DOO	Problem	Project	Required	Input Down dowing	Analytical	Performance	Plan for
DQO	Statement	Goals	Information Inputs	Boundaries	Approach	Criteria	Obtaining Data
	efine the problem that ecessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
	etermine the nature extent of MEC.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> </ul> Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 112 ft apart in the MRS boundary and 50 ft apart south of the MRS boundary; grids will equate to 50 ft by 50 ft areas within the MRS.</li> <li>Transect spacing is designed to search for areas where the smoke grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</li> </ul>	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the MRS.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the smoke grenade.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly density within transects using AIR.</li> <li>Perform DGM in grids.</li> <li>Data collection along 0.99 acres/2.71 miles of transects and 0.29 acres/5 grids.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on AIR data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone.</li> <li>Intrusive investigation of a representative number of anomalies (to be determined by PDT) for AIR transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM grids.</li> <li>Test trench of large</li> </ul>

# Table 1 – Munitions and Explosives of Concern Data Quality Objectives – MRS 1

DOO	Problem Statement	Project Coals	Required	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
DQO	Statement	Goals	Information Inputs	Boundaries	Approach		Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
	Determine the nature nd extent of MEC.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> </ul> Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the MRS.</li> <li>Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established</li> </ul>	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the MRS.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly density within transects using DGM, AIR and/or magand-dig.</li> <li>Data collection along 0.63 acres/1.74 miles of transects and 0.11 acres/2 grids.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for magand-dig transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM grids.</li> </ul>

# Table 2 – Munitions and Explosives of Concern Data Quality Objectives – MRS 2

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
IRS Characterization	Determine the nature and extent of MEC.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> </ul> Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be variously spaced apart (i.e., 112 ft, 242 ft, or 416 ft) and grids will equate to 50 ft by 50 ft areas within the MRS.</li> <li>Transect spacing is designed to search for areas where the MK II grenades, 37mm, or 60mm mortars (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</li> </ul>	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the MRS.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenades, 37mm, or 60mm mortars.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly densivithin transects using DGM, AIR and/or magand-dig.</li> <li>Data collection along 91.87 acres/252.63 mile of transects and 9.24 acres/161 grids.</li> <li>Overlap DGM and analog data collection methods along a sample transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placemen locations. Grids will be placed in high, medium, and low anomalous area based on DGM and AIR data and discussions with the PDT; biased placem of percentage of grids to define location of potent MEC in areas beyond target zone.</li> <li>Intrusive investigation of a representative numb of anomalies (to be determined by PDT) for AIR transects.</li> <li>Intrusive investigation of all anomalies for AIR grids.</li> <li>Intrusive investigation of all MEC-like anomalies for AIR grids.</li> </ul>

### Table 3 – Munitions and Explosives of Concern Data Quality Objectives – MRS 3

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
DQU		Goals	<b>^</b>		<b>^</b>	Specify probability limits for	
Explanation	Define the problem that necessitates the study	Identify study questions	<i>Identify data and information</i> <i>needed to answer study questions</i>	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	false rejections and false	Select the plan that meets the performance criteria
	· · · · · · · · · · · · · · · · · · ·		× 1	· ·		acceptance decision errors	* *
<b>ARS</b> Characterization	• Determine the nature	• Determine the location	• Data collected during	• During field activities,	• Maximum depth at	Anomaly reacquisition	• Visually inspect and
	and extent of MEC.	and type of MEC present.	previous activities.	transects will be spaced	which each type of MEC	(from DGM data) within 1	determine anomaly density
		• Determine the spatial	• Results of visual	approximately 112 ft apart	was encountered will be	meter accuracy.	within transects using
		extent of MEC.	observations along	and grids will equate to 50	used to define the vertical	• Transect pathway	DGM and mag-and-dig.
		• Determine if MEC	transects and in grids.	ft by 50 ft areas within the	extent for that type of	positional accuracy is +/-	• Data collection along
		exposure pathways for	• Analog (density) and/or	AoPI.	MEC.	20 %, as an average across	0.69  acres/1.89  miles of
		humans are complete.	digital (instrument	• Transect spacing is	• The location and spatial	the AoPI.	transects and 0.11 acres/2
		• Determine if MEC pose	response) geophysical	designed to search for	extent of MEC will be	• Depth of detection for	grids.
		a human health risk.	data.	areas where the MK II	used to define the lateral	DGM data (i.e., the failure	<ul> <li>Overlap DGM and</li> </ul>
			• Results of intrusive	grenade (the smallest	extent for each type of	criteria) is 7x the diameter	analog data collection
	Possible Actions:	investigation of identified	found item with an	MEC encountered; the	of the MK II grenade.	methods along a sample of	
		No DoD Action	anomalies.	explosive hazard) would	extent beyond the last	• QC/QA blind seed	transects for
		Indicated	• Survey of site	explode on impact with	MEC discovered will be	items will be detected and	comparability.
	Institutio	Institutional Controls	receptors, demographics	the ground, detonate and	equal to the transect	identified.	• Synthesize anomaly
		MEC Removal	and land use.	fragment.	spacing for the area in		density data into figures
		Combination of		• Grid locations in areas	question.		for PDT review and
		Actions		of high, medium, and low	• If evidence of MEC is		anomaly selection.
				anomaly count areas will	found, then discovery		<ul> <li>Select grid placement</li> </ul>
				be determined based on	location may be within a		locations. Grids will be
				results of transect	zone where ordnance		placed in high, medium,
			investigations.	landed that did not		and low anomalous areas,	
			• The anomaly selection	function as designed.		based on DGM data and	
			threshold in DGM grids is	• All MD, frag, and		discussions with the PDT;	
			based on the maximum	targets will be evaluated as		biased placement of	
			value determined during	possibly indicative of the		percentage of grids to	
				the geophysical proveout.	location of MEC.		define location of potential
				The initial value is set at			MEC in areas beyond
				11x the diameter of the	Alternative actions will be		target zone.
				MK II grenade (the	formulated in the		• Intrusive investigation
				smallest found item with	Feasibility Study based on		of all anomalies for mag-
				an explosive hazard across	the location and density of		and-dig transects.
				all MRSs/AoPIs).	MEC, land use, and other		• Intrusive investigation
				• Intrusively investigate	data gathered during the		of all MEC-like anomalies
				potential MEC items.	investigation and		for DGM grids.
					comparison of those data		
				Constraints: Rights-of-	with criteria established		
				entry, weather, current land	herein.		
				use activities.			

# Table 4 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 3

Reference: Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA//G-4, EPA/240/B-06/001, February 2006. NOTE: MEC performance criteria are included in Section 4.0; MC DQOs are included in the UFP-QAPP (Appendix E). (The DQOs presented here, for AoPI 3, may change following meetings between the USAESCH and the golf course owners.)

DOG	Problem	Project	Required	Input	Analytical	Performance	Plan for
DQO	Statement	Goals	Information Inputs	Boundaries	Approach	Criteria	Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
MRS Characterization	• Determine the nature and extent of MEC.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> <li>Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul> </li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 173 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI.</li> <li>Transect spacing is designed to search for areas where the rifle grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established</li> </ul>	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the rifle grenade.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly density within transects using DGM and mag-and-dig.</li> <li>Data collection along 0.11 acres/0.30 miles of transects and 0.06 acres/1 grid.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for mag-and-dig transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM grids.</li> </ul>

# Table 5 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 5

DOG	Problem	Project	Required	Input	Analytical	Performance	Plan for
DQO	Statement	Goals	Information Inputs	Boundaries	Approach	Criteria	Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
MRS Characterization	• Determine the nature and extent of MEC.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> </ul> Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI.</li> <li>Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</li> </ul>	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly density within transects using DGM and mag-and-dig.</li> <li>Data collection along 0.79 acres/2.16 miles of transects and 0.11 acres/2 grids.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for mag-and-dig transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM grids.</li> </ul>

# Table 6 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 8

DOO	Problem	Project	Required	Input Boundaries	Analytical	Performance	Plan for Obtaining Data
DQO	Statement	Goals	Information Inputs	Boundaries	Approach	<b>Criteria</b>	Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false	Select the plan that meets the performance criteria
ARS Characterization	Determine the nature and extent of MEC.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> </ul> Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI.</li> <li>Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</li> </ul>	<ul> <li>acceptance decision errors</li> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly density within transects using DGM and mag-and-dig.</li> <li>Data collection along 0.19 acres/0.53 miles of transects and 0.06 acres/1 grid.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potentia MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for mag-and-dig transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM grids.</li> </ul>

# Table 7 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 9E

<b>D</b> .0.5	Problem	Project	Required	Input	Analytical	Performance	Plan for
DQO	Statement	Goals	Information Inputs	Boundaries	Approach	Criteria	Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
MRS Characterization	Determine the nature and extent of MEC.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> </ul> Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI.</li> <li>Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</li> </ul>	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly density within transects using DGM and mag-and-dig.</li> <li>Data collection along 0.65 acres/1.78 miles of transects and 0.11 acres/2 grids.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for magand-dig transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM grids.</li> </ul>

### Table 8 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 9G

MRS Characterization • ]	Statement         Define the problem that         necessitates the study         Determine the nature         d extent of MEC.	GoalsIdentify study questions• Determine the location and type of MEC present.• Determine the spatial extent of MEC.• Determine if MEC	Information InputsIdentify data and information needed to answer study questions• Data collected during previous activities.• Results of visual	Boundaries         Specify the target population and define spatial limits         • During field activities, transects will be spaced	Approach Develop the logic for drawing conclusions from findings  Maximum depth at which each type of MEC	CriteriaSpecify probability limits for false rejections and false acceptance decision errors• Anomaly reacquisition	Obtaining Data           Select the plan that meets the performance criteria           • Visually inspect and
MRS Characterization • ]	necessitates the study Determine the nature	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> </ul>	<ul> <li>needed to answer study questions</li> <li>Data collected during previous activities.</li> </ul>	<ul><li><i>define spatial limits</i></li><li>During field activities,</li></ul>	<ul><li><i>conclusions from findings</i></li><li>Maximum depth at</li></ul>	false rejections and false acceptance decision errors	performance criteria
		<ul><li>and type of MEC present.</li><li>Determine the spatial extent of MEC.</li></ul>	previous activities.		1	Â	• Visually inspect and
		<ul> <li>Determine if MEC pose a human health risk.</li> <li>Determine if MEC pose a human health risk.</li> <li>Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul> </li> </ul>	observations along transects and in grids. • Analog (density) and/or digital (instrument response) geophysical data. • Results of intrusive investigation of identified anomalies. • Survey of site receptors, demographics and land use.	<ul> <li>approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI.</li> <li>Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>which each type of MEC</li> <li>was encountered will be</li> <li>used to define the vertical</li> <li>extent for that type of</li> <li>MEC.</li> <li>The location and spatial</li> <li>extent of MEC will be</li> <li>used to define the lateral</li> <li>extent for each type of</li> <li>MEC encountered; the</li> <li>extent beyond the last</li> <li>MEC discovered will be</li> <li>equal to the transect</li> <li>spacing for the area in</li> <li>question.</li> <li>If evidence of MEC is</li> <li>found, then discovery</li> <li>location may be within a</li> <li>zone where ordnance</li> <li>landed that did not</li> <li>function as designed.</li> <li>All MD, frag, and</li> <li>targets will be evaluated as</li> <li>possibly indicative of the</li> <li>location of MEC.</li> </ul> Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.	<ul> <li>(from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/-20%, as an average across the AoPI.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>determine anomaly density within transects using DGM and mag-and-dig.</li> <li>Data collection along 4.40 acres/12.09 miles of transects and 0.46 acres/8 grids.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potentia MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for mag-and-dig transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM grids.</li> </ul>

### Table 9 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 10A

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
MRS Characterization	• Determine the nature and extent of MEC.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> </ul> Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 416 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI.</li> <li>Transect spacing is designed to search for areas where the 60mm mortar (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</li> </ul>	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the 60mm mortar.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly density within transects using DGM and mag-and-dig.</li> <li>Data collection along 0.23 acres/0.63 miles of transects and 0.06 acres/1 grid.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for mag-and-dig transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM grids.</li> </ul>

# Table 10 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 10B

DOO	Problem	Project	Required	Input	Analytical	Performance	Plan for
DQO	Statement	Goals	Information Inputs	Boundaries	Approach	<b>Criteria</b>	Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
MRS Characterization	• Determine the nature and extent of MEC.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> </ul> Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI.</li> <li>Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</li> </ul>	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly density within transects using DGM and mag-and-dig.</li> <li>Data collection along 0.88 acres/2.42 miles of transects and 0.11 acres/2 grids.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for mag-and-dig transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM grids.</li> </ul>

# Table 11 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 11B

	Problem	Quality Objectives – AoPI 11 Project	Required	Input	Analytical	Performance	Plan for
DQO	Statement	Goals	Information Inputs	Boundaries	Approach	Criteria	Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
MRS Characterization	Determine the nature and extent of MEC.	<ul> <li>Determine the location and type of MEC present within each MRS.</li> <li>Determine the spatial extent of MEC within each MRS.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> <li>Possible Actions:</li> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 112 ft apart and grids will equate to 50 ft by 50 ft areas within the AoPI.</li> <li>Transect spacing is designed to search for areas where the MK II grenade (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> <li>Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.</li> </ul>	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the AoPI.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the MK II grenade.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly density within transects using DGM and mag-and-dig.</li> <li>Data collection along 0.14 acres/0.38 miles of transects and 5.03 acres of DGM (4.97 acres on ball field and 0.06 acres on 1 grid).</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on DGM data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for mag-and-dig transects.</li> <li>Intrusive investigation of all MEC-like anomalies for DGM areas/grids.</li> </ul>

## Table 12 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 11C

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
DQU		Goals	<b>^</b>		<b>^</b>	Specify probability limits for	
Explanation	Define the problem that	Identify study questions	Identify data and information	Specify the target population and	Develop the logic for drawing	false rejections and false	Select the plan that meets the
· r · · · · · · · · · · · · · · · · · ·	necessitates the study		needed to answer study questions	define spatial limits	conclusions from findings	acceptance decision errors	performance criteria
<b>MRS</b> Characterization	• Determine the nature	• Determine the location	• Data collected during	• During field activities,	• Maximum depth at	Anomaly reacquisition	• Visually inspect and
	and extent of MEC.	and type of MEC present.	previous activities.	transects will be spaced	which each type of MEC	(from DGM data) within 1	determine anomaly density
		• Determine the spatial	• Results of visual	approximately 112 ft apart	was encountered will be	meter accuracy.	within transects using
		extent of MEC.	observations along	and grids will equate to 50	used to define the vertical	• Transect pathway	DGM and mag-and-dig.
		• Determine if MEC	transects and in grids.	ft by 50 ft areas within the	extent for that type of	positional accuracy is +/-	• Data collection along
		exposure pathways for	• Analog (density) and/or	AoPI.	MEC.	20 %, as an average across	0.42  acres/1.17  miles of
		humans are complete.	digital (instrument	• Transect spacing is	• The location and spatial	the AoPI.	transects and 0.06 acres/1
		• Determine if MEC pose	response) geophysical	designed to search for	extent of MEC will be	• Depth of detection for	grid.
		a human health risk.	data.	areas where the MK II	used to define the lateral	DGM data (i.e., the failure	• Overlap DGM and
			• Results of intrusive	grenade (the smallest	extent for each type of	criteria) is 7x the diameter	analog data collection
		Possible Actions:	investigation of identified	found item with an	MEC encountered; the	of the MK II grenade.	methods along a sample of
		No DoD Action	anomalies.	explosive hazard) would	extent beyond the last	• QC/QA blind seed	transects for
		Indicated	• Survey of site	explode on impact with	MEC discovered will be	items will be detected and	comparability.
		Institutional Controls	receptors, demographics	the ground, detonate and	equal to the transect	identified.	• Synthesize anomaly
		MEC Removal	and land use.	fragment.	spacing for the area in		density data into figures
		Combination of		• Grid locations in areas	question.		for PDT review and
		Actions		of high, medium, and low	• If evidence of MEC is		anomaly selection.
				anomaly count areas will	found, then discovery		• Select grid placement
				be determined based on	location may be within a		locations. Grids will be
				results of transect	zone where ordnance		placed in high, medium,
				investigations.	landed that did not		and low anomalous areas,
				• The anomaly selection	function as designed.		based on DGM data and
				threshold in DGM grids is	• All MD, frag, and		discussions with the PDT;
				based on the maximum	targets will be evaluated as		biased placement of
				value determined during	possibly indicative of the		percentage of grids to
				the geophysical proveout.	location of MEC.		define location of potential
				The initial value is set at			MEC in areas beyond
				11x the diameter of the	Alternative actions will be		target zone.
				MK II grenade (the	formulated in the		• Intrusive investigation
				smallest found item with	Feasibility Study based on		of all anomalies for mag-
				an explosive hazard across	the location and density of		and-dig transects.
				all MRSs/AoPIs).	MEC, land use, and other		• Intrusive investigation
				• Intrusively investigate	data gathered during the		of all MEC-like anomalies
				potential MEC items.	investigation and		for DGM grids.
					comparison of those data		
				Constraints: Rights-of-	with criteria established		
				entry, weather, current land	herein.		
				use activities.			

# Table 13 – Munitions and Explosives of Concern Data Quality Objectives – AoPI 11D

DQO	Problem Statement	Project Goals	Required Information Inputs	Input Boundaries	Analytical Approach	Performance Criteria	Plan for Obtaining Data
Explanation	Define the problem that necessitates the study	Identify study questions	Identify data and information needed to answer study questions	Specify the target population and define spatial limits	Develop the logic for drawing conclusions from findings	Specify probability limits for false rejections and false acceptance decision errors	Select the plan that meets the performance criteria
MRS Characterization	Determine the nature and extent of MEC along the shoreline.	<ul> <li>Determine the location and type of MEC present.</li> <li>Determine the spatial extent of MEC.</li> <li>Determine if MEC exposure pathways for humans are complete.</li> <li>Determine if MEC pose a human health risk.</li> </ul> Possible Actions: <ul> <li>No DoD Action Indicated</li> <li>Institutional Controls</li> <li>MEC Removal</li> <li>Combination of Actions</li> </ul>	<ul> <li>Data collected during previous activities.</li> <li>Results of visual observations along transects and in grids.</li> <li>Analog (density) and/or digital (instrument response) geophysical data.</li> <li>Results of intrusive investigation of identified anomalies.</li> <li>Survey of site receptors, demographics and land use.</li> </ul>	<ul> <li>During field activities, transects will be spaced approximately 416 ft apart and grids will equate to 50 ft by 50 ft areas along the shoreline.</li> <li>Transect spacing is designed to search for areas where the 60mm mortar (the smallest found item with an explosive hazard) would explode on impact with the ground, detonate and fragment.</li> <li>Grid locations in areas of high, medium, and low anomaly count areas will be determined based on results of transect investigations.</li> <li>The anomaly selection threshold in DGM grids is based on the maximum value determined during the geophysical proveout. The initial value is set at 11x the diameter of the MK II grenade (the smallest found item with an explosive hazard across all MRSs/AoPIs).</li> <li>Intrusively investigate potential MEC items.</li> </ul>	<ul> <li>Maximum depth at which each type of MEC was encountered will be used to define the vertical extent for that type of MEC.</li> <li>The location and spatial extent of MEC will be used to define the lateral extent for each type of MEC encountered; the extent beyond the last MEC discovered will be equal to the transect spacing for the area in question.</li> <li>If evidence of MEC is found, then discovery location may be within a zone where ordnance landed that did not function as designed.</li> <li>All MD, frag, and targets will be evaluated as possibly indicative of the location of MEC.</li> </ul> Alternative actions will be formulated in the Feasibility Study based on the location and density of MEC, land use, and other data gathered during the investigation and comparison of those data with criteria established herein.	<ul> <li>Anomaly reacquisition (from DGM data) within 1 meter accuracy.</li> <li>Transect pathway positional accuracy is +/- 20 %, as an average across the study area.</li> <li>Depth of detection for DGM data (i.e., the failure criteria) is 7x the diameter of the 60mm mortar.</li> <li>QC/QA blind seed items will be detected and identified.</li> </ul>	<ul> <li>Visually inspect and determine anomaly densitive within transects using AII or mag-and-dig.</li> <li>Data collection along 0.60 acres/1.65 miles of transects and 0.11 acres/2 grids.</li> <li>Overlap DGM and analog data collection methods along a sample of transects for comparability.</li> <li>Synthesize anomaly density data into figures for PDT review and anomaly selection.</li> <li>Select grid placement locations. Grids will be placed in high, medium, and low anomalous areas, based on mag-and-dig and AIR data and discussions with the PDT; biased placement of percentage of grids to define location of potential MEC in areas beyond target zone.</li> <li>Intrusive investigation of all anomalies for mag-and-dig transects.</li> <li>Intrusive investigation of all anomalies for AIR grids.</li> <li>Intrusive investigation of all anomalies for AIR grids.</li> </ul>

#### Table 14 – Munitions and Explosives of Concern Data Quality Objectives – Lake Craig and Lake Johnson