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Remedial Process Optimization (RPO)

**Environmental Restoration Program
Edwards AFB, CA**

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Remedial Process Optimization (RPO)



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- **Definition of RPO**
 - A planning approach evaluating existing or proposed remediation processes with the goal of evaluating:
 - System operation costs
 - Effectiveness of ongoing cleanup systems or treatability studies
 - Cost to completion (CTC) and site cleanup times
 - Timely feedback to decision makers



The RPO Results



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- **RPO recommendations**
 - Facilitates attainment of 2012 Remedy-In-Place (RIP) goals; identify sites for accelerated closure
 - Enhanced system performance
 - Identify redundancies or unnecessary analysis
 - Eliminate unnecessary resource costs (manpower, time)
 - Supports U.S. Air Force mission – return of resources for base mission
 - Green remediation – uses less energy/generates less pollution



RPO Visit Goals



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- **Reduce risk to human health and/or environment**
- **Enhance system performance**
- **Accelerate site closure**
- **Avoid unnecessary costs**



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RPO Team



RPO Team



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- **Experienced environmental professionals**
- **Diverse backgrounds and skill sets**
- **Varied organizations (DOD, EPA, state regulator, private sector)**
- **Air Force Center for Engineering and the Environment (AFCEE) Program Management Office (PMO) team leader**
- **Contracting Officer**
- **Restoration Advisory Board (RAB)**

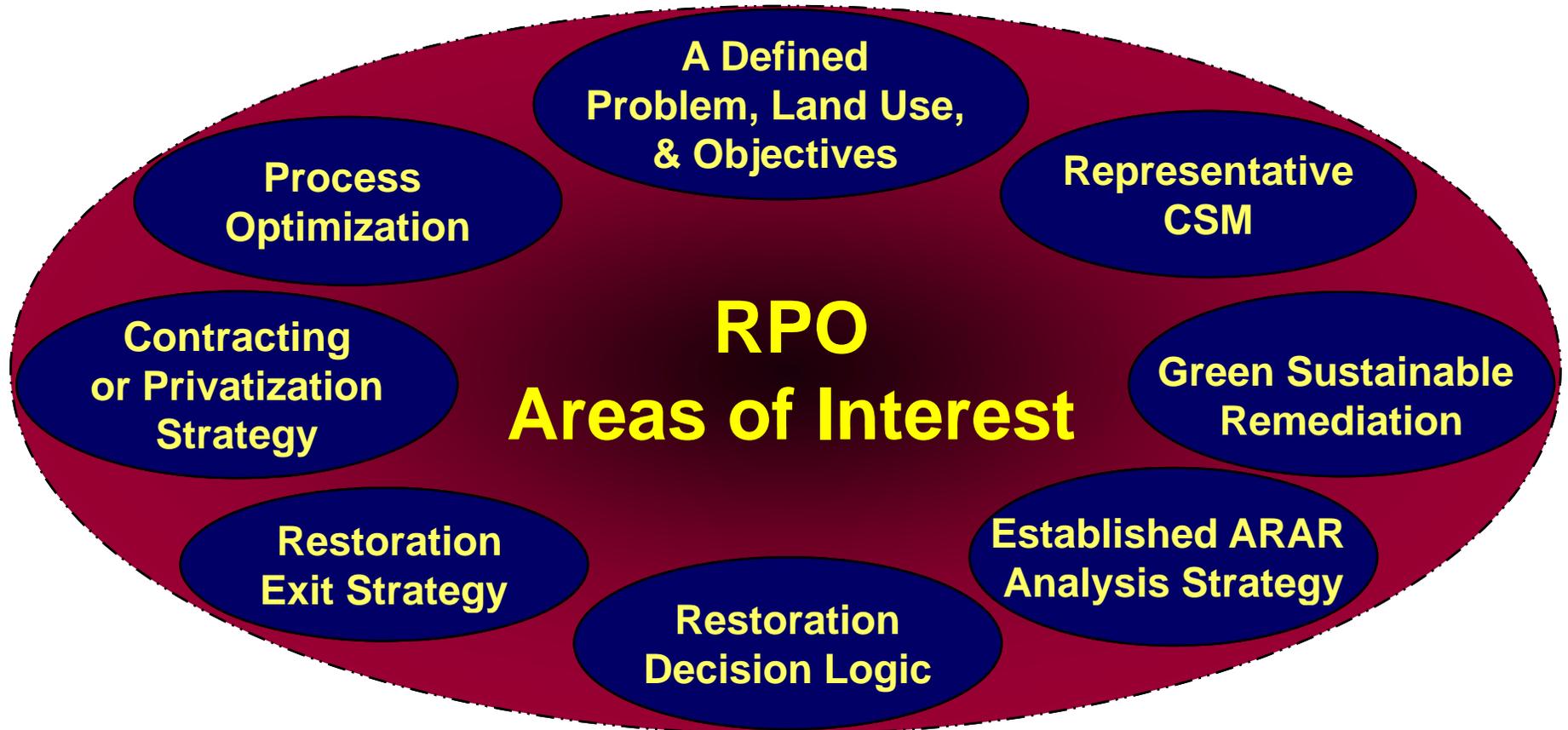




Environmental Restoration Program Optimization



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CSM = conceptual site model

ARAR = Applicable or Relevant and Appropriate Requirement



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RPO Process



The Visit (Phase I)



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- **Pre-visit data collection**
 - Interview installation staff
 - Pre-visit summary report to the team members
- **Visit – usually one week**
 - Base tour/site inspections
 - In-brief to installation
 - Research, analysis, and draft report
 - Out-brief installation and local regulators at base/PMO discretion
- **Present draft report at 95% completion status**
- **Follow-up**



Phases of RPO



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- **Phase I – Completed: Scoping Visit/Inventory and program review**
 - Support contractor, in-house staff, or service center
- **Phase II – Ongoing: Detailed assessment of a specific process or system**
 - Third-party technical experts with government lead
- **Phase III – Ongoing: Implementation of recommendations**
 - Implemented by base and contractors
- **Phase IV – Ongoing: Performance Tracking**
 - Return on RPO investment
 - Cost and restoration tracking



Common Recommendations



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- **Site Operation**

- Groundwater extraction systems
- Vapor treatment systems
- Monitoring strategies

- **Exit Strategy**

- Documents the path leading to No Further Action or Site Closed status
- Describes system performance expectations and how to be measured
- Identifies alternative actions and/or strategies
- Dynamic strategy based on changing site conditions with current, updated data
- Defines period of time with expected costs





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OU5/10 RPO

Edwards AFB



RPO Focus Area: OU5/10



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- **Site 285**

- Currently Research and Development status

- Operating pump and treat (P&T), with aquifer reinjection

- RPO Recommendations

- Reduce monitoring wells and injection well sampling – quarterly to annually started September 2009
- Reduce extraction well sampling – quarterly to annually started January 2010
- Supported proposed soil flushing galleries at Bldgs 4235 and 4241



RPO Focus Area: OU5/10 [cont'd]



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- **Sites 422 and 231**
 - Currently under draft final Feasibility Study
 - Mitigate chlorinated solvent plume with low concentrations
 - RPO Recommendations
 - Sample for Monitored Natural Attenuation (MNA) parameters – under proposal
 - Continue data collection to assess plume stability to address groundwater degradation concerns – ongoing



RPO Focus Area: OU5/10 [cont'd]



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- **Site 240**
 - Currently under draft final Feasibility Study
 - Free product with soil contamination; multiple groundwater contaminant plume encroaching aircraft hangar area
 - RPO Recommendations
 - Evaluate bioventing for soil contamination – included in draft final Feasibility Study
 - Continue to remove free product – removal continues
 - Sample for Monitored Natural Attenuation parameters – under proposal
 - Continue data collection to assess plume stability to address groundwater degradation concerns – ongoing



RPO Focus Area: OU5/10 [cont'd]



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- **Site 231**
 - Current under draft final Feasibility Study
 - Soils contaminated with Lead
 - RPO Recommendations
 - Remove contaminated soils down to 2 feet to mitigate ecological risk. For soils 2 feet and deeper, institute land use controls
 - Project (dig/haul) awarded fiscal year 2010 to remove soil down to 10 feet



The Future



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- **Institutionalize RPO into the Environmental Restoration Account (ERA) Business Process regardless of contract type**
 - Implement annually by incumbent contractors
 - Integrate into long-term monitoring (LTM) process
 - Work with Contracting
- **Continue recommendation tracking (RPO Phase II and III)**
- **Track cost and restoration performance (RPO Phase IV)**
- **Evaluate RPO return on investment (RPO Phase IV)**



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Questions?