

Abbreviations

SSD - Supervising Scientist Division

ARR - Alligator Rivers Region

PAN - Parks Australia North

NLC - Northern Land Council

**SUPERVISING SCIENTIST DIVISION
FUNCTIONS - December 2007****Supervising Scientist****Environmental Research Institute
of the Supervising Scientist****Office 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

GIS/Remote Sensing

- Develop cost-effective techniques to monitor and assess minesite rehabilitation success using multi-resolution optical and gamma ray remote sensing data
- Develop and implement field sampling protocols for integration with spatial information
- GIS mapping and analysis of landsurface features (topography, geomorphology, vegetation, weeds, fire scars)
- Wetland inventory and biodiversity mapping
- Creation of integrated, interactive spatial databases for both internal and external use
- Acquisition of high resolution spectral reflectance library data for native and introduced plant species and secondary minerals relevant to minesite rehabilitation performance
- Application of spatial data to produce innovative maps, posters, and digital media to assist with communication to stakeholders and the wider community.
- Provision of high level advice on spatial sciences and spatial data management across SSD

**Indigenous
communications**

- 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 bush tucker items to diet)
- Coordinate SSD research permit requirements in consultation with stakeholders (ie Traditional Owners, NLC & PAN)
- 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 assessment and supervisory function

**Aquatic Ecosystem
Protection**

- Monitor biological (macroinvertebrates, fish) and water quality (physico-chemical) attributes to detect impacts of mining downstream of Ranger mine and in reference sites to detect mining impacts and assess system health.
- Evaluate technology for continuous water quality measurement for compliance monitoring
- Develop and validate in situ biological (toxicity) monitoring methods for water quality assurance
- Assess any bioaccumulation of metals in fish and mussels downstream of uranium mines
- Quality assessment of monitoring results for posting on SSD website and in Supervising Scientist's annual report
- Undertake research to guide effective rehabilitation of uranium mines (eg development of closure criteria & success indicators)

Ecotoxicology

- Assess the toxicity of key surface water solutes associated with uranium and other mining operations using a battery of aquatic test organisms
- Derive site-specific water 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
- Conduct research projects on the sources, pathways and sinks of radiological and other contaminants in the environment using stable, radioactive and radiogenic tracers.
- Assess potential for bioaccumulation of radionuclides in traditional foods - fish and mussels in rivers, and terrestrial plants and animals
- Assist in planning for rehabilitation and monitoring of former and present-day minesites and assess the success of rehabilitation from a radiological perspective
- Operation of a commercial radio-analytical facility, with a focus on low-level radionuclide analysis by alpha and gamma spectrometry

**Hydrological &
Geomorphic Processes**

- Installation and operation of river gauging stations 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

**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'with 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
- Supervision of the implementation of C'with 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