Analysis of EPA's Federal Facilities Restoration and Reuse Office (FFRRO) Regional Program Performance

MDB, Inc.

Doing Well by Doing Good

August 2011

Final Draft

Note: This report is an internal evaluation based solely on EPA reporting.

Acronyms/Abbreviations

ARAR	Applicable or Relevant and Appropriate Requirements
CCs	National Priorities List Construction Completions
DDs	Decision Documents
DOD	Department of Defense
EPA	Environmental Protection Agency
FFRRO	Federal Facilities Restoration and Reuse Office
Final RODs	Records of Decision
FYRs	Five-Year Reviews
IC	Institutional Control
MMRP	Military Munitions Response Program
OFA	Other Federal Agency
RA Proj Comps	Remedial Action Project Completions
RA Starts	Remedial Action Starts
RI/FS Starts	Remedial Investigation / Feasibility Study Starts
ROD	Record of Decision
SWRAUs	Sitewide Ready for Anticipated Use
TCE	Trichloroethylene
UXO	Unexploded Ordnance

Introduction

This is a summary report of a series of analyses of the Federal Facilities Restoration and Reuse Office (FFRRO) regional programs' performance in meeting their annual targets for the last six years. MDB, Inc. conducted these analyses at the direction of Brendan Roache, assessing the successes and lessons learned by the EPA regional programs. These analyses will assist EPA in understanding more fully the national trends over time, the difficulties encountered by the Regions as they strive to meet their targets, and the ways in which Regions can improve their future performance.

The report comprises two parts. Part I is a statistical analysis of the past six years (2005-2010) of regional performance data regarding eight target measures. Part II is an analysis of the data gathered from regional offices regarding reasons for missed/substitute targets.

Part I. Analysis of Targets Met and Missed

Section 1. Data Characteristics and Assumptions

Part I analyzes the factors affecting EPA Regions meeting their annual federal-facility cleanup targets. MDB and its subcontractor, Neptune and Company, reviewed the 2005-2010 data regarding the eight program measures from all ten EPA Regions. The measures are:

- Decision Documents (DDs)
- Final Records of Decision (Final RODs)
- Five-Year Reviews (FYRs)
- National Priorities List Construction Completions (CCs)
- Remedial Action Project Completions (RA Proj Comps)
- Remedial Action Starts (RA Starts)
- Remedial Investigation/Feasibility Study Starts (RI/FS Starts)
- Sitewide Ready for Anticipated Use (SWRAUs)

We explored several statistical approaches with FFRRO before deciding on the final approach presented in this report. We concluded that the most reasonable approach was to accept substitute sites: Regions that changed their original site(s)—for measures requiring specific site designations—were considered to have *met* their target(s). In addition, we excluded all data (for any Region, year, and measure combination) with zero targets/ zero actuals. Thus, we created a neutral set-aside of these data, neither rewarding nor penalizing Regions with high numbers of target values—and corresponding end-of-year accomplishments—that equaled zero.

Note that since EPA did not collect Sitewide Ready for Anticipated Use (SWRAUs) data in 2005 and 2006, the tables/figures below contain 20 fewer data points for this measure.

Our final data decision criteria were:

- Target (regional commitment) = Actual (end-of-year accomplishment) is a Met (excluding Target 0 = Actual 0).
- Target with site substitution is a Met.
- Target with higher Actual value is a Met.
- Target with lower Actual value is a Miss.
- Target 0 = Actual 0 is removed from the analysis.

Table 1 displays the number of data points by measure (total = 342), ordered by percentage met (lowest to highest). The **Target 0 = Actual 0** row displays the 118 data points where Regions committed to zero targets – and which we eliminated from the analysis.

Category	Final RODs	RA Starts	RA Proj Comps	SWRAUs	FYRs	DDs	CCs	RI/FS Starts	Total
Met	17	35	43	20	43	50	21	31	**260**
Percentage Met	**54.8%**	**64.8%**	**75.4%**	**76.9%**	**79.6%**	**83.3%**	**84.0%**	**88.6%**	**N/A**
Missed	14	19	14	6	11	10	4	4	**82**
Target 0 = Actual 0	29	6	3	14	6	0	35	25	**118**
Data Not Available	0	0	0	20	0	0	0	0	**20**
Total	**60**	**60**	**60**	**40**	**60**	**60**	**60**	**60**	**460**
Total in Final Analysis	**31**	**54**	**57**	**26**	**54**	**60**	**25**	**35**	**342**

Table 1. Number of Data Points by Measure (2005-2010)

Figure 1 graphically displays the percentage of targets met by measure.

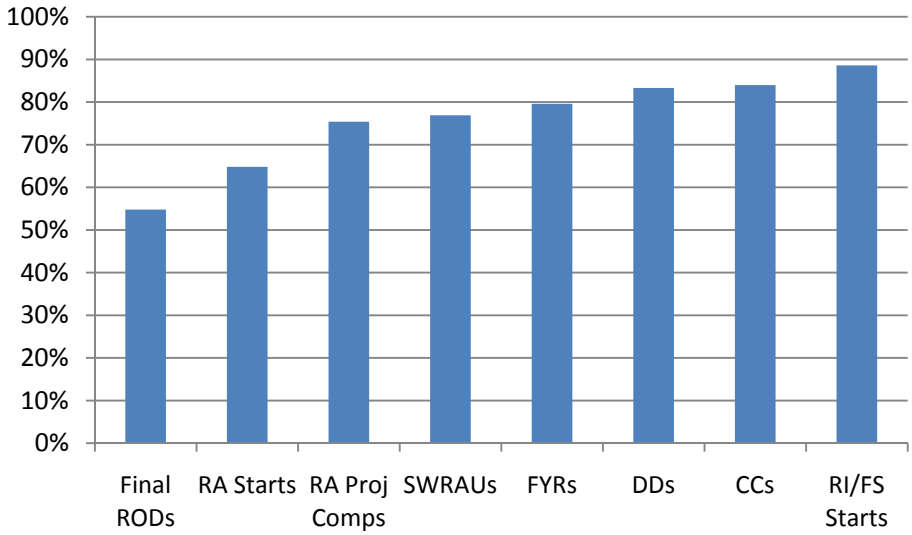

Figure 1. Percentage of Targets Met by Measure (2005-2010)

Section 2. Year Analysis

Table 2 displays the number of targets met/missed by year, across all measures and Regions. The **2005** and **2006** rows each have 10 fewer data points since the SWRAUs measure did not begin until 2007.

Year	Targets Met	Percentage Met	Targets Missed	Total in Analysis	Target 0 = Actual 0	Total
2005	40	75.5%	13	53	17	70
2006	37	71.2%	15	52	18	70
2007	38	61.3%	24	62	18	80
2008	44	78.6%	12	56	24	80
2009	49	84.5%	9	58	22	80
2010	52	85.2%	9	61	19	80
Total =	**260**	**N/A**	**82**	**342**	**118**	**460**

Table 2. Number of Targets Met/Missed by Year (2005-2010)

Figure 2 graphically presents the data from Table 2. It indicates that Regions met more targets than missed, and it seems that the Regions were meeting their targets more frequently over time (2010 being the most successful year).

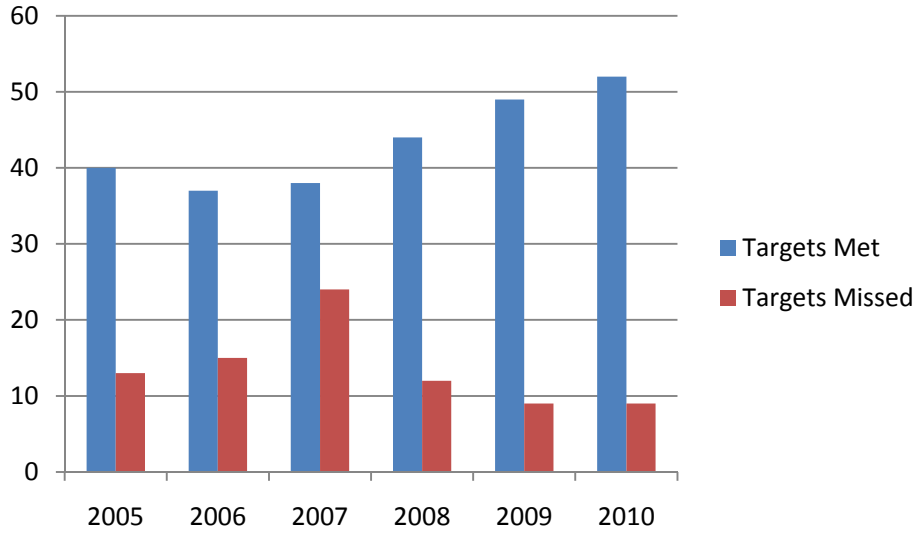

Figure 2. Number of Targets Met/Missed by Year (2005-2010)

Figure 3 indicates that there is a marginally statistically significant increasing trend (p-value = 0.06029) through time, based on results from Kendall's statistical test for trend. Kendall's test for trend indicates that the trend line is different from one with a slope of zero. Thus, the number of targets met across Regions and measures is increasing over the six-year period.

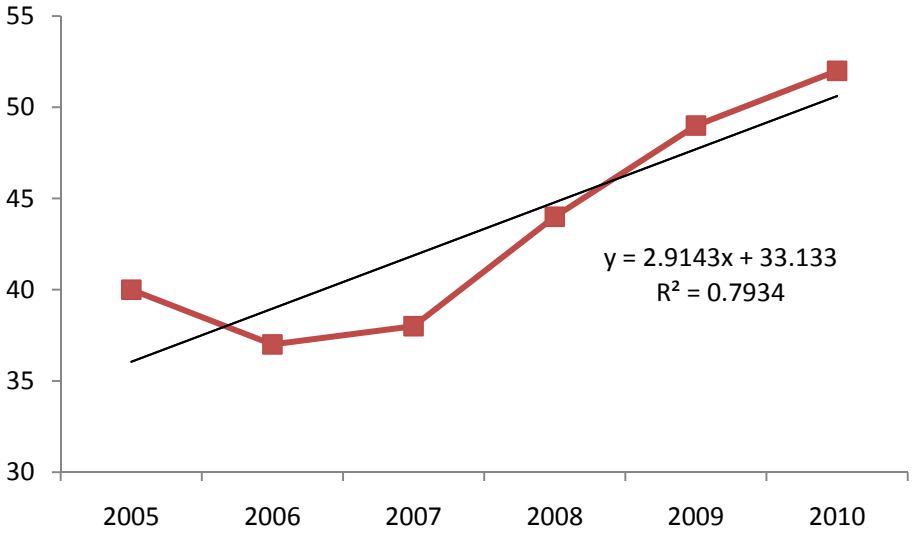

Figure 3. Graphical display of Table 2 data, with the trend line superimposed on the data, the regression equation below the trend line, and R^2 printed on the graph

Section 3. Measure Analysis

Based on Table 1, the number of targets met by the Regions was higher for every measure than the number of targets missed. The Regions met nearly all targets for CCs, SWRAUs, and RI/FS Starts. Furthermore, the Regions had higher totals for FYRs, DDs, and RA Project Completions due to the fact that fewer data were deleted for these measures (zero estimated/actual targets); as a result, those measures had a high number of targets met.

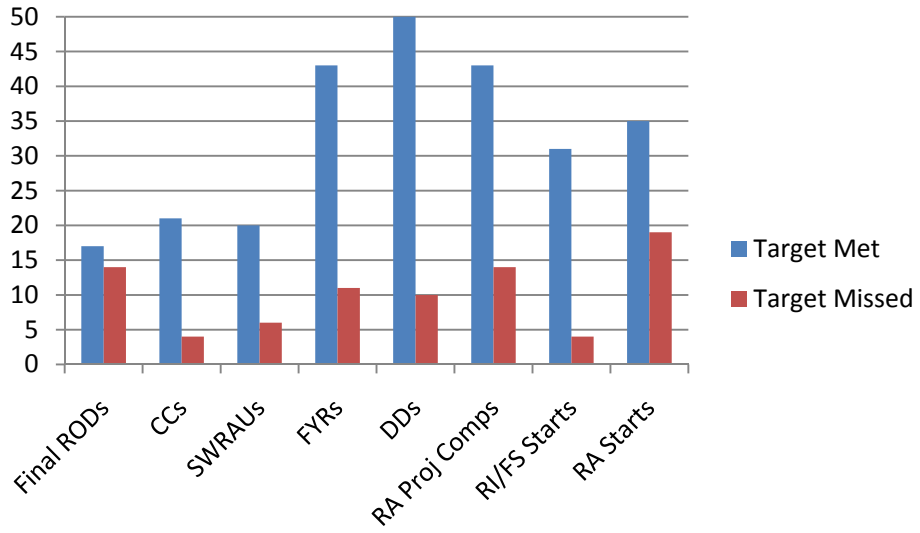

Figure 4. Number of Targets Met/Missed by Measure (2005-2010)

Table 3 presents the number of targets met for each measure, by year.

Year	Final RODs	CCs	SWRAUs	FYRs	DDs	RA Proj Comps	RI/FS Starts	RA Starts
2005	3	3	NA	8	9	7	5	5
2006	4	5	NA	6	7	6	4	5
2007	1	4	5	5	9	3	6	5
2008	3	1	7	7	7	8	5	6
2009	3	4	4	10	9	9	5	5
2010	3	4	4	7	9	10	6	9
Total Met	17	21	20	43	50	43	31	35
% Met	**54.8%**	**84.0%**	**76.9%**	**79.6%**	**83.3%**	**75.4%**	**88.6%**	**64.8%**
Target Missed	14	4	6	11	10	14	4	19
Target 0 = Actual 0	29	35	14	6	0	3	25	6

Table 3. Number of Targets Met by Measure and Year (2005-2010)

Section 4. Regional Analysis

Table 4 and Figure 5 present the number of targets met/missed by Region.[1] The overwhelming observation is that Region L never missed a target over the past six years. Regions G, M, and Z missed very few targets. Region Q is the only region that missed as many targets as it met.

Region	Target Met	Percent Met	Target Missed	Total in Analysis	Target 0 = Actual 0
J	16	64.0%	9	25	21
L	38	100.0%	0	38	8
Q	16	50.0%	16	32	14
B	26	70.3%	11	37	9
G	35	85.4%	6	41	5
P	27	73.0%	10	37	9
U	33	78.6%	9	42	4
Z	25	83.3%	5	30	16
Y	20	58.8%	14	34	12
M	24	92.3%	2	26	20
Total =	**260**	**N/A**	**82**	**342**	**118**

Table 4. Number of Targets Met/Missed by Region (2005-2010)[2]

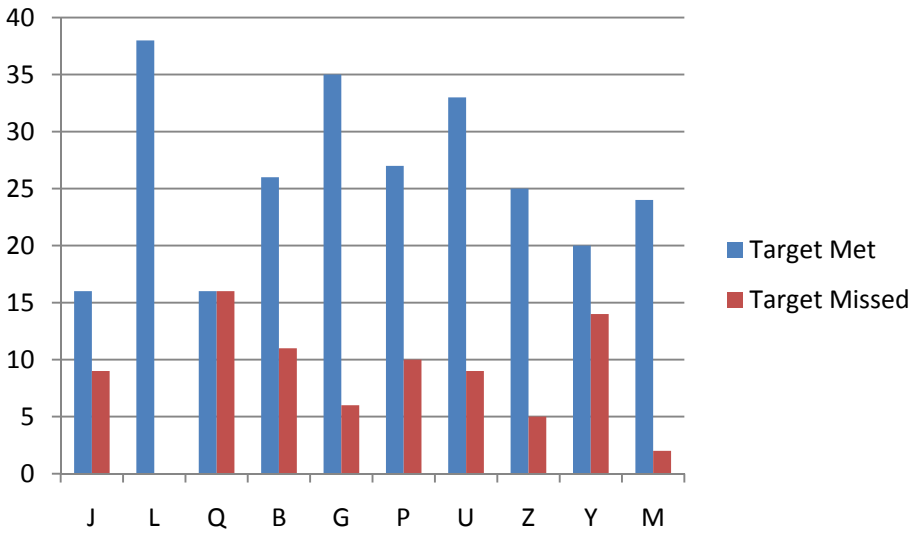

Figure 5. Number of Targets Met/Missed by Region (2005-2010)

[1] In this report, we have assigned letters to the Regions and displayed regional data in a random order.
[2] Since the SWRAUs measure began in 2007, each Region has two fewer values.

Figure 6 displays the percentage of targets met by Region, in descending order.

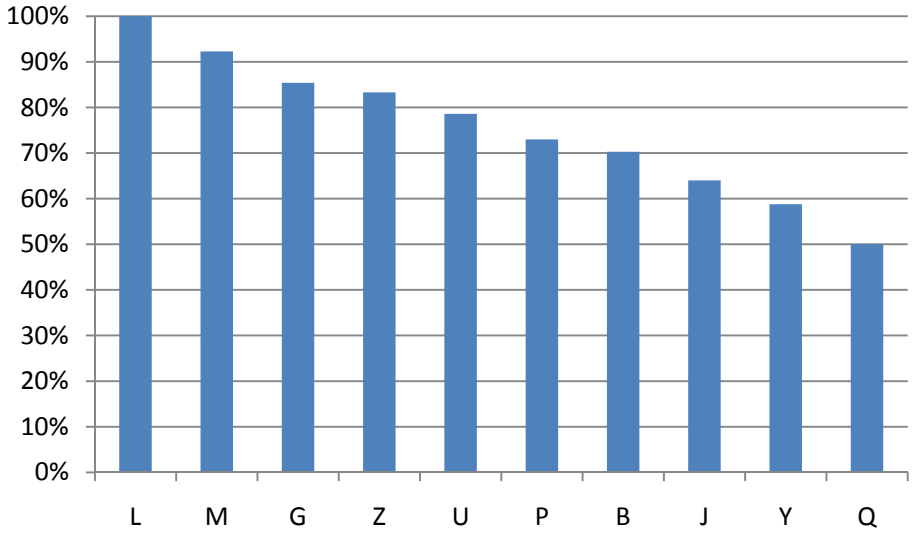

Figure 6. Percentages Met by Region (2005-2010)

Figure 7 displays the total number of accomplishments, adding all of the values for all eight measures for the past six years, by Region. It is useful to compare Figures 6 and 7 in order to assess (a) how well Regions met their targets and (b) the Regions' *numerical* accomplishments; this gives a glimpse as to how workload might factor into the assessment of each Region's performance.

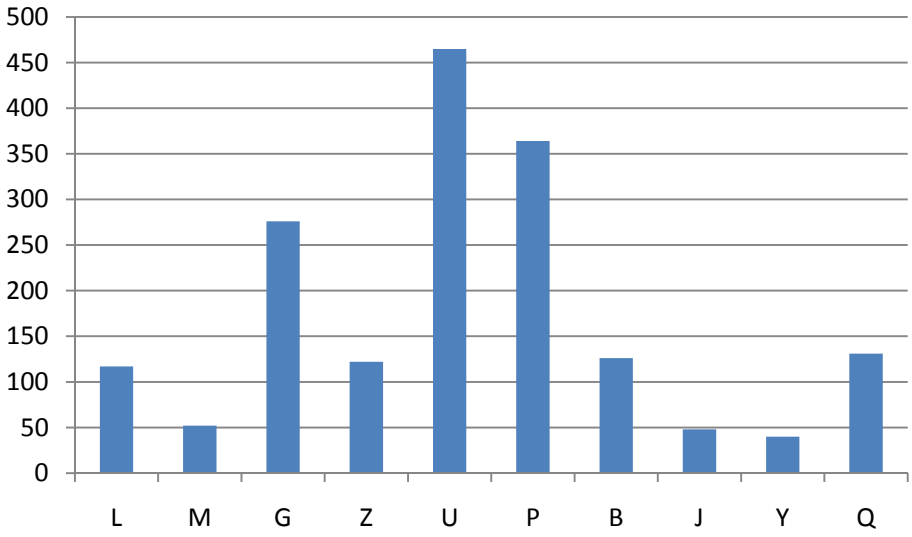

Figure 7. Accomplishment Totals by Region (2005-2010)

Section 4.1 Regional Analysis by Measure

Figure 8 presents the number of years in which each Region met/missed its Final RODs target. The results for three Regions (J, L, and Q) are most striking. One Region (L) did not miss any targets, while another Region (Q) missed all of the years in which it had target data (it had three years of zero targets). As a result of data exclusion, one Region (J) had no data to graph (i.e., all Region J data were zero targets).

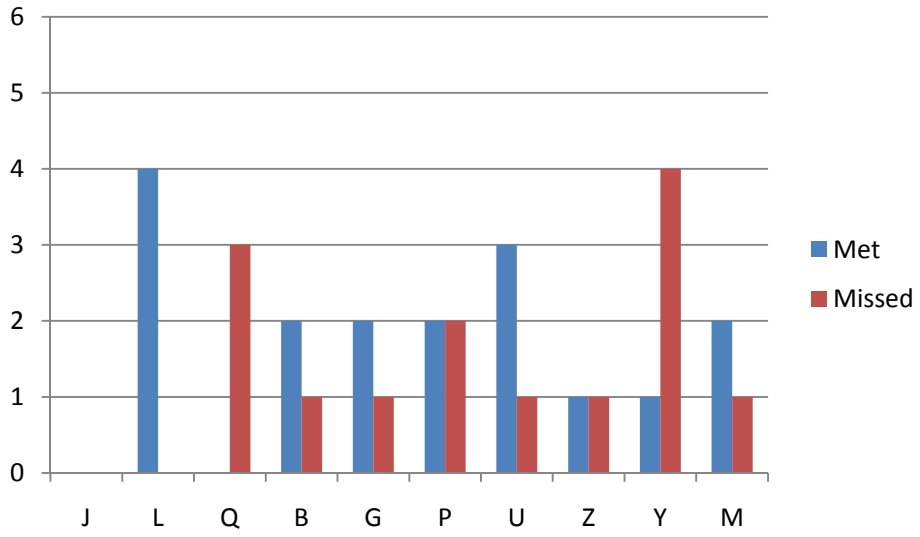

Figure 8. Number of Years in Which Each Region Met/Missed Its Final RODs Target (2005-2010)

Figure 9 presents the number of years in which each Region met/missed its CCs target. Seven Regions met all of their targets. Only two Regions missed targets.

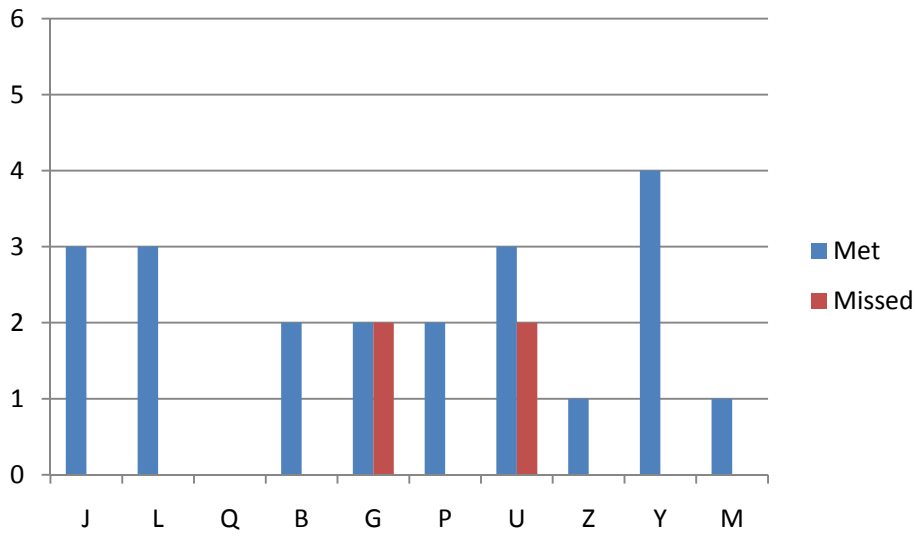

Figure 9. Number of Years in Which Each Region Met/Missed Its CCs Target (2005-2010)

Figure 10 presents the number of years in which each Region met/missed its SWRAUs target (2007-2010). Three Regions met all of their targets, six Regions each missed one, and one Region had zero targets.

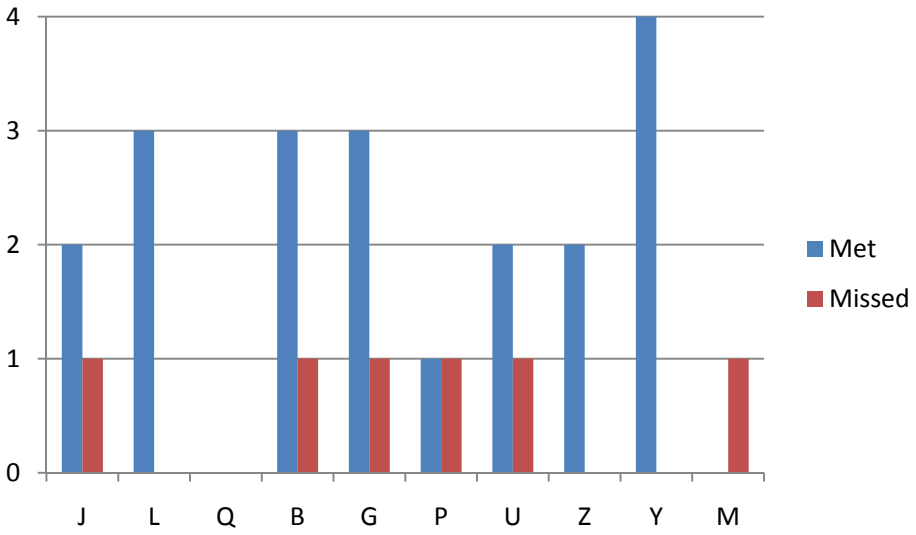

Figure 10. Number of Years in Which Each Region Met/Missed Its SWRAUs Target (2007-2010)

Figure 11 presents the number of years in which each Region met/missed its Five-Year Reviews target. Three Regions met all of their targets. Two Regions missed as many targets as they met.

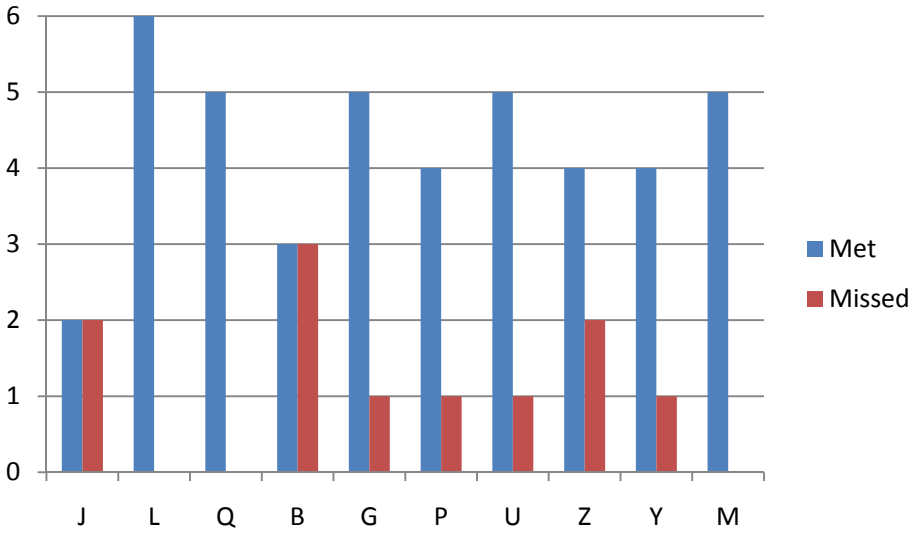

Figure 11. Number of Years in Which Each Region Met/Missed Its Five-Year Reviews Target (2005-2010)

Figure 12 presents the number of years in which each Region met/missed its Decision Documents target. Four Regions met all of their targets, two Regions missed as many targets as they met, and four Regions each missed one target.

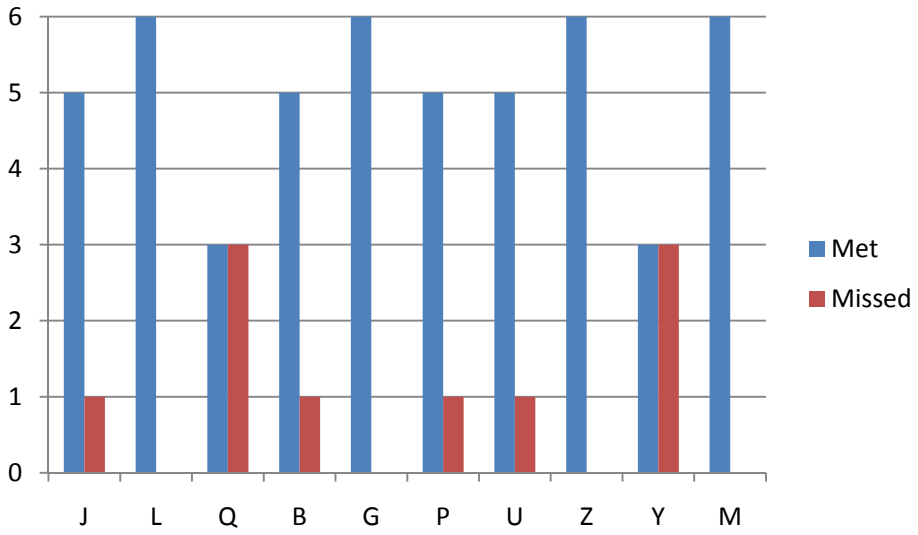

Figure 12. Number of Years in Which Each Region Met/Missed Its Decision Documents Target (2005-2010)

Figure 13 presents the number of years in which each Region met/missed its RA Project Completions target. Three Regions met all of their targets, and one Region missed more targets than it met.

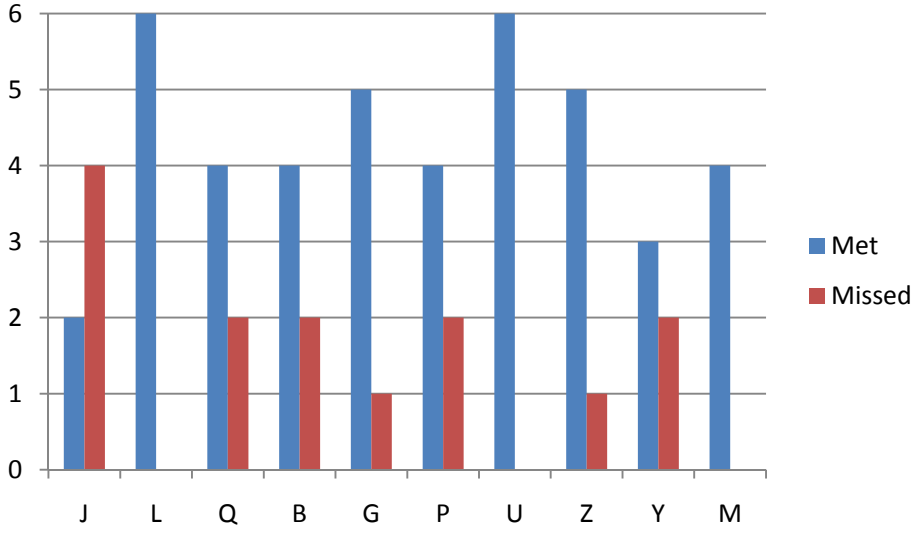

Figure 13. Number of Years in Which Each Region Met/Missed Its RA Project Completions Target (2005-2010)

Figure 14 presents the number of years in which each Region met/missed its RI/FS Starts target. All Regions but one met all of their targets. Two Regions each had just one target, and two other Regions had zero targets.

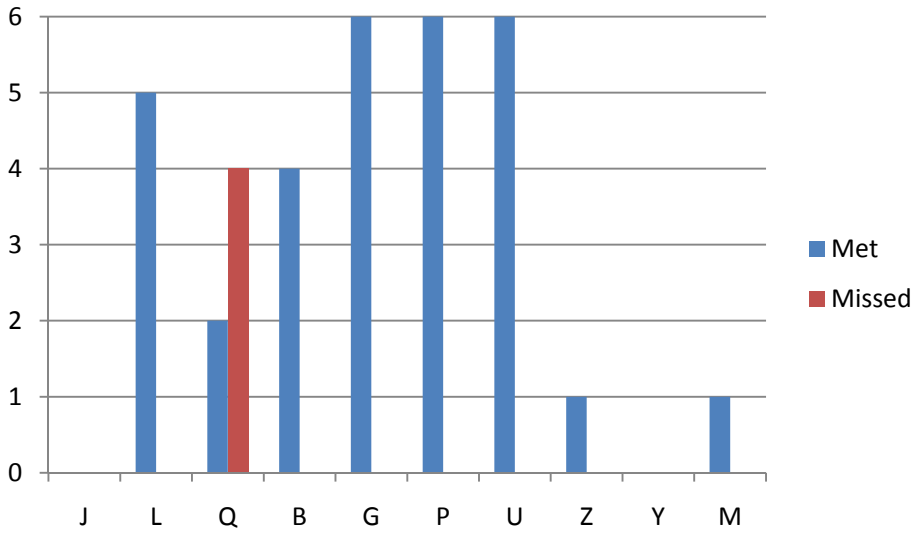

Figure 14. Number of Years in Which Each Region Met/Missed Its RI/FS Starts Target (2005-2010)

Figure 15 presents the number of years in which each Region met/missed its RA Starts target. Three Regions met all of their targets, three Regions missed as many targets as they met, and two Regions missed more targets than they met.

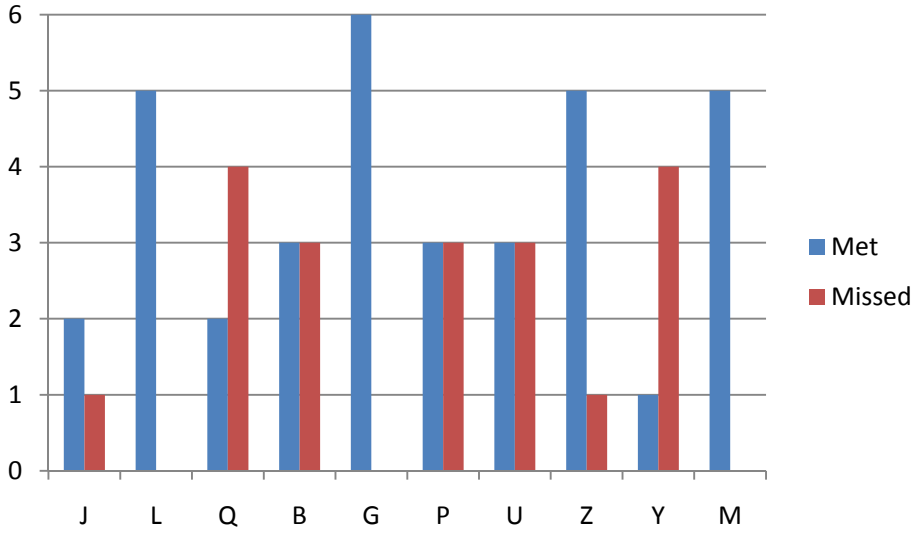

Figure 15. Number of Years in Which Each Region Met/Missed Its RA Starts Target (2005-2010)

Part II. Analysis of Missed/Substitute-Target Explanations

Section 1. Methodology

The following effort focused on compiling and analyzing the reasons for the Regions' missed/substitute targets. At the direction of EPA, MDB compiled a list of Program Managers and Remedial Project Managers who could provide that information. We contacted them via e-mail plus phone calls when necessary.

MDB analyzed the explanations that the regional officials provided and catalogued them under various categories, and we also determined which parties shouldered responsibility for missed/substitute targets (Other Federal Agencies (OFA), EPA, state officials, and/or local officials).

Note: In Part I, we indicated that if a Region met a target by substituting one site for another, then that substitution "counted" – i.e., we recognized Regions for meeting their numerical targets, regardless of whether they did so with their originally designated sites. For Part II's analysis, however, we sought explanations for any originally targeted site that did not meet its goal, even if a Region found a substitute. Thus, Part II's data include both missed and substitute sites.

Section 2. Results

Section 2.1. Categories

Figure 16 shows the distribution of explanations (from all Regions), by category.

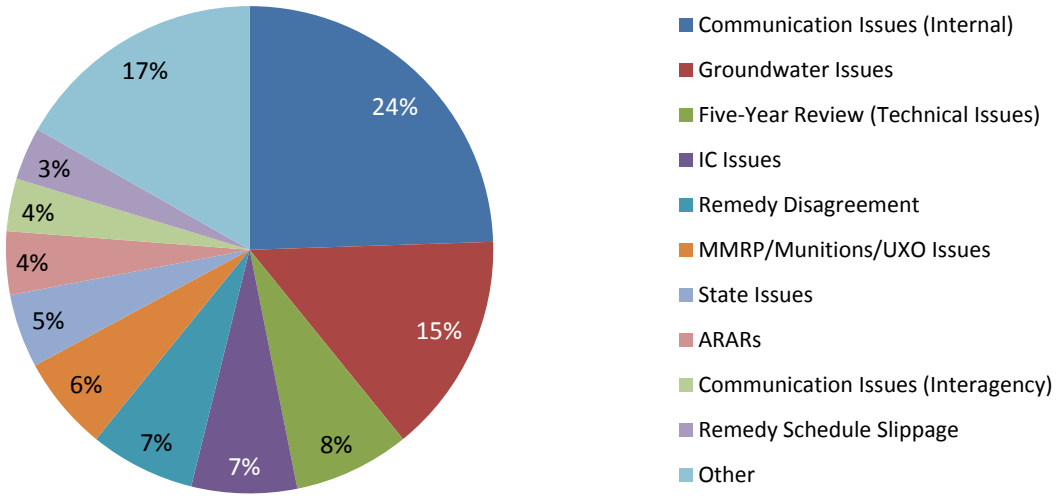

Figure 16. Missed/Substitute-Target Explanations by Category (All Regions)
(See Appendix B for a full list of categories, including those under "Other.")

Here are examples of the missed-target explanations:

- **Communication Issues (Internal)**
  - RPM did not get final management approval by the end of the fiscal year.
  - The Region did not meet all the requirements of the SWRAU definition in time
- **Groundwater Issues**
  - Delays in approving the modified Feasibility Study for Monitored Natural Attenuation delayed ROD, RD, and RA.
  - Dispute on beneficial reuse of groundwater and whether there were enough data to select a monitoring natural attenuation remedy.
- **Five-Year Review (Technical Issues)**
  - DOD submitted a five-year review document, and EPA responded with detailed comments. DOD was also pursuing a partial deletion at the site as a priority.
  - The deadline for submitting the 5 year review was missed.
- **IC Issues**
  - Problems with proper documentation of Institutional Control (IC) implementation for some older RODs.
  - Significant additional IC information was requested by EPA.

- **Remedy Disagreement**
  - Disagreements between EPA and DOD relating to the Feasibility Studies and subsequent potential remedy changes
  - Extensive discussion on the vapor intrusion components of the Supplemental Proposed Remedial Action Plan are ongoing and have not yet come to resolution.
- **MMRP/Munitions/UXO Issues**
  - The old planned final ROD date was missed because new areas were identified that needed to be investigated through the MMRP process.
  - Remaining work involved the implementation of a new policy dealing with munitions and ordnance related substances .
- **State Issues**
  - The FY 2005 Final ROD deadline was missed because of policy differences and negotiations between EPA and the DOD, along with state considerations.
  - Conflicts between EPA, DOD and the State over TCE toxicity value, vapor intrusion, perchlorate sampling, and interpretation of state ARARs.
- **ARARs**
  - Unresolved issues regarding Alternate Concentration Limits
- **Communication Issues (Interagency)**
  - Regional Counsel was short-handed for most of the year. Additionally, the levels of review and concurrence that RODs had to undergo was increased.
- **Remedy Schedule Slippage**
  - Delays in finalizing the Remedial Action Completion Report because the Construction Completion Report was delayed.
  - Construction of the remedy is ongoing through the next fiscal year.

Section 2.2. Distribution of Issues

The missed/substitute-target explanations' 18 categories have a relatively even distribution across EPA's Regions (see Figure 17).

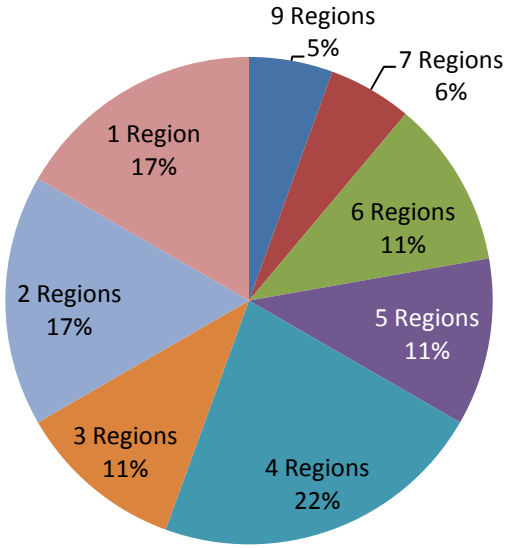

Figure 17. Distribution (Prevalence) of Categories

More specifically:

- Nine Regions had missed targets involving **Communication Issues (Internal)**.
- Seven Regions had **Groundwater Issues**.
- Six Regions had **IC Issues** and **MMRP/Munitions/UXO Issues**.
- Five Regions had **Five-Year Review (Technical Issues)** and **Remedy Disagreements**.
- Four Regions had **ARARs**, **Remedy Schedule Slippage**, **State Issues**, and **Vapor Intrusion Issues**.
- Three Regions had **Chemical-Specific Issues** and **Five-Year Review (Schedule Slippage)**.
- Two Regions had **Communication Issues (Interagency)**, **Communication Issues (OFA)**, and **Documents Revised by OFA**.
- **EPA Personnel Problems**, **New Contamination Discovered (Non-Munition)**, and **OFA Funding Issues** each occurred in one Region.

For a chart showing the geographic breadth of each category, see Appendix C.

Section 2.3. Responsibility

Figure 18 shows the distribution of parties responsible for missed/substitute targets (all Regions).

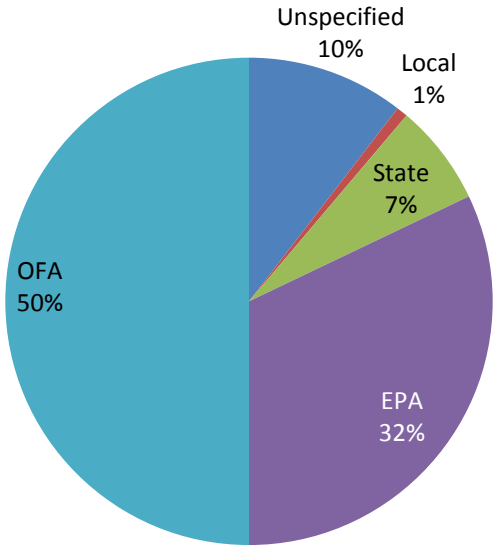

Figure 18. Responsible Parties (All Regions)[3]

Figure 19 shows the distribution of parties responsible—within each Region—for missed/substitute targets, based on how often respondents identified them as such.

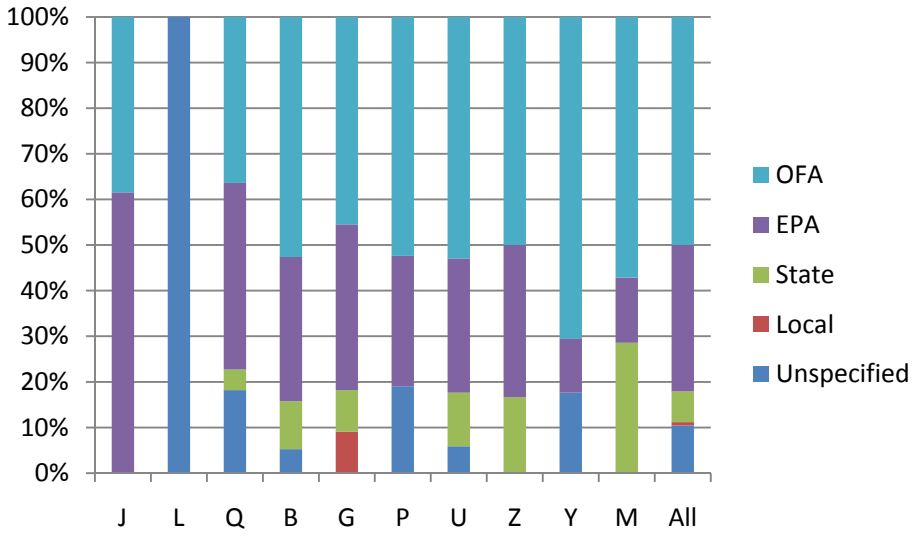

Figure 19. Responsible Parties (All Regions)

[3] "Unspecified" signifies missed targets for which responsibility was not clearly identifiable.

Part III. Appendices

Appendix A. Weighting Data

Table 5 displays our initial attempt to weight performance by each Region's share of remaining Non-CCs, FTEs, and Total Accomplishments (2005-2010).

Region	# of NPL Sites	# NPL Non-CC	Weighting Factor / % of Remaining Non-CC	Full-Time Equivalent (FTE)	Weighting Factor / % of FTE	Total Accomp	% Total Accomp	% Met
J	10	3	2.6%	9.4	7.9%	48	2.8%	64.0%
L	15	10	8.5%	9.5	8.0%	117	6.7%	100.0%
Q	14	12	10.3%	7.9	6.6%	131	7.5%	50.0%
B	30	11	9.4%	17.5	14.7%	126	7.2%	70.3%
G	31	22	18.8%	20.9	17.5%	276	15.9%	85.4%
P	31	29	24.8%	15.2	12.8%	364	20.9%	73.0%
U	19	16	13.7%	17.3	14.5%	465	26.7%	78.6%
Z	9	6	5.1%	11.5	9.7%	122	7.0%	83.3%
Y	8	4	3.4%	4.3	3.6%	40	2.3%	58.8%
M	6	4	3.4%	5.6	4.7%	52	3.0%	92.3%
Total:	**173**	**117**		**119.1**		**1,741**		

Table 5. NPL Weighting Based on the Number of NPL Sites, Non-Construction Completion Sites, and Full-Time Equivalents (2005-2010)

Appendix B. Categories of Missed/Substitute-Target Explanations: (All Regions)

Explanations	Occurrences
Communication Issues (Internal)	24.48% (35)
Groundwater Issues	14.69% (21)
Five-Year Review (Technical Issues)	7.69% (11)
IC Issues	6.99% (10)
Remedy Disagreement	6.99% (10)
MMRP/Munitions/UXO Issues	6.29% (9)
State Issues	4.90% (7)
ARARs	4.20% (6)
Communication Issues (Interagency)	3.50% (5)
Remedy Schedule Slippage	3.50% (5)
EPA Personnel Problems	2.80% (4)
Five-Year Review (Schedule Slippage)	2.80% (4)
Vapor Intrusion Issues	2.80% (4)
Chemical-Specific Issues	2.10% (3)
Communication Issues (OFA)	2.10% (3)
Document Revised by OFA	2.10% (3)
OFA Funding	1.40% (2)
New Contamination Discovered (Non-Munition)	0.70% (1)

Appendix C. Distribution of Categories across All Regions

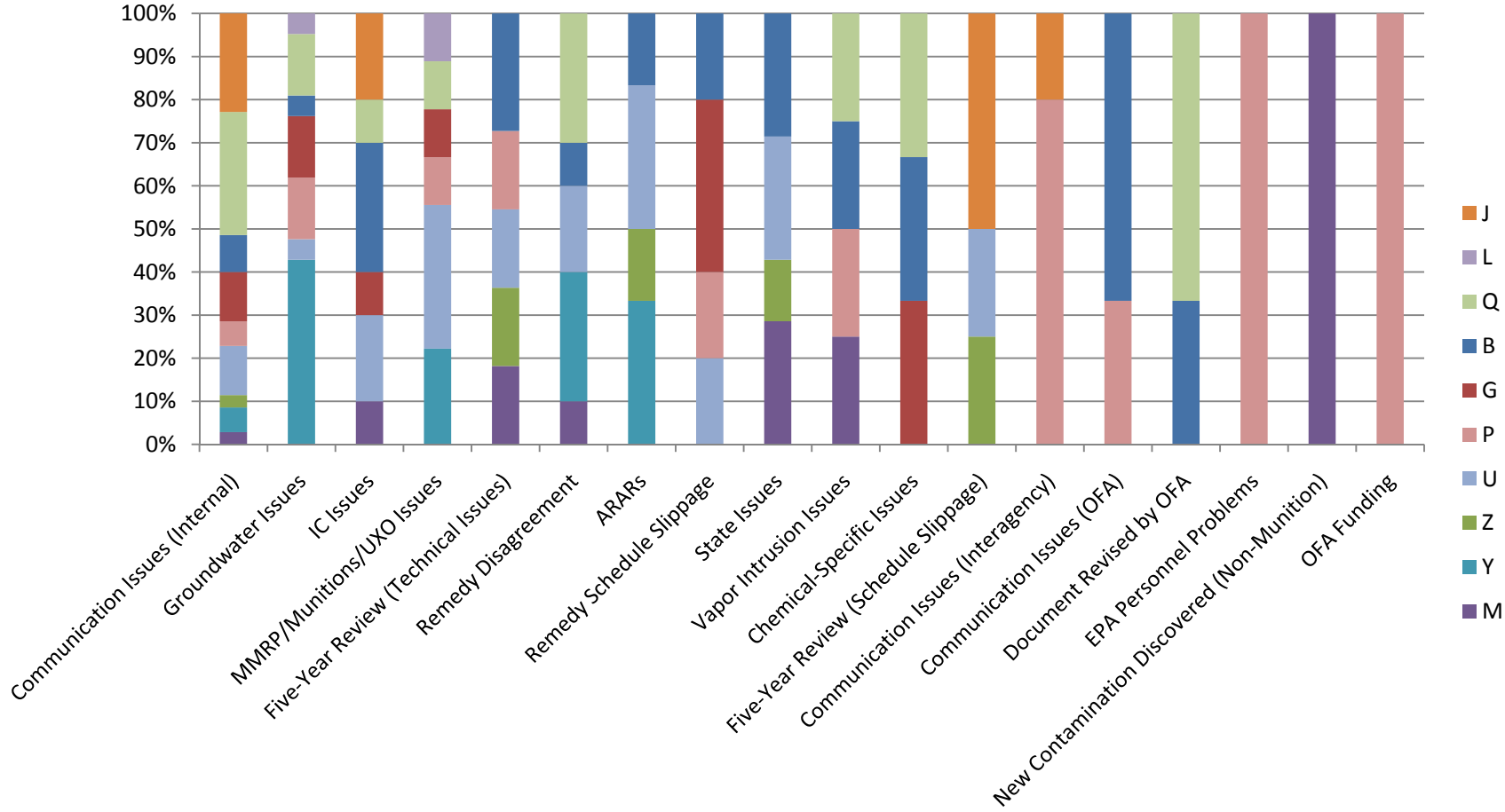

Figure 20. Distribution of Categories across All Regions (from the Most to the Least Widespread)