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Soil Scientists and Environmental Engineers



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**Lanfax Laboratories** - an independent, commercial and research organisation with special interests in soil, water and wastewater analysis. The modern facilities are operated as support to professional scientists and engineers consulting in those same disciplines, and provide a research component for water, wastewater and soils projects.

### Mission Statement

*Lanfax Laboratories aim to provide accurate, timely and cost effective sample collection, monitoring, analysis and interpretation of water, soil and wastes to all sectors of the community. The long term goal is to achieve a credible place among professional analysts, with expertise and proficiency in waste analysis, monitoring and environmental engineering.*

### Quality Management Systems

Since 1995 **Lanfax Laboratories** have successfully participated in soil proficiency programs with the Australasian Soil and Plant Analysis Council (ASPAC) for a range of soil tests. The completion of the Soil Quality Assurance Programs (a program required by NATA as the proficiency program for soil analysis in Australia) is one of continuing quality assurance. The most recent proficiency program was completed in November 2008.

As participants in Plant Analysis Quality Assurance Programs, **Lanfax Laboratories** is continually meeting performance criteria and upgrading its plant analysis capabilities. Investment in modern equipment is part of overall quality improvement program.

For proficiency in testing of water and wastewater, **Lanfax Laboratories** has taken part in proficiency testing with the National Association of Testing Authorities (NATA) in:

- Waters sub-program 84 Calcium, Magnesium, Potassium, Sodium (February 2006)
- Waters sub-program 72 Sulphate, conductivity, pH (April 2004)
- Waters sub-program 70 Total Phosphorus, Total Kjeldahl Nitrogen (December 2003)
- Waters sub-program 68 Biochemical Oxygen Demand (June 2003)
- Waters sub-program 64 Al, Bi, Li, Sr, Ag, Ba, B, Mn (Sept 2002)
- Waters sub-program 62 ammonia, nitrate, nitrite (July 2002)
- Waters sub-program 60 calcium, magnesium, potassium, sodium (July 2002)
- Waters sub-program 42 biochemical oxygen demand (BOD5) (Feb 1999)
- Waters sub-program 40 calcium, magnesium, sodium, potassium (Sept 1998)
- Waters sub-program 38 aluminium, cadmium, cobalt, antimony (May 1998)
- microbiology program Round 15 faecal coliform, total coliform (Apr 2000)
- microbiology program Round 12 faecal coliform, total coliform (Mar 1998)

**Lanfax Laboratories** completed the sample analyses in the 1998 Acid Sulphate Soils Analytical Quality Assurance Program conducted by the Acid Sulphate Soil Management Advisory Committee (ASSMAC), the Qld Dept Natural Resources (DNR) and the Ql Acid Sulphate Soil Investigation Team (QASSIT). All methods used are those approved by ASSMAC.

### Septic Tank Effluent Management

**Lanfax Laboratories** have significant experience with the design and operation of septic tanks, aerated wastewater treatment systems and other on-site domestic wastewater systems. **Lanfax Laboratories** have represented developers and councils in the Land & Environment Court in matters relating to on-site effluent management, and prepared technical documents for NSW Department of Local Government. **Lanfax Laboratories'** staff are available to undertake on-site inspections for septic tank effluent disposal, to design on-site systems and maintenance programs, and undertake regular monitoring programs to meet your local requirements. Through its own laboratories, **Lanfax Laboratories** are able to provide all soil and water related analyses and assessments for small or large scale land application areas.

### Environmental Engineering

**Lanfax Laboratories** can provide environmental engineering expertise and technical support for environmental projects consistent with ISO 14000 environmental management plans, life cycle analysis and land capability assessment.

## Commercial Analytical and Research Services

*Lanfax Laboratories* has analysed water, wastewater, soil, plant and manure samples for the University of New England and Beef CRC joint experimental research feed-lot, private consultants and intensive animal industries since 1992. *Lanfax Laboratories* continues to provide analytical services for university projects and post-graduate research for several universities.

*Lanfax Laboratories* - are recognised by a regulatory body as competent in undertaking Trade Waste Analysis for commercial premises discharging to the Armidale Sewerage Scheme. Trade waste analyses are conducted for a range of licensed premises in Armidale. The service includes collection of samples and advice on meeting compliance.

*Lanfax Laboratories* undertake monthly analyses for the Armidale Dumaresq Council, Uralla Shire Council, and Guyra Shire Council, of effluent discharges from the Councils' sewage treatment works. Typical tests include faecal coliforms, Total Oil and Grease (TOG), biochemical oxygen demand (BOD<sub>5</sub>) and other physico-chemical analyses. *Lanfax Laboratories* provides on-going assessment of the environmental monitoring of Guyra Sewage Treatment Works for Guyra Shire Council and Armidale Sewage Treatment Works for Armidale Dumaresq Council with respect to their annual environment protection licence reports.

*Lanfax Laboratories* provide soil, water, groundwater, wastewater and microbiological testing for private clients, offering interpretation of data and advice to meet specific requirements for domestic, agricultural or horticultural purposes.

Data from soil, water and wastewater samples collected and analysed by *Lanfax Laboratories* have been accepted as evidence by the courts over many years. All collection and sampling procedures follow best management practice.

*Lanfax Laboratories* consult widely in the fields of soil science, wastewater treatment and reuse, salinity management, preparation of technical documents and technical reviews.

*Lanfax Laboratories* provide independent, third part assessments of monitoring data for several on-site wastewater operations, reporting in a form to meet conditions of consent.

## Education and Training Programs

*Lanfax Laboratories* conduct training programs in "Land Capability for On-site Wastewater Management" and "Practical Implementation of AS/NZS 1547:2000 On-site domestic-wastewater management" and are part of a larger team involved in National On-site Wastewater Training since 1994 conducting courses in NSW, Victoria, Tasmania, Northern Territory, South Australia and New Zealand.

Numerous professional papers have been published from *Lanfax Laboratories*' unique research in many areas of soil, water and wastewater management (see website Publications where documents are available in PDF format). The principal, Dr Robert Patterson is a certified professional soil scientist (Stage 3).

Through its own initiatives, *Lanfax Laboratories* were the coordinators of the International Conferences on On-site Wastewater Systems, held in Armidale as On-site '99, On-site '01, On-site '03, On-site '05 and On-site '07. The abstracts for these conferences can be viewed on our web site.

## Research programs

*Lanfax Laboratories* have been involved with a variety of research projects including:

- research projects into the use of Australian and New Zealand peat for the treatment of domestic sewage, recent paper presented in Nelson, New Zealand March 2006, other papers available on the website;
- assessment of household chemical contributions to domestic wastewater treatment and disposal, effluent from sewage treatment plants and analysis of a range of household chemicals. Information on a range of laundry detergents available on the website;
- research into the effects of wastewater on the hydraulic conductivity on a range of Australian soils (paper presented to conference in USA, 1997), this research is on-going;
- research, in association with Armidale City Council, into the sustainable reuse of sewage effluent and biosolids in agricultural enterprises; and
- numerous professional papers have been published from *Lanfax Laboratories*' unique research in many areas of soil, water and wastewater management.

## On-going Commitment to Improvement

The program of accreditation is on-going, in line with the quality assurance program. Our modern laboratories have the blend of skills and equipment to meet routine analyses and specialist research interests. Modern equipment includes a IRIS Intrepid II, dual view Inductively Coupled Plasma (ICP) (installed new Sep04), a Flame and Furnace Atomic Absorption Spectrometer, Metrohm Ion Chromatograph (installed new Sep08).

An on-going program, for upgrading technical skills and improving scientific instrumentation, maintains our modern, competent analytical and research laboratories.