Discussion of Option Packages for Systems Serving > 1,000 (with analyses)

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This Presentation

Objectives

Provisions

System compliance

Improvement

Research

Large System Options

Objectives of Presentation

- Discuss and seek resolution of difference in options applicable to systems > 1,000
- Present results of analysis for systems > 1,000 including:
  - Number of systems with TC+, acute violations and Level 1 triggers
  - Cost estimates
  - Breakdown by 16 categories (NCWS / CWS, GW/SW, Population)

Assumptions for Analysis

- Did not have model available for large system categories
- Used 6-year review data to estimate % positive samples for TC for different categories
  - Multiplied by 3 repeats for each TC+
  - Systems 1,000 – 4,100 have additional routines under current rule and Option D
- Cost estimates do not include any costs for demonstrating compliance with reduced monitoring with reduced monitoring criteria (e.g. site visit)
- May not be directly comparable to the numbers derived for small systems but are acceptable
- Number of systems triggered for Level 1 assessment were estimated from SDWIS data for non-acute MCL

Number of CWS > 1,000 by Subcategory

Population	Type	Water Source	Number of Systems
1,001 – 4,100	CWS	GW	6,340
1,001 – 4,100	CWS	SW	3,065
4,101 – 33,000	CWS	GW	3,076
4,101 – 33,000	CWS	SW	3,140
33,001 – 96,000	CWS	GW	308
33,001 – 96,000	CWS	SW	710
> 96,000	CWS	GW	65
> 96,000	CWS	SW	343
Total CWS			17,047

Number of NCWS > 1,000 by Subcategory

Population	Type	Water Source	Number of Systems
1,001 – 4,100	NCWS	GW	1,410
1,001 – 4,100	NCWS	SW	139
4,101 – 33,000	NCWS	GW	132
4,101 – 33,000	NCWS	SW	37
33,001 – 96,000	NCWS	GW	4
33,001 – 96,000	NCWS	SW	3
> 96,000	NCWS	GW	3
> 96,000	NCWS	SW	2
Total NCWS			1,730
Total CWS			17,407
TOTAL			18,777

Summary of Option Packages (all CWS > 1,000)

Option / Element	A (Current)	B	C	D	E	F
# Systems on Reduced Monit.	0	0	0	0	0	0
Routine Monitoring Costs /yr	$156M	$156M	$156M	$156M	$156M	$156M
Repeat Monitoring Costs /yr	$2.8M	$2.8M	$2.8M	$2.8M	$2.8M	$2.8M
Additional Routine Monit Costs /yr	$0.7M	0	0	$0.7M	0	0
Repeats on Add'l Rout. Monit. Cost /yr	$92,000	0	0	$92,000	0	0
# Systems Triggered Level 1	0 (527)	527	527	527	527	527
Assessment Costs /yr (Implemented)	0 ($53,000)	$0.2M - $1.0M	$0.2M - $1.0M	$0.2M - $1.0M	$0.2M - $1.0M	$0.2M - $1.0M
PN Costs /yr *Non-Acute + Acute	$3.3M*	$78,000	$78,000	$78,000	$78,000	$78,000
Total Annual Cost	$162.9M ($163.0M)	$159.1M - $159.9M	$159.1M - $159.9M	$159.9M - $160.7M	$159.1M - $159.9M	$159.1M - $159.9M

Details – Routine Monitoring (all CWS > 1,000)

Option / Element	A (Current)	B	C	D	E	F
# Systems	18,777	18,777	18,777	18,777	18,777	18,777
# Routine Samples Collected	2,626,509	2,626,509	2,626,509	2,626,509	2,626,509	2,626,509
Routine Monitoring Cost /yr	$156M	$156M	$156M	$156M	$156M	$156M

Details – Repeat & Additional Routine Monitoring (all CWS > 1,000)

Option / Element	A (Current)	B	C	D	E	F
# Systems	18,777	18,777	18,777	18,777	18,777	18,777
# TC+ in Routines	14,428	14,428	14,428	14,428	14,428	14,428
Repeat Monitoring Costs /yr	$2.8M	$2.8M	$2.8M	$2.8M	$2.8M	$2.8M
Add'l Routine Monit. Costs /yr	$0.7M	0	0	$0.7M	0	0
Repeats on Add'l Routine Monit. Costs /yr	$92,000	0	0	$92,000	0	0
Total Monitoring Cost /yr	$159M	$158M	$158M	$159M	$158M	$158M

Details – Assessment (all CWS > 1,000)

Option / Element	A (Current)	B	C	D	E	F
# Systems	18,777	18,777	18,777	18,777	18,777	18,777
# Systems with Level 1 Trigger*	0 (527)	527	527	527	527	527
Level 1 Cost* /yr (Impl.)	0 ($53,000)	$0.2M - $1.0M	$0.2M - $1.0M	$0.2M - $1.0M	$0.2M - $1.0M	$0.2M - $1.0M
# Systems with Acute Violations	97	97	97	97	97	97
Public Notif. Cost for Non-Acute /yr	$3.2M	0	0	0	0	0
Public Notif. Cost for Acute /yr	$78,000	$78,000	$78,000	$78,000	$78,000	$78,000

* Represents an upper bound

Detailed Breakdown (all CWS > 1,000)

* Includes only elements with costs shown

	Option / Element	A (Current)	B	C	D	E	F
	# Systems	18,777	18,777	18,777	18,777	18,777	18,777
	National Cost* /yr	$162.9M ($163.0M)	$159.1M - $159.9M	$159.1M - $159.9M	$159.9M - $160.7M	$159.1M - $159.9M	$159.1M - $159.9M
Non-Triggered Systems	System Monit. Cost /yr	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000
	HH Monit. Cost /yr	$1	$1	$1	$1	$1	$1
Triggered Systems	System Monit. Cost /yr	$8,000	$8,000	$8,000	$8,000	$8,000	$8,000
	HH Monit. Cost /yr	$2	$2	$2	$2	$2	$2

Detailed Breakdown continued (all CWS > 1,000)

	Option / Element	A (Current)	B	C	D	E	F
	# Systems	18,777	18,777	18,777	18,777	18,777	18,777
Triggered Systems	System Assess. Cost /yr	($100)	$290 - $6,020	$290 - $6,020	$290 - $6,020	$290 - $6,020	$290 - $6,020
	HH Assess. Cost /yr	($0.03)	$0.08 - $0.34	$0.08 - $0.34	$0.08 - $0.34	$0.08 - $0.34	$0.08 - $0.34

Findings

- For systems >4,100 there are no differences between options
- Additional routines for <4,100 trigger fewer acute violations and Level 1 assessments than for the <1,000
- Very few Level 2 or Level 3 assessments compared to systems < 1,000
  - Cost to perform these assessments is much greater for the large systems