

US EPA ARCHIVE DOCUMENT

## EXECUTIVE SUMMARY

EPA has prepared this *Economic Assessment* to accompany the Agency's proposed rulemaking to revise the hazardous waste identification rules for contaminated media (HWIR-Media) under Subtitle C of the Resource Conservation and Recovery Act (RCRA). The proposed rule authorizes EPA and states to remove certain lower-risk contaminated media from most regulation as hazardous waste and modifies the treatment standards and permitting procedures for higher-risk contaminated media, which remain subject to hazardous waste regulations.

This *Economic Assessment* has been submitted to the Office of Management (OMB) in accordance with Executive Order 12866, which requires EPA to provide an assessment of the costs and benefits of significant regulatory actions. EPA has determined that the proposed rule is a significant regulatory action because it would have an annual effect on the economy, through costs savings, of greater than \$100 million per year.

This Executive Summary is organized into the following sections:

- ES.1: Description of the HWIR-Media Proposal
- ES.2: Potential Cost Savings
- ES.3: Sensitivity Analyses
- ES.4: Nonmonetary Effects
- ES.5: Potential Industry Impacts
- ES.6: Regulatory Issues

The results are summarized in Exhibit ES-1 below.

### ES.1 DESCRIPTION OF THE HWIR-MEDIA PROPOSAL

HWIR-Media will address an important limitation of the current RCRA Subtitle C program. The Subtitle C regulatory framework was designed primarily to ensure the safe cradle-to-grave management of currently-generated hazardous waste and thereby prevent releases, and to minimize the generation and maximize the legitimate reuse and recycling of hazardous waste. Subtitle C regulations consequently contain many detailed procedural and substantive management requirements that, when applied to the cleanup of contaminated media, create incentives to leave contaminated media in place or to select remedies that otherwise minimize the applicability of RCRA regulations.

The proposed rule would revise existing RCRA Subtitle C regulations by creating a new decision process for identifying and managing contaminated media: soil, sediment (excluding navigational sediment), ground water, and surface water. Under this framework, a risk-based set of hazardous constituent concentration levels would define a "bright line" separating high and low levels of contamination. Media (excluding non-navigational sediment) containing one or more hazardous constituents with concentrations above the bright line would be required to be managed as "hazardous contaminated media" under

Exhibit ES-1. Summary of Potential Impacts of HWIR-Media Options

	Proposed Bright Line Option	Expanded Bright Line Option
Remedial Wastes Eligible for Exemption	<ul style="list-style-type: none"> <li>78 percent of all contaminated media (excluding ground water) are potentially eligible for exclusion from Subtitle C:                             <ul style="list-style-type: none"> <li>Soil: 78 percent</li> <li>Sediment: 81 percent (by applying soil bright line)</li> <li>Ground water: 5 percent of sites using land placement of treated ground water</li> </ul> </li> <li>Portion of soil potentially eligible for exclusion is larger for RCRA corrective actions than for CERCLA remedial actions.</li> </ul>	<ul style="list-style-type: none"> <li>76 percent of all remedial wastes (excluding ground water and debris) are potentially eligible for exclusion from Subtitle C:                             <ul style="list-style-type: none"> <li>Media: same as Proposed Option</li> <li>Old waste: 63%</li> <li>Debris: Not estimated</li> </ul> </li> </ul>
Potential Annual Cost Savings	<ul style="list-style-type: none"> <li>Soil: \$1,050 million/year</li> <li>Sediment: \$60 million/year</li> <li>Ground water: \$120 million/year</li> <li>Total: \$1,230 million/year</li> <li>Potential soil and sediment savings would decline by \$640 million/year if CAMU rule was effective in the baseline.</li> <li>Estimates represent <u>maximum potential</u> annual savings over the next few years.</li> <li>Limited state adoption would reduce potential savings.</li> </ul>	<ul style="list-style-type: none"> <li>Media: \$1,230 million/year (same as Proposed Option)</li> <li>Old waste: \$220 million/year</li> <li>Debris: \$90 million/year</li> <li>Total: \$1,540 million/year</li> <li>Potential soil and sediment savings would decline by \$640 million/year if CAMU rule was effective in baseline.</li> <li>Estimates represent <u>maximum potential</u> annual savings over the next few years.</li> <li>Limited state adoption would reduce potential savings.</li> </ul>

Exhibit ES-1 (continued).  
Summary of Potential Impacts of HWIR-Media Options

	Proposed Bright Line Option	Expanded Bright Line Option
Potential Nonmonetary Impacts	<ul style="list-style-type: none"> <li>• Changes in media management methods should not significantly increase risks.</li> <li>• Reduced administrative costs and delays.</li> <li>• Faster cleanups from streamlined rules.</li> <li>• Incentives for additional cleanups.</li> <li>• Possible risk reductions from accelerated and additional cleanups.</li> </ul>	<ul style="list-style-type: none"> <li>• Changes in remedial management methods should not significantly increase risks.</li> <li>• Reduced administrative costs and delays.</li> <li>• Faster cleanups from streamlined rules.</li> <li>• Incentives for additional cleanups.</li> <li>• Possible risk reductions from accelerated and additional cleanups.</li> </ul>
Potential Impacts on Generators	<ul style="list-style-type: none"> <li>• Cost savings are one-time and may not affect production costs, profit margins, and competitiveness.</li> <li>• Waste generating industries with largest potential cost savings:               <ul style="list-style-type: none"> <li>- Chemical and allied products</li> <li>- Fabricated metal products</li> <li>- Petroleum and coal products</li> </ul> </li> <li>• Potential cost savings range from 3 to 11 percent of pollution abatement costs for these industries.</li> </ul>	<ul style="list-style-type: none"> <li>• Cost savings are one-time and may not affect production costs, profit margins, and competitiveness.</li> <li>• Waste generating industries with largest potential cost savings:               <ul style="list-style-type: none"> <li>- Chemical and allied products</li> <li>- Fabricated metal products</li> <li>- Petroleum and coal products</li> </ul> </li> <li>• Potential cost savings range from 5 to 13 percent of pollution abatement costs for these industries.</li> </ul>

Exhibit ES-1 (continued).  
Summary of Potential Impacts of HWIR-Media Options

	Proposed Bright Line Option	Expanded Bright Line Option
Potential Impacts on Environmental Services Industry	<ul style="list-style-type: none"> <li>• Potential generator cost savings translate into potential revenue losses for the environmental services industry.</li> <li>• Potential offsetting revenue gains from additional and accelerated cleanups.</li> <li>• Impacts differ by industry segments:               <ul style="list-style-type: none"> <li>- Potential minor increase in solid waste management revenues.</li> <li>- Potential significant decrease in commercial hazardous waste management and remediation services revenues.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Potential generator cost savings translate into potential revenue losses for the environmental services industry.</li> <li>• Potential offsetting revenue gains from additional and accelerated cleanups.</li> <li>• Impacts differ by industry segments:               <ul style="list-style-type: none"> <li>- Potential minor increase in solid waste management revenues.</li> <li>- Potential significant decrease in commercial hazardous waste management and remediation services revenues.</li> </ul> </li> <li>• Larger impact for this option by including all remedial waste</li> </ul>
Potential Impacts on Small Entities	<ul style="list-style-type: none"> <li>• No net costs to small entities that are subject to HWIR-Media regulations (i.e., generators).</li> </ul>	
Environmental Justice	<ul style="list-style-type: none"> <li>• Reduces the demand for hazardous waste incinerators.</li> <li>• Expedites site cleanups.</li> <li>• Enables the public to participate in developing and approving Remediation Management Plans.</li> <li>• Tribal authorization will enable Native American tribal programs to apply for final authorization to implement HWIR-Media.</li> </ul>	
Unfunded Mandate	<ul style="list-style-type: none"> <li>• Does not impose a federal intergovernmental mandate.</li> </ul>	

revised Subtitle C standards. Media containing hazardous constituents whose concentrations are all below the bright line ("non-hazardous contaminated media") often would be eligible for exclusion from Subtitle C regulation if managed under authorized state or EPA oversight. (The bright line would not apply to non-navigational sediment; instead, such sediment would be determined to be hazardous or non-hazardous on a site- and waste-specific basis.) In addition, the proposal would streamline the permitting requirements for cleanup of all types of remedial waste, contaminated media as well as old waste and debris.

The options analyzed in this Assessment vary in several dimensions.

- Risk-Based or Conditional Exemption. First, in addition to options using the risk-based bright-line framework, another set of options relies on a conditional exemption from RCRA Subtitle C where the required remedial management actions are specified in site-specific, risk-based Remediation Management Plans (RMPs) with EPA or state oversight.
- Type of Remedial Waste Affected. Within the two major categories, risk-based bright line and conditional exemption approaches, options that address either contaminated media only or all remedial wastes were evaluated.
- Alternative Bright Lines. Finally, options that use alternative methods of calculating the bright-line constituent concentration levels were developed and evaluated.

These options are identified in Exhibit ES-2 below.

Exhibit ES-2. Options Analyzed

Remedial Wastes Eligible for Exclusion	Levels of Contamination Excluded	
	Low Risk (Bright Line)	Low and High Risk (No Bright Line)
Contaminated Media Only	Proposed Bright Line Option & Alternative Bright Line Options 1, 2, and 3	Conditional Exemption Option

All Remedial Waste	Expanded Bright Line Option	Expanded Conditional Exemption Option (Unitary Approach)
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## ES.2 POTENTIAL COST SAVINGS

This section examines the total potential cost savings under the Proposed Bright Line Option and the Expanded Bright Line Option. The potential savings of the Conditional and Expanded Conditional Exemption Options are not directly quantified because of inherent difficulties in projecting management decisions that rely entirely on site- and waste-specific factors, rather than national standards. Nevertheless, the potential savings may be somewhat larger under the Conditional Exemptions Options than under the Bright Line Options:

- Remedial waste that would be below the bright line under a Bright Line Option is likely to be managed in similar ways under Bright Line and Conditional Exemption Options. In both cases, remediation decisions for this lower risk waste generally would be made outside of RCRA Subtitle C on a site-by-site basis.
- In contrast, remedial waste that would be above the bright line under a Bright Line Option, may, on average, be managed less expensively under the Conditional Exemption Options. One reason for this difference is the requirement under the Bright Line Options for contaminated soil above the bright line that (absent a treatment variance) all constituents subject to treatment having concentrations greater than 10 times their Universal Treatment Standard (UTS) levels must be treated, even if the constituents present a relatively low risk. The Conditional Exemption Options have no similar requirement. If the remediation methods under these options focus only on constituents above the bright line, the potential cost savings may be roughly 15 percent greater than under the Bright Line Options. (See Section 4.6.4 for more details.)

The cost savings estimates in this section were developed for the Bright Line Options and represent high end or maximum potential cost savings. These estimates



represent maximum potential costs savings because they assume, for example, that:

- All states adopt and implement HWIR-Media programs that are no more stringent than the proposed rule;
- The existing CAMU rule, which is under legal challenge, is ineffective and therefore its potential benefits are not reflected in the baseline; and
- Remediation decisionmakers voluntarily decide to take advantage of the less stringent standards available under HWIR-Media, rather than continue to manage remedial waste under current Subtitle C standards.

The sensitivity of the potential cost savings estimates to state implementation of HWIR-Media and to implementation of the CAMU rule is discussed in Section 4.6. Section 4.6 also discusses the sensitivity of the potential cost savings estimates to three additional assumptions reflected in the HWIR-Media analysis:

- Media that exhibit a hazardous characteristic as well as media contaminated with listed hazardous wastes are affected by HWIR-Media;
- Remedial waste above the bright line must be treated for all constituents with concentrations greater than 10 times Universal Treatment Standards; and
- Sludge from operating RCRA Subtitle C and Subtitle D surface impoundments is not affected by HWIR-Media.

As shown in Exhibit ES-3, the Proposed Bright Line Option could affect the management of about 8.1 million tons of contaminated media per year (excluding ground water). These media are managed at CERCLA remedial actions, RCRA corrective actions, RCRA closures, state superfund cleanups, and voluntary cleanups. Most of this volume is contaminated soil at CERCLA remedial action and RCRA corrective action sites.

Exhibit ES-3. Remedial Wastes Above and Below Proposed Bright Line

(million tons per year)

Remediation Category	Baseline Volume	Above Bright Line		Below Bright Line	
		Volume	Percent	Volume	Percent
Soil: CERCLA, State Superfund & Voluntary	3.08	1.23	40%	1.85	60%
Soil: RCRA Corrective Action and Closure	4.56	0.46	10%	4.10	90%
Sediment: CERCLA	0.14	0.04	25%	0.10	75%
Sediment: RCRA Corrective Action	0.32	0.03	10%	0.29	90%
<b>Proposed Bright Line Option</b>	<b>8.1</b>	<b>1.76</b>	<b>22%</b>	<b>6.34</b>	<b>78%</b>
Old Waste: CERCLA	0.65	0.24	37%	0.41	63%
Old Waste: RCRA Corrective Action	1.14	0.42	37%	0.72	63%
Remediation Debris	0.36	--	--	--	--
<b>Expanded Bright Line Option</b>	<b>10.25</b>	<b>2.42<sup>a/</sup></b>	<b>24%<sup>a/</sup></b>	<b>7.47<sup>a/</sup></b>	<b>76%<sup>a/</sup></b>

<sup>a/</sup> Excludes debris because representative debris concentration data were unavailable.

About 22 percent of all contaminated soil and sediment would be above the proposed bright line levels and, if excavated, would be subject to modified LDR treatment standards. Contaminated soil above the bright line is considerably more prevalent at CERCLA remedial actions than at RCRA corrective actions. About 40 percent of CERCLA remedial action soil versus only 10 percent of RCRA corrective action soil is above the proposed bright line.

Under the Expanded Bright Line Option, which includes old waste and debris, as well as contaminated media, the volume of remedial waste subject to HWIR-Media would increase by 26 percent to approximately 10.2 million tons per year. Most of the increased volume (1.8 million tons/year) would be old waste at both CERCLA remedial

action and RCRA corrective action sites. Based on RCRA corrective action data, over one-third of this waste is contaminated at levels above the bright line. The other type of remedial waste analyzed, remediation debris, has a lower annual volume than old waste (360,000 tons/year). The percentage of debris above or below the bright line was not calculated because representative sampling data were unavailable.

Ground water is excluded from Exhibit ES-3 because the volume of ground water treated is not estimated, but is assumed to be a function of the treatment duration required to achieve target constituent concentrations. Therefore, the total volume of the contaminated ground water cannot be simply divided into volumes above and below the HWIR-Media bright line. The Agency, however, estimated that ground water cleanups at about 23 CERCLA remedial actions and 29 RCRA corrective actions per year could be affected by HWIR-Media because they plan to dispose of the treated ground water through placement on the land and therefore are subject to the LDR treatment standards. Based on CERCLA data, the ground water at only about five percent of these sites is contaminated with HWIR-Media bright-line constituents and is below the bright line.

As shown in Exhibit ES-4, HWIR-Media has the potential to significantly reduce remediation costs for volumes that are above and below the bright line. Under HWIR-Media, some volumes below the bright line shown may be managed without costly treatment (e.g., they may be disposed of in Subtitle D landfills). When treated, technologies that do not meet the modified Subtitle C LDR treatment standards may be used. The average cost of managing CERCLA soil below the bright line, for example, would fall from \$341/ton in the baseline to \$73/ton under HWIR-Media. Volumes above the bright line will also be less costly to manage because their HWIR-Media treatment standards would be less stringent than under the baseline. For example, the average cost of managing CERCLA soil above the bright line would decline from \$424/ton in the baseline to \$314/ton under HWIR-Media.

Exhibit ES-4. Average Treatment Costs for Remedial Waste  
(\$/ton)

Remedial Waste	Baseline Cost		HWIR-Media	
	Above Bright Line Volume S	Below Bright Line Volume S	Above Bright Line Volumes a	Below Bright Line Volume S

Soil: CERCLA	\$424	\$341	\$314	\$73
Soil: RCRA Corrective Action	\$196	\$141	\$128	\$47
Sediment: CERCLA	\$449	\$302	\$302	\$83
Sediment: RCRA Corrective Action	\$211	\$156	\$143	\$62
Ground water	\$9.7 million/site	\$9.7 million/site	\$6.5 million/site	\$0/site
Old Waste	\$254 <sup>b/</sup>	\$254 <sup>b/</sup>	\$273	\$47
Debris	\$970	\$970	\$853 <sup>c/</sup>	\$853 <sup>c/</sup>

<sup>a/</sup> Includes treatability study costs.

<sup>b/</sup> Baseline costs for above and below old waste volumes were not calculated.

<sup>c/</sup> Portion of debris above and below bright line and associated costs were not calculated.

As shown in Exhibit ES-5, HWIR-Media has the potential to reduce management costs by roughly 50 percent. Under the Proposed Bright Line Option, the baseline management cost of \$2.4 billion per year could decrease to \$1.2 billion per year. The management cost for contaminated media above the bright line would decline by 24 percent or about \$250 million per year, representing 21 percent of the \$1.2 billion in potential annual cost savings. The management cost of contaminated media below the bright line would fall by 71 percent or about \$975 million per year, representing 79 percent of the potential annual cost savings. By including old waste and debris, the Expanded Bright Line Option increases the potential annual cost savings by another \$300 million to approximately \$1.5 billion.

Exhibit ES-5. Maximum Potential Cost Savings  
(\$ million/year)

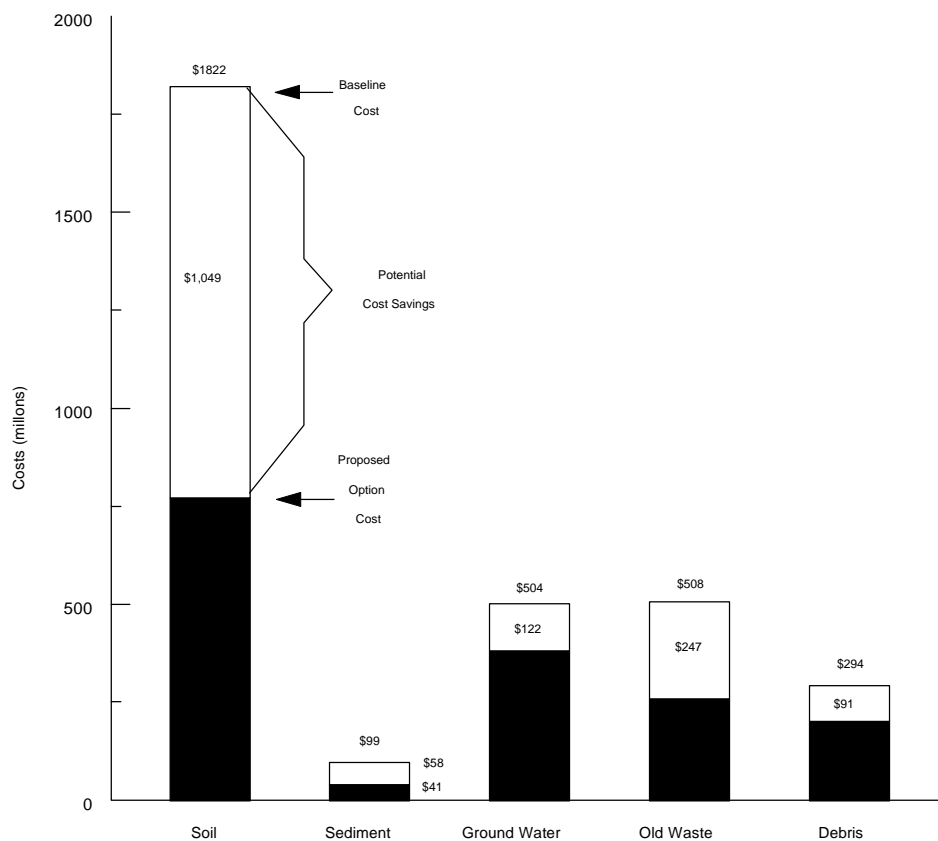
Remediation Category	Relation to Bright Line	Annual Cost		Potential Annual Cost Savings
		Baseline	HWIR-Media	
Soil: CERCLA, State Superfund, & Voluntary	Above	\$522	\$387	\$136 (26%)
	Below	\$630	\$135	\$495 (78%)
Soil: RCRA Corrective Action & Closure	Above	\$89	\$58	\$31 (35%)
	Below	\$579	\$193	\$386 (67%)
Sediment: CERCLA	Above	\$16	\$11	\$5 (31%)
	Below	\$32	\$9	\$23 (72%)
Sediment: RCRA Corrective Action	Above	\$7	\$5	\$2 (28%)
	Below	\$45	\$18	\$27 (60%)
Ground water: CERCLA	Above*	\$184	\$149	\$35 (19%)
	Below	\$39	\$19	\$20 (51%)
Ground water: RCRA Corrective Action	Above*	\$233	\$188	\$45 (19%)
	Below	\$49	\$26	\$23 (47%)
Proposed Bright Line Option	Above	\$1051	\$798	\$253 (24%)
	Below	\$1374	\$400	\$974 (71%)
	Total	\$2425	\$1196	\$1229 (51%)
Old Waste: CERCLA	All	\$165	\$85	\$80 (49%)
Old Waste: RCRA	All	\$290	\$149	\$141 (49%)
Debris	All	\$294	\$203	\$91 (31%)
Expanded Bright Line Option	Total	\$3174	\$1633	\$1541 (49%)

Note: Totals may not add due to rounding.

\* Includes sites with only non-HWIR constituents.

As shown in Exhibit ES-6, contaminated soil is responsible for most of the potential savings, over \$1 billion per year. The cost of managing soil as well as sediment could decline by up to 60 percent. The estimated potential reductions for other remedial waste range from 50 percent for old waste to 30 percent for debris and 25 percent for ground water. As noted earlier, these estimates represent potential rather than projected actual cost savings.

Exhibit ES-6. Potential Cost Savings By Remedial Waste



### ES.3 SENSITIVITY ANALYSES

EPA analyzed the importance of five major assumptions reflected in the HWIR-Media analysis:

- All states quickly adopt and implement rules similar to the proposed HWIR-Media rule. If, in contrast, only the five states with the largest remediation programs adopt and implement HWIR-Media, the potentially affected volumes and potential cost savings would decline by 60 to 70 percent.
- Corrective action management units (CAMUs) are assumed to not be used at remediation sites in either the baseline or under HWIR-Media and therefore the benefits of HWIR-Media are not superseded by CAMUs. If the opposite assumption is used, that is, the CAMU rule is and remains fully effective, the potentially affected volumes of soil and sediment and the associated cost savings attributable to HWIR-Media would decline by almost 58 percent.
- Media that exhibit a hazardous characteristic as well as media contaminated with listed hazardous wastes are affected by HWIR-Media. If contaminated soil exhibiting the toxicity characteristic only are excluded from HWIR, the potentially affected soil volume and potential cost savings would decline by approximately 20 percent and 15 percent, respectively.
- Remedial waste above the bright line must be treated for all constituents with concentrations greater than 10 times Universal Treatment Standards. If only constituents above the bright line must be treated, the volumes affected would not change, but the potential cost savings for soil and sediment would increase by almost \$165 million per year or 15 percent.
- Sludge from operating RCRA Subtitle C and Subtitle D surface impoundments is not affected by HWIR-Media. If, however, HWIR-Media applies to this 600,000 tons per year of sludge, the potential cost savings could be on the order of \$190 million per year.



Exhibits ES-7 and ES-8 summarize these sensitivity analyses results.

EPA also examined the combined effects of limited state adoption and use of CAMUs on the Proposed Bright Line Option, the Expanded Bright Line Option, and the Unitary Approach (which is essentially the same as the Expanded Conditional Exemption Option). In addition, the effects of "grandfathered" CAMUs under limited and full state adoption were also examined for the three options. The results of this analysis are presented in Exhibit ES-9. Under the full HWIR-Media adoption assumption, the annual maximum potential cost savings are \$1,229 million under the Proposed Bright Line Option and increase by \$503 million to \$1,732 million under the Expanded Bright Line Option. The annual maximum potential cost savings under the Unitary Option increase to \$2,094 million, or by \$362 million relative to the Expanded Bright Line Option. The addition of the Unitary Approach to management under full CAMU does not result in additional savings. The annual cost savings of \$844 million attributable to CAMUs and the cost savings of \$1,250 million with full CAMU in the baseline under the Unitary Approach together represent no additional cost savings relative to the total annual cost savings of \$2,094 million under the Unitary Approach with no CAMU in the baseline.

EPA estimates that a fully effective CAMU rule in the baseline will significantly reduce the potential cost savings attributable to HWIR-Media. Under the full HWIR-Media adoption assumption, cost savings decrease by approximately 40 percent under the Unitary Option, by 50 percent under the Expanded Bright Line Option, and by almost 70 percent under the Proposed Bright Line Option. Under the Proposed Bright Line Option, old waste, debris, and sludge would not be eligible for management under HWIR-Media nor in CAMUs, given that the proposal repeals the CAMU rule. These remediation wastes are therefore subject to less flexible, more expensive management methods under the full CAMU baseline assumption, resulting in a significant reduction in cost savings under the Proposed Bright Line Option.

Exhibit ES-7. Sensitivity Analyses: Potentially Affected Volumes

PROPOSED OPTION AND SENSITIVITY ANALYSES	REMIATI ON CATEGORY	AFFECTED VOLUME (million tons per year)			COMMENTS
		ABOVE Bright Line	BELOW Bright Line	TOT AL	
Proposed Bright Line Option	Soil	1.69	5.95	7.64	The portion of ground water above and below the bright line was not estimated.
	Sediment	0.07	0.39	0.46	
	Total	1.76	6.34	8.10	
Limited State Adoption/ Gradual State Adoption	The potentially affected volume would decline by 60 to 70 percent if only the 5 states with the largest cleanup programs adopt HWIR-Media. Also, because most states must modify their statutes and/or regulations to adopt HWIR-Media, affected volumes will gradually increase. Volumes affected in the 1st and 2nd year are estimated at one-third and two-thirds of the Proposed Option respectively, with volumes in subsequent years equal to the Proposed Option.				
Fully Effective Corrective Action Management Unit (CAMU) Rule	Soil	0.85	2.43	3.28	A fully effective CAMU rule would reduce potentially affected volume by 58 percent. The volume impact distribution between above and below bright line is based on Proposed Option analysis. CAMU rule does not apply to ground water.
	Sediment	0.02	0.13	0.15	
	Total	0.87	2.56	3.43	
Exclude Media Exhibiting Toxicity Characteristic Only	Soil	1.21	5.22	6.43	Impacts were estimated for soil only.

Exhibit ES-8. Sensitivity Analyses: Maximum Potential Cost Savings

PROPOSED OPTION AND SENSITIVITY ANALYSES	REMIEDIATION CATEGORY	COST SAVINGS (million \$ per year)			COMMENTS
		ABOVE	BELOW	TOTAL	
Proposed Bright Line Option	Soil	\$167	\$881	\$1,049	Twenty-one percent of total potential savings is from volumes above the bright line.
	Sediment	\$7	\$50	\$58	
	Ground water	\$83	\$38	\$122	
	<b>Total</b>	<b>\$257</b>	<b>\$969</b>	<b>\$1,229</b>	
Limited State Adoption/ Gradual State Adoption	<p>The potential cost savings would decline by 60 to 70 percent if only the 5 states with the largest cleanup programs adopt HWIR-Media. Also, because most states must modify their statutes and/or regulations to adopt HWIR-Media, cost savings will accrue gradually. Potential savings in the 1st and 2nd year are estimated at one-third and two-thirds of the Proposed Option respectively, with savings in subsequent years equal to the Proposed Option.</p>				
Fully Effective Corrective Action Management Unit (CAMU) Rule	Soil	\$80	\$368	\$448	Fully effective CAMU rule would reduce potential savings by 52 percent. Savings distribution between above and below volumes is based on Proposed Option analysis. CAMU rule does not apply to ground water.
	Sediment	\$3	\$17	\$20	
	Ground water	\$83	\$38	\$122	
	<b>Total</b>	<b>\$166</b>	<b>\$423</b>	<b>\$590</b>	

Exhibit ES-9. Estimated Baseline Management Costs and Cost Savings Under Alternative Scenarios and HWIR-Media Adoption Levels

HWIR-Media Options	Potential Cost Savings					
	Limited HWIR-Media Adoption			Full HWIR-Media Adoption		
	No CAMU	Grandfathered CAMU	Full CAMU	No CAMU	Grandfathered CAMU	Full CAMU
	million dollars per year					
Baseline Management Cost	3,519	3,480	2,675	3,519	3,480	2,675
Proposed Bright Line Option Savings	430	401	(414)	1,229	1,198	383
Expanded Bright Line Option Savings	607	568	(237)	1,732	1,693	888
Unitary Option Savings	733	694	(111)	2,094	2,055	1,250

With limited state adoption of HWIR-Media assuming no CAMUs in the baseline, the states responsible for 65 percent of remediation waste are assumed to manage remediation wastes using baseline management methods. Under the full CAMU baseline, management costs increase beyond the baseline for these states because their remediation wastes can no longer be managed in CAMUs and are not eligible for management under HWIR-Media. The increase in management costs in the non-adopting states is greater than the cost savings achieved in the states that adopt HWIR-Media, resulting in negative cost savings (i.e., net costs) under all options. EPA has estimated the cost savings that result if HWIR-Media does not repeal the CAMU rule, consequently allowing management of contaminated media in CAMUs or under HWIR-Media. The results of this analysis are presented in Exhibit D of the HWIR-Media Preamble.

ES.4 NONMONETARY EFFECTS

Under existing RCRA Subtitle C rules, contaminated media containing a listed hazardous waste or exhibiting a hazardous characteristic are subject to the land disposal restrictions (LDRs) and minimum technology requirements (MTRs) when they involve placement of waste upon the land.

When LDRs are triggered, contaminated media are subject to stringent and often costly treatment standards. Remediation decisionmakers often prefer remedies that leave contaminated media in place because such remedies avoid triggering the LDRs. When MTRs are triggered by the creation, expansion, or replacement of land-based units managing hazardous waste, contaminated media are subject to technical standards for liner, cover, and leachate collection systems. Thus, remediation decision-makers often avoid consolidating or otherwise moving contaminated media during remediation to bypass the MTRs.

If LDR, MTR, and other Subtitle C costs were not incurred, the Agency believes that remediation decisionmakers would conduct more cleanups than are currently being performed. Several factors provide incentives to perform cleanups. Remediating a site reduces future potential liability, increases the salability of the land, and may generate public good will. When the costs resulting from LDRs and MTR are incorporated into a cleanup decision, however, many cleanups become economically infeasible.

By removing existing LDR, MTR, and other Subtitle C requirements on certain non-hazardous contaminated media and allowing flexibility in selecting management options for all contaminated media, HWIR-Media is expected to reduce the disincentives for ex-situ management. Exhibit ES-10 summarizes the anticipated changes in management methods under HWIR-Media for non-hazardous contaminated media under the Proposed Bright Line Option. These same incentives would apply to remedial waste exempted from Subtitle C under the other HWIR-Media options.

Exhibit ES-10. Anticipated Incentives Created by HWIR-Media

Baseline Management Plans	Incentives for Non-Hazardous Contaminated Media	Reason for Change
No excavation or treatment (e.g., containment)	Manage in-situ or ex-situ	LDRs may not apply and therefore a less costly (non-LDR) ex-situ method may be chosen. Could also encourage in-situ or on-site ex-situ management because HWIR-Media lets a facility obtain an RMP instead of a more costly Part B permit.
Manage in-situ	Manage ex-situ	LDRs may not apply and therefore a less costly (non-LDR) ex-situ method may be chosen.
Manage ex-situ	Less expensive ex-situ management	Previously preferred ex-situ to in-situ or no treatment; ability to select a less costly ex-situ method under HWIR-Media will not cause shift from ex-situ management. May, however, choose a less expensive ex-situ method.

The resulting increase in ex-situ treatment and disposal may reduce long-term risks to human health. In addition, the more straightforward treatment requirements for media contaminated above the bright line (for example, reduction in the concentration of hazardous constituents subject to treatment in soil by 90 percent or to less than 10 times Universal Treatment Standards) may reduce regulatory confusion and uncertainty and accelerate the pace of cleanup of the nation's hazardous waste sites, thereby reducing long-term risk to human health.

The Bright Line and Conditional Exemption Options may have similar impacts in reducing long-term risks. As noted earlier, remedial waste that would be below the bright line under a Bright Line Option is likely to be managed in similar ways under Bright Line and Conditional Exemption Options. In contrast, remedial waste that would be above the bright line under a Bright Line Option, may, on average, be treated less extensively under the Conditional Exemption Options. Under these options, management methods may focus on the high risk constituents in such waste, rather than on all constituents subject to treatment having concentrations



exceeding 10 times UTS. The risk impact of this less extensive treatment is unclear, however, because the high risk constituents in this waste may still be adequately addressed under both types of options.

Although HWIR-Media will reduce the stringency of regulation for some media currently managed as hazardous waste, EPA does not expect any of the options to significantly increase risks to human health and the environment for two reasons:

- (1) There is a built-in process to minimize these risks under the HWIR-Media proposal, namely state or EPA oversight of cleanups through RMP review, approval, and oversight; and
- (2) Under all of the options considered, active management of contaminated media is likely to eliminate possible exposure pathways.

Thus, the Agency believes that the potential for significant increases in risk to human health and the environment is negligible for all these options.

## ES.5 POTENTIAL ECONOMIC IMPACTS

The primary economic impacts of HWIR-Media will be distributed across industries that manage remedial waste; secondary impacts will be felt by the environmental services industry. All four regulatory options examined will result in potential cost savings for generating industries and possible revenue losses for the environmental services industry. Savings for individual generators will generally be one-time in nature as their sites are cleaned up. On the other hand, the environmental services industry may suffer an on-going revenue loss from the reduced stringency of cleanups. Yet, offsetting this revenue loss will be increased revenues resulting from the increasing the number and pace of cleanups.

### ES.5.1 Potential Impacts on Generators

Based on an analysis of affected CERCLA remedial action and RCRA corrective action sites, the major generating industries that could be affected by HWIR-Media include fabricated metals products, petroleum refining, chemicals, power transmission equipment, and trucking terminal facilities. Firms in these industries will be the main beneficiaries of cost savings from changes in remediation practices under the various options. No other industry accounts for five percent or more of total potential cleanup cost savings.

Because cost savings are essentially one-time in nature, they are not likely to affect a company's production costs, long-term profit margins, and domestic or international competitiveness. In addition, because the cost of cleanup activities often falls on insurance companies, generators will receive less than the full amount of potential cost savings. As a result of these circumstances, the savings are unlikely to be passed on to consumers and instead will either be distributed to shareholders or be reinvested in the company. Therefore, savings from HWIR-Media may not affect the supply curve and market behavior of generating industries.

The potential cost savings are no more than one percent of total revenues for the industries with the largest share of the potential cost savings. The potential impacts appear more significant when compared with pollution abatement expenditures, which include expenditures for cleanup and managing and abating pollutants generated as part of a manufacturing process. Potential cost savings as a percent of total pollution abatement costs ranges from 3 to 13 percent for these industries, with higher ratios for the Expanded Bright Line Option.

#### ES.5.2 Potential Impacts on the Environmental Services Industry

Unlike in the case of generators, where cost savings are one-time occurrences, the revenue loss to firms in the environmental services industry will be ongoing because they work for a variety of generators who will conduct cleanups at different times in the future. HWIR-Media will not, however, have a uniform impact on the entire industry. Instead, the impacts will vary across three distinct industry segments:

- (1) The solid waste management industry segment, which provides transportation and disposal services for non-hazardous waste and contaminated media. Under HWIR-Media, the demand for the services of this industry segment will increase as more remedial wastes are disposed of in Subtitle D landfills.
- (2) The commercial hazardous waste management industry segment, which provides transportation, treatment, and disposal services for hazardous waste and contaminated media. Under HWIR-Media, this industry segment could face a revenue loss as smaller volumes are likely to be managed at commercial Subtitle C facilities and these



volumes may require less extensive treatment. These revenue losses, which are from cleanups that would occur in the baseline, will be offset, to some degree, by increased revenue resulting from the acceleration of these cleanups and the performance of new cleanups.

- (3) The remediation services industry segment provides engineering and technical advice for management of hazardous wastes. Under HWIR-Media, this industry segment may suffer a revenue loss, particularly for on-site cleanups. As for the commercial hazardous waste management industry, these revenue losses may be offset by increased revenue for accelerated and new cleanups.

These industry segments are not mutually exclusive. On the contrary, some of the large firms in the environmental services industry operate in more than one industry segment.

### ES.5.3 Net Economic Impacts

The estimated cost savings to generators and their insurance carriers under HWIR-Media are not expected to directly affect prices or output in the affected industries. In addition, the investment of the savings by generators and insurance companies or distribution of the savings to investors or employees would both be expected to have a positive effect on the economic growth. Long-run prices in the environmental services industries are also not expected to change significantly in response to the HWIR-Media proposal. Prices for remediation services and the management of hazardous wastes may decline in the short-term, however, in response to the reduced demand for these services under the HWIR-Media proposal. The resulting revenue losses for the environmental services industries could have a dampening effect on the economy as a whole, which may somewhat offset the boost to the economy from the increased investment and/or spending by generators and insurance companies. The stimulation of new and accelerated cleanups under HWIR-Media could, however, work to counter these potential losses. Overall, the net impact on prices and economic growth are expected to be slight and would not be expected to notably affect the balance of trade.

There are expected to be no direct impacts on employment by generators or insurers. Increased spending in the economy by shareholders and employees, which

would represent a slight boost to the economy, could increase overall employment slightly in the short-term. Employment impacts from changes in revenues in the solid waste management and commercial hazardous waste management industries are expected to be small given the capital-intensive nature of these industries. Reductions in revenues in the remediation services industry, as a result of decreased demand for their services, would reduce employment in this industry. This reduction in employment could be substantially higher than in the solid waste and hazardous waste management industries given the highly competitive and labor-intensive nature of the remediation services industry. Overall, the HWIR-Media proposal may result in only slight negative net impacts on employment. Any negative net employment impacts could be somewhat ameliorated, or even reversed, over time, however, by the economic growth resulting from the distribution or investment of the cost savings by generators and insurance companies as well as the potential for new and accelerated cleanups under HWIR-Media.

Section 6.3 of the report provides a detailed discussion of the potential net impacts of the HWIR-Media proposal.

#### ES.5.4 Potential Impacts on Small Entities

The proposed rule will not have a significant adverse economic impact on a substantial number of small entities that are subject to the requirements of HWIR-media. HWIR-Media confers remediation waste management cost savings on the regulated community while imposing increased implementation costs in cases where firms voluntarily seek cost savings. Therefore, in cases where remedial wastes are managed in the same manner under any option as they would be managed under the baseline, no additional costs (or savings) will be incurred under HWIR-Media. If a different management method is used, a generator may have to incur additional implementation costs to obtain management cost savings. An economically rational generator, however, will change the management method and incur these additional implementation costs only if it is confident of obtaining net benefits, such as savings on remediation waste management.

In summary, the rule will confer net benefits in situations where the generator changes the management method under HWIR-Media or will impose zero net costs in situations where the generator uses baseline management methods.

## ES.6 REGULATORY ISSUES

Chapter 7 of the *Economic Assessment* evaluates the impacts of the HWIR-Media proposal related to environmental justice and unfunded mandates. These findings are summarized below.

### ES.6.1 Environmental Justice

Under Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, as well as through its own *Environmental Justice Strategy*, OSWER *Environmental Justice Task Force Action Agenda*, and National Environmental Justice Advisory Council, EPA has undertaken to incorporate environmental justice into its policies and programs. To address this goal, EPA examined the impacts of HWIR-Media on low-income populations and minority populations. EPA concluded that HWIR-Media will advance environmental justice, as follows:

- By encouraging the use of innovative treatment techniques, HWIR-Media will reduce the number of hazardous waste incinerators that need to be sited across the nation. This, in turn, will reduce the likelihood of an incinerator being sited in a low-income or minority community.
- HWIR-Media will assist in expediting site cleanups across the nation, by reducing the need for time-consuming permitting of on-site remediation activities, increasing the flexibility of decisionmakers to respond to site-specific conditions, and lessening administrative and regulatory complications and delays. This may free Superfund resources to address additional sites. By encouraging excavation and treatment off site, HWIR-Media will expedite the restoration of sites and lead to their beneficial use, which may result in new jobs and increased economic activity in low-income or minority communities. This economic activity could take the form of increased employment of local community members at the remediation sites; the sale and redevelopment of sites for new economic activities; and new beneficial uses for remediated properties, such as parks, transportation facilities, and even hospitals.

- HWIR-Media's public participation provisions will enable local residents and other members of the public to participate in the development and approval of Remediation Management Plans.
- HWIR-Media's authorization provisions will enable Native American tribal programs to apply for final authorization to implement HWIR-Media.

EPA recognized that allowing remedial wastes to be more flexibly regulated could, if states, tribes or EPA impose standards less stringent than current Subtitle C on the cleanup of media contaminated below the bright line, pose some increased risk to human health and the environment. Even in those cases, however, EPA believes that human health risks to local communities are highly unlikely.

## ES.6.2 Unfunded Mandates

EPA also evaluated the proposed HWIR-Media rule for compliance with the Unfunded Mandates Reform Act of 1995. The Agency concluded that because each state or tribal organization will need to voluntarily seek authorization to implement HWIR-Media, the program will impose no federal intergovernmental mandate within the meaning of the Act. Rather, a state or tribal organization will attain greater flexibility with respect to remedial activities within its jurisdiction if it obtains HWIR-Media program authorization. In addition, promulgation of HWIR-Media is not expected to result in estimated costs of \$100 million or more to state, local, and tribal governments in the aggregate, or to the private sector, in any one year; instead it will create cost savings. Finally, HWIR-Media will not significantly or uniquely affect small governments.