Abbreviations

SSD - Supervising Scientist Division

ARR - Alligator Rivers Region

POT – Parks Tourism & Operations Branch (formerly PAN)

NLC – Northern Land Council

SUPERVISING SCIENTIST DIVISION FUNCTIONS - February 2011

Supervising Scientist

Environmental Research Institute of the Supervising Scientist

Environmental Risk Assessment

- Integration of water quality, ecotoxicological radiological, vegetation, weeds, fire scar, and feral animal data for regional scale risk assessment.
- Use of ecotoxicological and environmental information to predict the ecological risks of key toxicants

Spatial Sciences and Data Integration

- Create integrated, interactive spatial databases for internal and external use
- Provide high level advice on spatial sciences and spatial data management across SSD
- Develop and implement corporate frameworks for corporate storage and retrieval of spatial, point source (biological, chemical, radiochemical and physical) and photographic data
- Develop cost-effective techniques to monitor and assess minesite rehabilitation success using multi-resolution and multi platform remote sensing data
- Develop and implement field sampling protocols for integration with spatial information, including the development of a spectral reflectance library
- GIS mapping and analysis of landsurface features (eg topography, geomorphology, vegetation, weeds, fire scars)
- Produce spatially correct reference maps for use by project groups and for inclusion in annual reports and publications

Community Liaison

- Communication of objectives and outcomes of SSD research projects to local traditional people and other stakeholders
- Facilitate SSD research projects requiring indigenous knowledge inputs (eg contribution of bushtucker items to diet)
- Coordinate SSD research permit requirements in consultation with stakeholders (ie Traditional Owners, NLC & POTB)
- Consultation with Traditional Owners to identify mine closure aspirations
- Participation in open days at outstation communities to communicate work by SSD and other organisations
- Coordinate employment for indigenous people within SSD
- Preparation of posters and other educational materials in graphic or language form to communicate complex technical concepts
- Facilitate SSD supervision and assessment function

Aquatic Ecosystems Protection

- Monitor water quality (physico-chemical) and biological (macroinvertebrates, fish) attributes to detect mining impacts and assess ecosystem health downstream of the Ranger mine.
- Assess as required water quality and biological attributes downstream of other U mining sources (abandoned or operating) in the Alligator Rivers Region
- Develop and implement continuous physicochemical and in situ biological (toxicity) monitoring methods to facilitate early detection of impact
- Monitor bioaccumulation of metals and radionuclides in fish and mussels downstream of uranium mines
- In conjunction with Supervision and Assessment Group (OSS) provide QA/QC assessment of monitoring results for posting on the SSD website and in the Supervising Scientist's annual report
- Undertake research to guide effective rehabilitation of uranium mines (eg development of closure criteria and success indicators)

Ecotoxicology

- Assess the toxicity of key surface water contaminants (chemical and physical) associated with uranium and other mining operations using a battery of aquatic test organisms
- Derive site-specific water and sediment quality trigger values and/or limits
- Compare laboratory and field-measured toxicity responses to validate laboratory-derived water quality guidelines
- Assist with development of in situ biological monitoring techniques
- Quantify the toxicity of complex waste waters, to derive 'safe' dilutions for release to the receiving environment;
- Maintain the only tropical freshwater ecotoxicological test facility in northern Australia

Environmental Radioactivity

- Monitor radiological exposure pathways for the general public via surface water, groundwater, airborne and bioaccumulation routes
- Provide advice on the protection of people from radiological risk during and after mining activities in the ARR
- Use stable, radioactive and radiogenic tracers to identify and quantify the sources, pathways and sinks of radiological and other contaminants in the environment
- Assess potential for bioaccumulation of radionuclides in traditional foods – fish and mussels in rivers, and terrestrial plants and animals
- Contribute to developing radiological monitoring programs and closure criteria for former and present-day minesites
- Assess rehabilitation success, from a radiological perspective, of former U mine sites
- Operation of a commercial radio-analytical facility, with a focus on low-level radionuclide analysis by alpha and gamma spectrometry

Hydrological & Geomorphic Processes

- Install and operate river gauging stations and landform erosion plots to acquire data for hydrological and sediment transport modelling
- Extreme event modelling to assess potential Impact of climate change on hydrological and landscape evolution processes
- Computer modelling to assess erosional stability of reconstructed mine landforms over geologic time
- Quantification of annual stream sediment loads and evaluation of stream channel stability
- Derivation of local water quality guidelines for turbidity using continuous turbidity measurements coupled with grab measurements of suspended sediment concentration
- Classification of rivers based on channel morphology and flow characteristics
- Maintenance of hydrological databases for mine impacted catchments

Office of the Supervising Scientist

Supervision and Assessment

- Supervision of uranium mining and exploration activities to ensure the protection of the environment in the ARR
- Routine inspections of operating mine sites, non-operational sites and post-operational sites
- Environmental audits of operational and non-operational mine sites
- Provision of scientific and technical advice on environmental issues relevant to uranium mining operations
- Revision and interpretation of environmental monitoring data collected by uranium mining companies and SSD
- Assessment of applications, reports, plans, and other relevant documentation produced by uranium mining and exploration companies
- Liaison with key stakeholders including NT Government, NLC, Traditional Owners, other C'wlth Government agencies, and non government organisations and mining companies
- Investigation of any environmental and radiological incidents
- Development and promotion of standards and practices in relation to uranium mining operations and rehabilitation
- Provision of assistance to the department in relation to uranium mining referrals under the EPBC Act
- Supervision of the implementation of C'wlth Government legal requirements in relation to uranium mining operations and rehabilitation

Business Support

- Provision of strategic financial and HR advice to senior management
- Management of financial and HR process for SSD including accounts payable and receivable, procurement, recruitment
- Provision of information management services to SSD, including library, intranet, records management, IT support
- Provision of communications services to SSD, stakeholder liaison, internet and publications support
- Provision of policy advice and Ministerial liaison
- Secretariat services to Alligator Rivers Region Advisory Committee & Alligator Rivers Region Technical Committee
- Provision of other services to SSD including facilities management, fleet management, executive support, travel advice