



Introduction

ScottMadden and RTI International assisted Bruce Power in streamlining and automating its environmental monitoring programs (radiological, conventional, and groundwater). The result was a significant reduction in the amount of time and effort it takes staff to collect routine environmental data from the field, analyze the data in the laboratory, and report on adverse trends.

As a world leader in nuclear power, Bruce Power continually seeks to improve its processes and enhance employee engagement. Bruce Power turned to ScottMadden and RTI to help formulate and execute a strategy that would revamp its environmental monitoring program to reduce the amount of time it takes staff to collect routine environmental data from the field, analyze the data in the laboratory, and report on adverse trends. Bruce Power was also looking to improve the tool that was used to manage and house its environmental program data to a more secure data repository.

The solution implemented by Bruce Power included RTI's Nu-PathNETSM, a real-time environmental data reporting system. (For additional applications of Nu-PathNETSM, [click here.](#))

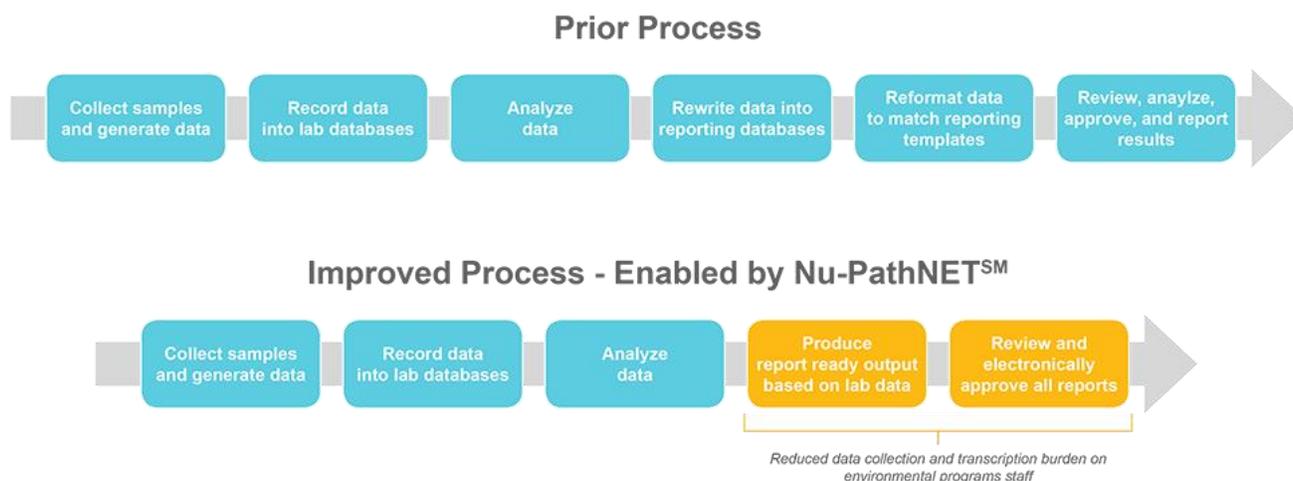
The Challenge

The challenges Bruce Power faced in managing its environmental program were two-fold: removing inefficiencies in the environmental reporting processes and replacing the out-of-date software that it used to analyze the data.

Removing Inefficiencies

The environmental reporting processes at Bruce Power had evolved as separate processes among the various departments involved in environmental reporting. As a result, there was little cross-functional integration among the departments and differences between the two stations on the very same site. The differences included equipment, measurement points, reporting requirements, and legacy supporting processes. Furthermore, the data repositories, worksheets, and systems evolved as a collection of solutions for specific reporting purposes, which required manual transcription of data and intervention to transfer data among multiple databases/systems.

Figure 1: Environmental Programs Process Improvements



In most cases, there was a lack of compatibility between databases, so data would be transcribed into one database, exported to a spreadsheet and manipulated, and then re-entered into another database. As a result, the environmental staff's time was spent cleaning and manipulating data, which took away time from the value-added time that could be spent performing analysis to improve site performance.

Tool Improvement

The environmental data was stored in different formats, including custom software, different databases, multiple spreadsheets, and paper forms. This data diversity presented compatibility issues and required institutional knowledge to locate historical data for the correct site and environmental parameter.

The analytical tools were antiquated and lacked the necessary IT support, which presented increased risk for Bruce Power. The custom software packages that were used by the groups that supported the site's environmental programs were developed in the 1980s and required extensive external support. Viewing and validating data in the existing tools was inconvenient to the point that most team members would print, edit, re-enter data, and reprint to ensure the appropriate corrections were made.

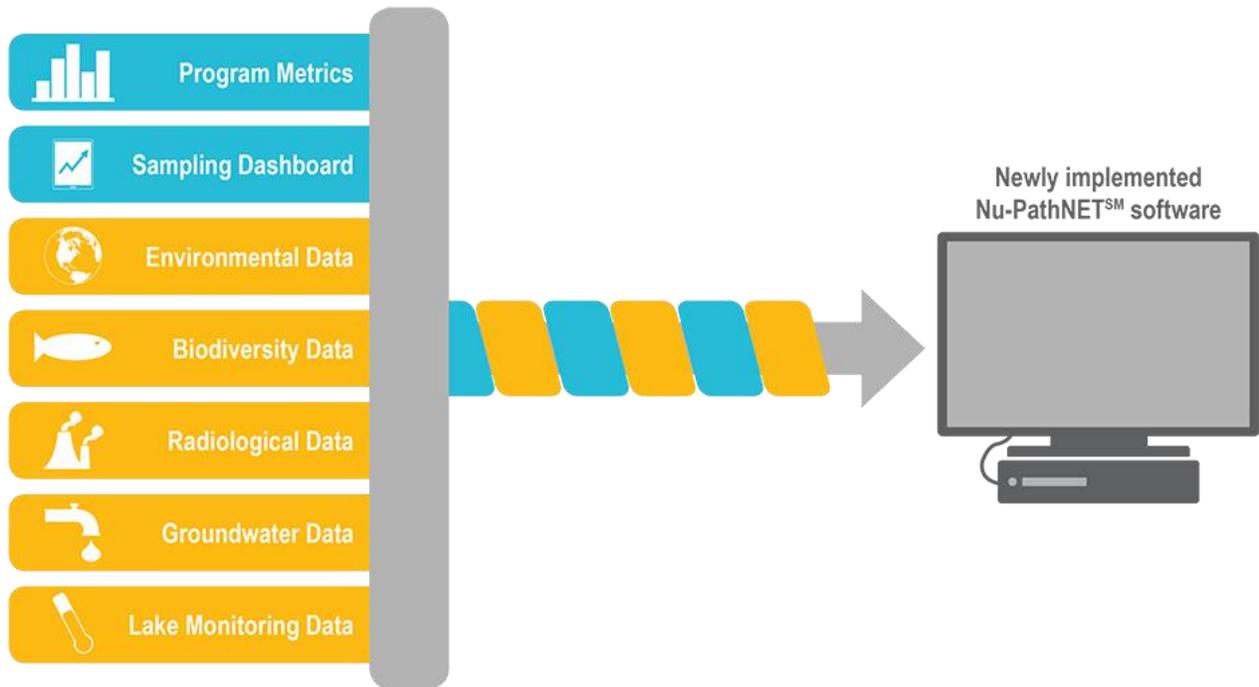
Existing reports and files were stored on a shared folder and personal desktops that could be accidentally overwritten. These shortcomings were becoming increasingly unacceptable as Bruce Power's workforce demographics changed and the industry continued to focus on data/cybersecurity enhancements.

How We Helped

Bruce Power, ScottMadden, and RTI International recognized the opportunity to apply our knowledge of best practices and a proprietary analytical tool to improve the efficiency of Bruce Power's environmental reporting. The solution included using a state-of-the-art analytical tool, managing the transition and process changes, and finally enabling future system enhancements for a new Laboratory Information Management System (LIMS).

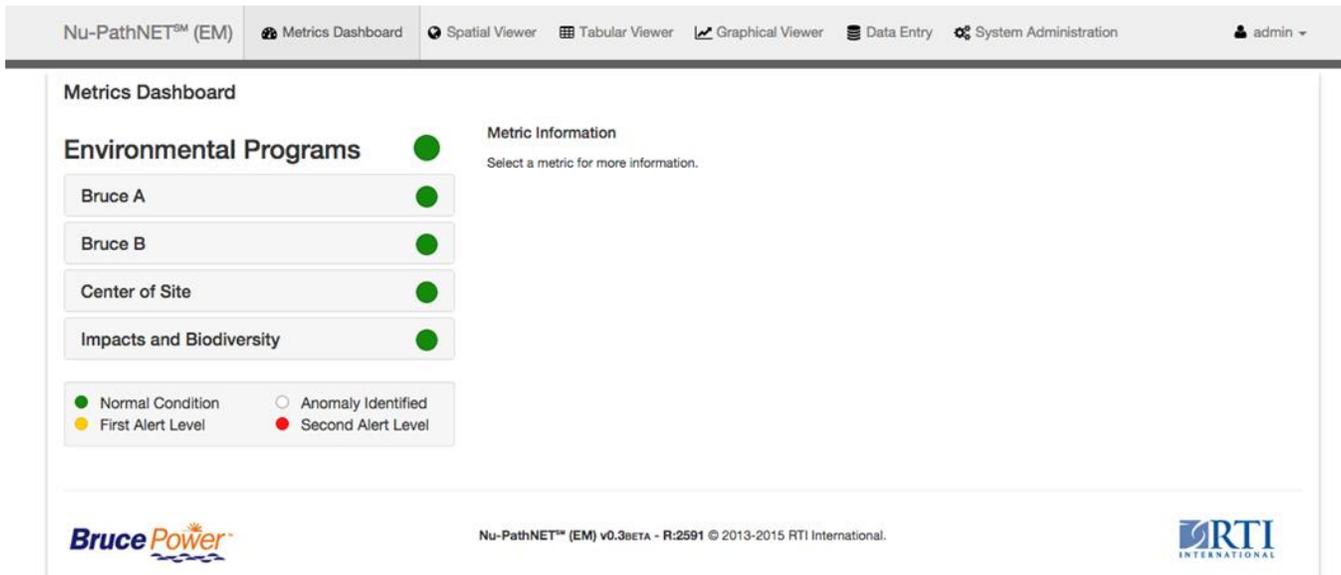
To improve the efficiency of environmental processes, ScottMadden and RTI International documented existing processes by site, report, and parameter to provide a comprehensive view of how environmental reports were being generated. This formed the foundation to identify the low-value steps that could be eliminated or automated through Nu-PathNETSM's capabilities. Nu-PathNETSM provided new data input capabilities, an easy-to-view interface, and a dashboard for viewing abnormal or missing data points.

Figure 2: Nu-PathNETSM Data Consolidation



Nu-PathNETSM is a state-of-the-art analytical tool offering substantial advantages in cybersecurity, access controls, and data visualization and analysis. Nu-PathNETSM is hosted in redundant data centers, complying with the latest cybersecurity regulations. Nu-PathNETSM also offers access controls to maintain the data integrity, provide audit trails of changes, and maintain algorithm control with system administrators. Additionally, the Nu-PathNETSM data visualization and dashboard of metrics offer graphical views and layers of technical detail to extract key insights. As shown in Figure 2, the dashboard display highlights when parameters are unusual and when expected data points are missing, providing better oversight of data quality.

Figure 3: Nu-PathNETSM Dashboard



These capabilities provided efficiency gains, better data integrity, and erased pain points of manual data entry, review of printed copies of data sheets, and tedious searches for missing data points.

ScottMadden and RTI International assisted the transition to the new data analysis platform in several ways:

- Migrated the data for environmental programs to maintain the historical record
- Conducted education sessions and collected and incorporated feedback to tailor the software to the users' needs
- Educated new system administrators to provide appropriate access controls
- Updated the applicable procedures to reflect the new efficient processes, further reduced the burden on environmental staff during the transition, and kept controlled procedures up to date
- Provided a reference guide and technical manual to educate new personnel and serve as a helpful desk-side resource
- Provided a road map for linking Nu-PathNETSM with a new LIMS

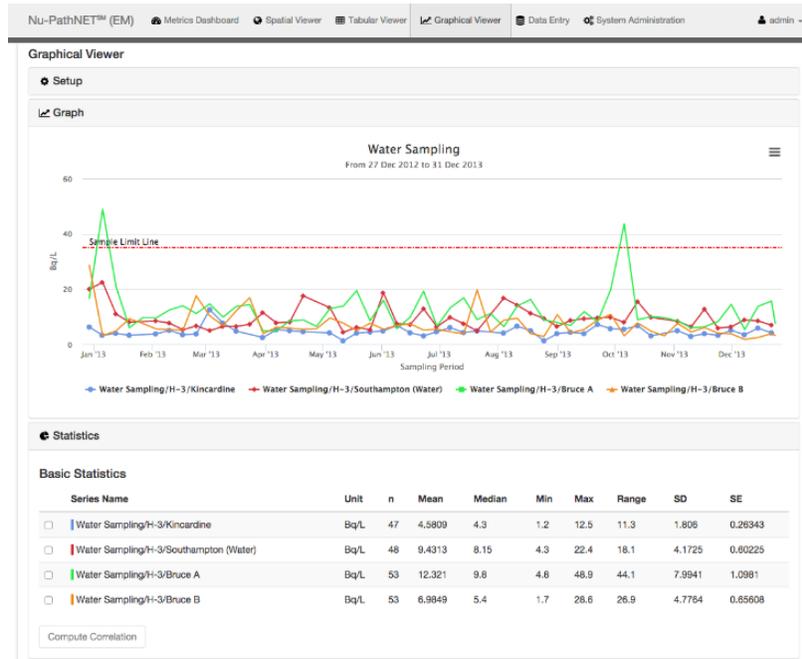
Results

With a reduction of lower value workload across the environmental programmatic and laboratory staff, the Nu-PathNETSM solution paid for itself.

The environmental programs group was able to produce regular environmental reports, including the annual Radiological Environmental Monitoring Program (REMP), in a more efficient and reliable manner. Additional benefits of the programmatic enhancement included improved data integrity from

hosting the environmental data in an internet-based, fully compliant cybersecurity network rather than personal computers, paper forms, and a shared drive on site. Finally, Bruce Power was able to use the documented processes, reference guides, and updated procedures as a more effective tool to onboard and train new and existing employees on its environmental processes.

Figure 4: Statistical Analysis at a Single Click



“Our workforce is elated with the enhancements of our new environmental reporting processes and tool,” said Francis Chua, manager, Environment and Sustainability at Bruce Power. “We have been able to produce our REMP report quicker with less errors and rework, and now our staff is able oversee and improve our environmental program performance rather than just report on it.”

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