



# USAID | JORDAN

FROM THE AMERICAN PEOPLE

## USAID Water Reuse and Environmental Conservation Project

### Site Remediation and Landfill Closure Techniques Suitable for Old Sites in Jordan

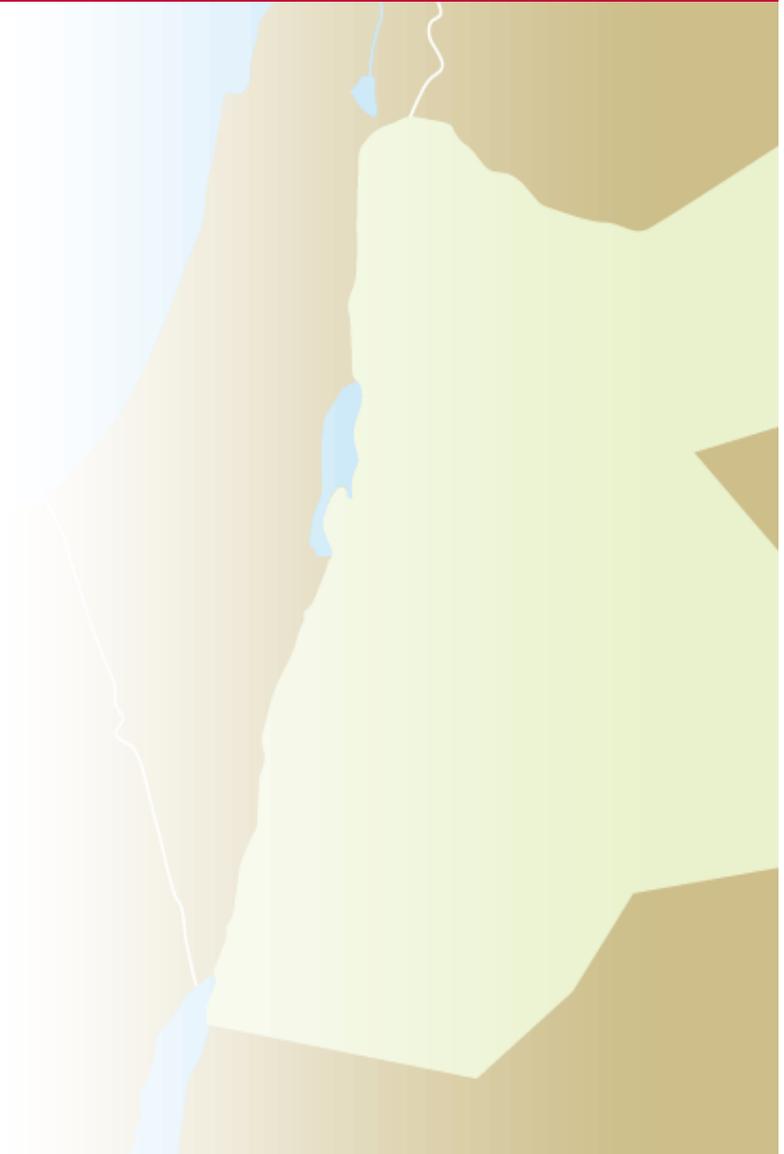
08 May 2014  
*Implemented by AECOM*





## AGENDA

- USAID and GoJ goals
- Appropriate Technologies
- Challenges
- Next steps





**USAID** | **JORDAN**  
FROM THE AMERICAN PEOPLE

## USAID AND GoJ GOALS

- Protect human health and safety, and the environment
- Develop useable land





## APPROPRIATE TECHNOLOGIES

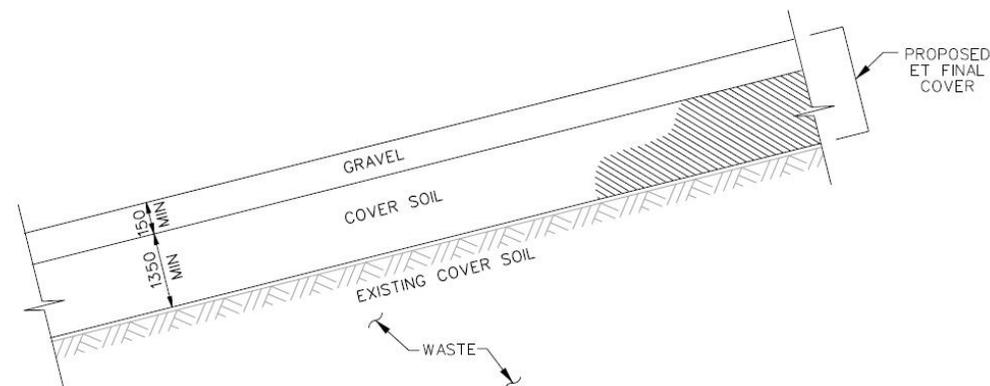
- Design to USEPA “Subtitle D” Standards
- Incorporate technology appropriate to Jordan





## APPROPRIATE TECHNOLOGIES

- USEPA “Subtitle D” Standards based on minimizing moisture addition to waste
- Arid climate is an advantage
  - Less moisture addition from precipitation
- Simplified final cover design





## APPROPRIATE TECHNOLOGIES

- Alternative materials of construction
  - geosynthetic clay liner (GCL)





## APPROPRIATE TECHNOLOGIES

- Lined overlay on existing landfill





## APPROPRIATE TECHNOLOGIES

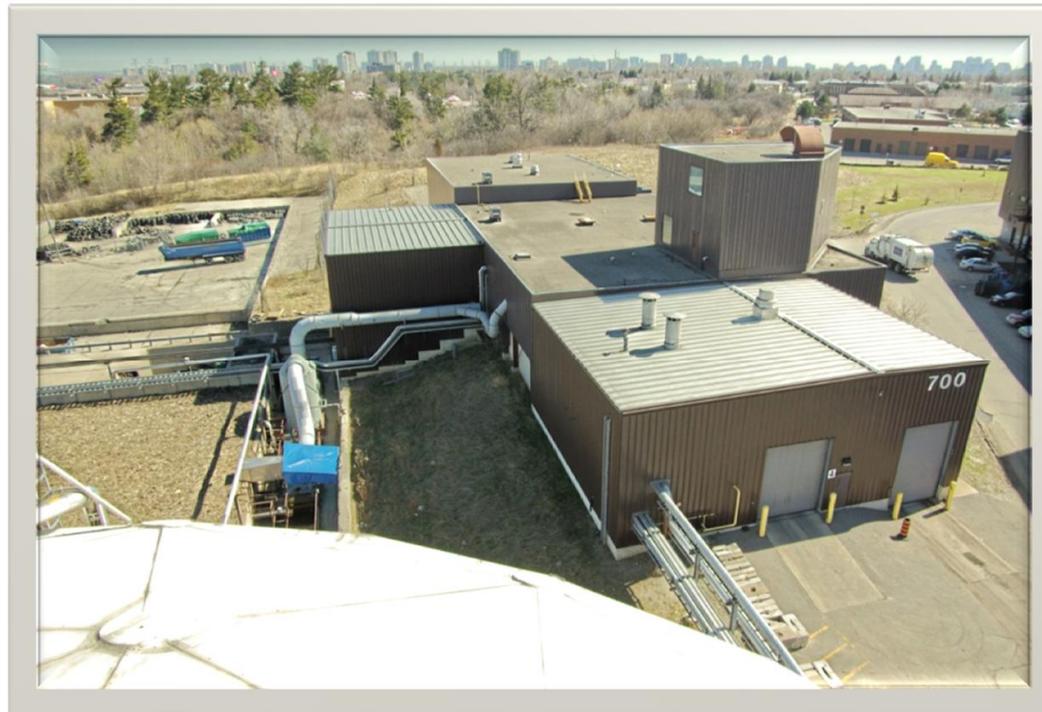
- End use
  - Public open/recreational space





## APPROPRIATE TECHNOLOGIES

- Anaerobic digestion
  - 40% of input must still be composted or landfilled





## CHALLENGES

### Consider local conditions:

- Proximity to population
- Proximity of waste to site boundary
- Separation from groundwater
- Waste characteristics





## CHALLENGES

- Acquiring site specific data
  - Topographic survey
  - Hydrogeology
  - Engineering properties of soils
  - Waste characterization
  - Waste placement record





## NEXT STEPS

- Review site characterizations
- Match alternative designs to site-specific conditions
- Implement alternative designs

