



STATE OF NORTH CAROLINA

INFORMATION SECURITY VULNERABILITY ASSESSMENT

**NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND
NATURAL RESOURCES**

RALEIGH, NORTH CAROLINA

SEPTEMBER 2007

OFFICE OF THE STATE AUDITOR

LESLIE W. MERRITT, JR., CPA, CFP

STATE AUDITOR

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State Auditor

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AUDITOR'S TRANSMITTAL

The Honorable Michael F. Easley, Governor
Members of the North Carolina General Assembly
Mr. William G. Ross, Secretary
Mr. George Bakolia, State CIO

Ladies and Gentlemen:

The Office of the State Auditor, in consultation and coordination with Information Technology Services, undertook a project to evaluate the network and computer security in place over computer operations at the North Carolina Department of Environment and Natural Resources.

In June and July 2007, the Office of the State Auditor used a private contractor to perform a comprehensive vulnerability assessment of the network and computer security at the North Carolina Department of Environment and Natural Resources. This assessment was conducted under the authority granted by North Carolina G.S. 147-64.6(c)(18).

This report represents the general results of our assessment. A detailed report containing the conditions found and recommended corrective action was provided to the North Carolina Department of Environment and Natural Resources at the conclusion of our fieldwork.

The primary objective of this assessment was to evaluate the security controls over the information network at the Agency. The scope of our assessment included network penetration, network vulnerability, network architecture, secure build, and application penetration.

We wish to express our sincere appreciation to the staff of the North Carolina Department of Environment and Natural Resources for the exceptional courtesy, cooperation, and assistance provided to us during this audit.

North Carolina General Statutes require the State Auditor to make audit reports available to the public. Copies of audit reports issued by the Office of the State Auditor may be obtained through one of the options listed in the back of this report.

Respectfully submitted,

A handwritten signature in cursive script that reads "Leslie W. Merritt, Jr.".

Leslie W. Merritt, Jr., CPA, CFP
State Auditor

OBJECTIVES AND SCOPE

The Office of the State Auditor, in consultation and coordination with Information Technology Services, undertook a project to evaluate the network and computer security in place over computer operations within the North Carolina Department of Environment and Natural Resources.

In June and July 2007, the Office of the State Auditor used a private contractor to perform a comprehensive information security assessment of the North Carolina Department of Environment and Natural Resources. The goal of the security assessment was to assist the North Carolina Department of Environment and Natural Resources with achieving and maintaining a “best practices” level of information security in order to protect agency internal systems, data, and assets.

The comprehensive information security assessment focused on five key areas:

- **Network Penetration Test.** The Network Penetration Test is designed to provide insight into methods of attack against specific infrastructure components, products, or suite of resident applications and present a reasonable example of what an attacker might accomplish.
- **Network Vulnerability Assessment.** The Network Vulnerability Assessment provides a thorough understanding of security-related weaknesses and exposures in networks.
- **Network Architecture Assessment.** The Network Architecture Assessment is a detailed review of a network design from an information security perspective.
- **Application Penetration Assessment.** The Application Penetration Assessment provides a thorough understanding of security-related weaknesses and exposures in an application.
- **Secure Build Review.** A Secure Build Review is a security analysis in a non-production environment of the build procedure for a host.

Our assessment identified security controls within each area above that were well defined and effective as well as controls that posed security risks and exposed the agency to possible internal or external attack. Control weaknesses were classified in relation to the level of risk as High, Medium, or Low. Our assessment identified forty-one high level weaknesses, thirty-two medium level weaknesses, and forty-seven low level weaknesses. This provides the North Carolina Department of Environment and Natural Resources with a benchmark for future assessments.

Due to the sensitive nature of the conditions found in these weaknesses, we have conveyed these findings to management in a separate report pursuant to the provision of the North Carolina General Statute 147-64.6(c)(18).

OBJECTIVES AND SCOPE (CONCLUDED)

Auditee's Response:

**North Carolina Department of
Environment and Natural Resources**

**Mike Easley, Governor
William G. Ross, Secretary
Jimmy Carter, Chief Information Officer**



August 20, 2007

The Honorable Leslie W. Merritt, Jr., CPA, CFP
North Carolina State Auditor
20601 Mail Service Center
Raleigh 27699-0601

Dear Mr. Merritt:

The Department of Environment and Natural Resources (DENR) has reviewed the results of the information security assessment which was conducted during the period from June 11, 2007, through August 8, 2007. We appreciated the opportunity to work with the security contractor who performed the work on behalf of the Office of the State Auditor. The team was highly professional and provided valuable information regarding security to the DENR staff during the assessment process.

Overall, we concur with the findings of the assessment. We are pleased that our new network architecture, currently in a pilot phase, was rated at a higher level of security than is typically observed in similar deployments. However, the findings also highlighted numerous areas where improvement is necessary. DENR is committed to immediately addressing all of the high-priority recommended actions contained in the assessment's executive report. We will continue our remediation efforts beyond that to the extent that resources allow.

The assessment made some recommendations which will require considerable time, effort, and training to implement properly. Funding will be necessary for additional staffing for the security team and to purchase additional security-related infrastructure systems.

Please give me (715-4101) or our Assistant Secretary for Information Systems and CIO, Jimmy Carter (733-4908) a call if you and your staff have any questions about our response to the assessment. Thank you.

Sincerely,


William G. Ross

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