mixed Paper		1,900			250	15,200	250-500 lbs/cy
Plastics #1 PET		450			35	25,710	30-40 lbs/cy, whole
Plastics #2 HDPE		450			25	36,000	22-25 lbs/cy, whole
Plastics #3-#7		450			50	18,000	whole
Glass		800			500	3,200	500-700 lbs/cy, whole
Alum UBCs		150			50	6,000	50-75 lbs/cy, whole
Steel/Tin Cans		450			150	6,000	150-175 lbs/cy, whole
TOTALS		**11,050**				**230,270**	

Recyclables Stream		**2020**		**2020**
Drop-Off Sites		6,630		2,072
Curbside Collection (Separated)		2,210		1,105
Curbside Collection (Single-Stream)		2,210		316

DESIGN YEAR 2020						
		Period			Period	
Recyclables Stream	**Ave TPD**	**Peak TPD**	**Peak TPH**	**Ave VPD**	**Peak VPD**	**Peak VPH**
Drop-Off Sites	26.1	39.2	4.9	8	12	2
Curbside (Separated)	8.7	13.1	2.0	4	4	1
Curbside (Single-Stream)	8.7	13.1	2.0	1	2	1
TOTALS	43.5	65.4	8.9	13	18	4

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	MULTI-STREAM ANALYSIS

OUTGOING MATERIALS FROM RECYCLABLES MRF

PROJECTIONS	2020							
	Recyclables (Tons)							
Recyclables Stream	Total	Percent	Mat'l Density (lb/bale; lb/cy) (1) (3)		# bales/year	# Trailer Loads/yr(2)	# Trailer Lds/wk	Baling hrs/yr
OCC	3,650	33%	1,200	baled (lb/bale)	6084	185	3.6	1106
Office Paper/Shreds	1,150	10%	1,500	baled (lb/bale)	1534	47	0.9	169
ONP	800	7%	400	loose (lb/cy)		43	0.8	0
Magazines	800	7%	600	loose (lb/cy)		29	0.6	0
Mixed Paper	1,900	17%	1,500	baled (lb/bale)	2534	77	1.5	297
Plastics #1 PET	450	4%	800	baled (lb/bale)	1125	25	0.5	300
Plastics #2 HDPE	450	4%	1,100	baled (lb/bale)	819	19	0.4	196
Plastics #3-#7	450	4%	800	baled (lb/bale)	1125	25	0.5	300
Glass (4)	800	7%	1,200	crushed (lb/cy)		0	0.0	0
Alum UBCs	150	1%	625	baled (lb/bale)	480	11	0.2	65
Steel/Tin Cans	450	4%	1,200	baled (lb/bale)	750	17	0.3	100
Totals	11,050	100%			11917	478	9	2533
Baled Tons	6,750							

Notes & Assumptions:

(1) Target bale size as 30"H x 48"W x 60"L; 1.85 cubic yards

Footprint of bale = 20 square feet

(2) Trailer Size = 8' W x 48' L x 8.5' H. Trailer footprint = 384 square feet

Bale stacked = 2 high # bales/trailer = 33 -- trailer weight limits

Bale stacked = 3 high # bales/trailer = 57

Avg # bales/trailer load = 45

Volume/trailer = 110 CY % Full (Loose)= 85%

gaylords/trailer = 4

(3) Bale weights obtained from specifications for Excel Model EX63 closed door, manual tie baler.

Baling hours from closed door, manual tie baler. Adjust the tons/hour and lbs/bale for actual baler considered.

Material	Tons/Hr	lbs/bale
OCC	3.3	1200
Office Paper/Shreds	6.8	1500
ONP	6.4	1500
Magazines	7.5	2000
Mixed Paper	6.4	1500
Plastics #1 PET	1.5	800
Plastics #2 HDPE	2.3	1100
Plastics #3-#7	1.5	
Glass	NA	
Alum UBCs	2.3	625
Steel/Tin Cans	4.5	1200

Estimated Number of Recyclable Trailer Loads per Year:

OCC	185
ONP	47
Magazines	29
Office Paper & Mixed Paper Bales	124
Plastics #1, #2, #3-#7 Bales	69
Aluminum	11
Steel/Tin Cans	17
Glass	0

(4) Glass assumed to be crushed on-site (with equipment) and used locally for aggregate.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF
Date:	April-12 **FY2020**
Sizing Basis:	Diversion Data from StateWide Projections
Location:	Wyoming
Worksheet:	MRF BUILDING SIZING

Revise items in red for program and site specific information.

RECYCLING TRANSFER STATION BUILDING SIZE CALCULATIONS

	2020 THROUGHPUT (AVG) =	**44**	**TPD**
YES	**FACILITY SIZE =**	**10,300**	**SF**
NO	**FACILITY SIZE (W/OUT SORT LINE) =**	**8,200**	**SF**
	OUTDOOR MANUEVERING AREA =	**3,800**	**SF**
	OUTDOOR STORAGE AREA (GLASS) =	**1,400**	**SF**

I. ESTIMATE INTERIOR VEHICLE UNLOADING SPACE REQUIRED

Assumptions: 1. INSIDE: Drive Through Lane inside building for unloading.

Width = 20 feet.

Length (min) = 50 feet.

2. Unloading space includes additional 10 feet for temporary recyclables storage.

3. OUTSIDE: Drive lane entrance/exit space at 40 feet by lane width.

Docking area space at 60 feet by docking width.

Docking Width/dock = 12 feet/dock

No. of docks = 3

Unloading & Tipping Floor Area =	1,000	square feet
Outdoor Manuevering Areas =	3,800	square feet

II. LOOSE MAT'L STORAGE AREA

Assumptions: 1. Provide sufficient space for loose material storage for at least one full bale of each material.
Volumes calculated based on bale weight divided by material loose density.

OCC	17	cubic yards	
Office Paper/High Grade/Shreds	6	cubic yards	
ONP	0	cubic yards;	loaded directly into trailer
Magazines	0	cubic yards;	loaded directly into trailer
Mixed Paper & SWL	6	cubic yards	
Plastics #1 PET	23	cubic yards	
Plastics #2 HDPE	44	cubic yards	
Plastics #3-#7	16	cubic yards	
Aluminum	14	cubic yards	
Metals/Ferrous	8	cubic yards	

Muliply loose material volume by storage factor: 1.5

2. Three-sided bin walls or cages to contain loose materials for baling.

Assume avg height = 6 feet

3. Glass loaded directly into gaylords for storage.

4. Loader aisle required along length of bins = 10 feet (skid steer)

5. # of Materials for storage 8

Loose Material Storage Area =	1,700	square feet

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF
Date:	April-12 **FY2020**
Sizing Basis:	Diversion Data from StateWide Projections
Location:	Wyoming
Worksheet:	MRF BUILDING SIZING

III. BALED MATERIAL STORAGE AREA

Assumptions: 1. Baled material will be accumulated for 1 truck load, plus additional: 25%

5 major material groups (OCC, Office Paper, Plastics #, Alum, Metals)

2. Estimate # of bales per load (range 35-60) = 45 bales/trailer
3. Bale storage stacking = 4 high 20 sf/bale
4. Aisle width for forklift = 15 feet; length= 20 feet per mat'l
5. Bales loaded into trailer via loading dock.

Baled Material Storage Area =	2,900	square feet

ALTERNATE SOLUTION: Increase number of loading docks and available trailers and store bales directly in trailers.

IV. OTHER MATERIAL STORAGE LOADOUT AREA

Assumptions: 1. Loose glass loaded into outdoor crushing area or roll-off container.

2. Glass storage area: 192 SF for 20-CY roll-off

Roll-off access lane: 120 feet

3. No Other Material Storage identified for inside MRF building.

Indoors:	Other Material Storage Area =	-	square feet
Outdoors:	Other Material Storage Area =	1,400	square feet

V. PROCESSING AREA

BALER AREA

Assumptions: 1. Area for infeed conveyors and baler(s).

Allow 30' x 15' for single horizontal baler, plus clearance & infeed conveyor

LENGTH = 50 FT
WIDTH = 40 FT

Processing Area (Baler) =	2,000	square feet

SORTING CONVEYOR/STATION AREA (OPTIONAL) - Required if Single-Stream Sort

Assumptions: 1. Area for incline conveyor, drum or belt magnet, sort conveyor w/ min 4 to 6 sorting stations.

Allow min. 20' wide for sort station and bin areas underneath, plus clearance.

LENGTH = 70 FT Adjust if greater no. sorting stations
WIDTH = 30 FT

Processing Area (Sort-Line) =	2,100	square feet

VI OFFICE AREA (OPTIONAL)

Assumptions: 1. Minimum interior office area for personnel including restroom facilities.

2. Adjust size based on actual needs.
3. Delete if separate office/admin building or combined with scale house.

From INPUTS sheet - Office Area? YES

Office Area =	600	square feet

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12 ***44 tpd***
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	CAPITAL COSTS

PRELIMINARY ENGINEERING OPINON OF PROBABLE CONSTRUCTION COST (2011$)
WYOMING REGIONAL MRF

ITEM DESCRIPTION	QUANTITY	UNIT	ESTIMATED COST UNIT PRICE	ESTIMATED COST TOTAL PRICE
Site Work				
Bonds, Mobilization and Insurance	4%	of WORK	$2,303,100	$92,000
Clearing and Grubbing	2	acre	$2,500	$5,000
Site Grading - General (2 FT across site)	2,200	CY	$3	$6,600
Excavation (Loading Dock - Grade Different'l)	1,000	CY	$5	$5,000
Earthwork/Structural Fill-Add 4'xbldg SF if no dock excavat'n	500	CY	$10	$5,000
Roadways - Grading	3,300	SY	$5	$16,500
Roadways Surfacing: Gravel (9")	830	CY	$60	$49,800
Concrete (8")	0	CY	$400	$0
Asphalt	0	SY	$30	$0
Erosion Control/ Stormwater Management	1	LS	$100,000	$100,000
Landscape and Planting	1	Allowance	$20,000	$20,000
Misc Site - Bollards, Signage	1	LS	$10,000	$10,000
Surveying	1	LS	$20,000	$20,000
Concrete & Foundations				
Foundation Excavation/Structural Fill	430	CY	$15	$6,500
Granular Fill/Backfill at Building	380	CY	$40	$15,200
Maneuv'g & Outdoor Storage Area - Asphalt	580	SY	$30	$17,400
Concrete Aprons (at roll-up doors)	90	CY	$400	$36,000
Building Foundations	80	CY	$650	$52,000
Retaining Walls (at docks)	80	CY	$650	$52,000
Tipping, Processing & Storage Floor	390	CY	$400	$156,000
General Equip. Foundation (baler)	30	CY	$500	$14,800
General Equip. Foundation (sort-line)	60	CY	$500	$30,000
Below-Grade Conveyor Pit (in-floor conveyor)	6	CY	$500	$3,000
Interior Push Walls (10' high) @unloading	60	CY	$650	$39,000
Interior Push Walls (3' high) @bale loadout	30	CY	$650	$19,500
Buildings				
Pre-Engineered Building	10,300	SF	$80	$824,000
Building Electrical	10,300	SF	$15	$154,500
Building Mech. (fire protect'n, venting, etc.)	10,300	SF	$25	$257,500
Roll-Up Doors	5	EA	$10,000	$50,000
Loading Docks Area	3	EA	$12,000	$36,000
Utilities				
Site Utilities (elect/transformer/water/sewer)	1	LS	$200,000	$200,000
Site Lighting	5	EA	$5,000	$25,000
Fencing				
Chain Link Security Fence (6' high)	1,200	LF	$24	$28,800
Chain Link Gates	20	LF	$250	$5,000
Office Area (Optional)				
Partitions/Ceiling (drywall surface area)	1,800	SF	$15	$27,000
Electrical/Lighting	1	LS	$6,000	$6,000
HVAC	1	LS	$5,000	$5,000
Plumbing/Restroom Facility	1	LS	$5,000	$5,000
			SUBTOTAL	**$2,395,100**
			General Contractor Fees (10% of Sitework, Bldg, Utilities)	**$196,000**
			Contingency (20%)	**$518,000**
			SUBTOTAL DIRECT CONSTRUCTION	**$3,109,100**
			Design/Engineering (10%)	**$311,000**
			Soils Report & Permitting (3%)	**$93,000**
			Construction Management/Observation (10%)	**$311,000**
			SUBTOTAL DEVELOPMENT COSTS	**$715,000**
			TOTAL MRF CONSTRUCTION & DEVELOPMENT COSTS	**$3,824,100**
			Annual Capital Debt Payment (% interest rate over 20 years) =	**$307,000**

* Revise items in red for program and site specific information.

Does not include potential costs of financing.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12 ***44 tpd***
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	CAPITAL COSTS

PRELIMINARY ENGINEERING OPINON OF PROBABLE CONSTRUCTION COST (2011$)
WYOMING REGIONAL MRF

ROLLING STOCK & PROCESS EQUIPMENT

ITEM DESCRIPTION	QUANTITY	UNIT	ESTIMATED COST UNIT PRICE	ESTIMATED COST TOTAL PRICE
Truck Tractor (amortized in Recycling Haul)	0	EA	$180,000	$0
Trailers (amortized in Recycling Haul)	0	EA	$100,000	$0
Roll-Off Containers (multi-material @ Drop Sites)	0	EA	$9,000	$0
Roll-Off Truck (Drop Site operations)	0	EA	$130,000	$0
Skid Loader	0	EA	$60,000	$0
Front-End Loader (mid-size)	1	EA	$250,000	$250,000
Forklift	1	EA	$50,000	$50,000
Optional Sorting Line[1]:				
Sort Station - Infloor/Incline Feed Conveyor	1	EA	$80,000	$80,000
Drum Magnet or Belt Magnet	1	EA	$50,000	$50,000
Sort Station - Sorting Conveyor (48" wide)	40	LF	$700	$28,000
Sort Station - Platform (12' wide x 40' long)	1	EA	$40,000	$40,000
Baler - Closed Door, Manual Tie[2]	1	EA	$120,000	$120,000
Baler - Two-Ram (Optional)[3]	0	EA	$230,000	$0
Baler Infeed Conveyor (By Manufacturer)	1	EA	$25,000	$25,000
			SUBTOTAL EQUIPMENT	**$643,000**
			Contingency (20%)	**$128,600**
			TOTAL ROLLING STOCK & PROCESS EQUIPMENT	**$771,600**
			Annual Equipment Debt Payment (% interest rate over 10 years) =	**$100,000**

Notes:
1. From 2009 project quote, plus estimated installation, esc. to 2011. Pre-fab sort systems may be less.
2. Unit price quote for mid-size closed door, manual tie baler, including factory installation & taxes (in 2011).
3. Unit price quote for Harris Wolverine two-ram baler, including installation, taxes, and recommendations for custom hopper, oil reservoir heater, and reduced voltage starter. Escalated from 2009 to 2011.
4. Both balers can produce high-density bales (>= 1000 lbs) in standard size, except for aluminum and PET in the closed door baler.
5. Harris Wolverine baler quote from Recycle Systems in Utah, Attn: R. Jefre Hicks.

* Revise items in red for program and site specific information.

OPTIONAL - SCALEHOUSE & SCALE

ITEM DESCRIPTION	QUANTITY	UNIT	ESTIMATED COST UNIT PRICE	ESTIMATED COST TOTAL PRICE
Pre-Engineered Metal Bldg - One Story[1]	200	SF	$200	$40,000
Concrete Slabwork[2]	5	CY	$400	$2,000
Concrete Footings	10	CY	$650	$6,500
Foundation Excavation/Structural Fill	60	CY	$15	$900
Granular Fill/Backfill at Building	10	CY	$40	$400
HVAC[3] and Plumbing[4]	200	SF	$40	$8,000
Electrical[5]	200	SF	$50	$10,000
Interior Treatments[6]	200	SF	$75	$15,000
Motor Truck Scales (10' x 70')	1	EA	$75,000	$75,000
Misc. Bldg/Scale Protection (bollards, etc.)	1	EA	$10,000	$10,000
			SUBTOTAL SCALE HOUSE & SCALE	**$167,800**
			Contingency (20%)	**$33,600**
			TOTAL SCALE HOUSE & SCALE	**$201,400**
			Annual Scale House Debt Payment (% interest rate over 15 years) =	**$19,000**

Notes:
1. No truck driver, facility, or administration activities areas are included; add to SF if desired.
2. Assumes stable soil with load bearing capacity. Slab floor is 6" non-industrial reinforced concrete.
3. Heating, ventilation, air conditioning.
4. Includes drains, plumbing, toilet, etc. Site water service line included w/ MRF.
5. Electrical includes lighting, wiring, power, communications, etc. Site electrical service included w/ MRF.
6. Includes tile, drywall, painting, window covers and basic cabinetry.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12 ***44 tpd***
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	O&M COSTS

PRELIMINARY ENGINEERING OPINON OF PROBABLE OPERATING COST (2011$)
WYOMING REGIONAL MRF

Revise items in red for program and site specific information.

				ESTIMATED COST	
ITEM DESCRIPTION		**QUANTITY**	**UNIT**	**UNIT PRICE**	**TOTAL PRICE**

LABOR

Job Classification	**Qty**	**Labor Rate**	**Hrs/Yr**		**Total**
MRF Supervisor	1	$35	2080 hrs	$	73,000
Baler Operator	1	$20	2080 hrs	$	42,100
Loader/Forklift Operators	2	$20	2080 hrs	$	84,200
General Laborer	1	$11	2080 hrs	$	22,500
Sort-Line Laborers	4.8	$11	2080 hrs	$	107,800
Maintenance	0.25	$30	2080 hrs	$	15,400
			Subtotal	***$***	***345,000***

Notes/Assumptions:

Labor rates assume fringe benefits designated on INPUTS sheet.

INSURANCE

Item		**Quantity**	**Unit Price**		**Total**
General, Liability, Fire, Etc.	1%	$2,074,300	bldgs/equipment	***$***	***21,000***

FACILITY MAINTENANCE

Item		**Quantity**	**Unit Price**		**Total**
Site Maintenance	2%	$508,500		$	10,200
Building Repair & Depreciation	3%	$1,731,300		$	51,900
Electricity - Lighting		37,000 kwh	$0.10	$	3,700
Electricity Demand - Peak Est.		140 kw	$100	$	14,000
Electricity - Equipment (Baling)		236,000 kwh	$0.10	$	23,600
Electricity - Equipment (Sort-Line)		22,000 kwh	$0.10	$	2,200
Heating - Natural gas		2,100 DTH	$6 /DTH	$	12,600
Water		300,000 gpy	$8 /1000 gal	$	2,400
Sanitary Service		270,000 gpy	$6 /1000 gal	$	1,600
Mobile Phone	4	phone service	$100 /month	$	4,800
			Subtotal	***$***	***127,000***

Notes/Assumptions:

Building lighting based on	0.5	watts/sf	2808 hours/year	(54 hrs/week)
Site Lighting	5	1000W Lights	4380 hours/year	(night-time)
Baler	50	hp	2913 hours/year	
Baler Conveyor	8	hp	2533 hours/year	
Sort Line Conveyor	3	hp	1829 hours/year	
Belt Magnet	5	hp	1829 hours/year	
Assume natural gas use	2	therm/sf/season (DTH = decatherm)		

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Regional MRF - Material Recovery Facility
Date:	April-12 ***44 tpd***
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	O&M COSTS

PRELIMINARY ENGINEERING OPINON OF PROBABLE OPERATING COST (2011$)
WYOMING REGIONAL MRF

EQUIPMENT O&M

Item	Qty	Rate	Hrs/Yr	Unit Price		Total
Skid Loader Fuel	0	2.0 gal/hr	2070 hrs	$4.00	$	-
Skid Loader O&M	0		2070 hrs	$5	$	-
Front-Loader Fuel	1	3.0 gal/hr	2070 hrs	$4.00	$	24,800
Front-Loader O&M	1		2070 hrs	$10	$	20,700
Forklift Fuel	1	3.0 gal/hr	1990 hrs	$4.00	$	23,900
Forklift O&M	1		1990 hrs	$5	$	10,000
Sorting Station & Conveyors O&M	3%	Purchase Price		$148,000	$	4,500
Magnet O&M	3%	Purchase Price		$50,000	$	1,500
Baler Feed Conveyor O&M	3%	Purchase Price		$25,000	$	800
Baler O&M	3%	Purchase Price		$120,000	$	3,600
Baling Wire (manual tie)	11917	bales		$4.00	$	47,700
				Subtotal	***$***	***137,500***

Notes/Assumptions:

Skid-Steer Loader Bucket Capacity	1	CY	NO			
Front Loader Bucket Capacity	5	CY	YES			
Trailer Loading & Mat'l Management (Yr2020 & Front-Loader):						
All Recyclables	23,110	bucket loads/yr		2	minutes/load	(twice)
Baler Feed	31,760	bucket loads/yr		1	minutes/load	
Estimated # Bales	11917	bales		5	minutes/bale	(twice)

CONTINGENCY

Item			Quantity		Unit Price		Total
O&M Contingency	10%	$	630,500	subtotal O&M		***$***	***63,100***
				ANNUAL TOTAL O&M ESTIMATE		**$**	**693,600**

Note: Excludes MRF construction and equipment capital debt amortization.

Project:	Wyoming Statewide Study of Solid Waste Recycling	
Technology:	Regional MRF	***Hauling Baled/Loose Recyclables to Markets***
Date:	April-12	**FY2020**
Cost Estimate Basis:	Diversion Data from StateWide Projections	
	2011$ - Cost assumptions from vendors, costing manuals & project data	
Location:	Wyoming	
Worksheet:	Recycling Haul - REGIONAL MRF HAUL COSTS	

MARKET LOCATIONS	**Salt Lake City**	***Comments***
Number of Trailer Loads	478	*from Multi-Stream Analysis sheet*
Recyclables Tonnage (tpy): FY2020	**11,050**	*from INPUTS sheet*
Load & Unload Time (minutes):	60	*Estimate*
One-Way Distance (miles)	**120**	***Revise based on MRF location & markets***
Average Speed (mph):	55	
Average Trips/Year:	478	
Average Trips/Month:	40	
Average Trips/Week:	10	
Hours Per Trip	5.4	
Weekly Freight Hours:	53.6	
Wkly Prorated Veh Inspect/Breaks:	10.1	*Ratio wkly freight hrs to Total wkly inspections/breaks*
Annual Freight Hours:	2,789.1	*Freight hours only for vehicle fuel, oil & grease cost*
Total Miles/Yr	114,720	
Annual Costs Assumptions:		
Fuel, Oil & Grease		
Fuel Cost per Gallon	$4.00	*Diesel prices, March 2012*
Miles per Gallon	5	
Oil & Grease ($/freight hour)	$0.50	*Estimate*
Tires		
New Tires Price	$700	
# New Tires Per 50,000 Miles	6	*6 tires on tractor & 12 tires on trailers*
Retread Tires	$300	*2008 retread tire prices escalated*
# Retread Tires Per 25,000 Miles	12	
Maintenance & Repairs		
Mechanic Labor annual salary	$45,760	*See INPUTS sheet*
Mechanic Labor % per Truck	10%	
Parts, Repairs, Overhaul ($/mile)	$0.50	
Equipment Operator/Driver Labor		
Driver % (based on total time)	160%	
Driver annual salary	$37,440	*See INPUTS sheet*
Fringe benefits (% of salary)	35%	*See INPUTS sheet*
Truck Amortization		
Number of Tractors	**2**	*Update based on loads/day; Multi-Stream Analysis sheet*
Capital Cost - per tractor	$180,000	*New truck price based on vendor data and other projects*
Resale Value (% of truck $)	20%	
Replacement Schedule (years)	10	
Interest Rate	5%	*See INPUTS sheet*
Capital Recovery Factor (A/P,i,n)	0.1295	
Trailer Amortization		
Number of Trailers	**3**	*Update based on loads/day; Multi-Stream Analysis sheet*
Capital Cost -- per trailer	$100,000	*Price based on other projects and vendor data*
Replacement Schedule (years)	10	*Used trailers price significantly less*
Interest Rate	5%	*See INPUTS sheet*
Capital Recovery Factor (A/P,i,n)	0.1295	
Insurance (per yr/truck) @ 3% $	$5,400	*Estimate % of capital cost*
License&Taxes (per yr/truck)@1.5% $	$2,700	*Estimate % of capital cost*
Pro-Rated % of Time	160%	

Project:	Wyoming Statewide Study of Solid Waste Recycling	
Technology:	Regional MRF	***Hauling Baled/Loose Recyclables to Markets***
Date:	April-12	**FY2020**
Cost Estimate Basis:	Diversion Data from StateWide Projections	
	2011$ - Cost assumptions from vendors, costing manuals & project data	
Location:	Wyoming	
Worksheet:	Recycling Haul - REGIONAL MRF HAUL COSTS	

Annual Recyclables Haul Costs to Market:	**Salt Lake City**	**Comments**
Fuel, Oil & Grease	$93,170	Mileage & Time Based
Tires	$26,160	Mileage Based
Maintenance & Repairs	$69,720	Mileage & Time Based
Driver Labor	$80,870	Time Based
Truck Amortization	$37,300	100% Utilized
Trailer Amortization	$38,850	100% Utilized
Insurance	$10,800	No. trucks
Licensing & Taxes	$5,400	No. trucks
Recycling Haul Cost to Markets	**$362,270**	
Recycling Haul Cost/Ton	**$32.80**	
Total Recycling Haul Cost/Pull	**$758**	

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	Yard/Wood Waste Windrow Composting (YW/WW)
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	READ ME

READ ME Guide to Drop-Site Cost Model:

Note: After READ ME sheet there are separate worksheets for 1000-tpy analysis and 4000-tpy analysis.

Worksheet	Function
Inputs	Provides assumptions & cost basis for all cost modeling analyses. Lists assumptions made/factors used to describe existing conditions, rates, costs, feedstock, design, operations, etc. This analysis establishes 2 separate composting scenarios based on 1,000 and 4,000 tpy input. Values in red can be changed to revise the modeling scenario.
Summary	Summary table of acreage requirements, captial costs, annual operating costs, esimated revenues and likely tipping fees.
Sizing	Assumptions and analysis for sizing stockpile, composting, storage, screening, wood waste processing and leachate lagoon areas.
Equipment Requirements	Describes processing equipment and capacities.
Capital Cost	Includes capital cost analysis based on measureable units and unit costs. All dollars are 2011. Values in red can be changed as costs vary over time.
Equipment Cost	Includes costs to operate and maintain equipment, including labor and contingency. All dollars are 2011. Values in red can be changed.
Maintenance Cost	Includes facility maintenance costs, including utilities. All dollars are 2011. Values in red can be changed.

Note: To view specific calculations, simply click on the cell value in the Excel spreadsheet.

Project:	Wyoming Statewide Study of Solid Waste Recycling		
Technology:	YW/WW Compost Facility - Windrows	Size:	***1,000 tpy***
Date:	April-12		
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data		
Location:	Wyoming		
Worksheet:	INPUTS - 1000		

Revise items in red for program and site specific information.

Yard Waste / Wood Waste Projections Fiscal Year= input design year

Diverted Materials (1)		Tonnage		Density (5)	Volume	
2	Amount from Curbside Collection (packer)	0	tons/year	500	-	CY
3	Amount from Drop-Sites	500	tons/year	350	2,900	CY
4	Estimated Amount Direct Hauled	500	tons/year	290	3,400	CY

Notes:

1 From site/facility projections.
2 Identify amount to be delivered from curbside collection programs.
3 Identify amount to be hauled from drop-sites.
4 Identify amount to be direct hauled to compost facility by residents/customers.
5 Adjust density based on typical materials received from source.

Quantity, Volumes & Densities:

1	Yard Waste/Wood Waste Quantity =	1,000	tons	
	Yard Waste/Wood Waste Quantity =	6,900	CY	
2	Percent Wood Waste =	50%		
	Percent Yard Waste (grass/leaves) =	50%		
		100%		must equal 100%
3	Density of Wood Waste =	250	lbs/cy	
	Density of Leaves/Grass Clippings =	350	lbs/cy	
	Average Density (based on tons and %) =	290	lbs/cy	adjust for actual data
4	Density of Wood Chips =	500	lbs/cy	

Notes:

1 Identify projections for yard waste/wood waste compost program.
2 Identify percentage of material that is wood waste versus yard waste.
3 Wood Waste density is for loose, raw material. Adjust if actual density data available.
4 Wood waste density after grinding. Adjust if actual density data available.

Project:	Wyoming Statewide Study of Solid Waste Recycling		
Technology:	YW/WW Compost Facility - Windrows	Size:	***1,000 tpy***
Date:	April-12		
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data		
Location:	Wyoming		
Worksheet:	INPUTS - 1000		

Inputs for Operations Sizing (See "Sizing-Windrow" sheet)

Adjust the provided default numbers (in red) for actual operations

Operations	5	days/week	
Stockpile Wood =	30	days	
Stockpile Yard Waste/Leaves For =	10	days	
Composting Time (Stage 1) =	12	weeks	assumes weekly turning
Stage 1 Windrows: Height =	5	feet	**Smallest pull-type turner**
Width =	10	feet	**Smallest pull-type turner**
Length =	150	feet	
Composting Time (Stage 2) =	12	weeks	assumes weekly turning
Stage 2 Windrows: Height =	5	feet	**Smallest pull-type turner**
Width =	10	feet	**Smallest pull-type turner**
Length =	150	feet	
Composting Curing Area:			
Curing Area Time =	6	weeks	
Curing: Pile Height =	6	feet	
Pile Width =	18	feet	
Pile Length =	40	feet	reduced length for smaller tpy
Space Between =	0	feet	
Finished Compost Storage Area:			
Storage Time =	12	weeks	
Compost Storage: Piles Height =	12	feet	
Pile Width =	24	feet	
Pile Length =	40	feet	reduced length for smaller tpy
Space Between =	0	feet	
Compost Screening Area			
Compost Screening Area? Trommel?	NO	(input YES or NO)	
Equip. Width, approx. =	0	feet	
Equip. Length, approx. =	0	feet	
Width around Screening Equip. =	0	feet	
Wood Waste Processing Area			
Wood Waste Processing Area?	YES	(input YES or NO)	
Equip. Width, approx. =	20	feet	
Equip. Length, approx. =	70	feet	
Width around Grinder =	25	feet	
Wood Chip Storage Area			
Wood Chip Storage Area?	YES	(input YES or NO)	
Storage Time =	6	weeks	
Piles Height =	12	feet	
Pile Width =	24	feet	reduced for smaller tpy, max. 40'
Pile Length =	24	feet	reduced for smaller tpy, max. 40'
Space Between =	20	feet	

Compost Leachate/Stormwater Lagoon Sizing

From U.S. Rainfall Maps, for general area: Adjust for actual location

100 - year, 24 - hour =	3	inches, approx.
2 - year, 24-hour =	1.5	inches

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows ***1,000 tpy***
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	SUMMARY - 1000

RAW MATERIAL MIX - MIX OF MATERIALS

INGREDIENTS AVAILABLE		**QUANTITY**	
		(Tons)	**(Cubic Yards)**
A	Wood Waste	500	4,000
B	Yard Waste	500	2,900
C			
	TOTAL	**1,000**	**6,900**

COMPOST FACILITY SIZING

Compost Facility Areas		**Sizing**	
		(SF)	**(ACRES)**
Primary Areas:			
	Raw Material Receiving	1,800	0.0
	Active Composting Area - Windrows	48,300	1.1
	Curing Area	7,200	0.2
	Compost Storage Area	7,200	0.2
	Screening Area	-	-
	Wood Waste Processing Area	8,400	0.2
	Wood Chip Storage Area	3,100	0.1
	SUBTOTAL	76,000	1.7
Miscellaneous Areas:			
	Buildings	-	-
	Roadways	23,500	0.5
	Leachate Lagoon	2,500	0.1
	Stormwater Management/Earth Area	33,100	0.8
	Buffer Area (10%)	13,500	0.3
	SUBTOTAL	72,600	1.7
	TOTAL	**148,600**	**3.4**

Note: Assumes no buildings and building areas.

Project:	Wyoming Statewide Study of Solid Waste Recycling	
Technology:	YW/WW Compost Facility - Windrows	***1,000 tpy***
Date:	April-12	
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data	
Location:	Wyoming	
Worksheet:	SUMMARY - 1000	

COMPOST FACILITY CAPITAL DEVELOPMENT

Compost Facility Areas		Capital Cost (2011$)	Annual Debt (2011$)
	Sitework	$126,500	
	Compost Pad	$42,500	
	Buildings	$0	
	Utilities & Fencing	$0	
	Contractor Markup & Contingency	$46,500	
	TOTAL	**$215,500**	**$17,300**

COMPOST FACILITY OPERATIONS & MAINTENANCE

Operations & Maintenance		Annual Cost (2011$)
	Equipment Depreciation	$13,900
	Equipment Maintenance	$8,500
	Equipment Fuel	$8,700
	Labor	$30,000
	Facility/Site Maintenance	$10,600
	Contingency	$7,200
	TOTAL	**$78,900**

SUMMARY OF EXPENSES AND REVENUES

Expense/Revenue Items		Annual $ (2011$)
	Compost Facility Capital Development	$17,300
	Compost Facility O&M	$78,900
Total Annual Compost Facility Expenses		$96,200
Estimated Revenues		$53,000
	NET REVENUES/(EXPENSES)	**($43,200)**
	POTENTIAL NET COST PER TON	**$43**

AVOIDED LANDFILL DISPOSAL, COST PER TON	**$73**

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows ***1,000 tpy***
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	SIZING - 1000

Items in red come from "INPUTS" sheet.

Windrow Size:

	Min (ft)	Max (ft)
Tractor Drawn & Self-Propelled Windrow Turner		
h =	4	9
b =	10	20
w (space between) =	5	12
L =	50	500

A = h x (b-h) where b>= 2xh

Projections - Fiscal Year: input design year

		tons/yr	CY/yr
	Wood Waste (loose)	500	4,000
	Yard Waste	500	2,900
	TOTALS	1,000	6,900

Stockpile Areas — **Yard Waste & Wood Waste**

1 Operations: 5 days/week

2 Daily Volumes (cubic yard), Average

Wood Waste (loose)	15.4	CY
Yard Waste	11.2	CY

3 Raw Wood Waste Stockpile

Stockpile Wood =	30	days
Volume Storage =	462	CY
Max. Height =	15	feet
Base Width =	40	feet
Length =	33	feet

WOOD WASTE STOCKPILE (SF) = 1,400

4 Yard Waste (Grass/Leaves) Stockpile

Stockpile Leaves For =	10	days
Volume Storage =	112	CY
Max. Height =	15	feet
Base Width =	40	feet
Length =	8	feet

YARD WASTE STOCKPILE (SF) = 400

Active Composting Area — **Yard Waste Only**

1 Composting Time (Stage 1) = 12 weeks

Composting Time (Stage 2) = 12 weeks

2 Determine Volume Mat'l -Composting Pad

Total Volume (CY) =	669	without shrinkage
2nd Stage Volume (CY) =	535	w/ shrinkage
Shrinkage Factor	0.8	

3 Windrow Volume & Number (1st Stage)

Windrow (CY)=	139	Height =	5	feet
		Width =	10	feet
		Length =	150	feet

Number Stage 1 Windrows = 5

Stage 1 Area Width =	110	feet
Stage 2 Area Length =	300	feet

STAGE 1 WINDROW AREA (SF) = 33,000

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows ***1,000 tpy***
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	SIZING - 1000

4 Windrow Volume & Number (2nd Stage)

Windrow (CY) =	139	Height =	5	feet
		Width =	10	feet
		Length =	150	feet
Number 2nd Stage Windrows =	4			
Windrow Width =	90	feet		
Windrow Length =	170	feet	WINDROW 2ND STAGE (SF) =	15,300

Curing Area **Yard Waste Only**

5 Assume Curing Piles

Pile Height =	6	feet
Pile Width =	18	feet
Pile Length =	40	feet
Space Between =	0	feet

6 Determine Volume for Curing Area

Curing Area Time =	6	weeks
Shrinkage Factor =	0.5	
Volume Curing (CY) =	167	

7 Determine Curing Pad Area

Curing Pile (CY) =	107			
Number of Piles =	2			
Area Length =	120	feet		
Area Width =	60	feet	CURING AREA (SF) =	7,200

Compost Storage Area **Yard Waste Only**

8 Assume Storage Piles

Piles Height =	12	feet
Pile Width =	24	feet
Pile Length =	40	feet
Space Between =	0	feet

9 Determine Volume for Storage

Storage Time =	12	weeks
Shrinkage Factor =	0.5	
Volume Storage (CY) =	335	

10 Determine Storage Pad Area

Storage Pile (CY) =	213			
Number of Piles =	2			
Area Length =	120	feet		
Area Width =	60	feet	STORAGE AREA (SF) =	7,200

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows ***1,000 tpy***
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	SIZING - 1000

Compost Screening Area **Yard Waste Only**

11 Screening Area

Equip. Width, approx. =	0	feet
Equip. Length, approx. =	0	feet

12 Manuevering Area

Width around Screening =	0	feet	SCREENING AREA (SF) = -

Wood Waste Processing Area

13 Grinder Area

Equip. Width, approx. =	20	feet
Equip. Length, approx. =	70	feet

14 Manuevering Area

Width around Grinder =	25	feet	WW PROCESS AREA (SF) = 8,400

Wood Chip Storage Area

15 Assume Storage Pile

Piles Height =	12	feet
Pile Width =	24	feet
Pile Length =	24	feet
Space Between =	20	feet

16 Determine Volume for Storage

Storage Time =	6	weeks
Volume Storage (CY) =	230	

17 Determine Storage Pad Area

Storage Pile (CY) =	128	
Number of Piles =	2	WW CHIPS STORAGE AREA (SF) = 3,100

Project:	Wyoming Statewide Study of Solid Waste Recycling	
Technology:	YW/WW Compost Facility - Windrows	***1,000 tpy***
Date:	April-12	
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data	
Location:	Wyoming	
Worksheet:	SIZING - 1000	

Compost Leachate/Stormwater Lagoon Sizing

From U.S. Rainfall Maps, for general area:

100 - year, 24 - hour =	3	inches, approx.
2 - year, 24-hour =	1.5	inches

Compost Pad Run-off Area =	76,000	SF	
Roadways Run-Off Area =	23,500	SF	Estimate, Adjust for actual conditions
Leachate Lagoon Rain Capacity =	12,400	CF	

Size Leachate Lagoon:		
Depth for Rain Capacity =	5	feet
Plus Freeboard =	1	foot
Plus Sediment Loading=	1	foot
	7	
Area Required =	2,500	SF
Plus Area for Side Slopes		

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows
Date:	April-12 ***1,000 tpy***
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	EQUIPMENT REQUIREMENTS - 1000

Yard Waste/Wood Waste Compost Sites		**Assumptions**	**Projections**
Quantities			
	Total Yard Waste & Wood Waste (tons) (1)		1,000
	Total Yard Waste & Wood Waste (CY) (2)		6,900
Facility Calculations (see Sizing Sheet)			
	Total Required Space (SF)		**148,600**
	Total Required Space (Acres)		**3.4**
	EQUIPMENT TIME REQUIRED		
	Horizontal Grinder/Chipper (3)	200/500 hp	
200 CY/hr	Throughput Time (hrs/wk)	Use 200 CY/hr avg received vol	0.7
	Front-End Loader (4)		
90 CY/hr	Raw Mat'l Storage Handling Time (hrs/wk)	Total cy/52 wks/90 CY/hr	1.5
90 CY/hr	Grinder In/Out Handling Time (hrs/wk)	90 CY/hr each end	2.9
45 CY/hr	Forming Windrows (hrs/wk)	Windrow cy/10 wks/45 CY/hr	2.2
45 CY/hr	Forming Curing Windrows (hrs/wk)	Curing cy/6 wks/45 CY/hr	0.6
90 CY/hr	Trommel Screen In/Out (hrs/wk)	Curing cy/wk;90 CY/hr each end	0.0
90 CY/hr	Compost Storage Handling Time (hrs/wk)	Curing cy/12 wks/90 CY/hr	0.3
	Tractor Drawn Windrow Turner	10' width, 5' height	
600 CY/hr	Throughput Time (hrs/wk) (5)	Use 600 CY/hr; windrow vol	1.1
	Trommel Screen		
100 CY/hr	Throughput Time (hrs/wk)	Use 100 CY/hour; curing vol	0.0
	Water Truck		
	Watering Time (hrs/wk)	20 gallons per CY yard waste (assuming dry leaves & grass); at 100 gpm discharge rate, 5 days/wk	0.9
	Total Required Equipment Hours	**Hours/week**	**10.2**
	LABOR		
	Equip Set-up/Transition/Breaks (hrs/wk)	Assume add'l 20%	2.0
	Total Labor Time Required	**Hours/week**	**12.2**
	Total Labor Time Required	**FTE**	**0.3**

NOTES:

1 Based on yard waste/wood waste quantity projections. See "INPUTS" sheet.
2 See "INPUTS" sheet. Volume based on % of yard waste and wood waste at estimated material densities.

3 Assumes incoming material divided into 2 piles (grass/leaves and wood waste).
Wood Waste is assumed to go directly to mulch and not be composted.
4 Capacity assumptions based on 3-cy bucket and movement of one load every 2-4 minutes.
5 Windrow turner assumed to turn materials once per week.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows
Date:	April-12 ***1,000 tpy***
Cost Estimate Basis:	2011$ -Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	CAPITAL COST - 1000

PRELIMINARY ENGINEERING OPINON OF PROBABLE CONSTRUCTION COST
WYOMING - COMPOST FACILITY (2011$)

ITEM DESCRIPTION	QUANTITY	UNIT	ESTIMATED COST UNIT PRICE	ESTIMATED COST TOTAL PRICE
Land Purchase				
Land (Assume existing property)	3.4	acre	$0	$0
Site Work (1)				
Bonds, Mobilization and Insurance (2)	6%	of WORK	$159,000	$10,000
Clearing and Grubbing	3.4	acre	$2,500	$8,500
Site Grading - General Earthwork	11,000	CY	$3	$33,000
Roadways - Gravel Surfacing	500	CY	$20	$10,000
Erosion Control/Stormwater Management	1	LS	$30,000	$30,000
Leachate Lagoon (Excavation & Lining)	2,500	SF	$10	$25,000
Landscape and Planting	0	Allowance	$0	$0
Misc Site - Bollards, Signage	1	Allowance	$5,000	$5,000
Surveying	1	Allowance	$5,000	$5,000
Compost Pad (1)				
Compost Pad Paving - Asphalt	0	SY	$30	$0
Compost Pad - Compacted Soil	8,500	SY	$5	$42,500
Public Drop-Off Area - Concrete	0	CY	$400	$0
Buildings (3)				
Maintenance Building	0	SF	$100	$0
Building Electrical	0	SF	$15	$0
Building Mechanical (HVAC, plumbing)	0	SF	$25	$0
Building Fire Protection/Sprinkler System	0	SF	$15	$0
Building Foundations/Concrete Slab	0	CY	$500	$0
Roll-Up Doors	0	EA	$10,000	$0
Utilities (3)				
Site Utilities (electrical, water well)	0	LS	$50,000	$0
Site port-a-let	0	EA	$5,000	$0
Site Lighting	0	EA	$5,000	$0
Water Storage Tank(fire protect'n,15Kgal)	0	EA	$25,000	$0
Optional Items (3)				
Chain Link Security Fence (6' high)	0	LF	$24	$0
Chain Link Gates	0	LF	$250	$0
Existing Facilities - Identify				

	SUBTOTAL	**$169,000**
General Contractor Fees (% Sitework, Bldg, Utilities)	**10%**	**$12,700**
Contingency	**20%**	**$33,800**
TOTAL SITEWORK & FACILITY		**$215,500**

Notes:
1 May be present if existing active compost facility. Adjust quantities and unit prices for site specific improvements and/or expansion.
2 Assumes private contractor developing site. Reduce or eliminate if compost facility developed and/or improved with existing staff and equipment.
3 May be available if existing site. Modify quantity and unit price for site specific conditions.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows
Date:	April-12 ***1,000 tpy***
Cost Estimate Basis:	2011$ -Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	O&M COST - 1000

PRELIMINARY ENGINEERING OPINON OF PROBABLE OPERATIONS & MAINTENANCE COST
WYOMING - COMPOST FACILITY (2011$)

	DATA		Capital and Operating Expenses		
General					
Annual Interest Rate	5.0%				
Quantities[1]					
Annual Green Waste (Tons)	1,000				
Annual Green Waste (CY)	6,900				
Equipment[2]	**Quantity**	**% Share**	**Capital Cost**	**Years Depreciation**	**$/Year**
Small Wheel Loader (120-170 hp)	1	19%	$140,000	10	$3,400
Tractor (min 80 hp w/ creeper gear), 540 PTO	1	3%	$100,000	20	$200
Pull-Type Turner (10' width)	1	100%	$60,000	10	$7,800
Grinder/Shredder (up to 200 hp)	1	2%	$300,000	10	$800
Screen (1/2" mesh, 6' diam, 20' length)	0	100%	$220,000	20	$0
Skid-Steer Loader (up to 90 hp)	1	25%	$60,000	20	$1,200
Water Truck	1	3%	$125,000	10	$500
Subtotal			$1,005,000		$13,900
Equipment Maintenance[3]			**Operation Hours/Year**	**$/Hr w/o Fuel**	**$/Year**
Small Wheel Loader (120-170 hp)			340	$10	$3,400
Tractor (min 80 hp w/ creeper gear), 540 PTO			60	$10	$600
Pull-Type Turner (10' width)			60	$7	$400
Grinder/Shredder (up to 200 hp)			40	$85	$3,400
Screen (1/2" mesh, 6' diam, 20' length)			0	$8	$0
Skid-Steer Loader (up to 90 hp)			50	$5	$300
Water Truck			50	$8	$400
Subtotal			600		$8,500
Equipment Fuel[4]			**Operation Hours/Year**	**Fuel Use Gallons/Hour**	**Fuel $/Year**
Small Wheel Loader (120-170 hp)			340	3	$4,100
Tractor (125 PTO hp with creeper gear)			60	5	$1,200
Pull-Type Turner (10' width)			60	0	$0
Grinder/Shredder (up to 200 hp)			40	15	$2,400
Screen (1/2" mesh, 6' diam, 20' length)			0	3	$0
Skid-Steer Loader (up to 90 hp)			50	2	$400
Water Truck			50	3	$600
Subtotal			600		$8,700
Labor[5]			**Operation Hours/Year**	**Labor $/Hour**	**Labor $/Year**
Total Equipment Operations			530	$20	$10,600
Equipment Start-Up/Transition/Breaks			110	$20	$2,200
Manager Time		5%	104	$45	$4,700
Maintenance			416	$30	$12,500
Subtotal			1,160		$30,000

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows
Date:	April-12 ***1,000 tpy***
Cost Estimate Basis:	2011$ -Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	O&M COST - 1000

PRELIMINARY ENGINEERING OPINON OF PROBABLE OPERATIONS & MAINTENANCE COST
WYOMING - COMPOST FACILITY (2011$)

Facility/Site Maintenance		**$/Year**
Site & Building Maintenance	From "Facility Maintenance Estimate" sheet	$2,200
Personnel Convenience (sanitary/water/phone)	From "Facility Maintenance Estimate" sheet	$8,400
Subtotal		$10,600

Contingency	**Percentage**	**O&M Costs**	**$/Year**
O&M Contingency	10%	$71,700	$7,200
Subtotal			$7,200

TOTAL O&M COSTS	**$78,900**

	Data	**Revenue & Avoided Disposal**	
Annual Revenues[6]	**Quantities**	**$/CY**	**Revenues $/Year**
Compost Materials, CY	1,450	$20	$29,000
Wood Chips/Mulch, CY	2,000	$12	$24,000
Compost Material Revenue			**$53,000**

AVOIDED LANDFILL DISPOSAL[7]	1,000 tons	**$73,000**

NOTES:

[1] From yard waste & wood waste projections. See "INPUTS" sheet.

[2] Adjust quantity for existing and new equipment, and percentage utilized by other solid waste operations. Amortization assumes equipment purchased at project inception.

[3] Estimated based on historic data and Caterpillar Performance Handbook Edition 83.

[4] Diesel fuel use based on other projects and general equipment data. Fuel price= $4.00 per gallon

[5] Estimate based on average annual pay for Wyoming solid waste from U.S. Bureau of Labor Statistics, plus 35% for benefits.

[6] Revenues may be zero if compost and mulch given away to public.

[7] Avoided landfill fees set equal to tons diverted times current Landfill Tip Fee: $73 per ton
Avoided landfill costs are not treated as revenue since the landfills still experience costs of operation.
Landfill will benefit from increase in site life.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows
Date:	April-12 ***1,000 tpy***
Cost Estimate Basis:	2011$ -Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	MAINTENANCE COST - 1000

PRELIMINARY ENGINEERING OPINON OF PROBABLE OPERATING COST
WYOMING - COMPOST FACILITY (2011$)

				ESTIMATED COST	
ITEM DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
FACILITY MAINTENANCE					
Item		**Quantity**		**Unit Price**	**Total**
Site Maintenance	2%	$111,500			$ 2,200
Building Repair & Depreciation	3%	$0			$ -
Electricity		000 kwh		$0.10	$ -
Electricity Demand - Peak Est.		0 kw		$100	$ -
Heating Propane (if bldg)	0	6 month		$3,000	$ -
Sanitary Service (1)	1	port-a-let service/month		$500 /month	$ 6,000
Water (1)	1	No on-site wtr;bottled wtr		$100 /month	$ 1,200
Mobile Phone	1	phone		$100 /month	$ 1,200
				Subtotal	$ 10,600
Notes:					
Building lighting based on	1.66	watts/sf	2080	hours/year	
Site Lighting	0	1000W Lights	4380	hours/year	
				ANNUAL TOTAL	**$ 10,600**

Notes:
1 Adjust if sanitary & water available through other site operations.

Project:	Wyoming Statewide Study of Solid Waste Recycling		
Technology:	YW/WW Compost Facility - Windrows	Size:	***4,000 tpy***
Date:	April-12		
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data		
Location:	Wyoming		
Worksheet:	INPUTS - 4000		

Revise items in red for program and site specific information.

Yard Waste / Wood Waste Projections Fiscal Year= input design year

Diverted Materials (1)		Tonnage		Density (5)	Volume	
2	Amount from Curbside Collection (packer)	0	tons/year	500	-	CY
3	Amount from Drop-Sites	2,000	tons/year	350	11,400	CY
4	Estimated Amount Direct Hauled	2,000	tons/year	290	13,800	CY

Notes:

1 From site/facility projections.
2 Identify amount to be delivered from curbside collection programs.
3 Identify amount to be hauled from drop-sites.
4 Identify amount to be direct hauled to compost facility by residents/customers.
5 Adjust density based on typical materials received from source.

Quantity, Volumes & Densities:

1	Yard Waste/Wood Waste Quantity =	4,000	tons	
	Yard Waste/Wood Waste Quantity =	27,400	CY	
2	Percent Wood Waste =	50%		
	Percent Yard Waste (grass/leaves) =	50%		
		100%		must equal 100%
3	Density of Wood Waste =	250	lbs/cy	
	Density of Leaves/Grass Clippings =	350	lbs/cy	
	Average Density (based on tons and %) =	290	lbs/cy	adjust for actual data
4	Density of Wood Chips =	500	lbs/cy	

Notes:

1 Identify projections for yard waste/wood waste compost program.
2 Identify percentage of material that is wood waste versus yard waste.
3 Wood Waste density is for loose, raw material. Adjust if actual density data available.
4 Wood waste density after grinding. Adjust if actual density data available.

Inputs for Operations Sizing (See "Sizing-Windrow" sheet)

Adjust provided default numbers for actual operations

Operations	5	days/week	
Stockpile Wood =	30	days	
Stockpile Yard Waste/Leaves For =	10	days	
Composting Time (Stage 1) =	12	weeks	assumes weekly turning
Stage 1 Windrows: Height =	6	feet	**mid-size pull-type turner**
Width =	11	feet	**mid-size pull-type turner**
Length =	150	feet	
Composting Time (Stage 2) =	12	weeks	assumes weekly turning
Stage 2 Windrows: Height =	6	feet	**mid-size pull-type turner**
Width =	11	feet	**mid-size pull-type turner**
Length =	150	feet	
Composting Curing Area:			
Curing Area Time =	6	weeks	
Curing: Pile Height =	6	feet	
Pile Width =	18	feet	
Pile Length =	125	feet	Adjust length for operations
Space Between =	0	feet	
Finished Compost Storage Area:			
Storage Time =	12	weeks	
Compost Storage: Piles Height =	12	feet	
Pile Width =	24	feet	
Pile Length =	70	feet	Adjust length for operations
Space Between =	0	feet	
Compost Screening Area			
Compost Screening Area?	YES	(input YES or NO)	
Equip. Width, approx. =	20	feet	
Equip. Length, approx. =	45	feet	
Width around Screening Equip. =	20	feet	
Wood Waste Processing Area			
Wood Waste Processing Area?	YES	(input YES or NO)	
Equip. Width, approx. =	20	feet	
Equip. Length, approx. =	70	feet	
Width around Grinder =	25	feet	
Wood Chip Storage Area			
Wood Chip Storage Area?	YES	(input YES or NO)	
Storage Time =	6	weeks	
Piles Height =	12	feet	
Pile Width =	40	feet	
Pile Length =	40	feet	
Space Between =	20	feet	

Compost Leachate/Stormwater Lagoon Sizing

From U.S. Rainfall Maps, for general area: Adjust for actual location

100 - year, 24 - hour =	3	inches, approx.
2 - year, 24-hour =	1.5	inches

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows ***4,000 tpy***
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	SUMMARY - 4000

RAW MATERIAL MIX - MIX OF MATERIALS

INGREDIENTS AVAILABLE		QUANTITY	
		(Tons)	(Cubic Yards)
A	Wood Waste	2,000	16,000
B	Yard Waste	2,000	11,400
C			
	TOTAL	**4,000**	**27,400**

COMPOST FACILITY SIZING

Compost Facility Areas		Sizing	
		(SF)	(ACRES)
Primary Areas:			
	Raw Material Receiving	6,700	0.2
	Active Composting Area - Windrows	152,600	3.5
	Curing Area	13,200	0.3
	Compost Storage Area	15,400	0.4
	Screening Area	5,100	0.1
	Wood Waste Processing Area	8,400	0.2
	Wood Chip Storage Area	6,400	0.1
	SUBTOTAL	207,800	4.8
Miscellaneous Areas:			
	Buildings	-	-
	Roadways	30,500	0.7
	Leachate Lagoon	5,800	0.1
	Stormwater Management/Earth Area	54,700	1.3
	Buffer Area (10%)	29,900	0.7
	SUBTOTAL	120,900	2.8
	TOTAL	**328,700**	**7.5**

Note: Assumes no buildings and building areas.

COMPOST FACILITY CAPITAL DEVELOPMENT

Compost Facility Areas		Capital Cost (2011$)	Annual Debt (2011$)
	Sitework	$247,800	
	Compost Pad	$115,500	
	Buildings	$0	
	Utilities & Fencing	$0	
	Contractor Markup & Contingency	$97,500	
	TOTAL	**$460,800**	**$37,000**

COMPOST FACILITY OPERATIONS & MAINTENANCE

Operations & Maintenance		Annual Cost (2011$)
	Equipment Depreciation	$70,900
	Equipment Maintenance	$29,600
	Equipment Fuel	$31,900
	Labor	$70,400
	Facility/Site Maintenance	$12,700
	Contingency	$21,600
	TOTAL	**$237,100**

SUMMARY OF EXPENSES AND REVENUES

Expense/Revenue Items		Annual $ (2011$)
	Compost Facility Capital Development	$37,000
	Compost Facility O&M	$237,100
Total Compost Facility Expenses		$274,100
Estimated Revenues		$210,000
	NET REVENUES/(EXPENSES)	**($64,100)**
	POTENTIAL NET COST PER TON	**$16**

AVOIDED LANDFILL DISPOSAL, COST PER TON	**$73**

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows ***4,000 tpy***
Date:	April-12
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	SIZING - 4000

Items in red come from "INPUTS" sheet.

Windrow Size:

	Min (ft)	Max (ft)
Tractor Drawn & Self-Propelled Windrow Turner		
h =	4	9
b =	10	20
w (space between) =	5	12
L =	50	500

A = h x (b-h) where b>= 2xh

Projections - Fiscal Year: input design year

		tons/yr	CY/yr
Wood Waste (loose)		2,000	16,000
Yard Waste		2,000	11,400
	TOTALS	4,000	27,400

Stockpile Areas — **Yard Waste & Wood Waste**

1 Operations: 5 days/week

2 Daily Volumes (cubic yard), Average

Wood Waste (loose)	61.5	CY
Yard Waste	43.8	CY

3 Raw Wood Waste Stockpile

Stockpile Wood =	30	days
Volume Storage =	1,846	CY
Max. Height =	15	feet
Base Width =	40	feet
Length =	133	feet

WOOD WASTE STOCKPILE (SF) = 5,400

4 Yard Waste (Grass/Leaves) Stockpile

Stockpile Leaves For =	10	days
Volume Storage =	438	CY
Max. Height =	15	feet
Base Width =	40	feet
Length =	32	feet

YARD WASTE STOCKPILE (SF) = 1,300

Active Composting Area — **Yard Waste Only**

1 Composting Time (Stage 1) = 12 weeks

Composting Time (Stage 2) = 12 weeks

2 Determine Volume Mat'l -Composting Pad

Total Volume (CY) =	2,631	without shrinkage
2nd Stage Volume (CY) =	2,105	w/ shrinkage
Shrinkage Factor	0.8	

3 Windrow Volume & Number (1st Stage)

Windrow (CY)=	183	Height =	6	feet
		Width =	11	feet
		Length =	150	feet

Number Stage 1 Windrows = 15

Stage 1 Area Width =	350	feet
Stage 2 Area Length =	300	feet

STAGE 1 WINDROW AREA (SF) = 105,000

4 Windrow Volume & Number (2nd Stage)

Windrow (CY) =	183	Height =	6	feet
		Width =	11	feet
		Length =	150	feet
Number 2nd Stage Windrows =	12			
Windrow Width =	280	feet		
Windrow Length =	170	feet		

WINDROW 2ND STAGE (SF) =	47,600

Curing Area **Yard Waste Only**

5 Assume Curing Piles

Pile Height =	6	feet
Pile Width =	18	feet
Pile Length =	125	feet
Space Between =	0	feet

6 Determine Volume for Curing Area

Curing Area Time =	6	weeks
Shrinkage Factor =	0.5	
Volume Curing (CY) =	658	

7 Determine Curing Pad Area

Curing Pile (CY) =	333	
Number of Piles =	2	
Area Length =	165	feet
Area Width =	80	feet

CURING AREA (SF) =	13,200

Compost Storage Area **Yard Waste Only**

8 Assume Storage Piles

Piles Height =	12	feet
Pile Width =	24	feet
Pile Length =	70	feet
Space Between =	0	feet

9 Determine Volume for Storage

Storage Time =	12	weeks
Shrinkage Factor =	0.5	
Volume Storage (CY) =	1,315	

10 Determine Storage Pad Area

Storage Pile (CY) =	373	
Number of Piles =	4	
Area Length =	110	feet
Area Width =	140	feet

STORAGE AREA (SF) =	15,400

Compost Screening Area **Yard Waste Only**

11 Screening Area

Equip. Width, approx. =	20	feet
Equip. Length, approx. =	45	feet

12 Manuevering Area

Width around Screening =	20	feet	SCREENING AREA (SF) = 5,100

Wood Waste Processing Area

13 Grinder Area

Equip. Width, approx. =	20	feet
Equip. Length, approx. =	70	feet

14 Manuevering Area

Width around Grinder =	25	feet	WW PROCESS AREA (SF) = 8,400

Wood Chip Storage Area

15 Assume Storage Pile

Piles Height =	12	feet
Pile Width =	40	feet
Pile Length =	40	feet
Space Between =	20	feet

16 Determine Volume for Storage

Storage Time =	6	weeks
Volume Storage (CY) =	920	

17 Determine Storage Pad Area

Storage Pile (CY) =	498		
Number of Piles =	2		WW CHIPS STORAGE AREA (SF) = 6,400

Compost Leachate/Stormwater Lagoon Sizing

From U.S. Rainfall Maps, for general area:

100 - year, 24 - hour =	3	inches, approx.
2 - year, 24-hour =	1.5	inches

Compost Pad Run-off Area =	202,700	SF	
Roadways Run-Off Area =	30,500	SF	Estimate, Adjust for actual conditions

Leachate Lagoon Rain Capacity = 29,200 CF

Size Leachate Lagoon:

Depth for Rain Capacity =	5	feet
Plus Freeboard =	1	foot
Plus Sediment Loading=	1	foot
	7	
Area Required =	5,800	SF
Plus Area for Side Slopes		

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows
Date:	April-12 ***4,000 tpy***
Cost Estimate Basis:	2011$ - Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	EQUIPMENT REQUIREMENTS - 4000

Yard Waste/Wood Waste Compost Sites		**Assumptions**	**Projections**
Quantities			
	Total Yard Waste & Wood Waste (tons) (1)		4,000
	Total Yard Waste & Wood Waste (CY) (2)		27,400
Facility Calculations (see Sizing Sheet)			
	Total Required Space (SF)		**328,700**
	Total Required Space (Acres)		**7.5**
	EQUIPMENT TIME REQUIRED		
	Horizontal Grinder/Chipper (3)	300/500 hp	
250 CY/hr	Throughput Time (hrs/wk)	Use 250 CY/hr avg received vol	2.1
	Front-End Loader (4)		
90 CY/hr	Raw Mat'l Storage Handling Time (hrs/wk)	Total cy/52 wks/90 CY/hr	5.9
90 CY/hr	Grinder In/Out Handling Time (hrs/wk)	90 CY/hr each end	11.7
45 CY/hr	Forming Windrows (hrs/wk)	Windrow cy/10 wks/45 CY/hr	8.8
45 CY/hr	Forming Curing Windrows (hrs/wk)	Curing cy/6 wks/45 CY/hr	2.4
90 CY/hr	Trommel Screen In/Out (hrs/wk)	Curing cy/wk;90 CY/hr each end	2.4
90 CY/hr	Compost Storage Handling Time (hrs/wk)	Curing cy/12 wks/90 CY/hr	1.2
	Tractor Drawn Windrow Turner	11' width, 6' height	
800 CY/hr	Throughput Time (hrs/wk) (5)	Use 800 CY/hr; windrow vol	3.3
	Trommel Screen		
100 CY/hr	Throughput Time (hrs/wk)	Use 100 CY/hour; curing vol	1.1
	Water Truck		
	Watering Time (hrs/wk)	20 gallons per CY yard waste (assuming dry leaves & grass); at 100 gpm discharge rate, 5 days/wk	3.7
	Total Required Equipment Hours	**Hours/week**	**42.6**
	LABOR		
	Equip Set-up/Transition/Breaks (hrs/wk)	Assume add'l 20%	8.5
	Total Labor Time Required	**Hours/week**	**51.1**
	Total Labor Time Required	**FTE**	**1.3**

NOTES:

1 Based on yard waste/wood waste quantity projections. See "INPUTS" sheet.
2 See "INPUTS" sheet. Volume based on % of yard waste and wood waste at estimated material densities.
3 Assumes incoming material divided into 2 piles (grass/leaves and wood waste).
Wood Waste is assumed to go directly to mulch and not be composted.
4 Capacity assumptions based on 3-cy bucket and movement of one load every 2-4 minutes.
5 Windrow turner assumed to turn materials once per week.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows
Date:	April-12 ***4,000 tpy***
Cost Estimate Basis:	2011$ -Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	CAPITAL COST - 4000

PRELIMINARY ENGINEERING OPINON OF PROBABLE CONSTRUCTION COST
WYOMING - COMPOST FACILITY (2011$)

ITEM DESCRIPTION	QUANTITY	UNIT	ESTIMATED COST UNIT PRICE	TOTAL PRICE
Land Purchase				
Land (Assume existing property)	7.5	acre	$0	$0
Site Work (1)				
Bonds, Mobilization and Insurance (2)	6%	of WORK	$342,300	$21,000
Clearing and Grubbing	7.5	acre	$2,500	$18,900
Site Grading - General Earthwork	24,300	CY	$3	$72,900
Roadways - Gravel Surfacing	600	CY	$20	$12,000
Erosion Control/ Stormwater Management	1	LS	$50,000	$50,000
Leachate Lagoon (Excavation & Lining)	5,800	SF	$10	$58,000
Landscape and Planting	0	Allowance	$0	$0
Misc Site - Bollards, Signage	1	Allowance	$5,000	$5,000
Surveying	1	Allowance	$10,000	$10,000
Compost Pad (1)				
Compost Pad Paving - Asphalt	0	SY	$30	$0
Compost Pad - Compacted Soil	23,100	SY	$5	$115,500
Public Drop-Off Area - Concrete	0	CY	$400	$0
Buildings (3)				
Maintenance Building	0	SF	$100	$0
Building Electrical	0	SF	$15	$0
Building Mechanical (HVAC, plumbing)	0	SF	$25	$0
Building Fire Protection/Sprinkler System	0	SF	$15	$0
Building Foundations/Concrete Slab	0	CY	$500	$0
Roll-Up Doors	0	EA	$10,000	$0
Utilities (3)				
Site Utilities (electrical, water well)	0	LS	$50,000	$0
Site port-a-let	0	EA	$5,000	$0
Site Lighting	0	EA	$5,000	$0
Water Storage Tank (fire protect'n, 15Kgal)	0	EA	$25,000	$0
Optional Items (3)				
Chain Link Security Fence (6' high)	0	LF	$24	$0
Chain Link Gates	0	LF	$250	$0
Existing Facilities - Identify				

	SUBTOTAL	**$363,300**
General Contractor Fees (% Sitework, Bldg, Utilities)	**10%**	**$24,800**
Contingency	**20%**	**$72,700**
TOTAL SITEWORK & FACILITY		**$460,800**

Notes:
1 May be present if existing active compost facility. Adjust quantities and unit prices for site specific improvements and/or expansion.
2 Assumes private contractor developing site. Reduce or eliminate if compost facility developed and/or improved with existing staff and equipment.
3 May be available if existing site. Modify quantity and unit price for site specific conditions.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows
Date:	April-12 ***4,000 tpy***
Cost Estimate Basis:	2011$ -Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	O&M COST - 4000

PRELIMINARY ENGINEERING OPINON OF PROBABLE OPERATIONS & MAINTENANCE COST
WYOMING - COMPOST FACILITY (2011$)

	DATA		Capital and Operating Expenses		
General					
Annual Interest Rate	5.0%				
Quantities[1]					
Annual Green Waste (Tons)	4,000				
Annual Green Waste (CY)	27,400				
Equipment[2]	**Quantity**	**% Share**	**Capital Cost**	**Years Depreciation**	**$/Year**
Mid-Size Wheel Loader (200-350 hp)	1	80%	$350,000	10	$36,300
Tractor (min 110 hp w/ creeper gear), 540 PTO	1	9%	$100,000	20	$700
Pull-Type Turner (11' width)	1	100%	$80,000	10	$10,400
Grinder/Shredder (200 hp to 400 hp)	1	5%	$450,000	10	$3,100
Screen (1/2" mesh, 6' diam, 20' length)	1	100%	$220,000	20	$17,700
Skid-Steer Loader (up to 90 hp)	1	25%	$60,000	20	$1,200
Water Truck	1	9%	$125,000	10	$1,500
Subtotal			$1,385,000		$70,900
Equipment Maintenance[3]			**Operation Hours/Year**	**$/Hr w/o Fuel**	**$/Year**
Mid-Size Wheel Loader (200-350 hp)			1,370	$10	$13,700
Tractor (min 110 hp w/ creeper gear), 540 PTO			170	$10	$1,700
Pull-Type Turner (11' width)			170	$7	$1,200
Grinder/Shredder (200 hp to 400 hp)			110	$85	$9,400
Screen (1/2" mesh, 6' diam, 20' length)			60	$8	$500
Skid-Steer Loader (up to 90 hp)			310	$5	$1,600
Water Truck			190	$8	$1,500
Subtotal			2,380		$29,600
Equipment Fuel[4]			**Operation Hours/Year**	**Fuel Use Gallons/Hour**	**Fuel $/Year**
Mid-Size Wheel Loader (200-350 hp)			1,370	3	$16,400
Tractor (min 110 hp w/ creeper gear), 540 PTO			170	5	$3,400
Pull-Type Turner (11' width)			170	0	$0
Grinder/Shredder (200 hp to 400 hp)			110	15	$6,600
Screen (1/2" mesh, 6' diam, 20' length)			60	3	$700
Skid-Steer Loader (up to 90 hp)			310	2	$2,500
Water Truck			190	3	$2,300
Subtotal			2,380		$31,900
Labor[5]			**Operation Hours/Year**	**Labor $/Hour**	**Labor $/Year**
Total Equipment Operations			2,220	$20	$44,400
Equipment Start-Up/Transition/Breaks			440	$20	$8,800
Manager Time		5%	104	$45	$4,700

Maintenance	416	$30	$12,500
Subtotal	3,180		$70,400

Facility/Site Maintenance		**$/Year**
Site & Building Maintenance	From "Facility Maintenance Estimate" sheet	$4,300
Personnel Convenience (sanitary/water/phone)	From "Facility Maintenance Estimate" sheet	$8,400
Subtotal		$12,700

Contingency	**Percentage**	**O&M Costs**	**$/Year**
O&M Contingency	10%	$215,500	$21,600
Subtotal			$21,600

TOTAL O&M COSTS	**$237,100**

	Data	**Revenue & Avoided Disposal**	
Annual Revenues[6]	**Quantities**	**$/CY**	**Revenues $/Year**
Compost Materials, CY	5,700	$20	$114,000
Wood Chips/Mulch, CY	8,000	$12	$96,000
Compost Material Revenue			**$210,000**

AVOIDED LANDFILL DISPOSAL[7]	4,000 tons	**$292,000**

NOTES:

[1] From yard waste & wood waste projections. See "INPUTS" sheet.

[2] Adjust quantity for existing and new equipment, and percentage utilized by other solid waste operations. Amortization assumes equipment purchased at project inception.

[3] Estimated based on historic data and Caterpillar Performance Handbook Edition 83.

[4] Diesel fuel use based on other projects and general equipment data. Fuel price= $4.00 per gallon

[5] Estimate based on average annual pay for Wyoming solid waste from U.S. Bureau of Labor Statistics, plus 35% for benefits.

[6] Revenues may be zero if compost and mulch given away to public.

[7] Avoided landfill fees set equal to tons diverted times current Landfill Tip Fee: $73 per ton

Avoided landfill costs are not treated as revenue since the landfills still experience costs of operation.

Landfill will benefit from increase in site life.

Project:	Wyoming Statewide Study of Solid Waste Recycling
Technology:	YW/WW Compost Facility - Windrows
Date:	April-12 ***4,000 tpy***
Cost Estimate Basis:	2011$ -Cost assumptions from vendors, costing manuals & project data
Location:	Wyoming
Worksheet:	MAINTENANCE COST - 4000

PRELIMINARY ENGINEERING OPINON OF PROBABLE OPERATING COST
WYOMING - COMPOST FACILITY (2011$)

				ESTIMATED COST	
ITEM DESCRIPTION		QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
FACILITY MAINTENANCE					
Item		**Quantity**		**Unit Price**	**Total**
Site Maintenance	2%	$216,800			$ 4,300
Building Repair & Depreciation	3%	$0			$ -
Electricity		000 kwh		$0.10	$ -
Electricity Demand - Peak Est.		0 kw		$100	$ -
Heating Propane (if bldg)	0	6 month		$3,000	$ -
Sanitary Service (1)	1	port-a-let service/month		$500 /month	$ 6,000
Water (1)	1	No on-site wtr;bottled wtr		$100 /month	$ 1,200
Mobile Phone	1	phone		$100 /month	$ 1,200
				Subtotal	$ 12,700
Notes:					
Building lighting based on	1.66	watts/sf	2080	hours/year	
Site Lighting	0	1000W Lights	4380	hours/year	
				ANNUAL TOTAL	**$ 12,700**

Notes:
1 Adjust if sanitary & water available through other site operations.

FACILITY OWNERSHIP & OPERATION SCENARIOS

Waste diversion facilities may be owned by public (including multiple or a joint government agency), private/for-profit or non-profit organizations. The same facilities can be operated by public, non-profit or private organizations. Table 5-1 identifies the pros and cons of the various scenarios.

SCENARIOS		CONSIDERATIONS	
Ownership	Operation	Pros	Cons
Local Government(s) or Joint Agency	Local Government(s) or Joint Agency	▫ High control ▫ Lack of profit margin may allow management of low-/ no-profit materials ▫ WY examples (Cheyenne C&D facility, Rock Springs MRF)	▫ Marketing commodities includes inherent risk ▫ Government fully responsible for all risks to suppliers and end-users ▫ Longer development time ▫ Government site search may trigger price hikes in eligible parcels
Local Government(s) or Joint Agency	For-profit operator	▫ Government can set many operating parameters through contract, including revenue sharing ▫ Operational efficiencies associated with private sector especially where economies of scale can be achieved with other private operations ▫ WY examples (Sundance curbside collection, Laramie single-stream transfer)	▫ Operator's need for profit may mean less materials received ▫ Government may not be able to "contract away" operating risks ▫ Government site search may trigger price hikes in eligible parcels
Local Government(s) or Joint Agency	Non-profit operator	▫ Government can set many operating parameters through contract, including revenue sharing ▫ Non-profit may receive more materials, increasing diversion ▫ Community service operators provide employment for the developmentally disabled ▫ Non-profits historically engage in more education of generators ▫ WY examples (CES drop site operations in Fremont County)	▫ Government less likely to be able to "contract away" operating risks ▫ Government site search may trigger price hikes in eligible parcels ▫ Few WY examples for composting or C&D operations _____
For profit developer/ owner	For profit operator	▫ Can achieve diversion without government investment ▫ Less risk to government ▫ Private operator more likely to do full processing (versus partial processing or transfer) operations ▫ May be greater economic sustainability & higher revenue sharing with government ▫ WY examples (Powell curbside collection, Jackson Curbside Inc.)	▫ No government control ▫ “Cherry-picking” of materials ▫ May be low diversion
Non-profit owner	Non-profit operator	▫ Non-profit may receive more materials, increasing diversion	

		▫ Community service operators provide employment for the developmentally disabled ▫ Non-profits historically engage in more education of generators ▫ WY examples (ARK MRF in Laramie, MCS MRF in Cheyenne, URI facility in Evanston, PVR MRF in Powell)	

Each of these scenarios includes different development and operational costs for local or regional governments. For example, each scenario will require public resources on some level for permitting (land use/special use, environmental, and solid waste) and site zoning variances (if needed). For the public ownership/operation scenario, additional costs will be incurred for siting, land purchase, facility design, construction (including site clearing/grading), construction quality assurance, equipment procurement and installation, facility start-up, operations, insurance/risk assessment and (eventually) facility decommissioning.

For public ownership/for- or non-profit operation scenarios, these resources may be shared with the operator to a degree that varies with the contractual relationship. Additional government costs for these scenarios will include the contractor procurement process (development and issuance of a request for bids/proposals and negotiation of a contract) as well as the on-going contract administration, invoicing and payment activities. Depending on the negotiated contract term, the procurement process may need to be repeated several times during the life of the facility. Obviously, the private sector ownership/operation scenario will incur the least costs to public agencies, albeit at the loss of control over operations and diversion.

<u>Other Factors that Affects Most Processing Infrastructure</u> -

- Site selection can be politically contentious, as well as technically and legally challenging - should consider
  - Central location within the service area
  - Good access to highways for both haulers bringing materials to the site & transportation to markets
  - Local zoning code compliance - these facilities are typically sited in areas zoned for general or light industrial use
  - Setbacks - local building codes typically establish these for all sides of the facility, as well as maximum building height
  - Additional buffer zones within the property - as needed to minimize nuisance impacts on neighbors
  - Availability of utilities - access to water, sewer, electricity, phone & internet access (where scale houses are separate from facility offices, a communications cable will also be needed between the two)
  - Ability to mitigate pollution - including storm water controls & design/operations to minimize nuisances such as light, noise & dust (local codes or ordinances may regulate these also)

BOULDER COUNTY CONSTRUCTION AND DEMOLITION INFRASTRUCTURE STUDY, MATERIALS GENERATION ESTIMATE AND MARKET ANALYSIS

Prepared For:
Boulder County Resource Conservation Division

Prepared By:

1. Executive Summary and Background

At the request of the Boulder County Resource Conservation Division, this report was conducted to assess the generation of Construction and Demolition waste in Boulder County and to recommend a course of action based on an analysis of diversion potential, market viability, and facility design.

The report finds that Construction and Demolition (C&D) waste represents 20-40% of the total generated waste stream in Boulder County, or about 120,000 tons of material generated per year. Of this amount, the vast majority is currently sent to landfills outside of the County's borders, and only a small fraction is being diverted through recycling.

In accordance with its Zero Waste goals, the County called for an investigation into the potential markets for commodities produced by C&D activities, and the recycling potential for C&D waste materials. This report finds that there are established recycling options for many of the materials common in the C&D waste stream, and that the inconvenience and economic hardship of recycling these materials in separate locations across the Front Range often prevents industry professionals from taking advantage of available diversion alternatives. Considering the existing markets for many of these materials, it is within the realm of possibility for the County to economically provide infrastructural support to the C&D community in order to increase diversion rates.

One way that the County could provide this support would be to create a transfer station for C&D materials that would act as a centralized collection point for materials which would otherwise be sent to landfills. Given the strength of regional and local markets, the County should not seek to compete with private organizations. The facility considered and outlined in this report is a transfer station for source-separated C&D waste designed to make recycling C&D materials more convenient and economical than landfills, and to operate on a break-even basis by charging fees for the drop off of material.

Based on a preliminary analysis, a C&D transfer facility could initially expect to receive between 19-65 tons of material per day, would require a minimum of 7 acres to provide adequate space for its operations, and would ideally be sited on a 10-12 acre lot to allow room for expansion. Future development of the facility is examined below, and includes consideration of material processing on site as a viable option for future expansion.

A cost estimate places the total cost of constructing a facility of this type between $7,000,000-15,000,000, with annual operating expenses in the range of $300,000-550,000. Depending on the actual operating costs of the facility, as well as the waste diversion rate, an averaged, per-ton tipping fee could run $29-$47. An averaged fee would allow a flat rate across materials, where revenue from higher-value commodities offsets the losses incurred from recycling costly materials.

Such a facility could be owned and operated through a number of public/private partnerships, depending on the financial and logistical concerns of the County. It is the goal of this report to provide the information necessary to allow County officials to make an educated decision regarding whether or not to construct a facility for the transfer or processing of C&D wastes. Specific contractual arrangements will change the particulars of facility design, location, and operating model.

Overview: Currently, good condition insulation can be donated to used building materials yards for reuse by homeowners. Insulation manufacturer Johns Manville has indicated that they may be interested in developing a recycling program for this material, though this is still in research and development and any viable option is still 5-10 years from implementation.

- **Transfer Model:** Under this model the facility would accept material, consolidate and store it until sufficient stock had accumulated to warrant transfer to either a reuse yard or to a fiberglass recycling facility to be turned into new products.

- **Processing Model:** In the event that a recycling process is developed that pre-processes fiberglass insulation, a C&D facility could process material prior to shipment. Note that processing fiberglass insulation may pose a significant health hazard for handlers, particularly if any processing (such as shredding) is involved.

No operational analysis table has been included in this sub-section because no data is currently available on costs of such an operation.

Recommendation: Due to the health and air quality hazards associated with processing fiberglass insulation (i.e. shredding, etc.), as well as the lack of current processing technology at present, it is not recommended that processing insulation be an option in Phase 1. Some insulation could be accepted as a reusable durable good if sufficient quality controls were implemented. Given the difficult nature of handling this material, the best option during Phase 1 is to accept only reusable fiberglass insulation for transfer as a used building material. If an arrangement can be worked out with a private entity to have them accept, handle, and manage this material, such a diversion alternative might be beneficial considering the County's Zero Waste goals.

4.3.4 Painted/Stained/Treated Wood and Wallboard

Overview: Painted and otherwise treated wood and wallboard cannot be recycled along with other clean items due to risk of contamination by chemical treatments. Some reusable pieces of material can be transferred to used building material yards, but the majority of this material –including all treated wood- should not be accepted by a C&D facility during Phase 1.

It is possible to plane painted wood and wallboard to remove the painted material from each piece. Given demand for quality lumber, this may become a viable opportunity in the future, but should be saved for future expansion of the facility.

Recommendation: At the time of writing there are no recycling options available for this material, and it should not be accepted by a C&D facility. In the future, if markets develop and recycling alternatives come online, the facility could consider accepting treated wood.

5. Conceptual Site Plan

Overview: This section presents one possible arrangement for a C&D transfer facility based on the handling models presented in Section 4. There are many forms that a facility of this type could take, and the design presented below is intended to establish a basic

understanding of the capabilities, size, operational flow and physical requirements of a transfer station for C&D materials.

5.1 Assumptions

Section 5.1 discusses the assumptions that inform the conceptual site plan. Several assumptions underlie the design of the facility:

- During the first phase of development, the facility will only accept material for transfer, with processing capabilities to come during later development.
- The transfer station will accept material as source separated loads, and will not have equipment on site to accept or to sort mixed loads of C&D wastes.
- Ideally, all materials handled by the facility would be kept under cover and protected from the elements in order to protect the commodities and minimize storm water pollution.
- The ideal design of the facility would accommodate large end-dump trucks, with a ceiling about 40ft-high, however actual limitations on roof height may preclude this option.
- The preliminary site plan is designed to illustrate the minimum space required to transfer all of the materials included in Phase 1, as well as provide the minimum amount of space for a Phase 2 expansion.

5.1.1 Materials Accepted

As discussed, the design of the transfer station can be divided based on phases of development. The materials that are considered for the initial build out, Phase 1, are:

- Aggregates
- Cardboard
- Ceiling Tiles
- Clean Wood
- Durable Goods and Reusable Building Materials
- Pallets
- Plastic Film
- Scrap Metal
- Vinyl Composite Tiles

Phase 2 of the facility build out is meant to incorporate consideration for materials that may develop markets within the next 5-10 years. While some materials may develop viable markets in this time, it is possible that not all of them will, or that materials not discussed here may become a priority. Phase 2 is meant to account for additional expansion as it becomes necessary. The materials targeted for future inclusion based on market growth are:

- Asphalt Shingles
- Commercial Roofing Membrane
- Fiberglass Insulation
- Plate Glass
- Clean Gypsum Wallboard

Phase 2 considerations also include adding processing capabilities for some materials depending on the market demand.

Phase 3 materials are not directly addressed in this conceptual plan, although space is provided to accommodate unexpected expansion and new materials in the event that this becomes necessary.

5.1.2 Site Assumptions

The conceptual site plan does not take into account the topographical and geographical particulars that are inherent to any actual parcel of land. For simplicity, and to make the site plan generally applicable, the site used in this model makes the following assumptions:

- The parcel is a North/South oriented rectangle approximately 430ft x 710ft or 300,000sqft (6.8 acres)
- The building is covered by a pre-engineered steel canopy tall enough to accommodate dump and roll-off trucks (30ft), and wide enough to provide a slight eave (10ft) over the walls.
- The building has concrete walls on four sides to keep out storm water, while leaving openings to accommodate trucks entering and leaving. This design also provides air flow between the walls and roof in order to improve interior air quality and reduce construction costs. Note that the building could also be designed as a fully enclosed steel, wood, or concrete structure.
- The building rests on a reinforced concrete slab.
- The area of the building is approximately 375’ x 260’, or 97,500 sq ft.

5.2 Preliminary Schematic

Figure 5.1 illustrates one possible site layout for the initial Phase 1 build out of the transfer station and is meant to provide a basic understanding of the traffic and operational flow of a facility with the capabilities discussed in Section 4.

The diagram below is not meant to be an architectural drawing, and the actual engineering, architecture, and site design will vary greatly depending on the realities of both budget and site specifics.

5.2.1 Site Layout and Operational Flow

Upon entering the facility, all incoming traffic is weighed in at the scale house, where it will be weighed again upon exiting to determine appropriate dumping fees. If different materials are charged at different rates, trucks might need to be weighed additional times between loads. The transfer station building is serviced by roadways on site that direct incoming traffic to one of three areas:

1. Contractor/Hauler Material Drop Off: The main structure contains a series of concrete bunkers which are dedicated to each material accepted by the facility. These bunkers are arranged along the outer walls of the structure, with room enough in between rows for roll-off and similar sized trucks to back into each bay. The bunkers are constructed out of concrete blocks that are moveable by a number of different rolling stock machines equipped with lifting forks. As such, the bays can be altered to accommodate the evolving needs of the transfer station throughout its operation.

Each bay is equipped with additional space for 1-2 roll-off containers. Incoming material is dumped into the bay, where it is transferred to roll-offs to await hauling to its end market.

2. Loading Dock: The facility is equipped with pallet storage area and an elevated loading dock to facilitate the transportation of palletized goods to end markets, as well as receiving materials and supplies for the transfer station when necessary.

3. Public Material Drop Off: An optional amenity that is shown in this rendering is a parking lot with small dumpsters to accommodate smaller, residential material drop off. The aim of this area is to provide a separate area for small vehicles to drop off C&D waste material in small quantities, avoiding the potential hazard of having these customers occupy the same space as larger commercial operators. The parking area also provides space for facility staff to park their vehicles.

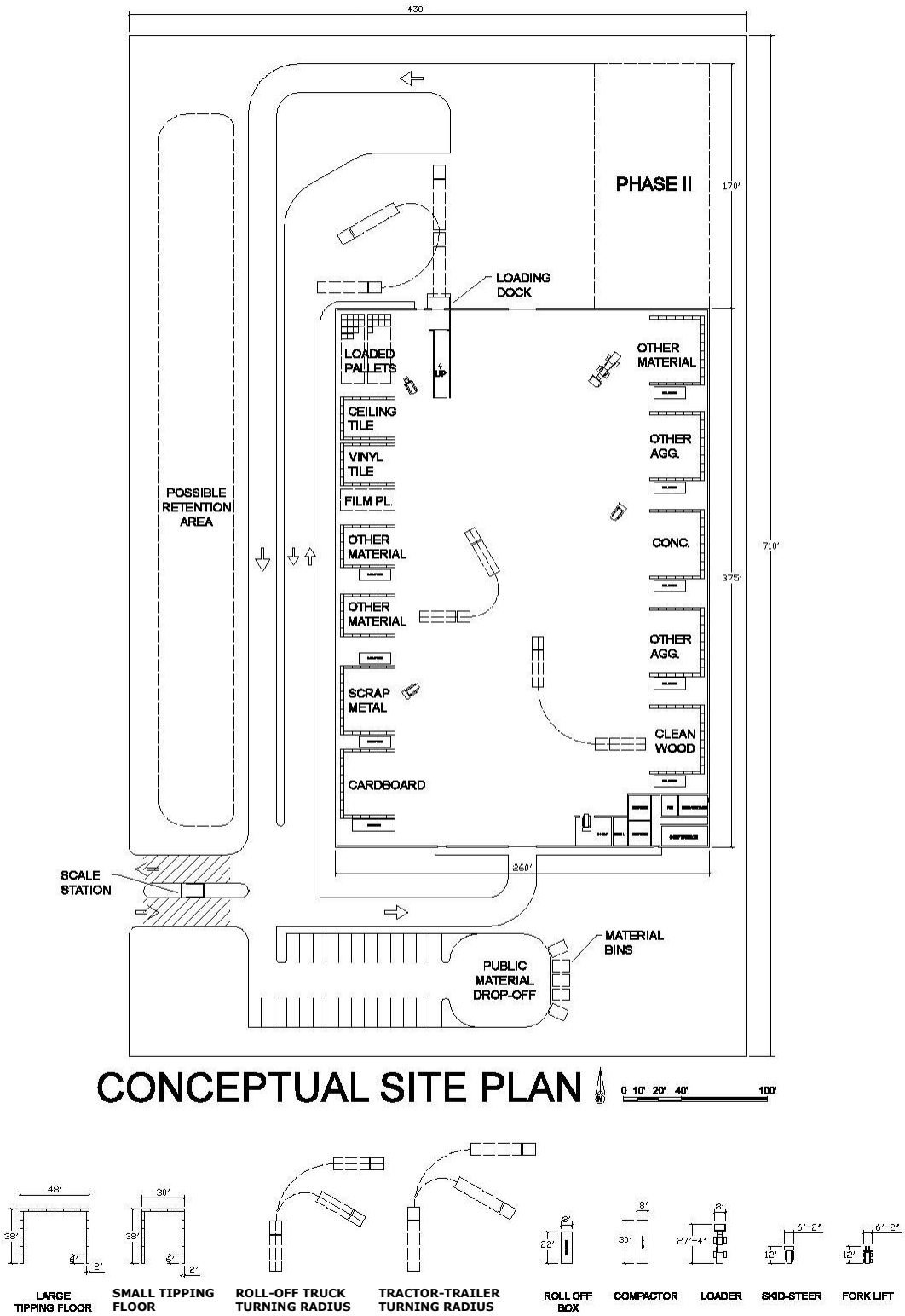
5.2.2 Additional Site Features

Offices and Support Building: The site design incorporates an administrative support area into the design of the main building, with approximately 1500 sq ft of office space for administrative operations. The support area also includes room for restrooms, a break room, and a maintenance area to provide support for the daily operations of the facility.

Further Expansion: The conceptual site plan includes space to expand the operations of the transfer station depending on the future needs of the facility. An area of about .3 acres is set aside to accommodate Phase 2 development should the need arise. Furthermore, the use of concrete block in the design of material holding bays will allow increased flexibility during expansion.

The area designated for Phase 2 expansion is designed to fit a wood/shingle grinder if it becomes economically viable to add processing capabilities to the facility. It is also designed to accommodate additional material bays, either to hold new materials or processed materials post-grinding.

Figure 5-1 Conceptual Site Plan



5.2.3 Site Requirements

Siting the C&D transfer station will require careful attention to the land use codes of Boulder County, as well as its incorporated municipalities. The County and its municipalities all have comprehensive development plans that will limit the number of viable sites significantly due to a limited selection of industrially zoned properties. Ideally, the facility would be sited on a parcel that offers convenient access for both contractors bringing in material, and haulers taking material away to end markets.

Zoning: The proposed facility would be considered either a large recycling collection center or a solid waste transfer station as described in the Boulder County code, Section 4-112. As such the facility will need to be sited in an area that is zoned for General Industrial use. Currently, each municipality, as well as the unincorporated County, has land designated for industrial use, though finding an available and desirable parcel of land may still pose a challenge.

Utilities: The facility will require access to water, electrical, and sewer utilities, and may need to be sited in an incorporated municipality in order to have access to these resources. In order to accommodate the offices on site, the facility should also have telephone and internet access. The location of utility lines will bear on the orientation of the building on the selected site, and it should be noted that if the scale house is located separately from the administrative office, communications cable will need to be run to connect the scale to the facility.

Setbacks: Industrially zoned properties will likely require additional setbacks than those illustrated in the conceptual site plan. Boulder County's code defines industrial setbacks to be 60' in front, 12' to the side, and 20' from the rear of the property border. Additionally, industrially zoned land has a building height limit of 50'.

Pollution: The main pollution concerns for the proposed facility are light, sound, storm water, and dust. Both Boulder County and the City of Boulder, have light pollution ordinances requiring new construction to maintain its light on site through the use of cut-off lighting fixtures. Any outdoor, nighttime lighting on the facility will need to comply with the appropriate regulations depending on the municipality it is sited in.

Noise pollution generated by truck traffic, processing equipment, and rolling stock will need to be mitigated through additional fencing and landscape barriers between the site and its neighbors.

Dust is likely to be produced by dumping, moving, and loading C&D materials, and will certainly be produced during Phase 2 if processing occurs on site. Dust control measures include forced-air circulation and water-mist suppression systems. The facility floor will also accumulate dust throughout the course of each day, and should be cleaned each night with a sweeper. Materials may track out of the facility after being picked up by truck tires and the roadways around the facility should be swept regularly, with the interior being swept as needed.

Fully enclosing the building, rather than leaving open space under the roof would significantly reduce pollution concerns, though it would raise concerns regarding interior air quality, and would likely increase construction costs.

Storm water: Storm water run-off from concrete, asphalt, and other hardscape surfaces must be diverted from running directly into streams, rivers, and other public waterways. Depending on the siting of the facility, water could be channeled to the public storm sewer system, however retention ponds will need to be constructed to store and release storm water at a controlled rate and to monitor water quality.

The preliminary site schematic calls for all materials to be stored under a roof and protected from the elements with bunker walls, reducing the likelihood of storm-water contamination. Nevertheless, it may become necessary to test the cleanliness of stored water, and possibly clean it, prior to releasing the water into public waterways. The specifications for the size and placement of a retention pond will depend on a site review once a location and final design have been chosen.

Traffic: The preliminary schematic places the scale and scale house at the edge of the parcel. This placement is meant to illustrate that a scale must be placed prior to any dumping area. The realities of scale traffic will require a driveway or run-up to accommodate a queue line in front of the scale in case multiple trucks are entering at the same time. Furthermore, the roadways leading to/from the facility must have acceleration/deceleration lanes to accommodate large trucks entering and leaving the facility without disturbing normal traffic.

The designer of the final building must decide what types of vehicles the facility is going to accept material from. Specifically, end-dump tractor-trailers can pose problems for a roofed facility since they require a roof some 40ft high in order to provide sufficient clearance during dumping. While roll-off trucks and dump trucks can maneuver and dump efficiently under a roof of about 30ft, end dump trailers will not be able to dump in such a building, though they could be loaded with material to be hauled to end markets.

Furthermore, both the interior roadways as well as those surrounding the facility along transit routes must be rated to hold large vehicles. If the facility is to be exporting material on fully-loaded end-dump trailers, the maximum vehicle weight is likely to be about 40 tons.

The size and type of vehicles that the facility accepts material from will determine the traffic pattern in and around the transfer station. Whether or not material is accepted from tractor trailers, it is likely that some materials will need to be hauled away to end markets using larger trucks. The site schematic presented above is designed to accommodate the larger turning radius of tractor-trailers as well as smaller trucks; however the siting of the facility must also take this into account.

Efficiencies: Depending on the way that material will be exiting the facility, accepting material from end dump trailers may not be desirable. The material being accepted by this facility will be hauled to processors and end markets using roll-off containers and, at most, 22 ton end-dump or other tractor-trailer rigs. Accepting loads from these large trucks (20-22 ton) will not allow for any added efficiencies, since the same type vehicles (or smaller) will be hauling the material away.

5.3 Rolling Stock and Equipment

Table 5-1 Details the estimated equipment needs for the proposed facility.

Table 5-1 Rolling Stock and Equipment Needs

Equipment	Example Manufacturers	Example models	Quantity		Primary Uses	Purchase Price	Operating Costs	Average Life Span	FTE's to Operate
			Low	High					
Loader	John Deere	544K	1	1	Heavy duty material handling and loading	$240K-$265K	$5-$6K (Fuel) $2-$3K (Maint.)	10-15 years	1
	Caterpiller	IT38H							
Skid Steer	Bobcat	S-650	1	2	Medium duty material handling and loading	$38K-$45K (w/attach.)	$3-$4K (Fuel) $2-$3K (Maint.)	8-10 years	1
	Caterpiller	252B Series 3							
Forklift	Toyota	5K# 8S	1	1	Light duty material handling and pallets	$28K-$32K	$1K-$1.5K(Fuel) $400-$500 (Maint.)	6-8 years	0.5
	Hyster	H50FT							
Parking Lot Sweeper	Schwarze	S235	1	1	Debris removal from hardscape	~$55K(New) ~$25K (Used)	$3K-$4K (Fuel and Maint.)	5-6 years	0.25
	Tymco	210							
Stationary Compactor	Marathon	RJ-400	0	1	Increase hauling capacity for OCC	$9K-$12K (w/box)	$400-$600 (Elec.) $400-$600 (Maint.)	5-6 years	--
	Wastecare	ST-31							
Roll-Off Box	May Mfg.	Tub-style	Numerous		Material storage and transport	$3.5-$4K	$100-$200	10-15 years	--
	Troth Ent.	Square							

The proposed equipment needs are designed to accommodate the materials present in Phase 1 and 2. As the facility ages, it may accept more material, different kinds of material, or handle materials differently. Additional equipment will likely be required to accommodate processing capabilities, and is included in the cost estimate for each material, respectively.

5.4 Personnel Requirements

Table 5-2 Details the Estimated Personnel required for the proposed facility.

The following proposed staffing solution is designed with the Phase 1 build out in mind. In the future, the transfer station may add processing capabilities, in which case additional personnel will be required. The facility will almost certainly receive more material as it ages, and personnel requirements should increase according to operational needs. The low estimate for personnel needs represent the bare minimum staff that would be required to operate a facility. Operational efficiencies would decrease with understaffing, and this estimate is meant to illustrate the cheapest amount of employees possible. The high estimate would be the ideal staffing from an operational standpoint, as it provides ample employees to handle both materials and customer service.

The personnel requirements take in to account the staff that would be needed to operate each piece of equipment on site, as well as administrative support staff. The Scale House Attendant and "Other Yard Staff" positions are flexible designations, and are meant to represent staff who could serve multiple roles. For example, under the minimum staffing situation, the scale house attendant might be available to operate a forklift as needed. Finally, the Marketing/Outreach Coordinator is responsible for developing market relationship with potential purchasers as well as increasing diversion through education and outreach to the community.

The County might choose to outsource the operation of the C&D facility to a private organization, a full discussion of which can be found in Section 6.6.

Table 5-2 Personnel Requirements

Title	FTE's	Job Description	Quantity	
			Low	High
Site Supervisor	1	Supervises equipment operators and general operations	1	1
Heavy Equipment Operators	0.5	Operates rolling stock equipment	2	4
Other yard Staff	0.5	Fills various roles as needed	1	2
Mechanic	0.25	Repairs heavy equipment as needed	0	1
Scale House Attendant	0.5	Processes incoming traffic and provides weight tickets	1	1
Marketing/Outreach Coordinator	1	Finds and maintains markets, increases diversion through education and outreach	0	1

5.5 Air Quality and Hazardous Materials Concerns

Air Quality: The site design presented in this report calls for a building that is partially enclosed, with space between the outer walls and roof to allow air to circulate through the structure. Due to commercial traffic and rolling stock exhaust generation, adequately ventilating the structure is important for worker safety. In a fully enclosed facility, adequate ventilation systems should be included in the design to minimize interior air pollution.

Dust Control: Materials such as aggregates, wood, wallboard, and asphalt shingles can all produce dust when they break apart, causing air quality concerns. Phase 1 of site development does not call for any processing to take place on the site, and concerns over hazardous dust are limited. Phase 2, however, suggests that some processing may in the future become a viable option at this facility, and consideration should be given to air quality control should this become a reality. Water-misting dust control systems can reduce the spread of dust off site, and should be considered along with any proposal to begin grinding material at the transfer station. It should be noted, however, that as the proposed building is not heated, water-based dust control systems will be subject to freezing temperatures and may not be able to operate in the winter.

Hazmat: Hazardous materials should be considered contamination in the waste stream and penalties should be charged for loads that are found to be contaminated after acceptance. If hazardous materials are visibly present in incoming loads, the loads should not be accepted to minimize worker exposure to harmful materials. Materials that should be considered hazardous include but are not limited to:

- Toxic chemicals or chemical residue
- Household hazardous materials
- Moldy or wet materials
- Asbestos
- Contaminated soils

UPPER ARKANSAS AREA COUNCILOF GOVERNMENTS RECYCLING PROGRAM INTER-GOVERNMENTAL AGREEEMENT

Appendix M

AGREEMENT
for the Participation
with the
_____ PROGRAM

This Agreement, entered into as of this _____ day of _____, 2011 by and between the _____and _____, a duly authorized political subdivision or government in the State of Colorado, hereinafter referred to as the "LOCAL AUTHORITY".

WITNESSETH:

WHEREAS, the UAACOG is organized within the State of Colorado for the purpose of providing technical assistance and the collaboration of efforts between counties, communities, and entities within the Upper Arkansas Valley region of the state of Colorado, and

WHEREAS, certain counties, communities, and entities within the area which is served by the UAACOG wish to, on a voluntary basis, provide for the pickup, consolidation, and sale of certain types of recyclable materials within the Upper Arkansas Valley region of the state of Colorado, and

WHEREAS, these certain counties, communities, municipalities and entities within the area which is served by the UAACOG wish to provide for the administration of the Upper Arkansas Recycling Program (PROGRAM), and

WHEREAS, the LOCAL AUTHORITY wishes to become a Participant in the PROGRAM and provide for the pickup, consolidation, and sale of certain types of recycled materials from within its jurisdiction.

NOW, THEREFORE, in consideration of the mutual covenants and obligations herein expressed, it is agreed by and between the parties hereto as follows:

Section 1 - This Agreement shall commence on the date of signing in duplicate originals by the parties and shall continue until December 31, 2012 or until terminated as herein provided.

Section 2 - Each county, community, or other entity, who becomes a Participant in the PROGRAM by the signing of this agreement shall have the right and duty to designate one representative to serve as a Director on the Advisory Board of the PROGRAM.

Section 3 - The appointing LOCAL AUTHORITY may change their appointed director to the Advisory Board at any time.

Section 4 - The UAACOG shall exercise the powers incidental, implied, expressed, or necessary for the accomplishment of the purposes of the PROGRAM as provided hereunder by this agreement.

Section 5 – The UAACOG is hereby authorized, in its name, to do all acts necessary for the exercise of the foregoing powers, including, but not limited to, the following: (a) to coordinate and manage the funding, construction, operation, and maintenance of the PROGRAM, (b) to charge rates, tolls, or fees in connection with the operation of the PROGRAM, (c) to contract for goods and services, (d) to acquire, construct, manage, maintain, operate, or dispose of any buildings, works, improvements, or other facilities needed by the PROGRAM, (e) to incur debts, liabilities, or obligations (subject to budget limitation and TABOR) provided that no debt, liability, or obligation shall constitute a debt, liability, or obligation to the Participants, without express written consent of the elected officials of the Participants and after full compliance with Colorado constitutional and statutory provisions relating to

authority of local elected officials' ability to obligate a governmental entity by incurring debt, (f) to apply for, accept, receive, and disburse grants, loans, and other aid from any governmental entity or political subdivision thereof or any other income from any source, (g) to approve or deny, on an annual basis, additional participation in the PROGRAM, and (h) to carry out and enforce all provisions of the agreements and policies of the PROGRAM.

Section 6 - That, while it is contemplated that the PROGRAM shall strive for self-supporting economic status, it is realized that a subsidy, not to exceed $1.30/person/year, will be necessary in the form of payment from the Participants in the PROGRAM in order to render the PROGRAM capable of operation.

Section 7 - It is the intent of the parties that the funding of the PROGRAM by each Participant be provided in substantially the same proportion as the population that each Participant bears to the combined population of all the Participants.

Section 8 - The LOCAL AUTHORITY will be responsible for purchasing, leasing, or otherwise making provision for the professional made, fiberglass containers to be placed in a location selected at the discretion of the LOCAL AUTHORITY. Said containers shall be utilized by the residents of the LOCAL AUTHORITY, for the collection of approved recyclable materials. Said containers must be of the same or compatible manufacture as those authorized for use by the UAACOG.

Section 9 - The LOCAL AUTHORITY shall maintain the area around the containers in a neat and clean condition, and shall maintain signs and instructions on the use of the containers.

Section 10 - The LOCAL AUTHORITY shall be required to notify the UAACOG immediately at such times as one or more of the collection containers is at or near a state of overflowing.

Section 11 - The LOCAL AUTHORITY shall be responsible to ensure that the containers are kept in a serviceable condition. In the event of damage or destruction of a container, the LOCAL AUTHORITY shall make arrangements to repair or replace said damaged container within one week of being notified by the UAACOG that the container is not serviceable, however damage to the containers by contractors of the PROGRAM will be the sole responsibility of the contractor. Such damage must be repaired within forty-eight (48) hours.

Section 12 - Any Participant, as a signer of this Agreement, may terminate its participation in the PROGRAM by written notification, to the UAACOG, signed by that Participant's authorized official, no later than ninety (90) days prior to the start of the new fiscal year of the UAACOG (January 1). Such notice is to allow the UAACOG time to make necessary budgetary alterations made necessary by the termination. The Board of Directors of the PROGRAM may waive the notice requirement should it be in the best interest of the PROGRAM.

Section 13 - That some of the debt of the PROGRAM may be serviced by fees levied upon the Participants of the PROGRAM on an annual basis. For this reason, termination of one or more individual Participants will require that a prorated share of that debt will have to be paid off or assumed by the terminating Participant. Debt that is serviced by other income will not be subject to this requirement. The parties understand and agree that the only funds that have or may be appropriated and available for payment under this Agreement in any one particular fiscal year are for the operating expenses of the PROGRAM. Notwithstanding anything to the contrary in any agreement relating to the PROGRAM the payment by a Participant of any other charges, liabilities, cost guarantees, fees, waiver and any awards thereon of any kind are contingent upon funds for such purpose(s) being appropriated by the governing board of the Participant, budgeted and otherwise made available. The obligation of any Participant to pay current charges of PROGRAM for each operating year of the PROGRAM shall constitute a current expenses of each Participant, payable exclusively from the Participant's funds and

shall not in any way be construed to be a general obligation indebtedness or other multiple fiscal year financial obligation.

Section 14 - That the parties realize that when this Agreement is terminated and the PROGRAM is dissolved, the UAACOG may own property, both real and personal, and may have other assets relating to the PROGRAM. The parties agree that all such property of the PROGRAM shall be disposed of in a manner in accordance with the policies of the UAACOG.

Section 15 - In the event any provisions of this Agreement are determined to be illegal or unenforceable for any reason, all other provisions of this agreement shall remain in full force and effect unless and until otherwise determined. The illegality of any provision of this agreement shall in no way affect the legality and enforceability of any other provisions of the Agreement.

IN WITNESS WHEREOF, the parties, hereto have hereunto authorized the execution of the within Agreement as of the date and year first above written.

UPPER ARKANSAS AREA COUNCIL OF GOVERNMENTS

By:_____
Chairperson of the Board, UAACOG

Attest:_____
Executive Director, UAACOG

LOCAL AUTHORITY:

FOR THE TOWN OF _____:

By:_____

Attest:_____

_____ appoints as their Director to the Advisory Board of the Upper Arkansas Recycling Program, _____.

Contact information for the appointed representative:

Email:_____

Telephone:_____

Address:_____

TEXT OF PROPOSAL FOR COUNTY-WIDE RECYCLING FACILITIES AND SERVICES SALES AND USE TAX, REVENUE BOND AND INTERGOVERNMENTAL AGREEMENT, APPEARING ON THE NOVEMBER GENERAL ELECTION BALLOT AS "COUNTY ISSUE 1A":

RESOLUTION NO. 94 - 162

9. **THAT** the net proceeds from the sales and use tax received by the County of Boulder shall be expended by the County of Boulder for the following purposes:

(a) To acquire an interest in real property, in fee title or other interest sufficient to site, and to construct, maintain and operate a solid waste recycling facility;

(b) To acquire an interest in real property, in fee title or other interest sufficient to site, and to construct, maintain and operate composting facilities, and public drop-off sites for compostable materials;

© To pay for all related costs of such acquisition and construction;

(d) To acquire, maintain and operate equipment for the recycling and composting facilities;

(e) To contract for the operation of a recycling and composting facilities;

(f) To contract with trash haulers for the collection of recyclable and compostible materials, and for the delivery of such materials to the recycling and composting facilities;

(g) To develop and improve local markets for recyclables;

(h) To expand and diversify recycling, composting and source reduction programs;

(I) To increase public awareness of the importance of solid waste management in protecting public health and the environment;

(j) To educate the public about source reduction, recycling, composting, resource recovery, and disposal of solid waste;

(k) To accept and offer grants; and

(l) To pay the costs of issuance and debt service of the revenue bonds, including principal and interest thereon, as authorized by this resolution.

10. **THAT** it is the intent of the Board, **based on recommendations from the Solid Waste Task Force and the Consortium of Cities**, that the County and political subdivisions within the County enter into an intergovernmental

agreement to coordinate decisions with respect to the expenditure of revenues derived from the sales and use tax, **if approved by the voters, the collection of solid waste county-wide, the operation and maintenance of the recycling and composting facilities, and other efforts deemed necessary to achieve the purposes set forth above. In connection therewith,** the Board specifically authorizes the County to enter into a multiple- fiscal year financial obligation in the form of an intergovernmental agreement to accomplish these purposes, **to be payable solely from the proceeds of the sales and use tax authorized in this Resolution.**

INTERGOVERNMENTAL AGREEMENT CONCERNING SOLID WASTE MANAGEMENT, RECYCLING, AND COMPOSTING

This agreement made and entered into this_____day of_____, 1995 by and between BOULDER COUNTY, a body politic and corporate, and the CITIES OF BOULDER, BROOMFIELD, LAFAYETTE, LONGMONT, LOUISVILLE and the TOWNS OF ERIE, LYONS, JAMESTOWN, NEDERLAND, SUPERIOR, AND WARD, each a municipal corporation (the parties may be referred to hereinafter individually as "party" or jointly as "parties"), superceding all prior agreements designated by this title,

WITNESSETH:

WHEREAS, the parties are authorized to enter into this intergovernmental agreement pursuant to Section 29-1-201, et. seq., C.R.S.; and

WHEREAS, the parties wish to encourage proper source reduction, recycling, composting, resource recovery and disposal of solid waste, and to increase public awareness of the importance of solid waste management practices in protecting public health and the environment; and

WHEREAS, in order to further such aims, the parties have determined that solid waste, recycling and composting

facilities ("facilities") should be sited, acquired, constructed, leased or contracted for, operated, and maintained through this intergovernmental agreement to provide essential services to the parties and their citizens; and

WHEREAS, this intergovernmental agreement is also intended to promote coordination of educational and collection efforts of and by the parties; and

WHEREAS, significant cost, organizational, and promotional efficiencies can be realized if the facilities are sited, acquired, constructed, leased or contracted for, operated, and maintained jointly by the parties through a durable intergovernmental agreement.

NOW, THEREFORE, in consideration of the mutual covenants and commitments made herein, the parties agree as follows:

I. CREATION OF A BOULDER COUNTY SOLID WASTE MANAGEMENT, RECYCLING AND COMPOSTING AUTHORITY

A. The parties hereby create the Boulder County Solid Waste Management, Recycling and Composting Authority ("Authority"), which will have the power and duty to site, acquire, construct, lease or contract for, operate, and maintain the Boulder County Solid Waste Recycling and Composting Facilities and related equipment ("facilities"), and to coordinate educational and collection efforts pursuant to the terms of this intergovernmental agreement.

B. The term "solid waste" in this agreement shall exclude waste defined as a "hazardous substance" under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), but nothing herein shall preclude the Authority from administering programs which handle wastes which are exempt from regulation as hazardous wastes, including without limitation household wastes, and solid waste

from commercial or industrial sources that does not contain hazardous waste as those terms are defined under the Rsource Conservation and Recovery Act (RCRA), so long as such wastes continue to be exempt.

C. All parties shall be entitled to appoint one member and an alternate to the board of directors of the Authority, and additional parties may join as members by executing this intergovernmental agreement. Although it is anticipated that decisions will be made by consensus, any party may require that a formal vote be taken. Except for votes taken pursuant to Paragraphs I.E. and I.L., below, a majority of the formal votes present and voting at a board meeting convened in accordance with the by-laws shall be required for any action of the Authority. For passage, a "formal vote" shall require a majority of parties present and voting plus a majority of population represented by the parties present and voting. A formal two thirds majority vote, where provided for in this agreement, shall require a two thirds majority of parties present and voting plus a two thirds majority of population represented by the parties present and voting. For the purpose of formal voting, each party shall be allocated a specific number of votes calculated with reference to the total population in such jurisdiction, including populations living outside Boulder County, except that Boulder County's vote shall be determined by the total Boulder County residents not located in another jurisdiction named in Paragraph 1 of this agreement. Population estimates shall be based upon the most current estimates of population which are accepted as accurate by a majority vote of the Authority.

D. Formal votes allocated to each party shall be changed as of January 1 of each year based upon the most current estimates of population which are accepted as accurate by a majority vote of the Authority, subject to judicial review. Votes shall be further adjusted as soon as the decennial United States census statistics become available, based on such statistics.

E. The board of the Authority shall have the authority to adopt by-laws with a formal two thirds majority vote, which may be amended only with a similar formal two thirds majority vote. The board of the Authority shall meet at least quarterly at a time and place to be set by the by-laws.

F. Parties may withdraw from this agreement, and such withdrawal shall be effective as of the January 1 following notice of intent to withdraw. Nothing in this paragraph or Paragraph V.A., below, shall preclude any amendment to this intergovernmental agreement at any time, provided that such amendment is signed by all the parties. Liability of a withdrawing party, if any under this agreement, shall be determined as of the effective date of withdrawal, rather than the date of notice thereof, unless otherwise agreed by the parties.

G. Title to any real or personal property acquired by the Authority and any facility built by the Authority shall vest in the Authority, and no party shall have any right to exercise any dominion or control over such property or facility except through the Authority. Upon the effective date of withdrawal of its participation in this intergovernmental agreement and in the Authority, a party forfeits any and all right, title and interest that it might otherwise have in such property or facility.

H. The Authority shall be a public entity separate from all of the parties. No debt, liability, or obligation of any party or of the Authority shall be imputed to any other party, and no debt, liability, or obligation of any party shall be imputed to the Authority.

I. The Authority is hereby authorized in its own name to perform all acts necessary for the exercise of its powers under the intergovernmental agreement, including without limitation the following:

1. To make and enter into contracts, including without limitation contracts of insurance and contracts either to receive or to provide services;

2. To apply for and accept grants, advances, and contributions;

3. To provide funding to the parties and other entities for the conduct of programs under the general purview of the Authority;

4. To employ or contract for the service of agents, consultants, and such other persons or firms as necessary, provided that the staff of the County Attorney's Office and the City Attorney's Offices of Boulder and Longmont shall jointly provide general legal services for the Authority at no additional cost to the parties;

5. To employ staff as necessary to carry out Authority programs, and adopt and implement appropriate personnel policies and procedures as required;

6. To make plans and conduct studies relating to solid waste recycling and composting in Boulder County, and to recommend revisions or amendments to comprehensive plans and ordinances to further solid waste recycling and composting in Boulder County, but in no case shall such recommendations override the authority of the entity which has adopted such plans and ordinances;

7. To site, acquire, construct, lease or contract for, operate, and maintain any building, works, improvements, or equipment, including without limitation the facilities, which may be located on multiple sites, subject to the zoning and other land use restrictions of the entity having jurisdiction over the site. No facility may be sited within the corporate boundaries or within one mile of the corporate boundaries of any party, without that party's consent.

8. To acquire, hold, or dispose of real or personal property;

9. To sue and be sued in its own name;

10. To incur debts, liabilities, or obligations;

11. To adopt annually a budget, in accordance with the state budget law, setting forth all administrative and operational and capital expenses of the Authority but without the power to assess any party therefore; and

12. To cooperate with Boulder County concerning collection of the up to .1 cent sales and use tax authorized by the voters on November 8, 1994, in order to permit such sales and use tax to be used for the siting, acquisition, construction, operation, and maintenance of improvements for the facilities and for the other purposes set forth in this intergovernmental agreement.

J. Each member and alternate shall serve at the pleasure of the governing body of the party which appointed that member and alternate.

K. A quorum of the board of the Authority shall consist of members or alternates representing a majority of the parties and a majority of the total population of the parties. The Authority may not convene a meeting in the absence of such a quorum.

L. In order to permit the Authority to take any budgetary action, including without limitation appropriating money or incurring indebtedness or purchasing real property, a formal two-thirds majority vote shall be required.

M. The Authority shall cause minutes of all board meetings to be kept and, as soon as possible after each board meeting, cause a copy of the minutes to be forwarded to each member of the board and to each alternate.

N. The Authority shall cause an annual audit to be made of its books, pursuant to Colorado law as it may be amended from time to time. This audit shall be provided to the governing body of each party.

II. PROGRAM DESCRIPTION

This intergovernmental agreement is entered into for the primary purposes of siting, acquisition, construction, leasing or contracting for, operation and maintenance of solid waste recycling and composting facilities. Such functions may be conducted directly by the Authority or may be conducted by an entity or entities under contract with the Authority. The intention is that facilities be constructed, leased or contracted for with funds derived from the up to .1 cent sales and use tax approved by the electorate on November 8, 1994, and be operated and maintained or leased or contracted for with such funds, and that after allocation of necessary debt service and operating and maintenance funds, the Authority make recommendations to Boulder County concerning allocation of the remainder of such sales and use tax in support of municipal recycling and composting activities and related collection, education and market development programs, and evaluation of such programs.

III. FINANCING

A. The Solid Waste Task Force appointed by the Boulder County Consortium of Cities identified two methods of funding to maximize solid waste diversion and source reduction goals in the county: imposition of a sales and use tax to fund the facilities and programs outlined above, and local user fees or taxes to promote local collection of recyclables. If at any time it is determined by the Authority that a portion of the county-wide sales tax should be used to fund collection of recyclables, the amount so designated shall be divided equally among all the residents of the county.

B. Boulder County agrees, pursuant to Boulder County Resolution 94-162, to dedicate the full up to .1 cent sales and use tax passed by the electorate on November 8, 1994 to the debt service, operation and maintenance costs of the facilities, and to consider the recommendations of the Authority for allocation of any remaining funds available from such sales and use tax after payment of all such costs.

C. The parties understand and agree that until otherwise directed by the Authority, Boulder County employees will administer the Authority for the benefit of all parties, under the direction of the board of the Authority as set forth herein.

IV. TERMINATION

A. This intergovernmental agreement shall terminate on December 31, 2001. The parties may enter into another intergovernmental agreement at that time.

B. Upon the expiration date of this agreement, or in the event of termination of the Authority by withdrawal of all parties or upon mutual agreement to terminate the Authority, and if there is a

successor public entity which will carry on the activities of the Authority and assume its obligations, then Authority assets and funds, including any interest earned on deposits, remaining upon termination of the Authority and after payment of all obligations shall be transferred to the successor public entity.

C. If there is no successor public entity which will carry on any of the activities of the Authority or assume any of its obligations, then Authority assets and funds, including any interest earned on deposits, remaining after termination of the Authority and after payment of all obligations shall be returned to the remaining parties to this intergovernmental agreement in proportion to the population of the parties remaining as of the termination date.

D. If there is a successor public entity which will undertake some of the functions of the Authority and assume some of its obligations, then Authority assets and funds, including any interest earned on deposits, remaining after termination of the Authority and after payment of all obligations shall be allocated by the board of the Authority between the successor public entity and the parties, utilizing the same criteria set forth in Paragraph IV.B, above.

E. In the event that the Authority is terminated, all decisions of the board of the Authority with regard to determinations of assets and funds to be transferred to parties or to any successors shall be final.

V. MISCELLANEOUS PROVISIONS

A. This intergovernmental agreement shall be effective as to each party upon ratification by that party. Any city or town in Boulder County, Colorado may become a member of the board of the Authority by presenting an adopted resolution or motion to the Authority which includes a request to become a member of the board and signature of this intergovernmental agreement as evidence of such intent.

B. Any amounts constituting a multiple fiscal year obligation pursuant to Colo. Const. Art. X, Section 20 shall be subject to annual appropriation or otherwise made consistent with Colo. Const. Art. X, Section 20.

C. Any party may withdraw from this intergovernmental agreement, subject to written notice, by presenting an adopted resolution or motion to the Authority. Such withdrawal shall be effective as of January 1 of the following year. The membership of any agency that ceases to have powers in common with the parties to this agreement shall terminate thirty days after such powers cease to exist.

D. The waiver by any party of any breach of any term, covenant, or condition of this intergovernmental agreement by another party shall not be deemed a waiver of such term, covenant, or condition for any subsequent breach of the same or of any other term, covenant, or condition of this intergovernmental agreement.

E. Any party shall have the right to enjoin any substantial breach or threatened breach of this intergovernmental agreement by any other party, and shall have the right to specific performance of this intergovernmental agreement.

F. This intergovernmental agreement is solely for the benefit of the parties hereto, and no third party shall be entitled to claim or enforce any rights hereunder except as expressly provided herein.

G. If any provision of this intergovernmental agreement or application thereof to any party or circumstances is held invalid by a court of competent jurisdiction, such invalidity shall not affect the other provisions of this intergovernmental agreement which can be given effect without the invalid provision or application; to this end, the provisions of this intergovernmental agreement are declared to be severable.

H. This intergovernmental agreement contains the entire agreement between the parties and shall not be amended or modified in any manner without such agreement or modification being agreed to and executed in writing by all the parties.

I. All notices to parties shall be deemed to have been given when mailed to the governing body of a party.

IN WITNESS WHEREOF, each party has executed its approval of this intergovernmental agreement and filed said approval with the County of Boulder, and said signatures are listed below or attached hereto:

BY-LAWS OF THE BOULDER COUNTY SOLID WASTE AUTHORITY BOARD

ARTICLE I - PURPOSE

Section 1.

The Boulder County Solid Waste Authority (the "Authority") was created pursuant to Section 29-1-201, et. seq., C.R.S., by the Intergovernmental Agreement Concerning Solid Waste Management, Recycling, and Composting, dated April 20, 1995 (hereafter "Agreement"), for the purposes set forth in that Agreement. That Agreement provides that the Authority will conduct its business and activities through a Board of Directors (hereafter the "board"). The board's activities shall be governed by that Agreement and by these by-laws.

Section 2.

These by-laws shall regulate the procedures of the board with respect to the internal management and government of the board. Nothing contained herein shall be construed to conflict with the Colorado statutes or any other law or regulation.

ARTICLE II - BOARD OF DIRECTORS

Section 1.

The board shall consist of representatives appointed by each party executing the Agreement. Each board member shall serve at the pleasure of the party he or she represents. In the event that a board member is unable to attend a meeting or meetings of the board, an alternate appointed by the jurisdiction represented by the absent board member may act in the absent board member's place. All board members, whether regular or alternate, shall serve at the pleasure of the governing body of the jurisdiction they represent.

Section 2.

Although it is anticipated that decisions of the board will be made by consensus, any board member may require that a formal vote be taken. Once so requested, voting shall be by formal vote as provided in the Agreement. Except for votes on emergency findings, by-laws and budgetary action, a majority of the formal votes present and voting at a board meeting convened in accordance with these by-laws shall be required for any action of the board. For passage, a majority shall require a majority of parties present and voting plus a majority of population represented by the parties present and voting. A formal two thirds majority vote for adoption of by-laws and budgetary action shall require a two thirds majority of parties present and voting plus a two thirds majority of population represented by the parties present and voting. An emergency finding shall require a two thirds majority of the total number of votes allocated to all of the parties to the Agreement. For the purpose of formal voting, the votes allocated to each party as of December 1, 1995 will be as follows:

City of Boulder: 94,706

City of Longmont: 52,258

Boulder County: 48,959

City of Broomfield: 31,430

City of Lafayette: 15,996

Town of Superior: 2,188

Town of Nederland: 1,541

Town of Erie: 1,292

Town of Jamestown: 352

For purposes of this allocation of votes, population estimates shall be based upon the most current estimates of population as of January 1 of each year, if such estimates are accepted as accurate by a majority vote of the board. Votes shall be further adjusted as soon as the decennial United States census statistics become available, based on such statistics.

Section 3.

In order to take any budgetary action, including without limitation appropriating money or incurring indebtedness or purchasing real property, a formal two-thirds majority vote shall be required.

Section 4.

The board shall have all of the powers vested in it by virtue of these by-laws, together with any other reasonable and necessary powers to carry out the purposes of the Authority.

Section 5.

The board may commit the Authority, but not any board member, or party to the Agreement, concerning any matter within the purpose of the Authority. The board may appoint any administrative staff that it deems necessary from time to time to manage the business affairs of the Authority, subject to approval of commitments of funds in the manner set forth in these by-laws. The duties of all members of the staff shall be specified in job descriptions decided by the board. The board may remove any such staff at its pleasure, and no staff member shall have any tenure or contractual right to retain his or her appointment in case of a vote of no confidence by the board.

Section 6.

The board shall hold regular meetings. Such meetings will be held the fourth Wednesday of each month. Special meetings of the board may be called at any time by the Chair or by any three board members. The Chair shall call a special meeting promptly upon receipt of a call by three board members. Special meetings shall be limited to the agenda set forth in the call. A reasonable period shall be set aside at all meetings of the board for the public to address the board. Board members shall be permitted to propose "new business" for the next meeting of the board. Subject to veto by the board, such new business shall be placed on the next board meeting agenda.

Section 7.

The call shall be mailed at least five days prior to any meeting of the board or received at the home or office of each board member at least twenty-four hours prior to such meeting. The call may designate any place in Boulder County for any meeting of the board. In case of an emergency, the meeting may be held by telephone or in some other convenient manner.

Section 8.

A quorum of the board shall consist of board members or alternates representing a majority of the parties to the Agreement and a majority of the total population of the parties to the Agreement. The board may not convene a meeting in the absence of such a quorum.

Section 9.

There shall be no proxies for meetings of the board. No board member may abstain in any matter not involving a conflict of interest for that board member. Any board member seeking to abstain without declaring a conflict of interest shall be counted as voting in the affirmative on the proposition at issue.

Section 10.

The board shall act only upon the affirmative vote of a majority of a quorum. Unless at least a formal majority vote of the total number of votes allocated to all of the parties to the Agreement finds that an emergency exists, no action shall be taken at any meeting of the board except on items set forth in the call.

A determination of an emergency shall be conclusive for all legal purposes.

Section 11.

In case of a tie vote of the board on any matter, a second vote shall be taken, and in case of a second tie vote, the item shall be postponed for a period of not less than 24 hours nor more than one month, at which time the board shall reconvene for a further vote, which may be by telephone or in any other convenient manner. If a third tie vote occurs, the matter shall be decided by a flip of a coin.

Section 12.

In all procedural matters not governed by these by-laws, the board shall be bound by the provisions of Robert's Rules of Order, Newly Revised (1990).

Section 13.

The board members shall serve without pay, but the board may authorize the payment of reasonable and necessary expenses incurred by board members in the performance of their duties.

Section 14.

As the decision-making entity for the Authority, the board has the following mission and functions, on behalf of the Authority:

a. To make and enter into contracts, including without limitation contracts of insurance either to receive or to provide services;

b. To apply for and accept grants, advances, and contributions;

c. To provide funding to the parties to the Agreement and other entities for the conduct of programs under the general purview of the Authority;

d. To employ or contract for the service of agents, consultants, and such other persons or firms as necessary;

e. To employ regular, part-time, and temporary staff as necessary to carry out Authority programs, and adopt and implement appropriate personnel policies and procedures as required;

f. To make plans and conduct studies relating to solid waste recycling and composting in Boulder County and to recommend revisions or amendments to comprehensive plans and ordinances to further solid waste recycling and composting in Boulder County, but in no case shall such recommendations override the authority of the entity which has adopted such plans and ordinances;

g. To site, acquire, construct, operate, and maintain any building, works, or improvements, including without limitation the facilities, which may be located on multiple sites, subject to the zoning and other land use restrictions of the entity having jurisdiction over the site;

h. To acquire, hold, or dispose of real or personal property;

i. To sue and act on behalf of the Authority should it be sued;

j. To incur debts, liabilities, or obligations;

k. To adopt annually a budget, in accordance with the state budget law, setting forth all administrative and operational and capital expenses of the Authority.

l. To cooperate with Boulder County concerning collection of the up to .1 cent sales and use tax authorized by the voters on November 8, 1994, in order to permit such sales and use tax to be used for the siting, acquisition, construction, operation, and maintenance of improvements for the facilities and for the other purposes set forth in the Agreement.

Section 15.

The board shall cause an annual audit to be made of the Authority's books, pursuant to Colorado law as it may be amended from time to time. This audit shall be provided to the governing body of each party to the Agreement.

Section 16.

The board may decide to administer programs which handle wastes which are exempt from regulation as hazardous wastes under state and federal law, including without limitation household hazardous waste. Any decision to accept this waste may only occur as a part of the Authority's annual budget process, and shall not be effective until January 1 of the following year. Any amendment or repeal of this provision of the by-laws may only occur as a part of the Authority's annual budget process, and shall not be effective until January 1 of the following year.

ARTICLE III - OFFICERS

Section 1.

The officers of the Authority shall consist of a Chair, a Vice Chair, and an Executive Secretary, who shall be elected by the board from among its members, each of whom shall serve until the end of the first meeting of the next calendar year, or until a successor shall be appointed and shall qualify. The officers shall be elected annually from the board members at the first meeting of each new year, or at the first meeting after the occurrence of a vacancy involving a board officer. Newly elected officers shall assume office at the conclusion of the meeting at which they are elected.

Section 2.

The Chair shall be the chief executive officer of the Authority and the parliamentary chair of the board. It shall be the duty of the Chair to preside over all meetings of the board, and, subject to the control of the

board, to supervise and control all of the business affairs of the Authority. The Chair shall appoint committees and shall be an ex-officio member of all committees. The Chair shall see that all orders and resolutions of the board are carried into effect. The Chair may supervise the staff and the business affairs of the Authority directly or through delegation to members of the staff, as determined by the Chair. For the first two years that the Authority exists, the Chair will be a representative of an entity other than Boulder County, the City of Boulder or the City of Longmont.

Section 3.

The Vice Chair shall, in the absence or disability of the Chair, perform the duties and exercise the powers of the Chair, and shall perform such other duties as the board shall prescribe.

Section 4.

The Executive Secretary shall issue notices of all meetings of the board, shall attend such meetings, and shall keep and provide minutes of all meetings of the board. The Executive Secretary shall have custody and control of the records and books of the board, and may utilize such clerical, stenographic and other assistants as he or she deems necessary from the staff of the Authority to perform these functions.

Section 5.

An officer may be removed by five board members whenever in their judgment the best interests of the Authority would be served thereby, but such removal shall be without prejudice to such officer's position as a board member or to the contract rights, if any, of the officer so removed. Any officer may resign at any time by giving written notice to the Authority. Removal may occur only at a properly called meeting of the board, after at least thirty days notice to the person proposed to be removed. A vacancy shall exist whenever an officer is so removed, resigns, dies, or ceases to be a board member.

Section 6.

A vacancy in any office may be filled by the board for the unexpired portion of the term.

Section 7.

After consultation with the Vice Chair, the Chair shall set the agenda for meetings of the board and recommend action to the board. Upon delegation by a majority of a quorum of the board at a properly called meeting of the board, including authorization of action on any matter otherwise properly before the board, to the extent limited by such authorization, a majority of a quorum of the Executive Committee, defined in Article IV below, may make any decision concerning the affairs of the Authority in the interim between properly called meetings of the board.

Section 8.

The Chair may sign certificates of membership and any deeds, mortgages, bonds, contracts, or other instruments authorized by these by-laws or which the board has authorized to be executed, except when required by law to be otherwise signed or executed.

ARTICLE IV - COMMITTEES

Section 1.

The Chair, in consultation with the board members, shall appoint all chairs and members of all committees of the Authority. Each committee shall contain at least one board member. Article IV, Section 2, Paragraph (c), designating the Executive Committee, shall supercede this section.

Section 2.

The standing committees shall be as follows:

(a) Legislative Committee: This committee shall be responsible for reviewing and recommending to the Board of Directors positions on state and federal legislative and regulatory changes affecting solid waste management, recycling and composting.

(b) Technical Group: This committee shall be responsible for advising the staff and the board on technical matters on an as-needed basis.

(c) Executive Committee: This committee shall consist of the officers plus up to two members of the board appointed by the Chair. This committee shall meet upon call by the Chair or the Vice-Chair, upon at least twenty-four hours notice, which may be by telephone, to deal with matters set forth in Article III, Section 7. All decisions of the Executive Committee shall be subject to board review at the next board meeting.

Section 3.

The standing committees shall have the power and authority to make decisions and authorize payments only as may be specifically assigned by the board at a properly called meeting of the board. Chairs shall be responsible for keeping minutes of committee meetings and for reporting activities to the board.

Section 4.

Other committees may be appointed by the Chair as the board shall from time to time deem necessary or expedient to carry out the business of the Authority.

Section 5.

The chair or any member of any committee may be removed at any time for willful misconduct by a majority of a quorum of the board at a properly called meeting of the board.

ARTICLE V - FINANCE

Section 1.

The fiscal year of the Authority shall be January 1 through December 31.

Section 2.

All checks and drafts upon the funds to the credit of the Authority in any of its depositories shall be signed by such of its officers or agents as shall from time to time be determined by the board, which may provide for the use of facsimile signatures under specified conditions, and all evidence of indebtedness payable to the Authority shall, for the purpose of deposit, discount or collection, be endorsed by such officers or agents of the Authority or in such manner as shall from time to time be determined by the board.

ARTICLE VI - MEETINGS

Section 1.

All meetings at which three board members are present, and at which any public business is discussed or any action to advise or recommend with respect to pending policy matter is taken, shall be open to the public at all times, in accordance with the Colorado Open Meetings Law, §24-6-402, C.R.S., as amended, except as permitted by Paragraph 24-6-402(4)(a), C.R.S. Notice shall be sufficient if posted in the lobby of the County Courthouse and at the offices of the Authority. Chance meetings or social gatherings at which the discussion of public business is not the central purpose shall not be required to be noticed or held in public, as provided by the Open Meetings Law.

Section 2.

The board shall keep a record of its proceedings, which record shall be open to inspection by the public during regular Authority office hours. The record of the board's meetings shall not be required to be in any particular form, and shall be kept in a manner appropriate to the nature of the discussions or other proceedings as determined by the Executive Secretary.

Section 3.

The Executive Secretary shall cause minutes of all board meetings to be kept and, as soon as possible after each board meeting, cause a copy of the minutes to be forwarded to each board member and to each alternate.

Section 4.

No board member shall participate in or attempt to influence the other board members with respect to any matter scheduled for discussion, if a board member stands to gain direct and substantial economic benefit to a business or any other undertaking in which the board member has a substantial financial interest or is engaged as counsel, consultant, representative, or agent, unless the board member states the fact and summary nature of the board member's interest for the record at the time of the board's meeting on the matter.

ARTICLE VII - AMENDMENTS

Section 1.

These by-laws may be adopted, and amended at any time with a two-thirds majority of the total number of votes allocated to all of the members.

Approved by the board: Date: November 15, 1995

Electronics EPR laws have been passed in 23 states, with 2 additional non-EPR state laws in place addressing electronics management (UT, CA). These laws have been passed for the following reasons:

- Prevent the release of toxic substances to the environment, especially to landfill disposal - scrap electronics contain lead, mercury, cadmium, lithium, brominated flame retardants, and phosphorous coatings
- Reduce cost burden on state and local governments lacking funds or expertise to properly manage electronics
- Prevent flow of scrap electronics to developing countries where electronics are managed without adequate controls to protect human health and the environment, often in violation of national and international laws
- Ensure better protection for workers in the US who recycle scrap electronics
- Create jobs locally rather than in developing countries or even across the country

How these electronics EPR laws are implemented and how compliance works varies greatly state-by-state, but most typically include the following key features:

- Clear definitions of electronic products that are covered (e.g., video display devices with screen size greater than 4" measured diagonally; computers and laptops; etc.) with exemptions and exclusions spelled out (cellular telephones; video display devices installed in an automobile)
- Clear definition of who gets to recycle for free (e.g., households, small school districts, businesses with less than 10 employees)
- Education requirements spread across several stakeholders (e.g., retailers, producers, government)
- Goals or targets of pounds to be collected, with various mechanisms for allocating the obligation to reach those goals to producers
- Provisions for bearing the costs of products whose makers are out of business ("orphan" products)
- Penalties for non-compliance
- Requirements for producer to
    - Offer recycling at no cost to defined parties, under some type of plan, whether simple or complex (e.g., mail-back programs may be acceptable)
    - Label all products sold with brand name
    - Register with the state, sometimes paying an initial &/or annual fee to cover the state's cost to manage the program
    - Report quantities recycled
    - Use registered recyclers (not necessarily in-state)
- Requirements for recyclers to
    - Meet specified operational standards
    - Sometimes register with the state
- Requirements for a state agency to collect data and report to the legislature
- Requirements for consumers to bear the cost of taking old products to designated collection point

GENERAL PROS and CONS OF PRODUCT STEWARDSHIP LEGISLATION

PROS	CONS
Provides dramatic environmental protection as the products in the waste stream become more complex and contain more toxic materials.	Not a need if there is no concern about groundwater, soils and air protection related to emissions from landfills.
Shifts burden of cost of responsible recycling and end-of-life (EOL) management for complex engineered products to producer, away from local ratepayers; fairly distributes that cost across all obligated producers.	If local governments do not manage and pay for the collection and disposal systems for MSW they will not see themselves as stakeholders or beneficiaries from an EPR law.
Shares responsibility for responsible EOL management across all actors in the value chain – producers, retailers, government, and consumers.	Business interests can oppose on principle of opposing any and all government regulation and preferring market-based initiatives to achieve similar ends.
Since many states have EPR legislation, the costs of recycling in those states has been embedded in product prices, so Wyoming residents are already paying for recycling that's happening in 23 states (in the case of electronics).	Producers often seek to get government and consumers to share more of the EOL costs, not wanting to bear full recycling costs.
Framework legislation can provide the business community with a more stable regulatory environment.	Haulers may feel threatened
Dramatically increases recycling of designated products.	
Creates jobs very quickly as local businesses step up to meet demands for recycling.	
Avoids costs related to contamination from improper disposal.	
Passing flexible framework legislation can be done more quickly than passing a series of individual EPR laws, streamlining the legislative process, while still enabling individual product trade interests to negotiate specific features that meet their needs.	
Under EPR, costs for recycling products at EOL are only borne by consumers of those specific products, not by all ratepayers in the local solid waste/recycle system that may not use those products.	
Can be politically popular with Republicans as EPR lowers government's costs (typically fees collected cover any needed gov't oversight, not	

PROS	CONS
taxpayer dollars); with Democrats as EPR provides strong environmental benefits; both parties value the job creation.	
Many businesses figure out how to do takeback to enhance their current business model, thus increasing sales/revenues.	

The results of the electronics EPR laws are dramatic: states with the oldest and strongest programs (Maine, Minnesota, Oregon, Washington, Wisconsin) are collecting an average of about 6.2 lbs./capita/year of scrap electronics[1] To compare, Colorado, with no EPR law, is collecting about 0.8 lbs./capita/year.

Related Information - the following information sources may be useful to local and state Wyoming governments in the development of EPR/PS strategies:

- Product Stewardship Institute - *http://productstewardship.us*
- Northwest Product Stewardship Council - *www.productstewardship.net*
- California Product Stewardship Council - *www.calpsc.org*
- Colorado Product Stewardship Council - *www.cafr.org/members/productStewardship.php* (this group works in Colorado, whose drivers and legislative climate is more like Wyoming's than the other regions noted above)
- Product Policy Institute - *www.productpolicy.org*

[1] How much e-waste is collected in states with electronics recycling laws? by Electronics TakeBack Coalition, January 23, 2012, accessed 2/21/12 at *www.electronicstakeback.com/wp-content/uploads/Collection_Volumes_by_State.pdf*.