



US Ecology Update & Case Studies

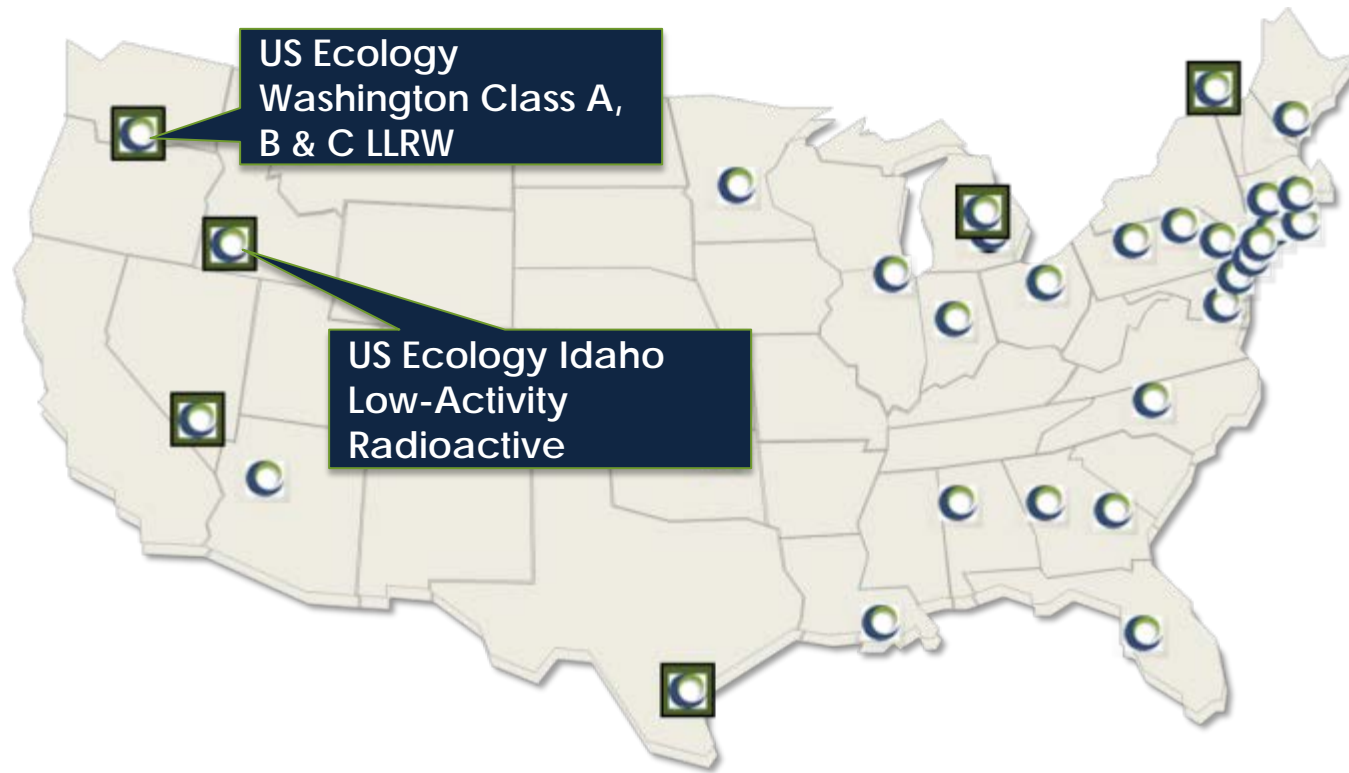
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US Ecology Overview

- Based in Boise, Idaho
- Founded in 1952
- Publicly traded company (NASDAQ – Ticker: ECOL)
- Acquired EQ – The Environmental Quality Company in June 2014 for \$465 million
 - Six (6) hazardous, PCB, and radioactive materials disposal facilities
 - Thirteen (13) hazardous materials treatment centers
 - 2,000 employees in Canada and the United States
 - \$615 million revenue & \$120 million EBITDA (combined 2014 pro-forma)

Treatment & Disposal Facilities



 Landfills

 Treatment and service centers

Treatment and Disposal Services

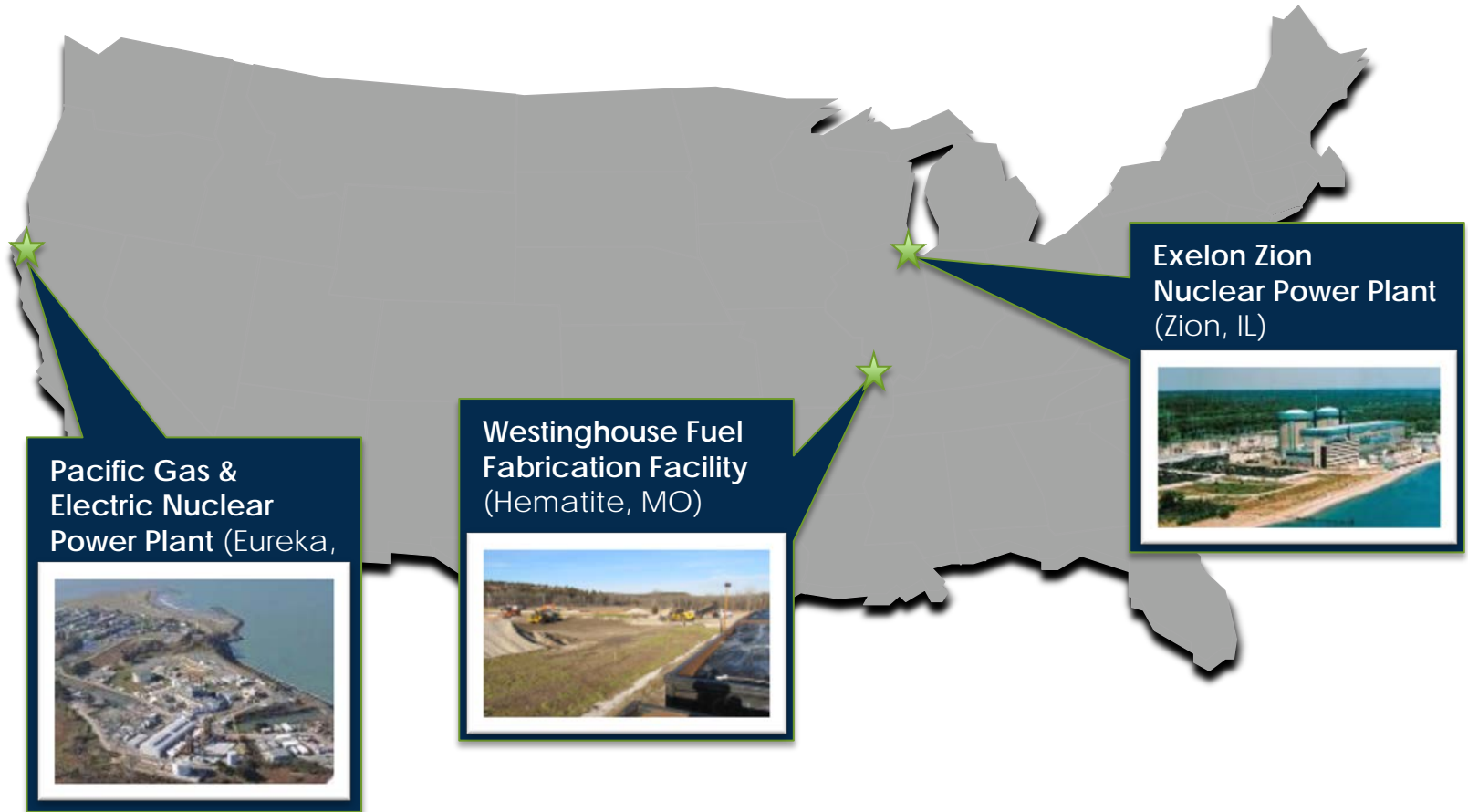
- ✓ Industrial and hazardous wastes
- ✓ Radioactive wastes
- ✓ Mobile solvent recycling
- ✓ Organic chemical recycling

✓ Thermal recycling

✓ Aircraft deicing fluid recycling

✓ Metals recovery and recycling

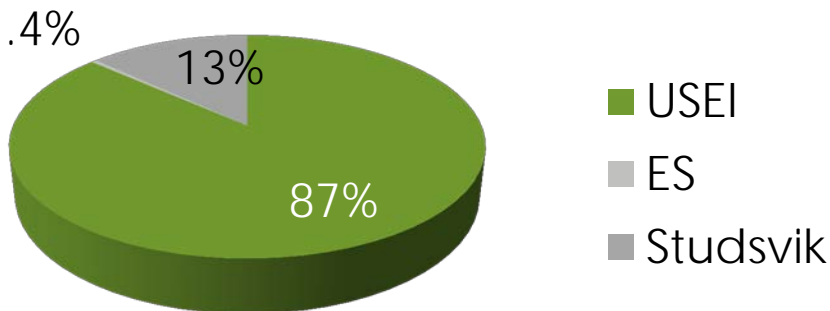
Active Decommissioning Projects



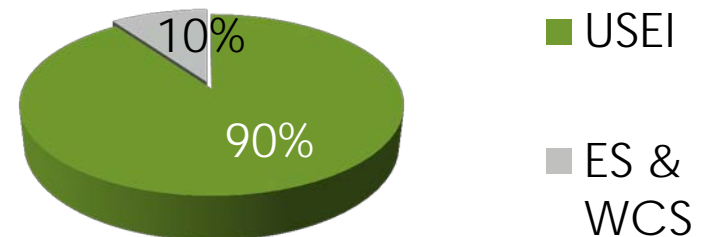
USE's Position in the US Radioactive Materials Market

- USACE FUSRAP (Manhattan Project)
 - ~100k-200k tons/year or >3M tons to date
- Serving 2 of the 3 current decommissionings (PG&E & WEC)
- NORM/TENORM
- DOD base clean-up market (Bay Area Navy bases, Air Force, etc)
- Smaller presence in DOE and nuclear power plant O&M marketplace

**Westinghouse
Decommissioning**
100,000 tons to date



**Pacific Gas & Electric
Decommissioning**
1,000 shipments to date



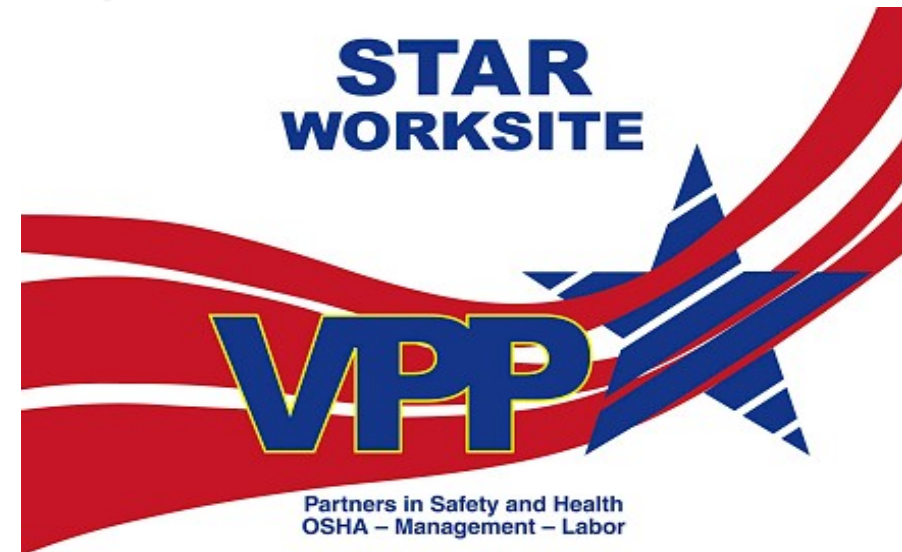
US Ecology Idaho



Safety & Compliance

- VPP Star Status
 - OSHA program
 - Cooperative relationship between management, labor & OSHA

- Very strong compliance record companywide



8 Million Tons Disposed 2000-2014



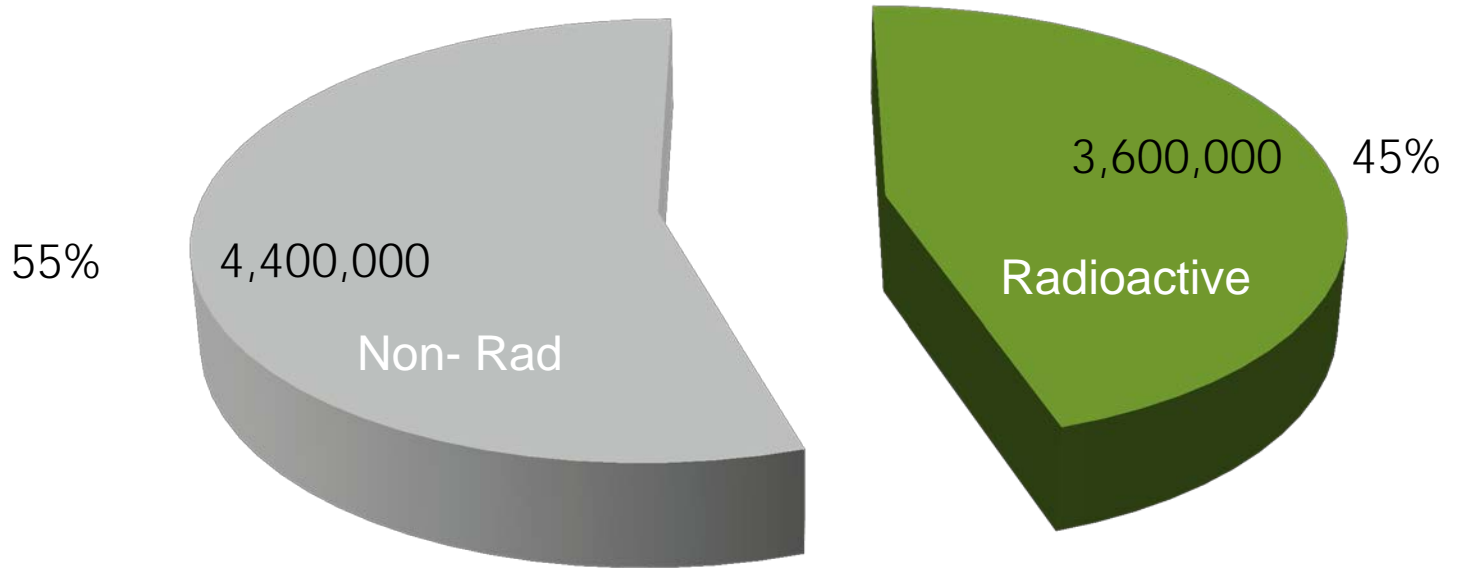
Westinghouse



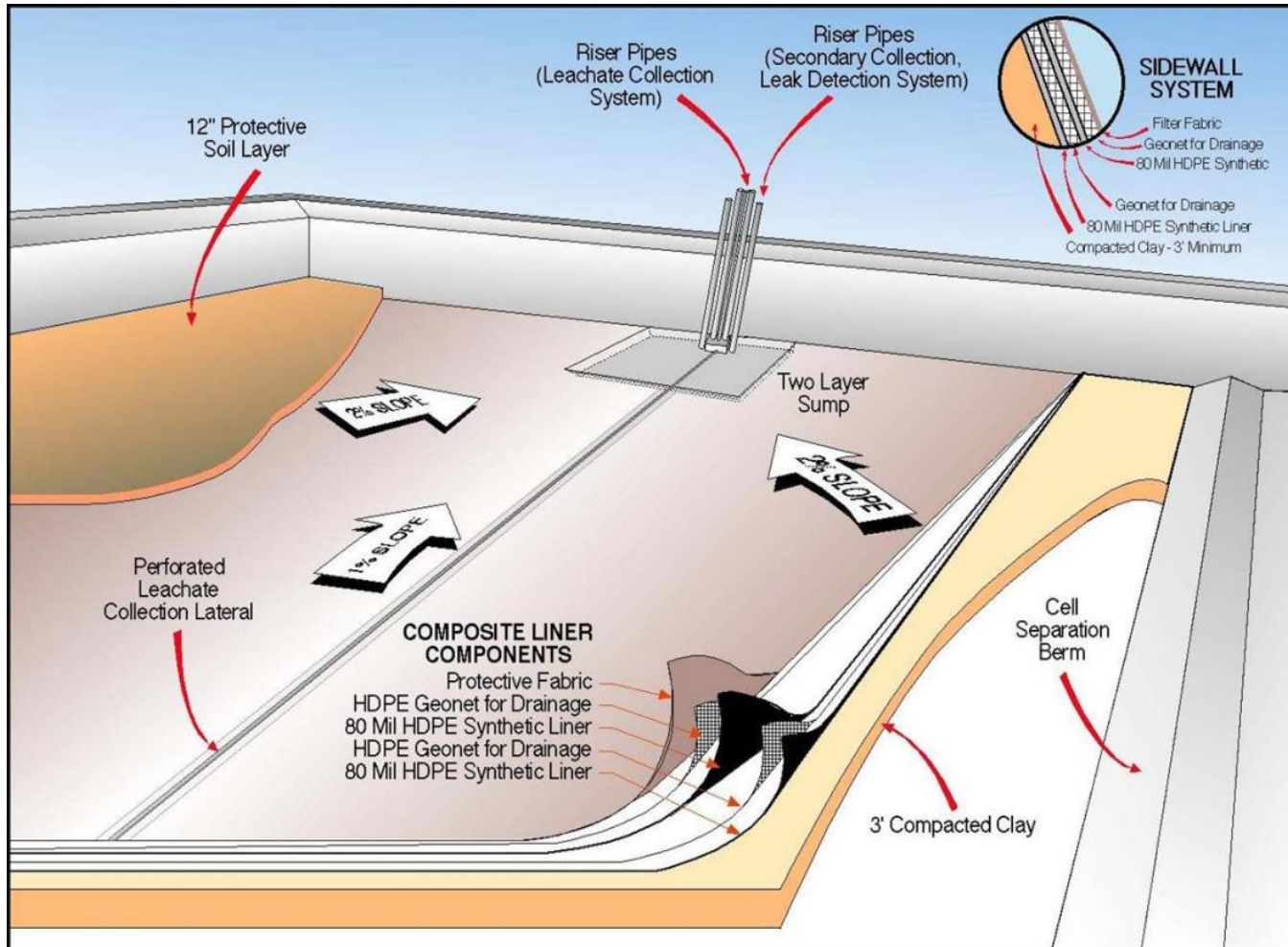
Cameco



Honeywell



Triple-Lined Disposal Cells



New Landfill

270,000,000 ft³ (10,000,000 yd³)
with additional 1/2 Billion ft³ licensed for disposal



Current



Idaho Regulation of Radioactive Material

- Like LLRW sites in SC, TX, UT and WA, USEI is regulated by its host State
- Idaho law delegates radioactive material regulatory authority to the Idaho Department of Environmental Quality (IDEQ)
- Idaho regulations implement State law (IDAPA 58.01.10)
 - Allows AEA-exempt source, byproduct & Special Nuclear Material
- IDEQ chose USEI's RCRA Permit as regulatory vehicle:
 - Public involvement
 - Modification process
 - Compliance & enforcement vehicle
 - Waste acceptance criteria & procedures
 - Eliminates duplication of having both a Permit & License

Radiological Program

- Tailored from Richland LLRW program
- Training:
 - Radiation principles, instrumentation, surveys, WAC compliance
 - Personnel monitoring
- Contamination surveys
- Quality Assurance Program
 - Consistent with 10 CFR Parts 19 and 20
 - Harmonized with NQA-1 & NUREG-1293
- Environmental Monitoring
 - Air, Radon, Groundwater, Soil, Leachate
- Corporate RSO Audit



Idaho DEQ independently audits & monitors

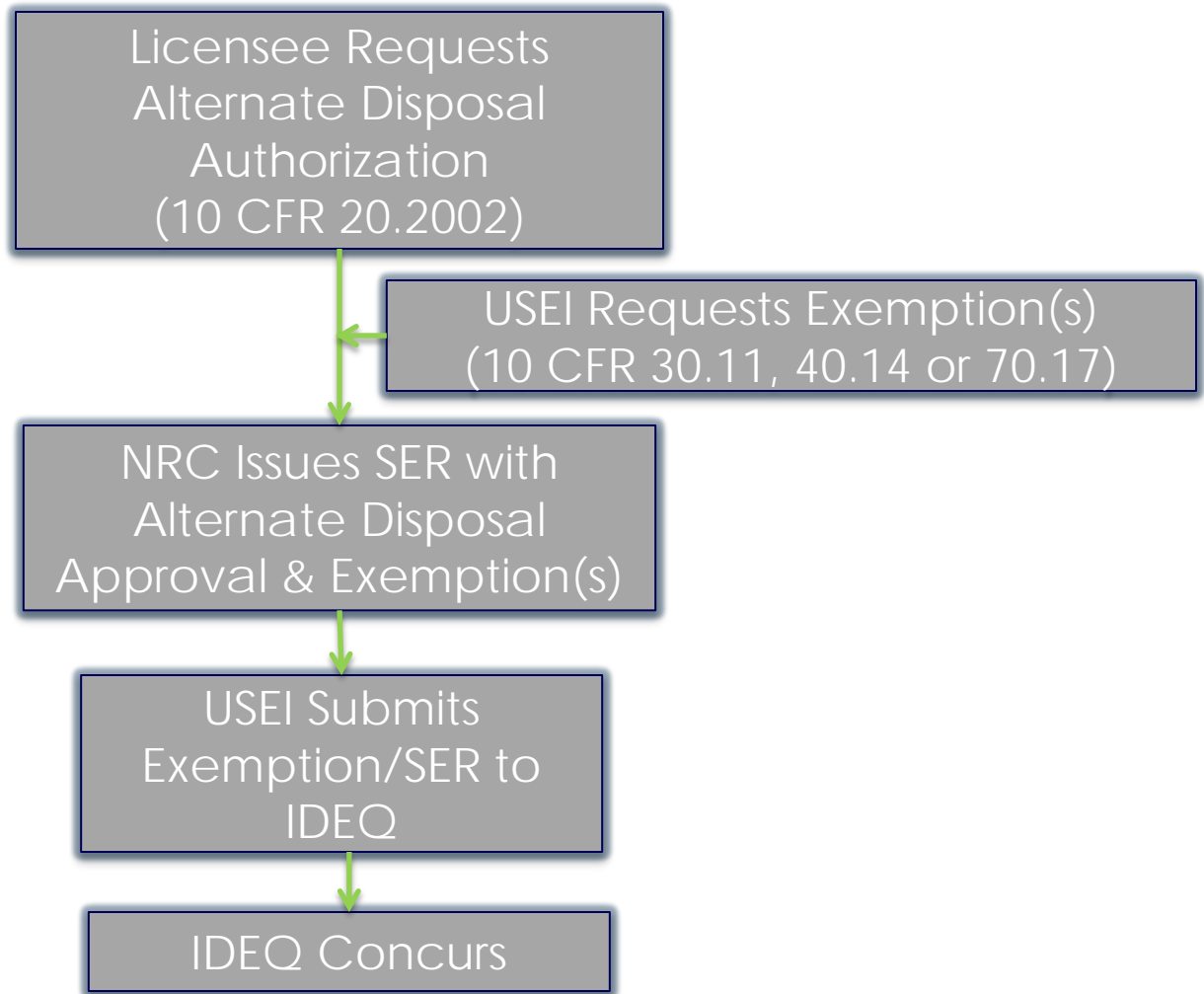
Audited & Approved

- US Army Corps of Engineers
- US Environmental Protection Agency
- General Electric
- Westinghouse Electric Company
- Pacific Gas & Electric
- US Nuclear Regulatory Commission (NON-FORMAL)
 - Visited site, held public meetings in community, met with Idaho regulators
 - Reviewed radiation protection program & environmental features in detail as part of alternate disposal approvals

"US Ecology's Idaho site provides equivalent protection to an LLRW disposal facility for HBPP's low-activity decommissioning waste"

-PG&E report to EPRI, June 2011

Regulatory Process

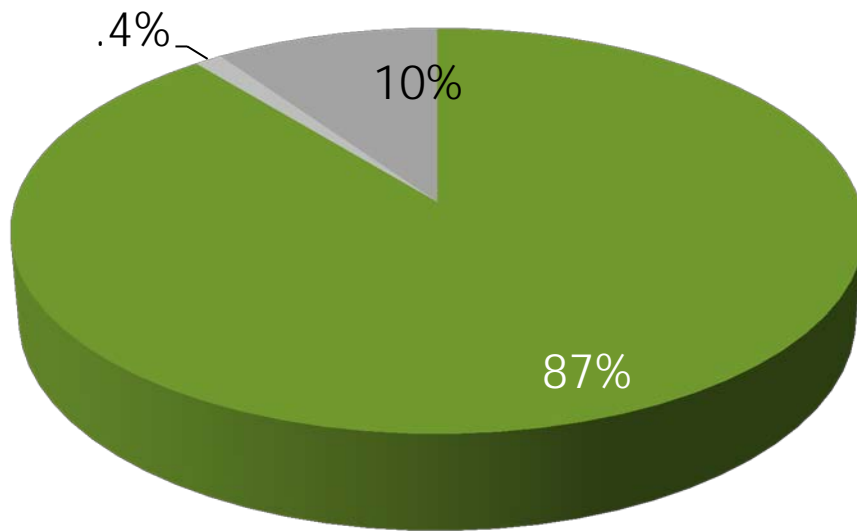


Update: Westinghouse Hematite Decommissioning Project

- Former fuel fabrication facility
- 1st 20.2002 authorization for large volumes of Special Nuclear Material
- Soil, concrete, building debris
- RCRA VOC Mixed Waste Treatment
- Radionuclides
 - LEU: 135 pCi/g (3-5% enrichment)
 - ⁹⁹Tc: 27 pCi/g



Westinghouse ~120,000 tons



- USEI
- ES
- Studsvik



~1,100 railcar equivalent shipments (~2M cuft)

Debris



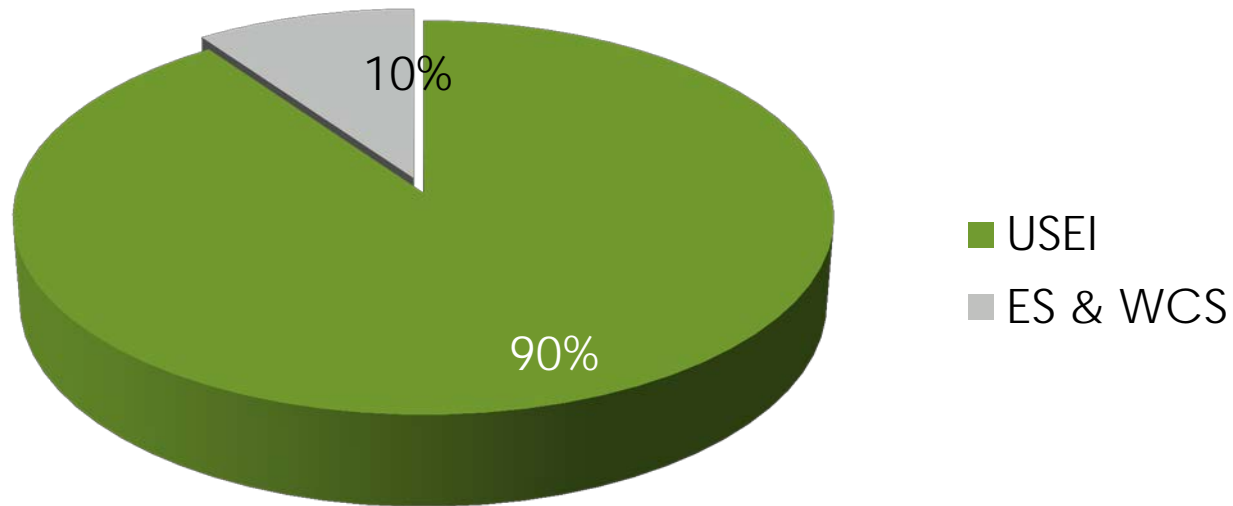
No packaging or oversize debris limitations

Update: PG&E Humboldt Bay NPP

- Total NRC approval: 2,300,000 ft³
- Building Demolition Concrete/Debris, Intake/Discharge Canal Sediments, Soil
- Byproduct Material + some SNM (related to fuel failures) w/ RCRA & PCBs
- Liquid waste treatment (fuel pool, discharges + liquid radwaste)
- Radionuclides (partial list):
 - ¹³⁷Cs: 15 pCi/g
 - ⁶⁰Co: 5 pCi/g
 - ³H: 100 pCi/g
 - ⁶³Ni: 10 pCi/g
 - ²³⁵U: 4 pCi/g
 - ²³⁹Pu: 2 pCi/g



Humboldt Bay ~1,000 shipments



~1,000 truck shipments to date (~400k cuft)

Liquid Radwaste



Regular Shipments of Oversize Debris



Transportation Services

- USE providing transportation on both decommissioning projects (truck & rail)
- Full-service rail transportation
 - Added ~100 gondolas to our fleet of 234
 - Intermodal containers & articulated flatcars
 - Truck fleet & key partners



Treatment

- Full RCRA Treatment Permit
 - Hazardous Metals (lead, arsenic, cadmium, etc.)
 - Hazardous organics (benzene, toluene, etc.) up to 500 ppm VOCs
 - Acids, cyanides, asbestos, etc.
 - Debris encapsulation (VOC or metals contaminated)
- Full TSCA permit (PCBs)
 - Full TSCA processing permit (transformers, capacitors)
 - Bulk material such as oil spills, PCB paint, etc.
- Bulk, containerized, lab packs, etc.



Conclusions

- USEI is a proven option & the industry leader for low-activity waste
- Idaho radiological program built on 60+ years in LLRW business
- Large volumes of low-activity soil and debris; standards beyond NRC
- USEI can address debris, oversize material, bulk shipments at the lowest cost