

# DATABASE SYSTEM UTILIZING A FILLABLE BEST MANAGEMENT PRACTICE SPREADSHEET TO FOLLOW AND UPWARD REPORT ARMY GREEN AND SUSTAINABLE REMEDiation

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# ARMY GREEN AND SUSTAINABLE REMEDIATION

- DoD GSR policy [2012 Defense Environmental Restoration Program (DERP) Manual]
- 2014-15 Army Environmental Strategic Plan mirrors the DoD GSR policy for active Army installations
- GSR encouraged, not required
  - DoD and Army policy – To consider and implement GSR “when feasible” and where “practicable based on economic and social benefits and costs”, applied across the entire remedial cycle
  - Not required by EPA



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# IF NOT REQUIRED, THEN WHY INCLUDE ?

Challenge – How to persuade project teams to include GSR when it is not required

- Benefits – saves resources and often decreases costs
- Comprehensive evaluation without being time-consuming
- Information provided to installation to complete GSR fields in the new Headquarters Army Environmental System (HQAES) database



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# SIMPLIFIED GSR EVALUATION

## GSR Best Management Practice (BMP) Checklist

- Developed in 2016 by EM CX
- Uses GSR BMP list from 2012 Army Study
  - 66 BMPs over 8 remedial activity areas
    - Methodologies that are inherently GSR
    - Specific investigative and remedy practices that conserve/protect resources
    - Can add project specific BMPs
- Excel spreadsheet documents the applicability, selection, and implementation process
  - Yes/No pick lists
  - Comment columns with either specific BMP application or reason why BMP not applicable, selected or implemented
  - Cost and schedule impact (increase, no impact, decrease, unknown)
  - Completion time < 5 hours



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# INPUT FOR HQAES GSR DATA FIELDS

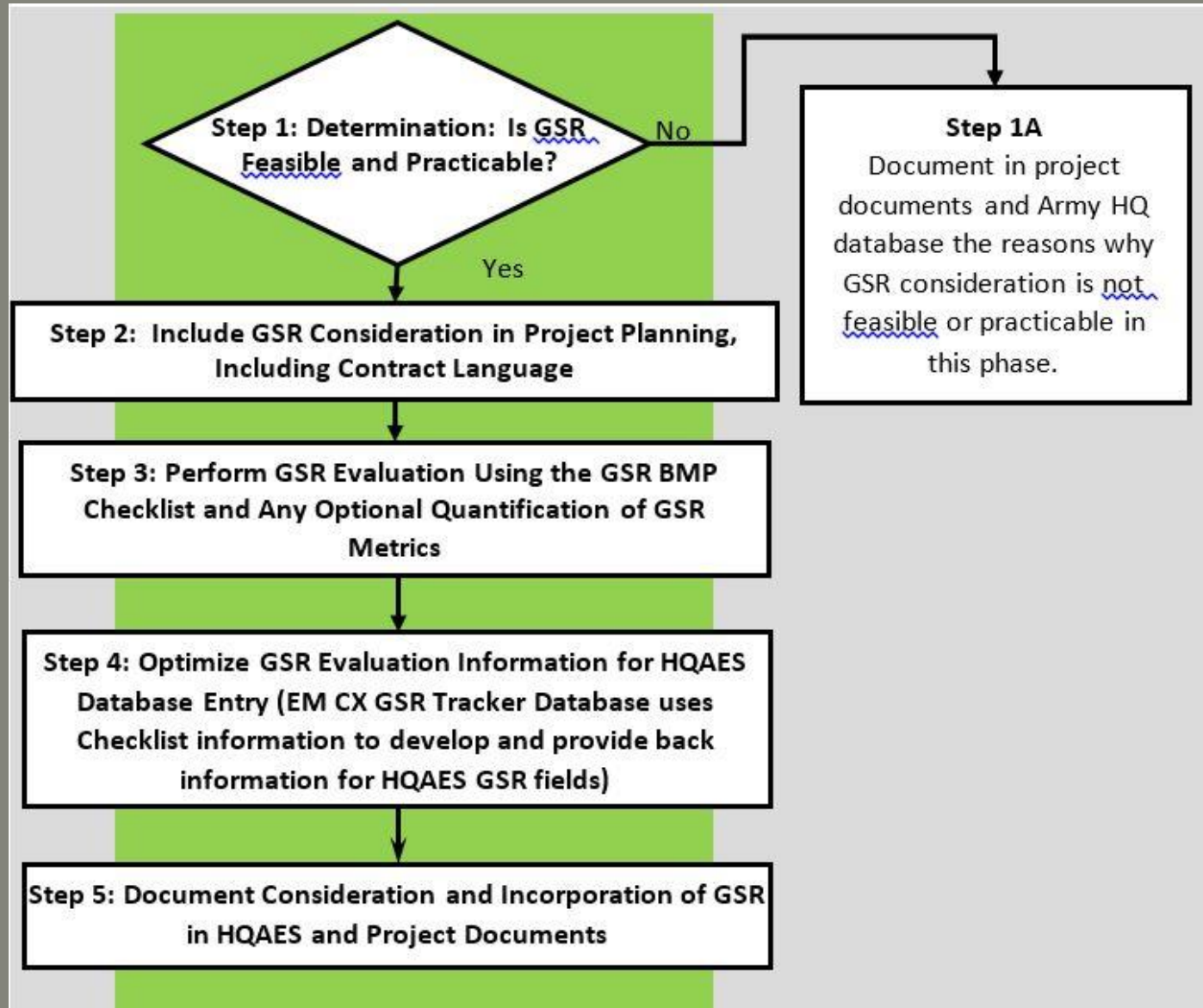
- HQAES data fields (developed in 2012 and revised 2016)
  - Which BMPs considered
  - Which BMPs implemented
  - Qualitative cost and schedule impact of each BMP implemented (increase, no impact, decrease, unknown)
- If quantitative footprint, cost evaluation, and/or schedule impact performed
  - Type of sustainability/cost analysis performed
  - Value (\$/year)
  - Impact on Remedy Schedule (years/months)
  - Impact on Remedy Footprint (% change)
- GSR methodologies used
  - Systematic planning process
  - Optimization
  - Low impact development discharge



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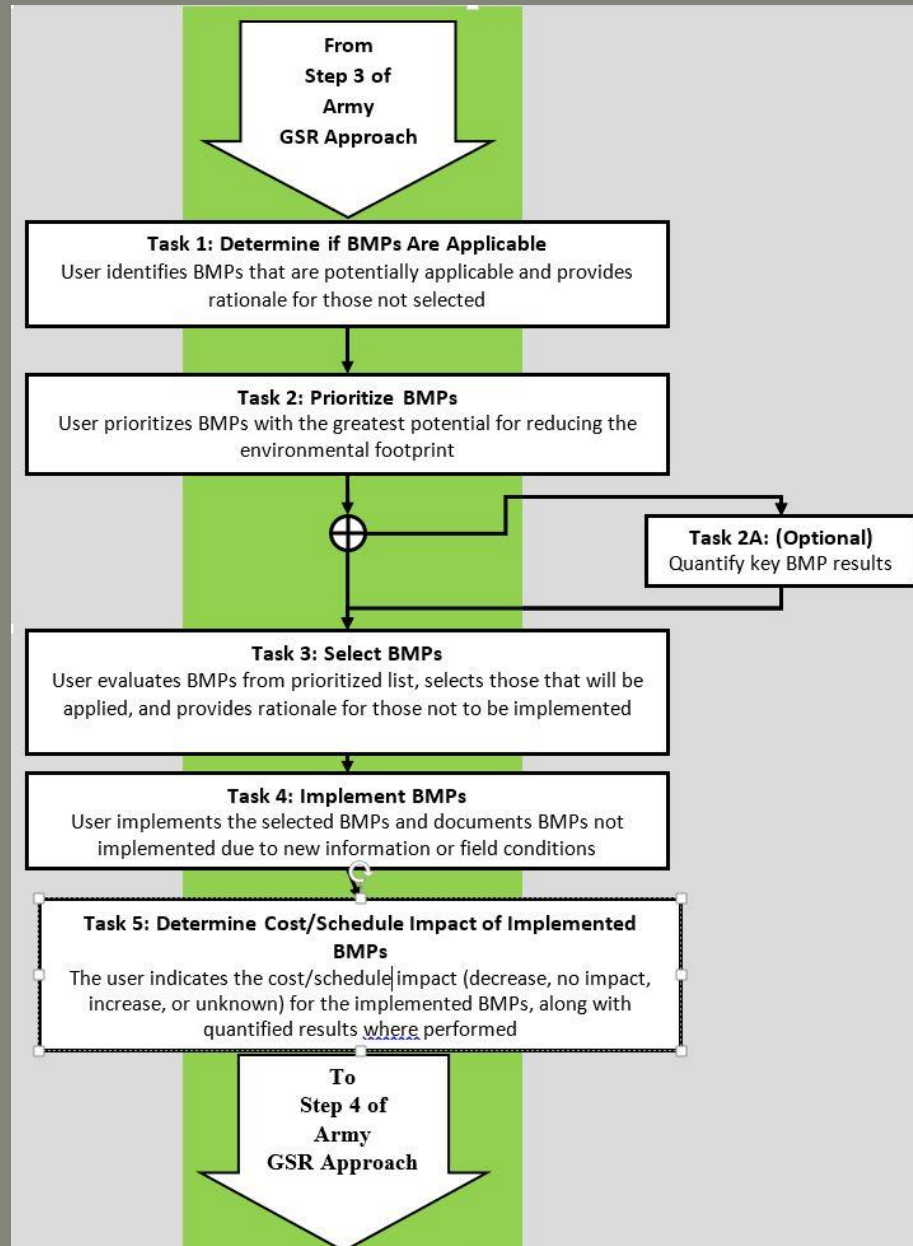


# ARMY GSR APPROACH





# GSR EVALUATION



# GSR CHECKLIST

Erase ALL Entries		Clear All Sort/Filters		Filter "YES" Applicable		Sort on Priority		Filter "YES" Selected		Filter "Yes" Implemented		Implemented=Yes Sort on Cost		Implemented=Yes Sort on Impact		<input checked="" type="checkbox"/> Show Next Step <a href="#">Reset Formatting</a>	
		Filter "No" not Applicable				Filter "No" not Selected		Filter "No" not Implemented									
Site, Project, Phase		Applicable?	Priority	Selected?	Implemented?	Cost Impact	Schedule Impact	Comments									
Category	Best Management Practice	Y/N	Enter Rationale if No or Enter BMP Application to Project if Yes	H/M/L	Y/N	Enter Rationale if Not Selected	Y/N	Enter Rationale if Not Implemented	(select from list)	(select from list)							
<b>B: Characterization and/or Remedy Approach</b>																	
Characterization and/or Remedy Approach	BMP B-3: Use appropriate characterization or remedy approach based on site conditions	Yes	Conduct tracer study to determine best injection program	High	Yes		Yes		Decrease	Decrease	Although increase in cost for study, lower overall cost as less material needed to be injected, also shorter time to reach remedial goals						
Characterization and/or Remedy Approach	BMP B-4: Establish decision points to trigger a change from one technology to another or from one remedy alternative to another	Yes	Active remediation followed by monitored natural attenuation	High	Yes		No	Decision deferred to monitoring phase to see if rebound occurs			Expected cost decrease when shift to MNA occurs						
<b>D: Energy/Emissions Equipment Use</b>																	
Energy/ Emissions Equipment Use	BMP D-7: Consider purchase of renewable energy certificates (RECs) to offset emissions from the remedial activities (note that a Memorandum titled Department of the Army Policy for Renewable Energy Credits, dated 24 May 2012, states that "the Army shall not purchase RECs solely to meet Federal renewable energy goals," but it is possible that Project Teams might in some cases consider the purchase of RECs to address concerns of one or more stakeholders at a specific site)	Yes	Purchase of RECs	Low	No	Policy did not allow											
<b>E: Material &amp; Off-Site Services</b>																	
Material & Off-Site Services	BMP E-4: Identify opportunities for using by-products or "waste" materials from local sources in place of refined chemicals or materials	Yes	Local availability of waste "Pepsi" water	Medium	Yes		Yes		Decrease	Decrease	Although Pepsi water was not available (emulsified vegetable oil (EVO) was substituted), the EVO was locally available						
<b>F: Water Resource Use</b>																	
Water Resource Use	BMP F-3: Use extracted and treated water for beneficial purposes	No	No extracted groundwater														
<b>G: Waste Generation, Disposal, and Recycling</b>																	
Waste Generation, Disposal, and Recycling	BMP G-3: Consider on-site treatment and re-use of soil instead of off-site disposal	No	No soil remediation														
<b>I: Safety and Community</b>																	
Safety and Community	BMP I-7: Contribute to local economy when possible	Yes	Use local drill crews for injection of substrate	Low	Yes		Yes		Decrease	Decrease							



# ARMY GSR APPROACH PILOT

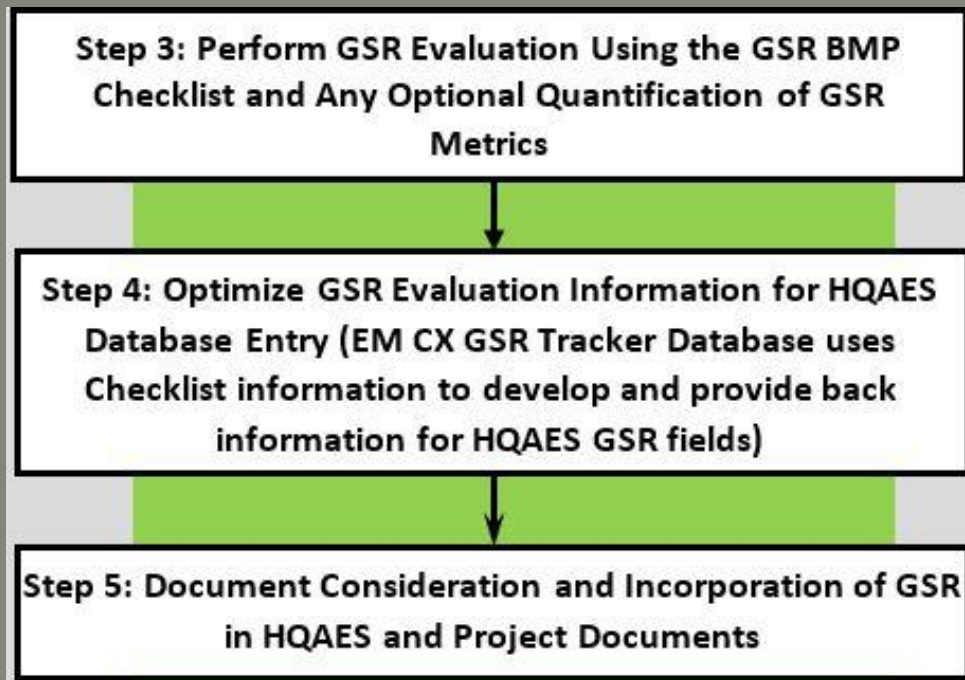
- Participants in Army Pilot
  - Cold Regions Research Engineering Lab
  - Tooele Army Ammunition Plant
  - Lake City Army Ammunition Plant
  - Joint Base Cape Cod (Massachusetts Military Reservation)



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# CURRENT ARMY PILOT PROCESS



- Proof GSR Checklist through installation use
- Refine the EM CX database for optimum GSR summary information
- Installation input of GSR into HQAES



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# EXAMPLE GSR DATA FOR HQAES INPUT

- Which BMPs not applicable (not considered)
- Which BMPs applicable (considered), with cost and schedule impact for those implemented (sorted by cost impact of decrease, no impact, increase)
- Number of BMPs considered
- Number of BMPs implemented
- Number of BMPs
  - Cost decrease, no impact, cost increase
  - Schedule decrease, no impact, schedule increase
- May add later number of methodologies inherently GSR
  - Optimization
  - Systematic planning



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# APPLICABLE (CONSIDERED) AND NOT APPLICABLE BMPS

Installation:	Example Army Base
Project/Site:	Sitewide groundwater
Phase:	Remedial Operations
Date of BMP Survey:	08-May-17

## Not Applicable BMPs

BMP	Description
A-03	Identify and periodically update a list of key stakeholders and their concerns with respect to GSR considerations
A-07	Incorporate green specifications into solicitations and contracts
A-09	Tailor the remedy cleanup goals such that they are appropriate for anticipated end-use of the property, rather than assuming a more conservative exposure scenario with more stringent cleanup goals

Installation:	Example Army Base
Project/Site:	Sitewide groundwater
Phase:	Remedial Operations
Date of BMP Survey:	08-May-17

## Applicable (Considered) BMPs

BMP	Description	Cost Impact	Schedule Impact
A-01	Develop a culture of GSR within the Project Team and encourage GSR ideas from project staff, and review similar projects from other sites for possible transfer/adoption of GSR ideas	Decrease	No Impact
A-02	Incorporate a section on GSR in project meetings, work plans, and reports	No Impact	No Impact
A-04	Schedule activities for appropriate seasons and/or time of day to reduce delays caused by weather conditions and fuel needed for heating or cooling	Decrease	Not Entered
A-05	Prepare, store, and distribute documents electronically	Decrease	Decrease

# SUMMARY BMP INFORMATION

## Army GSR Tracker (ver AB.1)

GSR

Reviews

Admin

GSR 1s

GSR 2s

GSR Reports

Installations

Sites/Phases

Select an installation...

Example Army Base

Select a Project/Site...

Sitewide groundwater

Selected Site/Project

ProjSiteNameGSR Sitewide groundwater

GSR\_ProjSiteMemo memo notes

5/1/2017  
rim

Select a Phase...

Remedial Operations

Selected Phase

GSRPhaseName Remedial Operatic

Ist\_GSRPhaseID O&M

Ist\_GSRPhaseSubID --

GSRPhaseMemo

Revaluation of GSR in a Optimization Study

5/1/2017  
CLD

READ ONLY

5/8/2017  
rim

import GSR  
survey

Ist\_GSRSurveyTimingID

0

GSR\_SurveyCompletedDate

08-May-17

GSR\_SurveyCompletedByOrg

0

GSR\_SurveyCompletedByUser

0

GSR\_SurveyLoadedDate

5/8/2017 12:21:13 PM

GSR\_SurveyLoadedByOrg

0

GSR\_SurveyLoadedByUser

0

GSR\_SurveyProjectDocumentName

GSR\_SurveyProjectDocumentLink

GSR\_LinkedToOptimizationStudy

tbl\_GSROptimizationID

0

Applicable

Not Applicable

A-01  
A-02  
A-04  
A-05  
A-06  
A-08  
A-10  
A-11  
B-01  
B-02  
B-03  
B-04  
B-05  
B-07  
B-08

A-03  
A-07  
A-09  
B-06  
B-09  
C-02  
C-03  
C-04  
D-01  
D-03  
D-07  
D-10  
E-01  
E-02  
E-03

Total BMPs

66

Applicable BMPs

36

Not Applicable BMPs

30

Selected BMPs

33

Not Selected BMPs

3

Implemented BMPs

27

	Cost	Schedule
Decrease	16	6
No Impact	8	21
Increase	3	0

Not Implemented BMPs

6

READ / WRITE



Record 1 of 1



show next hints

ver. AB.1 Jan-2016  
db Information



# CURRENT ARMY GSR APPROACH STATUS

- Continued completion of GSR checklists, with EM CX GSR database providing information back to the installations, installations uploading to HQAES
- Expansion of GSR Pilot to include GSR in contract language and project planning
- GSR checklists included in Army optimization studies, including installations in Draft Army Optimization Approach Pilot (Dave Becker of the EM CX)
  - Optimization studies will be tracked through HQAES GSR fields
  - Quantification of cost savings and partial GSR metrics, e.g. energy savings

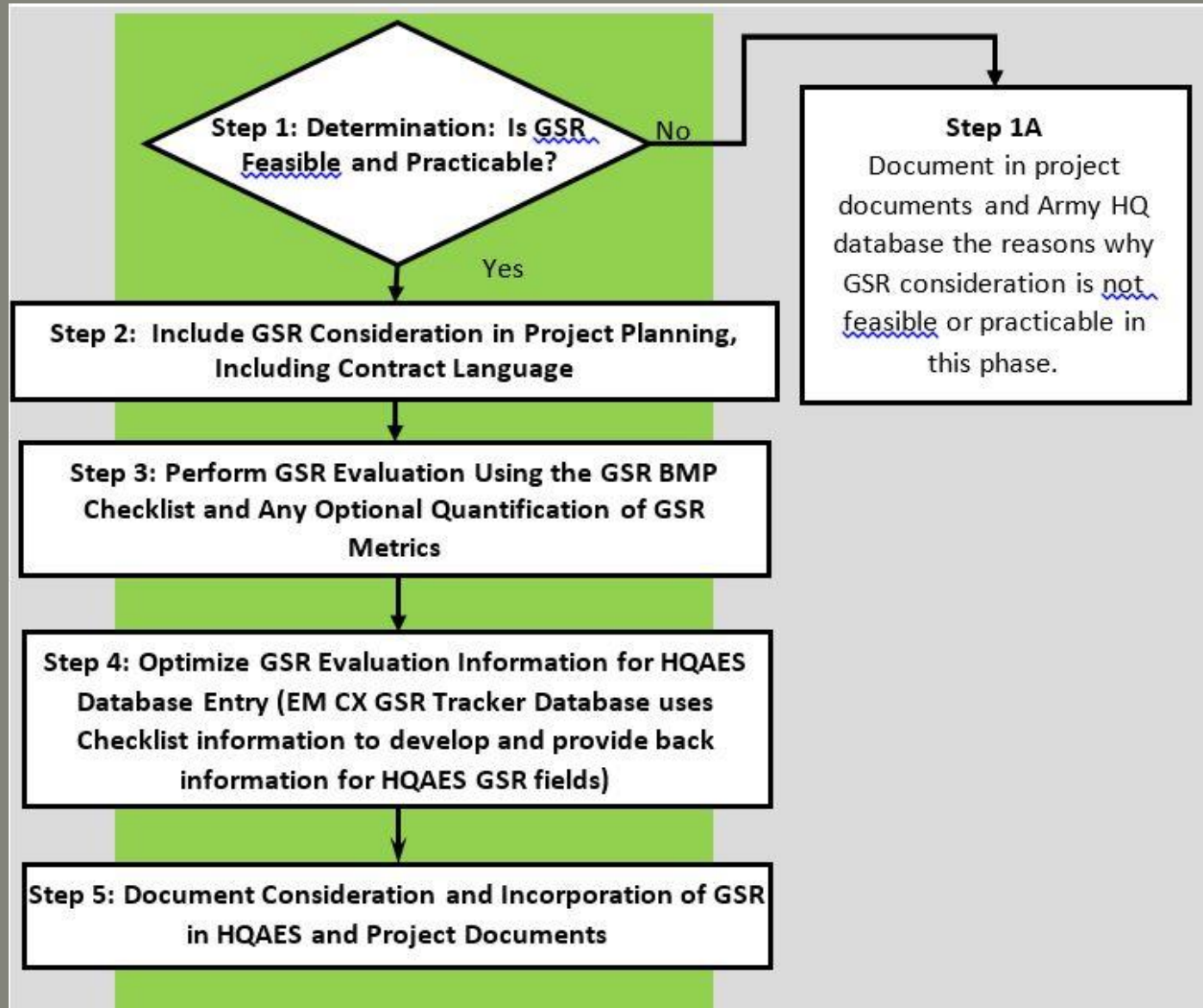


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# ARMY GSR APPROACH



# EXAMPLE GSR CONTRACT LANGUAGE FOR A PERFORMANCE-BASED ACQUISITION

The Contractor shall consider and implement green and sustainable remediation (GSR), consistent with GSR policy within the DERP (March 2012 DERP Manual) and Army environmental remediation (Army DERP) programs (include reference) using the attached Army GSR Approach as the basis unless alternate procedures are proposed by the Contractor and agreed to by the Government. The Contractor shall use the attached fillable, Excel-based spreadsheet version format of the GSR Best Management Practice (BMP) list developed as part of the Army GSR Study (USACE 2012) for documentation of the GSR BMP consideration and implementation within the project activities, as well as for tracking GSR BMP consideration and implementation in Army databases unless alternate procedures are proposed by the Contractor and agreed to by the Government. More details as to how to use the fillable BMP spreadsheet are included in the GSR Evaluation User's Guide, Appendix 1, in the Army GSR Approach. [For optional contract language to include quantitative footprinting, see Attachment A-2 of APPENDIX A, "Detailed Approach for Performing Green and Sustainable Remediation (GSR) Evaluations in Army Environmental Remediation" in the Army GSR Study Report (USACE 2012).]

Example only. Project-specific contract language should be reviewed by the project contracting official and/or office of counsel



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# PATH FORWARD

- Completion of Army GSR Pilot, including incorporation of GSR into contract language and forward project planning
- Revision of the Army GSR Approach with the data from the GSR and Optimization Pilots.
- Companion revision as necessary HQAES GSR and optimization fields



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# RESOURCES

Department of Army, Office of the Assistant Chief of Staff for Installation Management (DoA 2013) “FY 2014-2015 Army Environmental Cleanup Strategic Plan”, November 2013.

Department of Army, Office of the Assistant Chief of Staff for Installation Management (DoA 2012), “Evaluation of Consideration and Incorporation of Green and Sustainable Remediation (GSR) Practices in Army Environmental Remediation, Appendix A “Detailed Approach for Evaluating Green And Sustainable Remediation (GSR) on Army Environmental Projects”, August 2012,

[http://www.fedcenter.gov/Documents/index.cfm?id=22322&pge\\_prg\\_id=27392](http://www.fedcenter.gov/Documents/index.cfm?id=22322&pge_prg_id=27392)

Department of Defense (DoD 2012) “Defense Environmental Restoration Program (DERP) Manual”, revised 9 March 2012, No. 4715.20

<http://www.dtic.mil/whs/directives/corres/pdf/471520m.pdf>



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# QUESTIONS



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**U.S. ARMY**

File Name

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