Date: May 5, 2003

Subject: Revised MACT Floor, Regulatory Alternatives, and Nationwide Impacts for
                Equipment Leaks at Chemical Manufacturing Facilities
                Miscellaneous Organic NESHAP
                EPA Project No. 95/08; RTI International Project No. 08550.001.011

From: Brenda Shine, North State Engineering, Inc.
                Melissa Icenhour, RTI International
                David Randall, RTI International

To: MON Project Files

I.   Introduction

        This memorandum describes existing and new source MACT floors for equipment leaks,
regulatory alternatives above the floor and resulting incremental cost effectiveness of going
beyond the floor. This analysis was conducted in response to comments received on the April 4,
2002 proposal.

II.   Discussion

        A. Summary of Comments

        1. Process-Based Approach. The commenters argued that the approach for setting the
floor on a facility wide basis, as documented in the MACT floor memorandum may not have
adequately addressed variations in level of control of LDAR programs within facilities.[1] The
Section 114 information survey requested some specific information about LDAR programs, but
did not prompt respondents to specifically identify each LDAR program corresponding to each
MON process, if different programs were in use for separate MON processes at the facility. Upon
review of our data, we noted that there are circumstances where different processes are controlled
by different LDAR programs. Therefore, we reviewed our database and reanalyzed our data on a
process basis.

        2. Corrections to the Database. Commenters recommended numerous changes to the
database. We reviewed suggested changes and revised database entries under the following two
circumstances: (1) when the process is subject to the HON so that only the batch process vent
emissions are subject to the MON and (2) when the facility contact indicated to the commenter

that a non-HON LDAR program or no program is implemented for a MON process. The following specific changes were made to the database:

- Six processes at the Dixie Chemical Company plant were assigned the HON LDAR program in our original database; these have been changed to TX 28MID.

- Three processes at the Exxon Chemical Americas, Bayway Chemical Plant were assigned the HON LDAR program in our original database; these have been changed to NSPS VV.

- Five processes at the Lubrizol, Deer Park Plant were assigned the HON LDAR program in our original database; these have been changed to TX 28 MID.

- Six processes at the Lubrizol, Bayport Plant were assigned the HON LDAR program in our original database; these have been changed to TX 28 MID.

- We deleted entries for two processes at the Velsicol Chemical Corporation Plant that are subject to the HON.

- We deleted entries for three processes at the Kalama Chemical, Inc. plant that are subject to the HON.

- Of 11 processes at the Witco Corp., Sistersville Plant that were assigned the HON LDAR program in our original database, we revised 9 to no LDAR program and assigned the HON LDAR program to 2 processes. We also added two additional processes and assigned no LDAR program.

3. Costs. Commenters argued that the proposed LDAR requirements are not cost-effective because the potential environmental benefits are much lower than EPA assumed based on its SOCMI factors. Commenters submitted leak data from their industry to support their arguments. They also listed several basic, and expensive, requirements that would have to be implemented to make an LDAR program effective, such as identifying subject equipment, creating facility drawings, developing and populating a data management system, conducting physical tagging of components, developing a system to coordinate with O&M personnel, assigning personnel to coordinate the program, and training personnel. In arguing cost effectiveness of Method 21-based monitoring, commenters also suggested that our cost analysis was obscured by the inclusions of cost effective elements(design standards and audible/visual/olfactory-based program) with the Method 21 portion.

B. Revisions

1. Revised MACT Floor. Prior to making the revisions noted above, we analyzed our database on a process basis and found that 85 of the 1,142 processes (7.4 percent) in our database were reported to be controlled by HON-equivalent LDAR programs. This analysis includes all processes in the database; we did not attempt to identify continuous processes versus batch processes because many processes include both continuous and batch operations. After making

the revisions, 51 of 1,139 processes are controlled to the HON LDAR, or 4.5 percent controlled. Based on this result, we could not justify a MACT floor at the HON level of control.

The NSPS subpart VV LDAR was written into 40 CFR Part 63 as subpart TT (Control Level 1), and the CAR LDAR program was written into Part 63 as subpart UU (Control Level 2). Therefore, all Part 63 standards can cross reference either subpart TT or subpart UU, depending on the program desired. For MACT standards promulgated after the promulgation dates of subparts TT and UU, options are the adoption of either subpart TT or subpart UU, and not subpart H. The HON subpart H program is an older LDAR program that has been improved on in subpart UU by providing more flexibility and less burden while achieving similar reductions. The differences in moving from subpart H to subpart TT are a change in leak definition from 500 ppmv to 10,000 ppmv for most components, and no Method 21 monitoring for connectors. In moving from subpart H to subpart UU, an allowance is provided for less frequent monitoring based on leak rates.

Therefore, we reviewed the data to determine how many processes were controlled to a level equivalent to Subpart TT. For this analysis, we considered LDAR programs such as TX28MID, 28M, TX28RCT, TX28VHP, TX Reg 5, and LA non-HON, as well as processes implementing 40 CFR 60 Subpart VV. Only LDAR programs designated as audible/visual/olfactory (e.g., not Method 21 monitoring) were not considered at least equivalent to subpart TT. We found that 236 of the 1,139 processes, or 21 percent were controlled at least to that level. Therefore, we set the floor for existing sources on the requirements of subpart TT. The floor for new sources is still the requirements of subpart UU.

2. Regulatory Alternative Above the Floor. We conducted an analysis of the cost effectiveness of two regulatory alternatives that are more stringent than the MACT floor. The first regulatory alternative would require subpart UU LDAR for all processes with at least one continuous operation (i.e., those processes represented by the continuous model process in the previous analysis). The second regulatory alternative would require the subpart UU LDAR program for all processes. In conducting this analysis, we revised our estimated uncontrolled emissions for our model processes by using the initial leak rates submitted by the industry in their comments.[2] At the leak definitions of 500 ppmv for connectors and valves and 1,000 ppmv for pumps, we calculated leak rates of 0.35 percent for connectors, 6.47 percent for pumps, and 1.66 percent for valves from the data submitted by the industry. We also compared these leak rates and their resulting emission rates to data collected in the development of the Polymers and Resins IV standard and found good agreement. The Polymers and Resins industry leak rates were 0.61 percent for connectors, 8.71 percent for pumps, and 1.4 to 1.8 percent for valves.[3] For reductions achieved by the programs, we assumed that the reduction achieved by the subpart UU program would be equal to the emission estimated at the performance level of the program. We assumed that the subpart TT program would be half as effective as subpart UU for pumps, valves, and connectors, and that the reductions for pressure relief valves, open-ended lines, and sampling connections would be the same under both programs. A tabular summary of our emission estimates is provided in Table 1. The resulting model plant emission estimates are provided in Table 2.

Table 1. Resulting Emission Rates and Program Efficiencies for CMA Data

Component	Leak Definition (ppmv)	Number Monitored	Number Leaking	Initial Leak Rate	Adjusted leak definition (ppmv)	Adjusted Initial Leak Rate	Uncontrolled Emission Rate kg/hr/source[a]	Average Initial Leak Rate	Average Uncontrolled Emission Rate kg/hr/source	UU Performance Level[b]	UU Controlled Emission Rates	UU Control Eff	TT Control Eff[c]
Connectors	500	144792	173	0.12%	500	0.12%	7.32E-05	0.36%	1.86E-04	0.25%	1.35E-04	27.8%	13.8%
	10000	19912	168	0.84%		2.11%	1.01E-03						
Pumps[d]	500	121	0	0.00%	1000	0.00%	3.10E-04	6.47%	7.56E-03	3.04%	3.80E-03	49.7%	24.9%
	1000	683	13	1.90%		1.90%	2.55E-03						
	2000	82	0	0.00%		0.19%	6.70E-04						
	5000	374	39	10.43%		19.81%	2.23E-02						
	10000	662	13	1.96%		5.59%	6.61E-03						
Valves[d]	500	62299	312	0.50%	500	0.50%	2.62E-04	1.66%	3.68E-04	0.25%	1.45E-04	60.8%	30.3%
	5000	483	0	0.00%		0.18%	8.10E-05						
	10000	21185	123	0.58%		5.08%	6.87E-04						

[a] Uncontrolled emission rate based on the ALR Equations contained in Table 5-4 of EPA Protocol Document.
[b] Performance level is the monitoring frequency assumed to equal subsequent leak rate. For pumps, the initial leak rate was multiplied by the ratio of 8.04/17.1, per method described by Group IV Polymers and Resins Docket A-92-45 Item No. IXc-B-1, p.4.
[c] Assumed to be half as effective as subpart UU.
[d] Uncontrolled emission rate based on components assumed to be in light liquid service.

Table 2. Model Plant Emission Estimates

Component	Components Continuous	Uncontrolled Emission Rate, Mg/yr	Controlled Emission Rate, Mg/yr		Reduction		Components Batch	Uncontrolled Emission Rate, Mg/yr	Controlled Emission Rate, Mg/yr		Reduction	
			UU	TT	UU	TT			UU	TT	UU	TT
Valves- g/v[b]	44	0.14	0.06	0.10	60.8%	30.4%	0	0.00	0.00	0.00	0.0%	0.0%
Valves- ll[b]	526	1.70	0.67	1.18	60.8%	30.4%	61	0.20	0.07	0.14	63.5%	30.3%
Valves- hl[a]	133	0.27	0.27	0.27	0.0%	0.0%	68	0.14	0.14	0.14	0.0%	0.0%
Pumps-ll[b]	12	0.80	0.40	0.60	49.7%	24.9%	5	0.33	0.17	0.25	49.7%	24.9%
Pumps-hl[a]	8	0.60	0.60	0.60	0.0%	0.0%	5	0.38	0.38	0.38	0.0%	0.0%
Compressors	0											
Agitators[a]	0						3	0.35	0.35	0.35	0.0%	0.0%
PRVs-g/v[a]	1	0.91	0.00	0.00	100%	100%	0	0.00	0.00	0.00	0.0%	0.0%
Open-ended lines[a]	156	2.32	0.00	0.00	100%	100%	11	0.16	0.00	0.00	100.0%	100%
Flanges/Connectors (total)[b]	1,067	1.74	1.26	1.50	27.8%	13.8%	324	0.53	0.38	0.46	27.8%	13.8%
Flanges g/v												
Flanges ll												
Flanges hl												
Sampling Connections[a]	39	5.12	0.00	0.00	100%	100%	10	1.31	0	0	100.0%	100%
Total	1,986	13.61	3.25	4.25	76.1%	68.7%		3.40	1.49	1.71	56.2%	49.7%

[a] Based on the emission factor contained in the Alpha Gamma 1999 memo entitled "Ranking of Equipment Leak Programs."

[b] Based on the emission factor calculated from the ALR equations and reported leak frequencies.

Emission Reduction from UU, Mg/yr

Continuous Model Process	10.36
Batch Model Process	1.91

3. Revisions to Cost Analysis. We also revised our cost analysis to address commenter concerns. Table 3 presents a summary of changes to the cost elements. The revised analysis assumes that a facility required to implement an LDAR program will hire a subcontractor, based on our understanding that this is the preferred and common alternative over the implementation of an in-house program. The analysis makes use of revised data from the project files of the Polymers and Resins IV standard, including specific petitioner comments. Detailed costs for batch and continuous model processes under subparts TT and UU are included in Attachment 1. Attachments 2 through 4 present the Microsoft Access modules that were used to estimate the impacts under the MACT floor and the regulatory alternatives. Note that references to "HON" and "subpart VV" in the attachments mean subparts UU and TT, respectively, for the purposes of this analysis.

Table 3. Revised Cost Elements

Cost element		Previous analysis	UU	TT	Comments
Initial monitoring $/Comp	Pumps	$4.65	$17.70	$17.70	The $17.70 is based on comments from PET producer Eastman's experiences, which indicated significantly greater initial costs than had been previously assumed; items included in the $17.70 are walkdown and field verification, creation and issuance of drawings, creation of data forms and tags, hanging of tags, population of software, cost of tags, and the initial monitoring costs. The original the $4.65 was based on $2.15/component for identification and documentation of components and $2.50 for initial monitoring. The $17.70 cost was assumed to apply to the UU and TT programs for all components requiring M21 periodic monitoring. For connectors subject to TT, and initial cost of $1.13 was assumed, the same cost as applied to heavy liquid components in all of the four programs.
	Valves	$4.65	$17.70	$17.70	
	Flanges	$4.65	$17.70	$1.13	
	Heavy Liquid	$1.13	$1.13	$1.13	
Subsequent Monitoring $/Comp	Pumps	$6.75	$2.50	$2.50	No monitoring fee for components which do not require periodic monitoring.
	Valves	$.75	$2.50	$2.50	
	Flanges	$.75	$2.50	$0	
	Heavy Liquid	$0	$0	$0	

Table 3. (continued)

Cost element		Previous analysis	UU	TT	Comments
Method 21 Monitoring Frequencies (events/yr)	Pumps	12	12	12	
	Valves	4	.5	1	Assumes skip monitoring
	Flanges	1	.125	0	Assumes skip monitoring
	Heavy Liquid	0	0	0	
Monitoring Device rental	NA		$1609.53	$1609.53	Based on 12-1day rentals (e.g., monthly rental charge); includes calibration and miscellaneous; Note that this rental is in addition to hiring a subcontractor to perform monitoring. The original analysis assumed the cost of buying an instrument.
Data Collection system	NA		$14,500.00	$14,500.00	Based on P&R IV petitioner's estimate. The facility must purchase software even if monitoring program is subcontracted out. The original analysis did not include this cost, but included a cost of $7,700 for every 7,000 components.
Admin Reports	NA	60 hours @ $36.95/hr	300 hours @ $36.95/hr	300 hours @ $36.95/hr	Costs for UU used in P&R IV, petitioner's estimate; TT program costs assumed to be same as for UU.
Planning and Training	NA	200 hours @ 36.95/ hr	340 hours @ 36.95/ hr	340 hours @ 36.95/ hr	Costs for UU used in P&R IV petitioner's estimate; TT program costs assumed to be same as for UU.

III.   Results of Cost Analysis

The results of the cost analysis are presented in Table 4. Attachment 5 presents the detailed analysis results.

Table 4. Impacts for Existing Sources

	Emission reduction, Mg/yr	Total capital investment, $/yr	Total annual cost, $/yr	Cost effectiveness, $/Mg	
				Relative to	Incremental
Previous analysis					
MACT floor	13,800	14,100,000	9,320,000	675	N/A
Current analysis					
MACT Floor					
– batch	1,430	19,946,000	16,372,000	11,400	N/A
– continuous	1,180	9,466,000	3,760,000	3,180	N/A
– overall	2,615	29,412,000	20,131,000	7,700	N/A
Reg Alt 1					
– batch	1,430	19,946,000	16,372,000	11,400	0
– continuous	1,360	11,295,000	3,845,000	2,830	470
– overall	2,790	31,241,000	20,217,000	7,250	470
Reg Alt 2					
– batch	1,650	25,193,000	17,945,000	10,900	7,200
– continuous	1,360	11,295,000	3,845,000	2,830	0
– overall	3,010	36,488,000	21,790,000	7,240	7,200

IV. <u>Conclusions</u>

The changes have reduced the anticipated emission reductions at the MACT floor by almost an order of magnitude while more than doubling the annual costs. The revised cost of the MACT floor for processes represented by the continuous model process is $3,180/Mg, and the incremental cost of the first regulatory alternative (subpart UU for processes that contain continuous processes) is $470/Mg, both of which are reasonable. The MACT floor cost and incremental cost effectiveness of regulatory alternative 2 (subpart UU for batch processes), however, are unreasonable. Therefore, we recommend using regulatory alternative 1 as the standard for equipment leaks at existing sources.

V. <u>References</u>

1. Memorandum from B. Shine and D. Randall, MRI, to MON Project File. July 31, 2000. MACT floor, regulatory alternatives, and nationwide impacts for equipment leaks at chemical manufacturing facilities.

2. Letter from J. Mayhew, American Chemistry Council, to EPA Docket No. A-96-04. June 28, 2002. Comments on Proposed Miscellaneous Organic Chemical Manufacturing NESHAP. Exhibit J.

3. Memorandum from K. Barnett, EPA:ESD, to Group IV Polymers and Resins Docket A-92-45. December 2000. Final Analysis of Equipment Leak Program for PET Facilities Subject to the Group IV Polymers and Resins NESHAP. Table 7.

ATTACHMENT 1

Spreadsheets Used to Estimate Costs for Subpart TT and Subpart UU LDAR
Programs for the Model Batch and Continuous Processes

HON Program Model Process – Batch

Type of Component	Number of Components	Initial Monitoring Fee or Unit Cost ($/comp)	Initial LDAR Costs ($/yr) (Capital)	Initial LDAR Admin. Costs	Frequency of Monitoring (times/yr)	Subsequent Monitoring Fee ($/comp) or Charge (%)	Annual Monitoring Costs ($/yr)	Annual Maintenance Costs ($/yr)
Pump Seals								
* Light-liquid service	8	17.70	327.94		12	2.50	318.00	532.61
* Heavy-liquid service	5	1.13	5.65					
Valves								
* Gas/vapor service	0	17.70	0.00		0.25	2.50	0.00	0.00
* Light-liquid service	61	17.70	1108.55		0.25	2.50	38.13	0.10
* Heavy-liquid service	68	1.13	76.84					
Connectors								
* Flanges - gas/vapor		17.70	0.00		0.125	2.50	0.00	0.00
* Flanges - light liquid	325	17.70	5771.88		0.125	2.50	101.56	0.25
* Flanges -heavy liquid								
Pressure Relief Devices								
* Disks	0	78.00	0.00		1	2.00	0.00	0.00
* Disk holders, valves,etc.	0	3852.00	0.00		1	5.00		0.00
Open-ended Valves	11	102.00	1122.00			5.00		56.10
Sampling Connections	10	409.00	4090.00			5.00		204.50
Compressor Vent		6242.00	0.00			5.00		0.00
Replacement Pump Seals	8	180.00	93.17					
Monitoring Device	0	6500.00	0.00					0.00
Monitoring Device - Rent	0						0.00	
Data Collection System	0	1200.00	0.00					
Number of Subcategories: 1								
Administrative and Reports	300	36.95						
Planning and Training	340	36.95		12563.00				
TOTALS			12596.03	12563.00			457.69	793.56

Capital Costs w/o OVA and Train	12,596
Annualized Capital Costs	3,582
Annual Expenses	14,018
Annual Fixed Costs ($/yr)	15,296
Annual Variable Costs ($/yr)	2,304

A-2

HON Program Model Process – Batch
(continued)

Type of Component	Initial Leak Frequency (%)	Initial Number of Leaks	Subsequent Leak Frequency (%)	Annual Number of Leaks	Percent Repaired OnLine	Repair Time (hours)	Labor Charge ($/hr)	Annual OnLine Leak Repair Cost ($/yr)	Percent Requiring Further Repair	Repair Time (hours)	Labor Charge ($/hr)	Annual Offline Leak Repair Cost ($/yr)	Annual Admin. Cost ($/yr)	Annual Misc. Charges ($/yr)
Pump Seals														
* Light-liquid service	6.47	0.52	3.04	2.92	100	16.00	22.50	1050.62	0	80.00	22.50	0.00		420.25
* Heavy-liquid service														
Valves														
* Gas/vapor service	1.70	0.00	0.25	0.00	75	0.17	22.50	0.00	25	4.00	22.50	0.00		
* Light-liquid service	1.70	1.04	0.25	0.04	75	0.17	22.50	0.11	25	4.00	22.50	0.86		
* Heavy-liquid service														
Connectors														
* Flanges - gas/vapor	0.36	0.00	0.25	0.00	75	0.17	22.50	0.00	25	2.00	22.50	0.00		
* Flanges - light liquid	0.36	1.17	0.25	0.10	75	0.17	22.50	0.29	25	2.00	22.50	1.14		
* Flanges -heavy liquid														
Pressure Relief Devices														
* Disks	0.00		0.00											0.00
* Disk holders, valves, etc.	0.00		0.00											0.00
Open-ended Valves	0.00		0.00											44.88
Sampling Connections	0.00		0.00											163.60
Compressor Vent	0.00		0.00											0.00
Replacement Pump Seals														
Monitoring Device														0.00
Monitoring Device - Rent														
Data Collection System														0.00
Administrative and Reports													11085.00	
Planning and Training														
TOTALS								1051.02		2.00			11085.00	628.73

Batch SOCMI Program

Type of Component	Number of Components	Initial Monitoring Fee or Unit Cost ($/comp)	Initial LDAR Costs ($/yr) (Capital)	Initial LDAR Admin. Costs	Frequency of Monitoring (times/yr)	Subsequent Monitoring Fee ($/comp) or Charge (%)	Annual Monitoring Costs ($/yr)	Annual Maintenance Costs ($/yr)
Pump Seals								
* Light-liquid service	8	17.70	357.02		12	2.50	318.00	305.86
* Heavy-liquid service	5	1.13	5.65					
Valves								
* Gas/vapor service		17.70	0.00		1	2.50	0.00	
* Light-liquid service	61	17.70	1146.73		1	2.50	152.50	
* Heavy-liquid service	68							
Connectors								
* Flanges - gas/vapor			0.00		0	0.00	0.00	
* Flanges - light liquid	325	1.13	438.12		0	0.00	0.00	
* Flanges -heavy liquid								
Pressure Relief Devices								
* Disks		78.00	0.00		1	2.00	0.00	0.00
* Disk holders, valves, etc.	0	3852.00	0.00		1	5.00		0.00
Open-ended Valves	11	102.00	1122.00			5.00		56.10
Sampling Connections	10	409.00	4090.00			5.00		204.50
Compressor Vent		6242.00	0.00			5.00		0.00
Replacement Pump Seals	8	180.00	107.71					
Monitoring Device - Buy		6500.00	0.00					0.00
Monitoring Device - Rent	0							
Data Collection System	0	1200.00	0.00					
Number of Monitoring Systems: 12 **Number of Subcategories: 1**								
Administrative and Reports	300	36.95						
Planning and Training	340	36.95		12,563.00				
Data Entry - Initial	0	1.88	0.00					
Data Entry - Subsequent	0	0.75					0.00	
TOTALS			7344.07	12,563.00			470.50	566.46

Capital Costs	7,344
Annualized Capital Costs	2,838
Annual Expenses	13,195
Annual Fixed Costs ($/yr)	14,376
Annual Variable Costs ($/yr)	1,657

Type of Component	Initial Leak Frequency (%)	Initial Number of Leaks	Subsequent Leak Frequency (%)	Annual Number of Leaks	Percent Repaired OnLine	Repair Time (hours)	Labor Charge ($/hr)	Annual OnLine Leak Repair Cost ($/yr)	Percent Requiring Further Repair	Repair Time (hours)	Labor Charge ($/hr)	Annual Offline Leak Repair Cost ($/yr)	Annual Admin. Cost ($/yr)	Annual Misc. Charges ($/yr)
Pump Seals														
* Light-liquid service	7.48	0.60	1.77	1.70	100	16.00	22.50	611.71	0	80.00	22.50	0.00		244.68
* Heavy-liquid service														
Valves														
* Gas/vapor service	7.48	0.00	2.33	0.00	75	0.17	22.50	0.00	25	4.00	22.50	0.00		
* Light-liquid service	4.34	2.65	0.54	0.33	75	0.17	22.50	0.93	25	4.00	22.50	7.41		
* Heavy-liquid service														
Connectors														
* Flanges - gas/vapor	1.55	0.00	0.138	0.00	75	0.17	22.50	0.00	25	2.00	22.50	0.00		
* Flanges - light liquid	1.55	5.04	0.138	0.45	75	0.17	22.50	0.00	25	2.00	22.50	5.05		
* Flanges -heavy liquid														
Pressure Relief Devices														
* Disks		0.00												0.00
* Disk holders, valves, etc.		0.00												0.00
Open-ended Valves		0.00												44.88
Sampling Connections		0.00												163.60
Compressor Vent		0.00												0.00
Replacement Pump Seals														
Monitoring Device - Buy														0.00
Monitoring Device - Rent														
Data Collection System														0.00
Administrative and Reports													11,085.00	
Planning and Training														
Data Entry - Initial														
Data Entry - Subsequent														
TOTALS								612.64				7.41	11,085.00	453.16

A-5

Continuous SOCMI Program

Type of Component	Number of Components	Initial Monitoring Fee or Unit Cost ($/comp)	Initial LDAR Costs ($/yr) (Capital)	Initial LDAR Admin. Costs	Frequency of Monitoring (times/yr)	Subsequent Monitoring Fee ($/comp) or Charge (%)	Annual Monitoring Costs ($/yr)	Annual Maintenance Costs ($/yr)
Pump Seals								
* Light-liquid service	12	17.70	535.54		12	2.50	477.00	458.78
* Heavy-liquid service	8	1.13						
Valves								
* Gas/vapor service	44	17.70	116.33		1	2.50	110.00	
* Light-liquid service	526	17.70	972.47		1	2.50	1,315.00	
* Heavy-liquid service	133	1.13						
Connectors								
* Flanges - gas/vapor		1.13	0.00		1	0.00	0.00	
* Flanges - light liquid	1,067	1.13	1032.92		1	0.00	0.00	
* Flanges -heavy liquid								
Pressure Relief Devices								
* Disks	1	78.00	78.00		1	2.00	2.00	3.90
* Disk holders, valves, etc.	1	3852.00	3852.00		1	5.00		192.60
Open-ended Valves	156	102.00	15912.00			5.00		795.60
Sampling Connections	39	409.00	15951.00			5.00		797.55
Compressor Vent		6242.00	0.00			5.00		0.00
Replacement Pump Seals	12	180.00	161.57					
Monitoring Device - Buy		6500.00	0.00					0.00
Monitoring Device - Rent	0							
Data Collection System	0	1200.00	0.00					
Number of Monitoring Days: 12								
Number of Subcategories: 1								
Administrative and Reports	300	36.95						
Planning and Training	340	36.95		12,563.00				
Data Entry - Initial	0	1.88	0.00					
Data Entry - Subsequent	0	0.75					0.00	
TOTALS			48,838.11	12,563.00			1,904.00	2248.43

Capital Costs	48,838
Annualized Capital Costs	8,735
Annual Expenses	18,052
Annual Fixed Costs ($/yr)	21,619
Annual Variable Costs ($/yr)	5,168

Continuous SOCMI Program
(continued)

Type of Component	Initial Leak Frequency (%)	Initial Number of Leaks	Subsequent Leak Frequency (%)	Annual Number of Leaks	Percent Repaired OnLine	Repair Time (hours)	Labor Charge ($/hr)	Annual OnLine Leak Repair Cost ($/yr)	Percent Requiring Further Repair	Repair Time (hours)	Labor Charge ($/hr)	Annual Offline Leak Repair Cost ($/yr)	Annual Admin. Cost ($/yr)	Annual Misc. Charges ($/yr)
Pump Seals														
* Light-liquid service	7.48	0.90	1.77	2.55	100	16.00	22.50	917.57	0	80.00	22.50	0.00		367.03
* Heavy-liquid service														
Valves														
* Gas/vapor service	7.48	3.29	2.33	1.03	75	0.17	22.50	2.89	25	4.00	22.50	23.07		
* Light-liquid service	4.34	22.83	0.54	2.84	75	0.17	22.50	8.00	25	4.00	22.50	63.91		
* Heavy-liquid service														
Connectors														
* Flanges - gas/vapor	1.55	0.00	0.138	0.00	75	0.17	22.50	0.00	25	2.00	22.50	0.00		
* Flanges - light liquid	1.55	16.54	0.138	0.00	75	0.17	22.50	0.00	25	2.00	22.50	0.00		
* Flanges -heavy liquid														
Pressure Relief Devices														
* Disks		0.00												3.12
* Disk holders, valves, etc.		0.00												154.08
Open-ended Valves		0.00												636.48
Sampling Connections		0.00												638.04
Compressor Vent		0.00												0.00
Replacement Pump Seals														
Monitoring Device - Buy														0.00
Monitoring Device - Rent														
Data Collection System														0.00
Administrative and Reports													11,085	
Planning and Training														
Data Entry - Initial														
Data Entry - Subsequent														
TOTALS								928.46				86.98	11,085	1798.75

HON Program Model Process – Continuous

Type of Component	Number of Components	Initial Monitoring Fee or Unit Cost ($/comp)	Initial LDAR Costs ($/yr) (Capital)	Initial LDAR Admin. Costs	Frequency of Monitoring (times/yr)	Subsequent Monitoring Fee ($/comp) or Charge (%)	Annual Monitoring Costs ($/yr)	Annual Maintenance Costs ($/yr)
Pump Seals								
* Light-liquid service	12	17.70	491.90		12	2.50	477.00	798.91
* Heavy-liquid service	8	1.13	9.04					
Valves								
* Gas/vapor service	44	17.70	799.61		0.25	2.50	27.50	0.07
* Light-liquid service	526	17.70	9558.95		0.25	2.50	328.75	0.82
* Heavy-liquid service	133	1.13	150.29					
Connectors								
* Flanges - gas/vapor		17.70	0.00		0.13	2.50	0.00	0.00
* Flanges - light liquid	1,067	17.70	18949.54		0.13	2.50	333.44	0.83
* Flanges -heavy liquid								
Pressure Relief Devices								
* Disks	1	78.00	78.00		1	2.00	2.00	3.90
* Disk holders, valves, etc.	1	3852.00	3852.00		1	5.00		192.60
Open-ended Valves	156	102.00	15912.00			5.00		795.60
Sampling Connections	39	409.00	15951.00			5.00		797.55
Compressor Vent		6242.00	0.00			5.00		0.00
Replacement Pump Seals	12	180.00	139.75					
Monitoring Device	0	6500.00	0.00					0.00
Monitoring Device - Rent	0						0.00	
Data Collection System	0	1200.00	0.00					
Number of Subcategories: 1								
Administrative and Reports	300	36.95						
Planning and Training	340	36.95		12563.00				
TOTALS			65892.09	12563.00			1168.69	2590.29

Capital Costs w/o OVA and Train	65,892
Annualized Capital Costs	11,163
Annual Expenses	18,570
Annual Fixed Costs ($/yr)	24,384
Annual Variable Costs ($/yr)	5,349

HON Program Model Process – Continuous
(continued)

Type of Component	Initial Leak Frequency (%)	Initial Number of Leaks	Subsequent Leak Frequency (%)	Annual Number of Leaks	Percent Repaired OnLine	Repair Time (hours)	Labor Charge ($/hr)	Annual OnLine Leak Repair Cost ($/yr)	Percent Requiring Further Repair	Repair Time (hours)	Labor Charge ($/hr)	Annual Offline Leak Repair Cost ($/yr)	Annual Admin. Cost ($/yr)	Annual Misc. Charges ($/yr)
Pump Seals														
* Light-liquid service	6.47	0.78	3.04	4.38	100	16.00	22.50	1575.94	0	80.00	22.50	0.00		630.37
* Heavy-liquid service														
Valves														
* Gas/vapor service	1.70	0.75	0.25	0.03	75	0.17	22.50	0.08	25	4.00	22.50	0.62		2.97
* Light-liquid service	1.70	8.94	0.25	0.33	75	0.17	22.50	0.93	25	4.00	22.50	7.40		35.51
* Heavy-liquid service														
Connectors														
* Flanges - gas/vapor	0.36	0.00	0.25	0.00	75	0.17	22.50	0.00	25	2.00	22.50	0.00		0.00
* Flanges - light liquid	0.36	3.84	0.25	0.33	75	0.17	22.50	0.94	25	2.00	22.50	3.75		36.01
* Flanges -heavy liquid														
Pressure Relief Devices														
* Disks		0.00		0.00										3.12
* Disk holders, valves, etc.		0.00		0.00										154.08
Open-ended Valves		0.00		0.00										636.48
Sampling Connections		0.00		0.00										638.04
Compressor Vent		0.00		0.00										0.00
Replacement Pump Seals														
Monitoring Device														0.00
Monitoring Device - Rent														
Data Collection System														0.00
Administrative and Reports													11085.00	
Planning and Training														
TOTALS								1577.88				11.77	11084.00	2136.58

ATTACHMENT 2

Access Module Used to Calculate Costs

MACT Floor

MACT Floor Access Module

```vba
Option Compare Database
Option Explicit

Public Sub LDARCost()
Dim dbs As Database
Dim rst As Recordset
Dim Batch_PP As Double                  'Count of batch product process
Dim Cont_PP As Double                   'count of continuous product process
Dim Component As Double                 'number of components installed in each facility
Dim OVA As Long                         'number of OVA required for each facility
Dim OVACost As Long                     'cost for OVA required
Const VVContFC As Long = 48838          'continuous fixed cost for  SubpartVV
Const VVBatchFC As Long = 7344          'batch fixed cost for  SubpartVV
Const VVTrain As Double = 12563         'planing and training for  SubpartVV
Const VVContCC As Long = 8735           'continuous annualized capital cost for  SubpartVV
Const VVBatchCC As Long = 2838          'batch annualized capital cost for  SubpartVV
Const VVContAnnExp As Long = 18052      'continuous annual expense for  SubpartVV
Const VVBatchAnnExp As Long = 13195     'batch anual expense for  SubpartVV
Dim VVTCI As Long                       'total capital investment for  SubpartVV
Dim VVTAC As Long                       'total annual cost for  SubpartVV
Dim VVRC As Double                      'recovery credit for SubpartVV
Dim ProType As String                   'process type
Dim UnctrlEmis As Long                  'HAP Uncontrolled emissions
Dim CtrlEmis As Long                    'HAP controlled emissions
Dim TTCI As Long                        'total capital investment
Dim TTAC As Long                        'total annual cost
Dim RC As Long                          'total recovery credit
Dim Recovery As Double                  'reduction in emission after applying LDAR
Dim LDAR As String                      'LDAR program
Dim MAC As Integer                      'MACT
Dim HAPRed As Double                    'total hap reduction, lb/yr
Const Mirror As Single = 0              'hon monitoring, reporting and recordkeeping
Dim OandM As Double                     'operating and maintenance cost
'Const Mirror As Single = 0             'monitoring, recordkeeping and reporting cost
Dim CAR As Double                       'annualized capital cost
Dim VVOandM As Double                   'VV operating and maintenance cost
'Const VVMirror As Single = 0           'VV monitoring, recordkeeping and reporting cost
Dim VVCAR As Double                     'VV annualized capital cost
Dim RCVV As Double                      'vv recovery credit
Dim MFID As String                      'master facility id
Dim HONTCI As Double                    'total capital investment for HON
Dim OVAANN As Double                    'Annualized OVA costs

Set dbs = CurrentDb
```

```
Set rst = dbs.OpenRecordset("LDAR, with cost data")

rst.MoveFirst

Do While Not rst.EOF

ProType = rst![ProcType]
UnctrlEmis = rst![LDAR Uncontrolled Emissions]
CtrlEmis = rst![LDAR Controlled Emissions]
Recovery = rst![Reduction]
LDAR = rst![LDAR Program]
MAC = rst![MACT]
Batch_PP = rst![BatchPP]
Cont_PP = rst![ContPP]
HAPRed = rst![Total HAP Reduction (lb/yr)]
MFID = rst![Master Facility ID]

If Batch_PP = 0 And Cont_PP = 0 Then
    OVACost = 0
    OVAANN = 0
Else
    OVACost = 14500
    OVAANN = OVACost * 0.142 + 1610


                                '1610 is annual rental cost
End If                          '0.142 is the capital recovery factor for the data collection
system
                                'assuming equipment life of 10 years

If MAC = 0 And ProType = "batch" Then
    VVRC = (0.497 - Recovery) * UnctrlEmis * 0.1      '0.10 $/lb is salvage value
ElseIf (MAC = 0 Or MAC = 2) And ProType = "continuous" Then
    VVRC = (0.688 - Recovery) * UnctrlEmis * 0.1
Else
    VVRC = 0
End If

If (MAC = 0 Or MAC = 2) And ProType = "Continuous" Then
    VVTCI = VVTrain + (VVContFC + OVACost) * Cont_PP
    VVTAC = (VVContCC + VVContAnnExp + OVAANN) * Cont_PP - VVRC
    RCVV = VVRC
ElseIf MAC = 0 And ProType = "Batch" Then
    VVTCI = VVTrain + (VVBatchFC + OVACost) * Batch_PP
    VVTAC = (VVBatchCC + VVBatchAnnExp + OVAANN) * Batch_PP - VVRC
    RCVV = VVRC
Else
```

```
      VVTCI = 0
      VVTAC = 0
      RCVV = 0
End If

If (MAC = 0 Or MAC = 2) Then
      TTCI = VVTCI
      TTAC = VVTAC
 End If

rst.Edit

If HAPRed = 0 Then
      rst![HON_TCI] = 0
      rst![HON_TAC] = 0
      rst![VV_TCI] = 0
      rst![VV_TAC] = 0
      rst![TCI] = 0
      rst![TAC] = 0
      rst![O&M ($)] = 0
      rst![MRR ($)] = 0
      rst![ACR ($)] = 0
      rst![RC ($)] = 0

Else
      rst![TCI] = TTCI
      rst![TAC] = TTAC
      rst![O&M ($)] = TTAC - Mirror - (0.1098 * TTCI) + RC
      rst![MRR ($)] = Mirror
      rst![ACR ($)] = 0.1098 * TTCI
      rst![RC ($)] = RC

End If
rst.Update
rst.MoveNext
Loop
End Sub
```

ATTACHMENT 3

Access Module Used to Calculate Costs

Regulatory Alternative No. 1

Regulatory Alternative No. 1 Access Module

```
Option Compare Database
Option Explicit


Public Sub LDARCost()
Dim dbs As Database
Dim rst As Recordset
Dim Batch_PP As Double              'Count of batch product process
Dim Cont_PP As Double               'count of continuous product process
Dim Component As Double              'number of components installed in each facility
Dim OVA As Long                    'number of OVA required for each facility
Dim OVACost As Long                 'cost for OVA required
Const HONContFC As Double = 65892      'continuous fixed cost for HON
Const HONBatchFC As Long = 12596        'batch fixed cost for HON
Const HONTrain As Long = 12563         'planing and training for HON
Const HONContCC As Long = 11163         'continuous annualized capital cost for HON
Const HONBatchCC As Long = 3582         'batch annualized capital cost for HON
Const HONContAnnExp As Long = 18570      'continuous annual expense for HON
Const HONBatchAnnExp As Long = 14018     'total capital investment for HON
Dim HONTAC As Long                    'total annual cost for HON
Dim HONRC As Double                  'recovery credit for HON
Const VVContFC As Long = 48838          'continuous fixed cost for  SubpartVV
Const VVBatchFC As Long = 7344          'batch fixed cost for  SubpartVV
Const VVTrain As Double = 12563         'planing and training for  SubpartVV
Const VVContCC As Long = 8735           'continuous annualized capital cost for  SubpartVV
Const VVBatchCC As Long = 2838          'batch annualized capital cost for  SubpartVV
Const VVContAnnExp As Long = 18052       'continuous annual expense for  SubpartVV
Const VVBatchAnnExp As Long = 13195      'batch anual expense for  SubpartVV
Dim VVTCI As Long                    'total capital investment for  SubpartVV
Dim VVTAC As Long                    'total annual cost for  SubpartVV
Dim VVRC As Double                   'recovery credit for SubpartVV
Dim ProType As String               'process type
Dim UnctrlEmis As Long               'HAP Uncontrolled emissions
Dim CtrlEmis As Long                'HAP controlled emissions
Dim TTCI As Long                    'total capital investment
Dim TTAC As Long                    'total annual cost
Dim RC As Long                     'total recovery credit
Dim Recovery As Double               'reduction in emission after applying LDAR
Dim LDAR As String                 'LDAR program
Dim MAC As Integer                 'MACT
Dim HAPRed As Double                'total hap reduction, lb/yr
Dim HONOandM As Double               'hon operating and maintenance cost
Const Mirror As Single = 0           'hon monitoring, reporting and recordkeeping
Dim HONCAR As Double                'hon annualized capital recovery
Dim RCHON As Double                 'hon recovery credit
```

```
Dim OandM As Double                    'operating and maintenance cost
'Const Mirror As Single = 0            'monitoring, recordkeeping and reporting cost
Dim CAR As Double                      'annualized capital cost
Dim VVOandM As Double                   'VV operating and maintenance cost
'Const VVMirror As Single = 0           'VV monitoring, recordkeeping and reporting cost
Dim VVCAR As Double                     'VV annualized capital cost
Dim RCVV As Double                      'vv recovery credit
Dim MFID As String                     'master facility id
Dim HONTCI As Double                    'total capital investment for HON
Dim OVAANN As Double                    'Annualized OVA costs

Set dbs = CurrentDb
Set rst = dbs.OpenRecordset("LDAR Reg Alt 3, with cost data")

rst.MoveFirst

Do While Not rst.EOF

ProType = rst![ProcType]
UnctrlEmis = rst![LDAR Uncontrolled Emissions]
CtrlEmis = rst![LDAR Controlled Emissions]
Recovery = rst![Reduction]
LDAR = rst![LDAR Program]
MAC = rst![MACT]
Batch_PP = rst![BatchPP]
Cont_PP = rst![ContPP]
HAPRed = rst![Total HAP Reduction (lb/yr)]
MFID = rst![Master Facility ID]

If Batch_PP = 0 And Cont_PP = 0 Then
   OVACost = 0
   OVAANN = 0
Else
   OVACost = 14500
   OVAANN = OVACost * 0.142 + 1610
                                    '1610 is the annual rental cost
End If                               '0.142 is the capital recovery factor for
                                     'the data collection system assuming
                                     'equipment life of 10 years
If MAC = 4 And ProType = "Batch" Then            '0.10 $/lb is salvage value
   HONRC = (0.81) * UnctrlEmis * 0.1
ElseIf MAC = 2 And ProType = "Continuous" Then
   HONRC = (0.761 - Recovery) * UnctrlEmis * 0.1
ElseIf MAC = 0 And ProType = "Batch" Then
   HONRC = 0.562 * UnctrlEmis * 0.1
ElseIf MAC = 0 And ProType = "Continuous" Then
```

```
    HONRC = 0.761 * UnctrlEmis * 0.1
End If

If (MAC = 2 Or MAC = 0) And ProType = "Continuous" Then
    HONTCI = HONTrain + (OVACost + HONContFC) * Cont_PP
    HONTAC = ((HONContCC + HONContAnnExp + OVAANN)) * Cont_PP - HONRC
    RCHON = HONRC

ElseIf MAC = 1 Then
    HONTCI = 0
    HONTAC = 0
    RCHON = 0
End If

If MAC = 4 Then
    VVRC = (0.497 - Recovery) * UnctrlEmis * 0.1        '0.10 $/lb is salvage value

ElseIf MAC = 2 Then
    VVRC = Recovery * UnctrlEmis * 0.1

Else
    VVRC = 0
End If

If MAC = 4 And ProType = "Batch" Then
    VVTCI = VVTrain + (VVBatchFC + OVACost) * Batch_PP
    VVTAC = (VVBatchCC + VVBatchAnnExp + OVAANN) * Batch_PP - VVRC
    RCVV = VVRC

ElseIf MAC = 2 And ProType = "Continuous" Then
    VVTCI = VVTrain + (VVContFC + OVACost) * Cont_PP
    VVTAC = (VVContCC + VVContAnnExp + OVAANN) * Cont_PP - VVRC
    RCVV = VVRC

Else
    VVTCI = 0
    VVTAC = 0
    RCVV = 0
End If

If MAC = 0 And ProType = "continuous" Then
    TTCI = HONTCI
    TTAC = HONTAC

ElseIf MAC = 4 Then
    TTCI = VVTCI
```

```
   TTAC = VVTAC
   RC = VVRC

ElseIf MAC = 2 And ProType = "batch" Then
   TTCI = VVTCI
   TTAC = VVTAC
   RC = RCHON

ElseIf MAC = 2 And ProType = "continuous" Then
   TTCI = HONTCI - VVTCI
   TTAC = HONTAC - VVTAC
   RC = RCHON

 End If

rst.Edit

If HAPRed = 0 Then
   rst![HON_TCI] = 0
   rst![HON_TAC] = 0
   rst![VV_TCI] = 0
   rst![VV_TAC] = 0
   rst![TCI] = 0
   rst![TAC] = 0
   rst![O&M ($)] = 0
   rst![MRR ($)] = 0
   rst![ACR ($)] = 0
   rst![RC ($)] = 0

Else
   rst![HON_TCI] = HONTCI
   rst![HON_TAC] = HONTAC
   rst![VV_TCI] = VVTCI
   rst![VV_TAC] = VVTAC
   rst![TCI] = TTCI
   rst![TAC] = TTAC
   rst![O&M ($)] = TTAC - Mirror - (0.1098 * TTCI) + RC
   rst![MRR ($)] = Mirror
   rst![ACR ($)] = 0.1098 * TTCI
   rst![RC ($)] = RC

End If
rst.Update
rst.MoveNext
Loop
End Sub
```

ATTACHMENT 4

Access Module Used to Calculate Costs
Regulatory Alternative No. 2

Regulatory Alternative No. 2 Access Module

```
Attribute VB_Name = "LDAR RA 2 Cost Calc"
Option Compare Database
Option Explicit


Public Sub LDARCost()
Dim dbs As Database
Dim rst As Recordset
Dim Batch_PP As Double                 'Count of batch product process
Dim Cont_PP As Double                  'count of continuous product process
Dim Component As Double                'number of components installed in each facility
Dim OVA As Long                        'number of OVA required for each facility
Dim OVACost As Long                    'cost for OVA required
Const HONContFC As Double = 65892      'continuous fixed cost for HON
Const HONBatchFC As Long = 12596       'batch fixed cost for HON
Const HONTrain As Long = 12563         'planing and training for HON
Const HONContCC As Long = 11163        'continuous annualized capital cost for HON
Const HONBatchCC As Long = 3582        'batch annualized capital cost for HON
Const HONContAnnExp As Long = 18570    'continuous annual expense for HON
Const HONBatchAnnExp As Long = 14018   'total capital investment for HON
Dim HONTAC As Long                     'total annual cost for HON
Dim HONRC As Double                    'recovery credit for HON
Const VVContFC As Long = 48838         'continuous fixed cost for  SubpartVV
Const VVBatchFC As Long = 7344         'batch fixed cost for  SubpartVV
Const VVTrain As Double = 12563        'planing and training for  SubpartVV
Const VVContCC As Long = 8735          'continuous annualized capital cost for  SubpartVV
Const VVBatchCC As Long = 2838         'batch annualized capital cost for  SubpartVV
Const VVContAnnExp As Long = 18052     'continuous annual expense for  SubpartVV
Const VVBatchAnnExp As Long = 13195    'batch anual expense for  SubpartVV
Dim VVTCI As Long                      'total capital investment for  SubpartVV
Dim VVTAC As Long                      'total annual cost for  SubpartVV
Dim VVRC As Double                     'recovery credit for SubpartVV
Dim ProType As String                  'process type
Dim UnctrlEmis As Long                 'HAP Uncontrolled emissions
Dim CtrlEmis As Long                   'HAP controlled emissions
Dim TTCI As Long                       'total capital investment
Dim TTAC As Long                       'total annual cost
Dim RC As Long                         'total recovery credit
Dim Recovery As Double                 'reduction in emission after applying LDAR
Dim LDAR As String                     'LDAR program
Dim MAC As Integer                     'MACT
Dim HAPRed As Double                   'total hap reduction, lb/yr
Dim HONOandM As Double                 'hon operating and maintenance cost
Const Mirror As Single = 0             'hon monitoring, reporting and recordkeeping
Dim HONCAR As Double                   'hon annualized capital recovery
```

```
Dim RCHON As Double                      'hon recovery credit
Dim OandM As Double                      'operating and maintenance cost
'Const Mirror As Single = 0              'monitoring, recordkeeping and reporting cost
Dim CAR As Double                        'annualized capital cost
Dim VVOandM As Double                    'VV operating and maintenance cost
'Const VVMirror As Single = 0            'VV monitoring, recordkeeping and reporting cost
Dim VVCAR As Double                      'VV annualized capital cost
Dim RCVV As Double                       'vv recovery credit
Dim MFID As String                       'master facility id
Dim HONTCI As Double                     'total capital investment for HON
Dim OVAANN As Double                     'Annualized OVA costs

Set dbs = CurrentDb
Set rst = dbs.OpenRecordset("LDAR Reg Alt, with cost data")

rst.MoveFirst

Do While Not rst.EOF

ProType = rst![ProcType]
UnctrlEmis = rst![LDAR Uncontrolled Emissions]
CtrlEmis = rst![LDAR Controlled Emissions]
Recovery = rst![Reduction]
LDAR = rst![LDAR Program]
MAC = rst![MACT]
Batch_PP = rst![BatchPP]
Cont_PP = rst![ContPP]
HAPRed = rst![Total HAP Reduction (lb/yr)]
MFID = rst![Master Facility ID]

If Batch_PP = 0 And Cont_PP = 0 Then
   OVACost = 0
   OVAANN = 0
Else
   OVACost = 14500
   OVAANN = OVACost * 0.142 + 1610
                                 '1610 is the annual rental cost
End If                            '0.142 is the capital recovery factor for
                                 'the data collection system assuming
                                 'equipment life of 10 years
If MAC = 2 And ProType = "Batch" Then            '0.10 $/lb is salvage value
   HONRC = (0.562 - Recovery) * UnctrlEmis * 0.1
ElseIf MAC = 2 And ProType = "Continuous" Then
   HONRC = (0.761 - Recovery) * UnctrlEmis * 0.1
ElseIf MAC = 0 And ProType = "Batch" Then
   HONRC = 0.562 * UnctrlEmis * 0.1
```

ElseIf MAC = 0 And ProType = "Continuous" Then
   HONRC = 0.761 * UnctrlEmis * 0.1
End If

If (MAC = 2 Or MAC = 0) And ProType = "Continuous" Then
   HONTCI = HONTrain + (OVACost + HONContFC) * Cont_PP
   HONTAC = ((HONContCC + HONContAnnExp + OVAANN)) * Cont_PP - HONRC
   RCHON = HONRC
ElseIf (MAC = 2 Or MAC = 0) And ProType = "Batch" Then
   HONTCI = HONTrain + (OVACost + HONBatchFC) * Batch_PP
   HONTAC = ((HONBatchCC + HONBatchAnnExp + OVAANN) * Batch_PP) - HONRC
   RCHON = HONRC
ElseIf MAC = 1 Then
   HONTCI = 0
   HONTAC = 0
   RCHON = 0
End If

If MAC = 2 Then
   VVRC = Recovery * UnctrlEmis * 0.1   '0.10 $/lb is salvage value
Else
   VVRC = 0
End If

If MAC = 2 And ProType = "Continuous" Then
   VVTCI = VVTrain + (VVContFC + OVACost) * Cont_PP
   VVTAC = (VVContCC + VVContAnnExp + OVAANN) * Cont_PP - VVRC
   RCVV = VVRC
ElseIf MAC = 2 And ProType = "Batch" Then
   VVTCI = VVTrain + (VVBatchFC + OVACost) * Batch_PP
   VVTAC = (VVBatchCC + VVBatchAnnExp + OVAANN) * Batch_PP - VVRC
   RCVV = VVRC
Else
   VVTCI = 0
   VVTAC = 0
   RCVV = 0
End If

If MAC = 0 Then
   TTCI = HONTCI
   TTAC = HONTAC

ElseIf MAC = 2 Then
   TTCI = HONTCI - VVTCI
   TTAC = HONTAC - VVTAC
   RC = RCHON

```
 End If

rst.Edit

If HAPRed = 0 Then
    rst![HON_TCI] = 0
    rst![HON_TAC] = 0
    rst![VV_TCI] = 0
    rst![VV_TAC] = 0
    rst![TCI] = 0
    rst![TAC] = 0
    rst![O&M ($)] = 0
    rst![MRR ($)] = 0
    rst![ACR ($)] = 0
    rst![RC ($)] = 0

Else
    rst![HON_TCI] = HONTCI
    rst![HON_TAC] = HONTAC
    rst![VV_TCI] = VVTCI
    rst![VV_TAC] = VVTAC
    rst![TCI] = TTCI
    rst![TAC] = TTAC
    rst![O&M ($)] = TTAC - Mirror - (0.1098 * TTCI) + RC
    rst![MRR ($)] = Mirror
    rst![ACR ($)] = 0.1098 * TTCI
    rst![RC ($)] = RC

End If
rst.Update
rst.MoveNext
Loop
End Sub
```

ATTACHMENT 5

Emissions and Cost Impacts
MACT Floor
and
Regulatory Alternatives

Equipment Leak Control Cost - MACT Floor (new)

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
1	M1	6	0	45000	None	0	0	45,000	22,365	Batch	$143,627	$115,976	$10,371
2	M10	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
3	M100	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
4	M101	5	0	37500	None	0	0	37,500	18,638	Batch	$121,783	$96,646	$10,371
5	M102	6	0	45000	None	0	0	45,000	22,365	Batch	$143,627	$115,975	$10,371
6	M103	5	0	37500	None	0	0	37,500	18,638	Batch	$121,783	$96,646	$10,371
7	M104	1	0	7500	LA non-HON	0.497	1	3,773	0	Batch	$0	$0	$0
8	M105	7	0	52500	None	0	0	52,500	26,093	Batch	$165,471	$135,305	$10,371
9	M106	8	0	60000	HON	0.562	1	26,280	0	Batch	$0	$0	$0
10	M107	0	1	30000	HON	0.761	1	7,170	0	Continuous	$0	$0	$0
11	M107	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
12	M107	7	0	52500	TX28VHP	0.497	1	26,408	0	Batch	$0	$0	$0
13	M108	11	0	82500	None	0	0	82,500	41,003	Batch	$252,847	$212,622	$10,371
14	M109	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
15	M11	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
16	M110	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
17	M111	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
18	M112	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
19	M113	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
20	M113	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
21	M114	1	0	7500	HON	0.562	1	3,285	0	Batch	$0	$0	$0
22	M114	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
23	M115	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
24	M116	4	0	30000	AVO	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
25	M116	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
26	M117	0	2	60000	None	0	0	60,000	41,280	Continuous	$139,239	$56,784	$2,751
27	M118	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
28	M119	6	0	45000	AVO	0	0	45,000	22,365	Batch	$143,627	$115,976	$10,371

A-25

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
29	M12	5	0	37500	Subpart VV	0.497	1	18,863	0	Batch	$0	$0	$0
30	M120	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
31	M121	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
32	M122	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
33	M123	1	0	7500	Subpart V	0.497	1	3,773	0	Batch	$0	$0	$0
34	M124	2	0	15000	AVO	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
35	M125	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
36	M125	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
37	M126	0	2	60000	None	0	0	60,000	41,280	Continuous	$139,239	$56,784	$2,751
38	M126	1	0	7500	TXReg5	0.497	1	3,773	0	Batch	$0	$0	$0
39	M127	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
40	M128	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
41	M129	127	0	952500	None	0	0	952,500	473,393	Batch	$2,786,75	$2,454,815	$10,371
42	M13	3	0	22500	AVO	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
43	M130	163	0	1222500	None	0	0	1,222,500	607,583	Batch	$3,573,13	$3,150,668	$10,371
44	M131	39	0	292500	None	0	0	292,500	145,373	Batch	$864,479	$753,841	$10,371
45	M132	2	0	15000	AVO	0	0	15,000	7,455	Batch	$56,251	$38,659	$10,371
46	M133	4	0	30000	HON	0.562	1	13,140	0	Batch	$0	$0	$0
47	M134	26	0	195000	None	0	0	195,000	96,915	Batch	$580,507	$502,561	$10,371
48	M135	0	0	0	HON	0.562	1	0	0	Batch	$0	$0	$0
49	M136	6	0	45000	AVO	0	0	45,000	22,365	Batch	$143,627	$115,975	$10,371
50	M137	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
51	M138	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
52	M141	1	0	7500	Subpart V	0.497	1	3,773	0	Batch	$0	$0	$0
53	M142	8	0	60000	None	0	0	60,000	29,820	Batch	$187,315	$154,634	$10,371
54	M142	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
55	M144	7	0	52500	Subpart VV	0.497	1	26,408	0	Batch	$0	$0	$0
56	M145	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
57	M146	3	0	22500	TX28MID	0.497	1	11,318	0	Batch	$0	$0	$0
58	M146	0	4	120000	TX28MID	0.688	1	37,440	0	Continuous	$0	$0	$0

A-26

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
59	M147	3	0	22500	Subpart VV	0.497	1	11,318	0	Batch	$0	$0	$0
60	M148	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
61	M149	11	0	82500	None	0	0	82,500	41,003	Batch	$252,847	$212,622	$10,371
62	M15	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
63	M15	1	0	7500	Subpart V	0.497	1	3,773	0	Batch	$0	$0	$0
64	M15	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
65	M150	3	0	22500	LA non-HON	0.497	1	11,318	0	Batch	$0	$0	$0
66	M150	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
67	M151	2	0	15000	TX28M	0.02	0	14,700	7,155	Batch	$56,251	$38,688	$10,814
68	M152	6	0	45000	Subpart VV	0.497	1	22,635	0	Batch	$0	$0	$0
69	M153	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
70	M154	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
71	M155	6	0	45000	None	0	0	45,000	22,365	Batch	$143,627	$115,975	$10,371
72	M156	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
73	M157	13	0	97500	Subpart VV	0.497	1	49,043	0	Batch	$0	$0	$0
74	M158	1	0	7500	AVO	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
75	M16	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
76	M160	2	0	15000	HON	0.562	1	6,570	0	Batch	$0	$0	$0
77	M17	52	0	390000	None	0	0	390,000	193,830	Batch	$1,148,45	$1,005,121	$10,371
78	M18	6	0	45000	Subpart VV	0.497	1	22,635	0	Batch	$0	$0	$0
79	M19	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
80	M2	1	0	7500	AVO	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
81	M20	8	0	60000	None	0	0	60,000	29,820	Batch	$187,315	$154,634	$10,371
82	M21	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
83	M22	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
84	M22	3	0	22500	Subpart VV	0.497	1	11,318	0	Batch	$0	$0	$0
85	M23	0	1	30000	LA 2122	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
86	M23	2	0	15000	LA non-HON	0.497	1	7,545	0	Batch	$0	$0	$0
87	M23	0	2	60000	LA non-HON	0.688	1	18,720	0	Continuous	$0	$0	$0
88	M23	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751

A-27

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
89	M24	3	0	22500	AVO	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
90	M25	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
91	M25	43	0	322500	Subpart VV	0.497	1	162,218	0	Batch	$0	$0	$0
92	M254	0	2	60000	None	0	0	60,000	41,280	Continuous	$139,239	$56,784	$2,751
93	M255	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
94	M256	0	2	60000	None	0	0	60,000	41,280	Continuous	$139,239	$56,784	$2,751
95	M258	0	2	60000	None	0	0	60,000	41,280	Continuous	$139,239	$56,784	$2,751
96	M259	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
97	M26	19	0	142500	None	0	0	142,500	70,823	Batch	$427,599	$367,256	$10,371
98	M260	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
99	M261	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
100	M262	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
101	M265	0	2	60000	TX28MID	0.688	1	18,720	0	Continuous	$0	$0	$0
102	M269	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
103	M27	7	0	52500	None	0	0	52,500	26,093	Batch	$165,471	$135,305	$10,371
104	M27	2	0	15000	Subpart VV	0.497	1	7,545	0	Batch	$0	$0	$0
105	M270	0	1	30000	TX28RCT	0.688	1	9,360	0	Continuous	$0	$0	$0
106	M271	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
107	M277	0	4	120000	None	0	0	120,000	82,560	Continuous	$265,915	$113,568	$2,751
108	M279	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
109	M28	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
110	M280	0	3	90000	28M	0.24	2	68,400	40,320	Continuous	$202,577	$87,336	$4,332
111	M281	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
112	M283	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
113	M284	0	1	30000	28M	0.24	2	22,800	13,440	Continuous	$75,901	$29,112	$4,332
114	M285	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
115	M287	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
116	M289	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
117	M29	4	0	30000	HON	0.562	1	13,140	0	Batch	$0	$0	$0
118	M293	0	2	60000	TX28MID	0.688	1	18,720	0	Continuous	$0	$0	$0

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
119	M297	0	2	60000	None	0	0	60,000	41,280	Continuous	$139,239	$56,784	$2,751
120	M299	0	3	90000	None	0	0	90,000	61,920	Continuous	$202,577	$85,176	$2,751
121	M3	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
122	M30	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
123	M300	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
124	M301	0	1	30000	TX28VHP	0.688	1	9,360	0	Continuous	$0	$0	$0
125	M303	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
126	M306	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
127	M307	0	1	30000	TX28VHP	0.688	1	9,360	0	Continuous	$0	$0	$0
128	M308	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
129	M311	0	1	30000	TX28RCT	0.688	1	9,360	0	Continuous	$0	$0	$0
130	M314	0	4	120000	None	0	0	120,000	82,560	Continuous	$265,915	$113,568	$2,751
131	M315	0	2	60000	TX28MID	0.688	1	18,720	0	Continuous	$0	$0	$0
132	M318	0	2	60000	None	0	0	60,000	41,280	Continuous	$139,239	$56,784	$2,751
133	M32	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
134	M320	0	2	60000	TX28MID	0.688	1	18,720	0	Continuous	$0	$0	$0
135	M322	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
136	M325	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
137	M326	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
138	M328	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
139	M33	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
140	M330	0	2	60000	None	0	0	60,000	41,280	Continuous	$139,239	$56,784	$2,751
141	M334	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
142	M337	0	1	30000	29MID	0.688	1	9,360	0	Continuous	$0	$0	$0
143	M34	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
144	M342	0	1	30000	TX28MID	0.688	1	9,360	0	Continuous	$0	$0	$0
145	M343	0	1	30000	28M	0.24	2	22,800	13,440	Continuous	$75,901	$29,112	$4,332
146	M347	0	1	30000	LA non-HON	0.688	1	9,360	0	Continuous	$0	$0	$0
147	M35	5	0	37500	None	0	0	37,500	18,638	Batch	$121,783	$96,646	$10,371
148	M350	0	1	30000	28M	0.24	2	22,800	13,440	Continuous	$75,901	$29,112	$4,332

A-29

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
149	M351	0	3	90000	None	0	0	90,000	61,920	Continuous	$202,577	$85,176	$2,751
150	M352	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
151	M358	0	2	60000	None	0	0	60,000	41,280	Continuous	$139,239	$56,784	$2,751
152	M359	0	1	30000	None	0	0	30,000	20,640	Continuous	$75,901	$28,392	$2,751
153	M36	1	0	7500	AVO	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
154	M37	1	0	7500	AVO	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
155	M38	1	0	7500	AVO	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
156	M380	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
157	M39	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
158	M4	4	0	30000	Subpart VV	0.497	1	15,090	0	Batch	$0	$0	$0
159	M40	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
160	M41	1	0	7500	AVO	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
161	M42	36	0	270000	None	0	0	270,000	134,190	Batch	$798,947	$695,853	$10,371
162	M43	12	0	90000	HON	0.562	1	39,420	0	Batch	$0	$0	$0
163	M44	0	2	60000	28M	0.24	2	45,600	26,880	Continuous	$139,239	$58,224	$4,332
164	M44	6	0	45000	TX28MID	0.497	1	22,635	0	Batch	$0	$0	$0
165	M45	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
166	M45	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
167	M46	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
168	M47	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
169	M48	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
170	M49	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
171	M49	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
172	M5	10	0	75000	None	0	0	75,000	37,275	Batch	$231,003	$193,292	$10,371
173	M51	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
174	M52	4	0	30000	HON	0.562	1	13,140	0	Batch	$0	$0	$0
175	M53	1	0	7500	TX28M	0.02	0	7,350	3,578	Batch	$34,407	$19,344	$10,814
176	M54	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
177	M55	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
178	M56	2	0	15000	Subpart VV	0.497	1	7,545	0	Batch	$0	$0	$0

A-30

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
179	M58	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
180	M59	1	0	7500	HON	0.562	1	3,285	0	Batch	$0	$0	$0
181	M6	0	0	0	None	0	0	0	0	Batch	$0	$0	$0
182	M60	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
183	M61	5	0	37500	None	0	0	37,500	18,638	Batch	$121,783	$96,646	$10,371
184	M62	11	0	82500	None	0	0	82,500	41,003	Batch	$252,847	$212,622	$10,371
185	M62	2	0	15000	Subpart V	0.497	1	7,545	0	Batch	$0	$0	$0
186	M63	4	0	30000	AVO	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
187	M64	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
188	M65	2	0	15000	LA non-HON	0.497	1	7,545	0	Batch	$0	$0	$0
189	M66	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
190	M67	6	0	45000	None	0	0	45,000	22,365	Batch	$143,627	$115,975	$10,371
191	M68	2	0	15000	HON	0.562	1	6,570	0	Batch	$0	$0	$0
192	M69	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
193	M7	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
194	M70	2	0	15000	None	0	0	15,000	7,455	Batch	$56,251	$38,658	$10,371
195	M71	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
196	M72	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
197	M73	8	0	60000	None	0	0	60,000	29,820	Batch	$187,315	$154,634	$10,371
198	M74	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
199	M75	5	0	37500	None	0	0	37,500	18,638	Batch	$121,783	$96,646	$10,371
200	M76	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
201	M77	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
202	M78	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
203	M79	2	0	15000	Subpart VV	0.497	1	7,545	0	Batch	$0	$0	$0
204	M8	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
205	M80	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
206	M81	4	0	30000	AVO	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
207	M82	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
208	M83	13	0	97500	None	0	0	97,500	48,458	Batch	$296,535	$251,280	$10,371

A-31

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
209	M84	3	0	22500	None	0	0	22,500	11,183	Batch	$78,095	$57,988	$10,371
210	M84	5	0	37500	TX28MID	0.497	1	18,863	0	Batch	$0	$0	$0
211	M85	10	0	75000	HON	0.562	1	32,850	0	Batch	$0	$0	$0
212	M86	6	0	45000	TX28MID	0.497	1	22,635	0	Batch	$0	$0	$0
213	M87	11	0	82500	None	0	0	82,500	41,003	Batch	$252,847	$212,622	$10,371
214	M88	6	0	45000	None	0	0	45,000	22,365	Batch	$143,627	$115,976	$10,371
215	M89	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
216	M9	2	0	15000	HON	0.562	1	6,570	0	Batch	$0	$0	$0
217	M9	9	0	67500	None	0	0	67,500	33,548	Batch	$209,159	$173,963	$10,371
218	M90	22	0	165000	None	0	0	165,000	82,005	Batch	$493,131	$425,244	$10,371
219	M91	5	0	37500	None	0	0	37,500	18,638	Batch	$121,783	$96,646	$10,371
220	M92	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
221	M93	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
222	M94	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
223	M95	10	0	75000	None	0	0	75,000	37,275	Batch	$231,003	$193,292	$10,371
224	M96	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
225	M97	4	0	30000	None	0	0	30,000	14,910	Batch	$99,939	$77,317	$10,371
226	M98	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
227	M99	1	0	7500	None	0	0	7,500	3,728	Batch	$34,407	$19,329	$10,371
Total				10,507,500				9,215,850	4,461,383		$24,679,693	$18,251,539	$8,182
Batch				7,867,500				7,089,720	3,156,743		$19,946,613	$16,371,907	$10,37
Continuous				2,640,000				2,126,130	1,304,640		$4,733,080	$1,879,632	$2,881
Overall Continuous				5,280,000				4,252,260	2,609,280		$9,466,160	$3,759,264	$2,881
National				13,147,500				11,341,980	5,766,023		$29,412,773	$20,131,171	$6,983

A-32

Equipment Leak Control Cost - Regulatory Alternative No. 1

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
1	M1	6	0	45000	None	0	4	45,000	22,365	Batch	$143,627	$115,976	$10,371
2	M10	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
3	M100	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
4	M101	5	0	37500	None	0	4	37,500	18,638	Batch	$121,783	$96,646	$10,371
5	M102	6	0	45000	None	0	4	45,000	22,365	Batch	$143,627	$115,975	$10,371
6	M103	5	0	37500	None	0	4	37,500	18,638	Batch	$121,783	$96,646	$10,371
7	M104	1	0	7500	LA non-HON	0.497	1	3,773	0	Batch	$0	$0	$0
8	M105	7	0	52500	None	0	4	52,500	26,093	Batch	$165,471	$135,305	$10,371
9	M106	8	0	60000	HON	0.562	1	26,280	0	Batch	$0	$0	$0
10	M107	0	1	30000	HON	0.761	1	7,170	0	Continuous	$0	$0	$0
11	M107	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
12	M107	7	0	52500	TX28VHP	0.497	1	26,408	0	Batch	$0	$0	$0
13	M108	11	0	82500	None	0	4	82,500	41,003	Batch	$252,847	$212,622	$10,371
14	M109	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
15	M11	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
16	M110	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
17	M111	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
18	M112	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
19	M113	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
20	M113	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
21	M114	1	0	7500	HON	0.562	1	3,285	0	Batch	$0	$0	$0
22	M114	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
23	M115	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
24	M116	4	0	30000	AVO	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
25	M116	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
26	M117	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
27	M118	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
28	M119	6	0	45000	AVO	0	4	45,000	22,365	Batch	$143,627	$115,976	$10,371

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
29	M12	5	0	37500	Subpart VV	0.497	1	18,863	0	Batch	$0	$0	$0
30	M120	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
31	M121	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
32	M122	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
33	M123	1	0	7500	Subpart V	0.497	1	3,773	0	Batch	$0	$0	$0
34	M124	2	0	15000	AVO	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
35	M125	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
36	M125	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
37	M126	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
38	M126	1	0	7500	TXReg5	0.497	1	3,773	0	Batch	$0	$0	$0
39	M127	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
40	M128	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
41	M129	127	0	952500	None	0	4	952,500	473,393	Batch	$2,786,75	$2,454,815	$10,371
42	M13	3	0	22500	AVO	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
43	M130	163	0	1222500	None	0	4	1,222,500	607,583	Batch	$3,573,13	$3,150,668	$10,371
44	M131	39	0	292500	None	0	4	292,500	145,373	Batch	$864,479	$753,841	$10,371
45	M132	2	0	15000	AVO	0	4	15,000	7,455	Batch	$56,251	$38,659	$10,371
46	M133	4	0	30000	HON	0.562	1	13,140	0	Batch	$0	$0	$0
47	M134	26	0	195000	None	0	4	195,000	96,915	Batch	$580,507	$502,561	$10,371
48	M135	0	0	0	HON	0.562	1	0	0	Batch	$0	$0	$0
49	M136	6	0	45000	AVO	0	4	45,000	22,365	Batch	$143,627	$115,975	$10,371
50	M137	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
51	M138	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
52	M141	1	0	7500	Subpart V	0.497	1	3,773	0	Batch	$0	$0	$0
53	M142	8	0	60000	None	0	4	60,000	29,820	Batch	$187,315	$154,634	$10,371
54	M142	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
55	M144	7	0	52500	Subpart VV	0.497	1	26,408	0	Batch	$0	$0	$0
56	M145	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
57	M146	3	0	22500	TX28MID	0.497	1	11,318	0	Batch	$0	$0	$0
58	M146	0	4	120000	TX28MID	0.688	2	37,440	8,760	Continuous	$68,216	$19,164	$4,375

A-34

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
59	M147	3	0	22500	Subpart VV	0.497	1	11,318	0	Batch	$0	$0	$0
60	M148	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
61	M149	11	0	82500	None	0	4	82,500	41,003	Batch	$252,847	$212,622	$10,371
62	M15	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
63	M15	1	0	7500	Subpart V	0.497	1	3,773	0	Batch	$0	$0	$0
64	M15	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
65	M150	3	0	22500	LA non-HON	0.497	1	11,318	0	Batch	$0	$0	$0
66	M150	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
67	M151	2	0	15000	TX28M	0.02	4	14,700	7,155	Batch	$56,251	$38,688	$10,814
68	M152	6	0	45000	Subpart VV	0.497	1	22,635	0	Batch	$0	$0	$0
69	M153	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
70	M154	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
71	M155	6	0	45000	None	0	4	45,000	22,365	Batch	$143,627	$115,975	$10,371
72	M156	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
73	M157	13	0	97500	Subpart VV	0.497	1	49,043	0	Batch	$0	$0	$0
74	M158	1	0	7500	AVO	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
75	M16	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
76	M160	2	0	15000	HON	0.562	1	6,570	0	Batch	$0	$0	$0
77	M17	52	0	390000	None	0	4	390,000	193,830	Batch	$1,148,45	$1,005,121	$10,371
78	M18	6	0	45000	Subpart VV	0.497	1	22,635	0	Batch	$0	$0	$0
79	M19	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
80	M2	1	0	7500	AVO	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
81	M20	8	0	60000	None	0	4	60,000	29,820	Batch	$187,315	$154,634	$10,371
82	M21	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
83	M22	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
84	M22	3	0	22500	Subpart VV	0.497	1	11,318	0	Batch	$0	$0	$0
85	M23	0	1	30000	LA 2122	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
86	M23	2	0	15000	LA non-HON	0.497	1	7,545	0	Batch	$0	$0	$0
87	M23	0	2	60000	LA non-HON	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375
88	M23	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726

A-35

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
89	M24	3	0	22500	AVO	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
90	M25	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
91	M25	43	0	322500	Subpart VV	0.497	1	162,218	0	Batch	$0	$0	$0
92	M254	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
93	M255	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
94	M256	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
95	M258	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
96	M259	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
97	M26	19	0	142500	None	0	4	142,500	70,823	Batch	$427,599	$367,256	$10,371
98	M260	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
99	M261	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
100	M262	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
101	M265	0	2	60000	TX28MID	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375
102	M269	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
103	M27	7	0	52500	None	0	4	52,500	26,093	Batch	$165,471	$135,305	$10,371
104	M27	2	0	15000	Subpart VV	0.497	1	7,545	0	Batch	$0	$0	$0
105	M270	0	1	30000	TX28RCT	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
106	M271	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
107	M277	0	4	120000	None	0	0	120,000	91,320	Continuous	$334,131	$124,476	$2,726
108	M279	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
109	M28	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
110	M280	0	3	90000	28M	0.24	2	68,400	46,890	Continuous	$51,162	$6,309	$269
111	M281	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
112	M283	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
113	M284	0	1	30000	28M	0.24	2	22,800	15,630	Continuous	$17,054	$2,103	$269
114	M285	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
115	M287	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
116	M289	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
117	M29	4	0	30000	HON	0.562	1	13,140	0	Batch	$0	$0	$0
118	M293	0	2	60000	TX28MID	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375

A-36

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
119	M297	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
120	M299	0	3	90000	None	0	0	90,000	68,490	Continuous	$253,739	$93,357	$2,726
121	M3	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
122	M30	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
123	M300	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
124	M301	0	1	30000	TX28VHP	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
125	M303	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
126	M306	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
127	M307	0	1	30000	TX28VHP	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
128	M308	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
129	M311	0	1	30000	TX28RCT	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
130	M314	0	4	120000	None	0	0	120,000	91,320	Continuous	$334,131	$124,476	$2,726
131	M315	0	2	60000	TX28MID	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375
132	M318	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
133	M32	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
134	M320	0	2	60000	TX28MID	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375
135	M322	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
136	M325	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
137	M326	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
138	M328	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
139	M33	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
140	M330	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
141	M334	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
142	M337	0	1	30000	29MID	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
143	M34	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
144	M342	0	1	30000	TX28MID	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
145	M343	0	1	30000	28M	0.24	2	22,800	15,630	Continuous	$17,054	$2,103	$269
146	M347	0	1	30000	LA non-HON	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
147	M35	5	0	37500	None	0	4	37,500	18,638	Batch	$121,783	$96,646	$10,371
148	M350	0	1	30000	28M	0.24	2	22,800	15,630	Continuous	$17,054	$2,103	$269

A-37

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
149	M351	0	3	90000	None	0	0	90,000	68,490	Continuous	$253,739	$93,357	$2,726
150	M352	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
151	M358	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
152	M359	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
153	M36	1	0	7500	AVO	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
154	M37	1	0	7500	AVO	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
155	M38	1	0	7500	AVO	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
156	M380	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
157	M39	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
158	M4	4	0	30000	Subpart VV	0.497	1	15,090	0	Batch	$0	$0	$0
159	M40	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
160	M41	1	0	7500	AVO	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
161	M42	36	0	270000	None	0	4	270,000	134,190	Batch	$798,947	$695,853	$10,371
162	M43	12	0	90000	HON	0.562	1	39,420	0	Batch	$0	$0	$0
163	M44	0	2	60000	28M	0.24	2	45,600	31,260	Continuous	$34,108	$4,206	$269
164	M44	6	0	45000	TX28MID	0.497	1	22,635	0	Batch	$0	$0	$0
165	M45	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
166	M45	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
167	M46	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
168	M47	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
169	M48	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
170	M49	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
171	M49	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
172	M5	10	0	75000	None	0	4	75,000	37,275	Batch	$231,003	$193,292	$10,371
173	M51	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
174	M52	4	0	30000	HON	0.562	1	13,140	0	Batch	$0	$0	$0
175	M53	1	0	7500	TX28M	0.02	4	7,350	3,578	Batch	$34,407	$19,344	$10,814
176	M54	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
177	M55	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
178	M56	2	0	15000	Subpart VV	0.497	1	7,545	0	Batch	$0	$0	$0

A-38

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
179	M58	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
180	M59	1	0	7500	HON	0.562	1	3,285	0	Batch	$0	$0	$0
181	M6	0	0	0	None	0	4	0	0	Batch	$0	$0	$0
182	M60	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
183	M61	5	0	37500	None	0	4	37,500	18,638	Batch	$121,783	$96,646	$10,371
184	M62	11	0	82500	None	0	4	82,500	41,003	Batch	$252,847	$212,622	$10,371
185	M62	2	0	15000	Subpart V	0.497	1	7,545	0	Batch	$0	$0	$0
186	M63	4	0	30000	AVO	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
187	M64	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
188	M65	2	0	15000	LA non-HON	0.497	1	7,545	0	Batch	$0	$0	$0
189	M66	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
190	M67	6	0	45000	None	0	4	45,000	22,365	Batch	$143,627	$115,975	$10,371
191	M68	2	0	15000	HON	0.562	1	6,570	0	Batch	$0	$0	$0
192	M69	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
193	M7	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
194	M70	2	0	15000	None	0	4	15,000	7,455	Batch	$56,251	$38,658	$10,371
195	M71	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
196	M72	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
197	M73	8	0	60000	None	0	4	60,000	29,820	Batch	$187,315	$154,634	$10,371
198	M74	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
199	M75	5	0	37500	None	0	4	37,500	18,638	Batch	$121,783	$96,646	$10,371
200	M76	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
201	M77	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
202	M78	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
203	M79	2	0	15000	Subpart VV	0.497	1	7,545	0	Batch	$0	$0	$0
204	M8	1	0	7500	Subpart VV	0.497	1	3,773	0	Batch	$0	$0	$0
205	M80	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
206	M81	4	0	30000	AVO	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
207	M82	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
208	M83	13	0	97500	None	0	4	97,500	48,458	Batch	$296,535	$251,280	$10,371

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
209	M84	3	0	22500	None	0	4	22,500	11,183	Batch	$78,095	$57,988	$10,371
210	M84	5	0	37500	TX28MID	0.497	1	18,863	0	Batch	$0	$0	$0
211	M85	10	0	75000	HON	0.562	1	32,850	0	Batch	$0	$0	$0
212	M86	6	0	45000	TX28MID	0.497	1	22,635	0	Batch	$0	$0	$0
213	M87	11	0	82500	None	0	4	82,500	41,003	Batch	$252,847	$212,622	$10,371
214	M88	6	0	45000	None	0	4	45,000	22,365	Batch	$143,627	$115,976	$10,371
215	M89	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
216	M9	2	0	15000	HON	0.562	1	6,570	0	Batch	$0	$0	$0
217	M9	9	0	67500	None	0	4	67,500	33,548	Batch	$209,159	$173,963	$10,371
218	M90	22	0	165000	None	0	4	165,000	82,005	Batch	$493,131	$425,244	$10,371
219	M91	5	0	37500	None	0	4	37,500	18,638	Batch	$121,783	$96,646	$10,371
220	M92	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
221	M93	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
222	M94	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
223	M95	10	0	75000	None	0	4	75,000	37,275	Batch	$231,003	$193,292	$10,371
224	M96	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
225	M97	4	0	30000	None	0	4	30,000	14,910	Batch	$99,939	$77,317	$10,371
226	M98	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
227	M99	1	0	7500	None	0	4	7,500	3,728	Batch	$34,407	$19,329	$10,371
Total				10,507,500				9,215,850	4,651,913		$25,593,872	$18,294,244	$7,865
Batch				7,867,500				7,089,720	3,156,743		$19,946,613	$16,371,907	$10,37
Continuous				2,640,000				2,126,130	1,495,170		$5,647,259	$1,922,337	$2,571
Overall Continuous				5,280,000				4,252,260	2,990,340		$11,294,518	$3,844,674	$2,571
National				13,147,500				11,341,980	6,147,083		$31,241,131	$20,216,581	$6,578

A-40

Equipment Leak Control Cost - Regulatory Alternative 2 (new module)

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
1	M1	6	0	45000	None	0	0	45,000	25,290	Batch	$175,139	$125,085	$9,892
2	M10	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
3	M100	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
4	M101	5	0	37500	None	0	0	37,500	21,075	Batch	$148,043	$104,238	$9,892
5	M102	6	0	45000	None	0	0	45,000	25,290	Batch	$175,139	$125,085	$9,892
6	M103	5	0	37500	None	0	0	37,500	21,075	Batch	$148,043	$104,238	$9,892
7	M104	1	0	7500	LA non-HON	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
8	M105	7	0	52500	None	0	0	52,500	29,505	Batch	$202,235	$145,932	$9,892
9	M106	8	0	60000	HON	0.562	1	26,280	0	Batch	$0	$0	$0
10	M107	0	1	30000	HON	0.761	1	7,170	0	Continuous	$0	$0	$0
11	M107	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
12	M107	7	0	52500	TX28VHP	0.497	2	26,408	3,413	Batch	$36,764	$13,237	$7,758
13	M108	11	0	82500	None	0	0	82,500	46,365	Batch	$310,619	$229,322	$9,892
14	M109	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
15	M11	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
16	M110	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
17	M111	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
18	M112	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
19	M113	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
20	M113	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
21	M114	1	0	7500	HON	0.562	1	3,285	0	Batch	$0	$0	$0
22	M114	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
23	M115	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
24	M116	4	0	30000	AVO	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
25	M116	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
26	M117	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
27	M118	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
28	M119	6	0	45000	AVO	0	0	45,000	25,290	Batch	$175,139	$125,085	$9,892

A-41

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
29	M12	5	0	37500	Subpart VV	0.497	2	18,863	2,438	Batch	$26,260	$9,455	$7,758
30	M120	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
31	M121	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
32	M122	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
33	M123	1	0	7500	Subpart V	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
34	M124	2	0	15000	AVO	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
35	M125	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
36	M125	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
37	M126	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
38	M126	1	0	7500	TXReg5	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
39	M127	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
40	M128	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
41	M129	127	0	952500	None	0	0	952,500	535,305	Batch	$3,453,75	$2,647,632	$9,892
42	M13	3	0	22500	AVO	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
43	M130	163	0	1222500	None	0	0	1,222,500	687,045	Batch	$4,429,21	$3,398,142	$9,892
44	M131	39	0	292500	None	0	0	292,500	164,385	Batch	$1,069,30	$813,052	$9,892
45	M132	2	0	15000	AVO	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
46	M133	4	0	30000	HON	0.562	1	13,140	0	Batch	$0	$0	$0
47	M134	26	0	195000	None	0	0	195,000	109,590	Batch	$717,059	$542,035	$9,892
48	M135	0	0	0	HON	0.562	1	0	0	Batch	$0	$0	$0
49	M136	6	0	45000	AVO	0	0	45,000	25,290	Batch	$175,139	$125,085	$9,892
50	M137	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
51	M138	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
52	M141	1	0	7500	Subpart V	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
53	M142	8	0	60000	None	0	0	60,000	33,720	Batch	$229,331	$166,780	$9,892
54	M142	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
55	M144	7	0	52500	Subpart VV	0.497	2	26,408	3,413	Batch	$36,764	$13,237	$7,758
56	M145	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
57	M146	3	0	22500	TX28MID	0.497	2	11,318	1,463	Batch	$15,756	$5,673	$7,758
58	M146	0	4	120000	TX28MID	0.688	2	37,440	8,760	Continuous	$68,216	$19,164	$4,375

A-42

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
59	M147	3	0	22500	Subpart VV	0.497	2	11,318	1,463	Batch	$15,756	$5,673	$7,758
60	M148	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
61	M149	11	0	82500	None	0	0	82,500	46,365	Batch	$310,619	$229,322	$9,892
62	M15	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
63	M15	1	0	7500	Subpart V	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
64	M15	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
65	M150	3	0	22500	LA non-HON	0.497	2	11,318	1,463	Batch	$15,756	$5,673	$7,758
66	M150	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
67	M151	2	0	15000	TX28M	0.02	0	14,700	8,130	Batch	$66,755	$41,695	$10,257
68	M152	6	0	45000	Subpart VV	0.497	2	22,635	2,925	Batch	$31,512	$11,346	$7,758
69	M153	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
70	M154	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
71	M155	6	0	45000	None	0	0	45,000	25,290	Batch	$175,139	$125,085	$9,892
72	M156	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
73	M157	13	0	97500	Subpart VV	0.497	2	49,043	6,338	Batch	$68,276	$24,583	$7,758
74	M158	1	0	7500	AVO	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
75	M16	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
76	M160	2	0	15000	HON	0.562	1	6,570	0	Batch	$0	$0	$0
77	M17	52	0	390000	None	0	0	390,000	219,180	Batch	$1,421,55	$1,084,070	$9,892
78	M18	6	0	45000	Subpart VV	0.497	2	22,635	2,925	Batch	$31,512	$11,346	$7,758
79	M19	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
80	M2	1	0	7500	AVO	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
81	M20	8	0	60000	None	0	0	60,000	33,720	Batch	$229,331	$166,780	$9,892
82	M21	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
83	M22	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
84	M22	3	0	22500	Subpart VV	0.497	2	11,318	1,463	Batch	$15,756	$5,673	$7,758
85	M23	0	1	30000	LA 2122	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
86	M23	2	0	15000	LA non-HON	0.497	2	7,545	975	Batch	$10,504	$3,782	$7,758
87	M23	0	2	60000	LA non-HON	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375
88	M23	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726

A-43

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
89	M24	3	0	22500	AVO	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
90	M25	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
91	M25	43	0	322500	Subpart VV	0.497	2	162,218	20,963	Batch	$225,836	$81,313	$7,758
92	M254	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
93	M255	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
94	M256	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
95	M258	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
96	M259	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
97	M26	19	0	142500	None	0	0	142,500	80,085	Batch	$527,387	$396,102	$9,892
98	M260	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
99	M261	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
100	M262	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
101	M265	0	2	60000	TX28MID	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375
102	M269	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
103	M27	7	0	52500	None	0	0	52,500	29,505	Batch	$202,235	$145,932	$9,892
104	M27	2	0	15000	Subpart VV	0.497	2	7,545	975	Batch	$10,504	$3,782	$7,758
105	M270	0	1	30000	TX28RCT	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
106	M271	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
107	M277	0	4	120000	None	0	0	120,000	91,320	Continuous	$334,131	$124,476	$2,726
108	M279	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
109	M28	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
110	M280	0	3	90000	28M	0.24	2	68,400	46,890	Continuous	$51,162	$6,309	$269
111	M281	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
112	M283	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
113	M284	0	1	30000	28M	0.24	2	22,800	15,630	Continuous	$17,054	$2,103	$269
114	M285	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
115	M287	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
116	M289	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
117	M29	4	0	30000	HON	0.562	1	13,140	0	Batch	$0	$0	$0
118	M293	0	2	60000	TX28MID	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
119	M297	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
120	M299	0	3	90000	None	0	0	90,000	68,490	Continuous	$253,739	$93,357	$2,726
121	M3	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
122	M30	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
123	M300	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
124	M301	0	1	30000	TX28VHP	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
125	M303	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
126	M306	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
127	M307	0	1	30000	TX28VHP	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
128	M308	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
129	M311	0	1	30000	TX28RCT	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
130	M314	0	4	120000	None	0	0	120,000	91,320	Continuous	$334,131	$124,476	$2,726
131	M315	0	2	60000	TX28MID	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375
132	M318	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
133	M32	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
134	M320	0	2	60000	TX28MID	0.688	2	18,720	4,380	Continuous	$34,108	$9,582	$4,375
135	M322	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
136	M325	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
137	M326	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
138	M328	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
139	M33	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
140	M330	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
141	M334	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
142	M337	0	1	30000	29MID	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
143	M34	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
144	M342	0	1	30000	TX28MID	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
145	M343	0	1	30000	28M	0.24	2	22,800	15,630	Continuous	$17,054	$2,103	$269
146	M347	0	1	30000	LA non-HON	0.688	2	9,360	2,190	Continuous	$17,054	$4,791	$4,375
147	M35	5	0	37500	None	0	0	37,500	21,075	Batch	$148,043	$104,238	$9,892
148	M350	0	1	30000	28M	0.24	2	22,800	15,630	Continuous	$17,054	$2,103	$269

A-45

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
149	M351	0	3	90000	None	0	0	90,000	68,490	Continuous	$253,739	$93,357	$2,726
150	M352	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
151	M358	0	2	60000	None	0	0	60,000	45,660	Continuous	$173,347	$62,238	$2,726
152	M359	0	1	30000	None	0	0	30,000	22,830	Continuous	$92,955	$31,119	$2,726
153	M36	1	0	7500	AVO	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
154	M37	1	0	7500	AVO	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
155	M38	1	0	7500	AVO	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
156	M380	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
157	M39	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
158	M4	4	0	30000	Subpart VV	0.497	2	15,090	1,950	Batch	$21,008	$7,564	$7,758
159	M40	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
160	M41	1	0	7500	AVO	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
161	M42	36	0	270000	None	0	0	270,000	151,740	Batch	$988,019	$750,510	$9,892
162	M43	12	0	90000	HON	0.562	1	39,420	0	Batch	$0	$0	$0
163	M44	0	2	60000	28M	0.24	2	45,600	31,260	Continuous	$34,108	$4,206	$269
164	M44	6	0	45000	TX28MID	0.497	2	22,635	2,925	Batch	$31,512	$11,346	$7,758
165	M45	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
166	M45	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
167	M46	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
168	M47	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
169	M48	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
170	M49	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
171	M49	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
172	M5	10	0	75000	None	0	0	75,000	42,150	Batch	$283,523	$208,475	$9,892
173	M51	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
174	M52	4	0	30000	HON	0.562	1	13,140	0	Batch	$0	$0	$0
175	M53	1	0	7500	TX28M	0.02	0	7,350	4,065	Batch	$39,659	$20,848	$10,257
176	M54	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
177	M55	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
178	M56	2	0	15000	Subpart VV	0.497	2	7,545	975	Batch	$10,504	$3,782	$7,758

A-46

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
179	M58	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
180	M59	1	0	7500	HON	0.562	1	3,285	0	Batch	$0	$0	$0
181	M6	0	0	0	None	0	0	0	0	Batch	$0	$0	$0
182	M60	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
183	M61	5	0	37500	None	0	0	37,500	21,075	Batch	$148,043	$104,238	$9,892
184	M62	11	0	82500	None	0	0	82,500	46,365	Batch	$310,619	$229,322	$9,892
185	M62	2	0	15000	Subpart V	0.497	2	7,545	975	Batch	$10,504	$3,782	$7,758
186	M63	4	0	30000	AVO	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
187	M64	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
188	M65	2	0	15000	LA non-HON	0.497	2	7,545	975	Batch	$10,504	$3,782	$7,758
189	M66	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
190	M67	6	0	45000	None	0	0	45,000	25,290	Batch	$175,139	$125,085	$9,892
191	M68	2	0	15000	HON	0.562	1	6,570	0	Batch	$0	$0	$0
192	M69	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
193	M7	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
194	M70	2	0	15000	None	0	0	15,000	8,430	Batch	$66,755	$41,695	$9,892
195	M71	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
196	M72	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
197	M73	8	0	60000	None	0	0	60,000	33,720	Batch	$229,331	$166,780	$9,892
198	M74	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
199	M75	5	0	37500	None	0	0	37,500	21,075	Batch	$148,043	$104,238	$9,892
200	M76	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
201	M77	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
202	M78	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
203	M79	2	0	15000	Subpart VV	0.497	2	7,545	975	Batch	$10,504	$3,782	$7,758
204	M8	1	0	7500	Subpart VV	0.497	2	3,773	488	Batch	$5,252	$1,891	$7,758
205	M80	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
206	M81	4	0	30000	AVO	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
207	M82	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
208	M83	13	0	97500	None	0	0	97,500	54,795	Batch	$364,811	$271,018	$9,892

A-47

Count	MFID	Batch PP	Continuous PP	Uncontrolled HAP Emissions (lb/yr)	LDAR Program	Reduction	MACT	Baseline HAP Emissions (lb/yr)	HAP Reduction (lb/yr)	Type	TCI	TAC	CE ($/ton)
209	M84	3	0	22500	None	0	0	22,500	12,645	Batch	$93,851	$62,542	$9,892
210	M84	5	0	37500	TX28MID	0.497	2	18,863	2,438	Batch	$26,260	$9,455	$7,758
211	M85	10	0	75000	HON	0.562	1	32,850	0	Batch	$0	$0	$0
212	M86	6	0	45000	TX28MID	0.497	2	22,635	2,925	Batch	$31,512	$11,346	$7,758
213	M87	11	0	82500	None	0	0	82,500	46,365	Batch	$310,619	$229,322	$9,892
214	M88	6	0	45000	None	0	0	45,000	25,290	Batch	$175,139	$125,085	$9,892
215	M89	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
216	M9	2	0	15000	HON	0.562	1	6,570	0	Batch	$0	$0	$0
217	M9	9	0	67500	None	0	0	67,500	37,935	Batch	$256,427	$187,628	$9,892
218	M90	22	0	165000	None	0	0	165,000	92,730	Batch	$608,675	$458,645	$9,892
219	M91	5	0	37500	None	0	0	37,500	21,075	Batch	$148,043	$104,238	$9,892
220	M92	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,847	$9,892
221	M93	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
222	M94	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
223	M95	10	0	75000	None	0	0	75,000	42,150	Batch	$283,523	$208,475	$9,892
224	M96	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
225	M97	4	0	30000	None	0	0	30,000	16,860	Batch	$120,947	$83,390	$9,892
226	M98	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
227	M99	1	0	7500	None	0	0	7,500	4,215	Batch	$39,659	$20,848	$9,892
Total				10,507,500				9,215,850	5,138,925		$30,840,620	$19,867,610	$7,732
Batch				7,867,500				7,089,720	3,643,755		$25,193,361	$17,945,273	$9,850
Continuous				2,640,000				2,126,130	1,495,170		$5,647,259	$1,922,337	$2,571
Overall Continuous				5,280,000				4,252,260	2,990,340		$11,294,518	$3,844,674	$2,571
National				13,147,500				11,341,980	6,634,095		$36,487,879	$21,789,947	$6,569

A-48