

Program Standards, Quality Improvement, and Innovative Procedures:  
Working toward a “Model Environmental Health Program”

by

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## ABSTRACT

*The formal practice of Environmental Health in North Carolina has been in existence since at least 1877 when the General Assembly formed a State Board of Health. The responsibilities of the board were to investigate the sanitary and environmental conditions related to the causes of and prevention of disease. Environmental health has been practiced in North Carolina in some form since that time, but today challenges face practitioners of environmental health that threaten to undermine the protections that have been provided for over 130 years.*

*The North Carolina Local Health Department Accreditation Program (NCLHDAP) provides performance standards for local health agencies that include environmental health programs. These standards are general, requiring specific programs and services, but including few metrics that define and govern performance within the activities.*

*Performance and quality improvement measures, including and building upon Centers for Disease Control's (CDC) National Environmental Public Health Performance Standards, would be beneficial and improve the state and consistency of practice.*

*Use of technology and innovative procedures aimed at improving customer service should be employed. A "distributed operations" model, in which staff can perform all operations necessary to complete tasks in the field, would increase efficiency and improve customer service.*

## **Introduction**

Environmental Health in North Carolina has been practiced since the late 1800s (Appendix 1). Currently, each county is responsible for maintaining an environmental health department, staffed by employees in the employ of the county, and authorized by the state to enforce rules promulgated by the state to regulate foodservice establishments, institutions, lodging places, child day care centers, residential care facilities, swimming pools, tattoos, septic systems, wells, and other environmental matters.

The practice of environmental health in North Carolina and across the nation depends on knowledgeable and experienced practitioners working to identify and minimize or eliminate environmental hazards to the public health, supported by regulations that provide the framework for their valuable work. Environmental health practitioners work with a wide variety of agencies in addition to public health, including environmental protection, agriculture, building inspection and zoning, and educational institutions (ASTHO, 2005).

The integrity and effectiveness of environmental health practice has been diminished by a confluence of factors that have been generated by a shortage of qualified environmental health practitioners (ASTHO, 2005). This is due partly to an overall workforce shortage in public health that has created a leadership void in environmental health policy development, and program implementation (ASTHO, 2005; Deuel *et al.*, 2004), but also the reluctance of local governments to invest sufficient resources in their environmental health programs. This has resulted in an inability of local departments to provide services, increased times to service delivery, and diminished environmental protection.

North Carolina is not an exception. The system of local health departments (LHD) independently enforcing state rules with disparate budgeting, staffing levels, and experience of

personnel from county to county has led to inconsistent interpretation and enforcement of rules, widely varying response times, and the need for some to ‘triage’ program responsibilities to meet political expectations<sup>1</sup>. The absence of an agreement among counties for standardized Onsite Wastewater permits forms begets inconsistent requirements for and documentation of sewage systems. The lack of a modern state automation system to collect and analyze data renders the NC DENR incapable of assessing the performance and assuring the effectiveness of county programs.

Local environmental health departments are often understaffed, and recruitment and retention of environmental health specialists poses a problem for small and less affluent counties. In many cases, services go unprovided, or long wait times pose problems for customers.

The North Carolina Local Health Department Accreditation program (NCLHDAP) provides some standards for the operation of a local environmental health department, but issues of timeliness, quality, productivity, and performance are unaddressed in the NCLHDAP benchmarks.

In order to assure that the protections and services of environmental health departments across the state are uniform, performance measures should be developed that address the requirements for conducting the activities of an environmental health department. These measures should assure that the protections for the public health required in the law and rules regarding environmental health are provided for all citizens of the state, regardless of their county of residence.

It is incumbent upon individual counties to conduct valid program assessments and operate effective quality improvement programs independently in order to ensure that quality

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<sup>1</sup> In some cases, this takes the form of deferring foodservice inspections to facilitate land development resulting in inadequate protection of the public health.

services are provided to customers, and that the work product of their programs complies with all applicable laws and rules (Appendix 3).

In addition, the conduct of a program should ensure that services are provided in a timely, efficient fashion, employing all methods available to facilitate this goal. Innovative approaches should be sought that could redefine the business process, and procedures which leverage the capabilities of technology should be incorporated.

As a part of our continuing efforts to provide quality services to the public, to address an objective of the Catawba County Board of Health, and in keeping with the requirements of this project, I resolved to work to define for Catawba County Environmental Health (CCEH) what constitutes a “model environmental health program”, and to use lessons learned to maintain a robust quality improvement program and encourage risk taking to develop procedures that facilitate provide efficient and timely services for our customers..

## **Project Details, Description, and Methodology**

The overall project goal of defining a model program using lessons learned to implement program improvement at CCEH has been facilitated by a multi-path approach focusing on:

- Nationally recognized program standards
- Quality Improvement
- Technology
- Operational procedures

Program standards relevant to environmental health practice were researched, and two programs were instituted which augment the NCLHDAP and meet several of the requirements for reaccreditation in the benchmarks.

Quality improvement (QI) measures were defined, developed and implemented that focus on critical, state mandated environmental health regulatory programs. Data collection for the QI program is managed by EHS supervisors, analyzed, and plotted to provide evidence of improvement, as required by NCLHDAP benchmarks.

The commitment of Catawba County to technology was leveraged to implement a totally paperless system to conduct the business of the department. This produced gains in efficiency, productivity, and improved customer service.

Operational procedures were evaluated and updated to be congruent with the overall goal of the “model department”, and to take advantage of the technology deployed to the field.

Finally, a method for integrating the individual elements of the program into a whole was needed. The Balanced Scorecard was chosen for this task, and a scorecard for CCEH was developed.

## **Results**

### Performance Standards

The first order of business in defining a “model environmental health program” was to seek any existing performance measure systems for environmental health that could inform the effort to devise a set of measures for CCEH.

A literature search yielded few instances of performance standards that were specific to environmental health practice at the local department level. Performance standards are being discussed, but most local jurisdictions do not have performance standards programs in place to evaluate their environmental health programs (Mydlowski, 2007). Funding, the lack of a common framework, and the availability of a common data platform within which to collect data are common reasons cited for not employing performance standards in environmental health programs.

However, the Division of Emergency and Environmental Health Services at CDC’s National Center for Environmental Health has developed the National Environmental Public Health Performance Standards (NEnvPHPS) (Barron *et al.*, 2007), which are modeled after the National Public Health Performance Standards (NPHPS).

Although the NEnvPHPS is still in the pilot phase, and has not been released for general use by local departments, I obtained a copy through a friend and associate within the National Public Health Service. The director of the project was notified of my interest in independently using the NEnvPHPS and a copy of the standards was provided.

As a part of defining the “model program”, the NEnvPHPS was specified as a template by which we could evaluate our current program and determine where improvements could be made. The assessment document has been completed, ranking our department on the

NEnvPHPS scale for each criterion (Appendix 2), and a supplementary document detailing rationale for the rankings is in process. The assessment will be used to inform program improvements as the effort to construct a “model program” continues.

Another assessment proposed for our department is the Protocol for Assessing Community Excellence in Environmental Health (PACE EH) (NACCHO, 2007). PACE EH is the methodology promoted by the National Center for Environmental Health (NCEH) and the National Association of County and City Health Officials (NACCHO) to conduct community environmental health assessments. PACE EH offers guidance to communities and local health officials for conducting community-based environmental health assessments to

- identify environmental health issues,
- prioritize the identified issues,
- develop action plans, and
- evaluate the progress to address selected issues.

PACE EH improves the environmental health decision-making process by strengthening community involvement so that public values and priorities are considered. (NACCHO, 2007)

The PACE EH assessment for Catawba County EH is scheduled to begin in the spring of 2010, with organization of the assessment committees.

## Quality Improvement

The assessments above will inform quality improvement on a programmatic level; areas of where improvements can be made in programs offered and services delivered to the community. A method was needed, however to monitor the quality of work produced as a function of the programs offered and services provided.

The quality of services provided is a customer concern to which environmental health departments must pay special attention. Errors and omissions by environmental health specialists can have serious financial implications for property owners and the counties in which EHS who provide poor quality services.

An internal quality assurance program should evaluate the work produced by its staff, identify gaps and take action to address them. Supervisors and administrators should review a statistically significant probability sample of inspections, permits, and other services each week to assure the work complies with generally accepted practices, relevant general statutes, rules, and regulations. A well-implemented quality improvement program will identify weaknesses in the system, and allow management to make adjustments in the process.

A simple method for determining sample size in small populations is  $n = \frac{N}{1 + N(e)^2}$ ,

where N is the number of permits processed and e is the desired precision (Israel, 1992; Yamane, 1967). If we specify a precision of  $\pm 5\%$ , and the number of permits processed each year is 2000, the sample size would be 333, or about 28 each month.

Each supervisor at Catawba County has as a required outcome for purposes of the yearly personnel evaluation to review a statistically significant sample of work produced according to the above method, develop a scoring system which evaluates the work product for compliance with all applicable rules, statutes, and operational factors, and produce a weekly report which is

used to inform the quality improvement program and provide feedback to field staff. Results of the reviews are also graphed on a scatterplot to illustrate the quality improvement which results from the program.

Review of work in progress allows detection of inspections or permits which are non-compliant with applicable rules and regulations and resolution of problems before the work is final. This will also provide a “teachable moment” with EHS for supervisors, to identify areas for improvement which will contribute to the mission of CCEH.

This method will also comply with the NCLHDAP requirement in 17.1 to provide “evidence of performance improvement activities” with regard to inspection and permitting activities for state mandated environmental health regulatory programs.

### Operational procedures

Catawba County, as an organization, encourages use of technology to improve and expand services. The Information Technology department at Catawba County is very supportive of departments, and their budget contains funds for provision and timely replacement of hardware and software licenses to enable departments to use technology in programs.

CCEH has taken advantage of this commitment by the agency to transform the way work is done in the program. Historically, the working documents for CCEH were printed, forms which the EHS used to record the information collected on inspection and permitting visits. Onsite wastewater (OSWP) forms were sequentially numbered, and filed according to applicant's name. No address or PIN number based retrieval was possible. Food, Lodging, and Institutional (FLI) forms were blank, NCR duplicate forms provided by the state branch.

EHS observed office hours from 8 am to 9 am daily, answering landline telephones, completing and submitting paperwork, and planning workload for the day. On many days, the volume of calls was such that some customers were unable to contact an EHS before their 9 am departure, resulting in frequent complaints. This system was necessary when cellphones were not ubiquitous, and paper based documentation required submission and filing of hard copy. It also consumed one-eighth of the day, precluding service delivery during this period, when contractors and other operators were in the field working.

CCEH has shifted paradigms to a decentralized, automated system of service delivery, resulting in an increase in field time, more rapid completion and submission of documents, improved indexing and retrieval of records, improved service delivery, and decreased complaints from customers.

Changes made in operational procedures to date include:

- Paper based documents back to 1998 were scanned into an imaging storage and retrieval system (LaserFiche), and can be retrieved by several indexes, improving access to archival records.
- Each EHS has a cellphone to communicate with clients and the office, and legacy landline numbers send voicemail to Outlook email for retrieval in the field.
- Each EHS has a tablet notebook with a cellular modem to process and submit all documentation required to conduct daily business. In addition, portable, battery powered printers allow production of documents in the field. Portable scanners allow import of handwritten or other ancillary documents into the system.
- Dedicated applications which facilitate completion of all activities has been licensed and installed on all computers. A third-party vendor (CDP) handles submission of FLI information to the state, as required by DENR, and an “enterprise land management automation solution” (enerGov) integrates the operations of OSWP with the Zoning, Building Inspections, Fire Protection, and Code Enforcement departments, allowing completion and submission of previously paper based documents electronically.
- Each OSWP EHS has a GPS unit with which positions of septic systems and wells are recorded, allowing rapid access of this information through the GIS system. This system can produce reports and maps to illustrate effects of conditions such as droughts by mapping the positions of replacement wells or need for sewer lines by mapping septic system failures.

With the advent of technology which allowed the conduct of all daily business in

the field, the need for the daily “office hours” was rendered unnecessary. However, a procedure was needed to facilitate the operation of a completely decentralized field program. In consultation with CCPH administration, Catawba County Human Resources and Risk Management, a Distributed Operations procedure was developed and instituted (Appendix 4). EHS no longer are required to visit the office; rather office visits are *ad hoc*, at the discretion or need of the individual EHS.

Changes were also made in assignment of workload. Assigned geographic areas, where an individual EHS managed a particular region of the county, were replaced with a team approach. Individual areas required frequent revision due to varying workloads, and did not further a team spirit among EHS. Instead of 5 geographic areas, the county is now divided into two team areas with two EHS assigned to each, and one “floater” position that manages overflow workload and second opinions. EHS are able to divide workload according to their own prerogatives, including geographic distribution and relative current workloads.

## The Balanced Scorecard

In order to consolidate the individual initiatives noted above into a coherent whole, and to further identify areas of potential improvement for CCEH, an integrated method of defining and tracking our efforts was needed

The Balanced Scorecard (Appendix 5), developed by Robert Kaplan and David Norton, provides managers a fast, comprehensive view of the state of their business operations (Kaplan & Norton, 1992).

The format of the Balanced Scorecard requires the user to consider all important measures as a system, allowing managers to see where an increase in performance in one area may decrease performance in another. Kaplan and Norton note that even the best objective can be achieved badly. Implementing a crash staff education program (the learning and growth perspective) may take too much time away from performing tasks essential to everyday operations, and increase a backlog caused by an inadequate number of trained workers. Especially in government, where the financial perspective is controlled by factors other than the goal of maximizing profit, the systems approach is critical. To evaluate performance on the basis of how closely an agency toed the budgetary line or how much a department returned to the general fund at the end of the year says nothing about its overall performance (Kaplan & Norton, 1996).

A Balanced Scorecard was developed for CCEH (Appendix 6), that considers not only program standards, quality improvement, and operational procedures, but also learning and growth and financial considerations. The Balanced Scorecard for CCEH will guide the department in its pursuit of model practices and program improvement.

## **Conclusions**

This project has benefited the community in the form of improved customer service, increased efficiency and effectiveness of operation, increasing quality of services, and an increase of approximately one full time equivalent (FTE) of service delivery time.

In coming months, it will benefit the community by analyzing unmet community needs in environmental health services, and moving toward meeting those needs.

The program standards analysis has identified areas in which the department is performing well, and should continue to maintain high standards. Gaps in performance have also been identified, allowing the department to focus efforts in quality improvement. Departmental services were ranked on the NEnvPHPS, and areas where the responses were less than “Significant -50%-75%” were targeted for the first phase of improvement efforts (some responses are relevant to programs not offered; the PACE-EH assessment may shed further light on community need for the services).

Quality improvement efforts, although the statistical analysis has not yet accumulated a significant amount of data, have begun to improve the quality of work. The review of a statistically significant sample of work produced has enabled supervisors to identify areas for improvement educate and counsel staff where necessary.

The move to a decentralized method of field operations has added an extra hour per day of field time, which for 9 field EHS is the equivalent of 45 hours per week, or 1.125 FTE of time newly available for customer service. No increase in line item funds were required for this increase.

Automation solutions for field work have had a positive effect on speed of service delivery, in actual production of permits and inspections, and retrieval of archival information

that facilitates field work and as a direct customer service. These increases are not easily quantifiable, but can perhaps be noted by a perceived decrease in customer and staff complaints about accessibility of information and length of retrieval time required.

The PACE-EH assessment, scheduled to begin in spring 2010, is anticipated to identify programs for which there is a community need, and programs that have the potential to improve community health. For example, one frequent request for service is in the area of residential mold detection and remediation. CCEH receives many calls from citizens, especially renters, inquiring about health issues related to indoor air quality and mold. A PACE-EH assessment should provide information regarding the scope of such needs and identify those areas where the community need is significant.

Tying the individual improvement efforts into the structure of a Balanced Scorecard should guide the department in its effort to become a “model program”, and provide a structure for measurement of progress. As needs are identified, they can be added to the Scorecard and integrated into the program in a coherent manner which is specific, measurable, attainable, realistic and time-based (SMART) (Drucker, 1954).

## **Leadership Development**

This multi-focal project has been challenging to implement from leadership point of view, as the vicissitudes of life have intervened, as they are wont to do, in many forms, complicating the path from both a technical and a human point of view.

There are elements of incremental as well as transformational change in its execution, and external developments added complication. As a leader, I found it easier to obtain buy-in by staff when the change was incremental, and of internal genesis.

For the elements of the project which were controlled internally, I used a “team management” format. Input from staff was solicited and considered at every step, a “common stake” was forged by explaining the reasons for the change, and the benefits to both the individual and the department. Staff were given ownership of portions of the implementation, to test for workability before full implementation. Experiences in the field were used to make changes to procedures before final implementation. This approach was quite successful, however, some staff participated more than others.

Those elements of the process which were shaped by external forces were more problematic to guide. In the course of the project, a directive from upper management regarding customer service operations increased each administrative assistant’s workload by approximately one-third of an FTE without any increase in staff. This high-directive and low-supportive element became the most problematic to manage. For some staff it became the central issue, and diverted focus from the primary goal of increasing customer service and efficiency. This change still reverberates today. It is a testament to the low utility of the authority-obedience mode of leadership that those elements where team management was used are proceeding well, and those elements imposed without consultation are still problematic.

I found that a high-supportive and low-directive approach to be useful in helping to ameliorate the negative effects of the externally imposed requirements; when faced with the inevitability of the authoritarian change, being allowed to structure the procedures of the required work gave the staff a “common stake” in the change, much as if a team management approach had been employed.

My own preference in leadership is the team management approach, with a “list” toward country club management. However, there have been instances during implementation where a high-directive approach has been warranted. Some staff, as noted earlier, participated in the “beta-test” more than others; similarly, some staffers were more compliant when the final form of the change was implemented. Those staffers not complying well after implementation were first encouraged, then directed, to conduct business according to the new procedure.

This underscores the worth of situational management. Being able to utilize a variety of leadership styles facilitates an efficiently operating program. Further, being able to recognize those instances where a particular style might be effective is quite an advantage. Realizing that the authoritarian change noted above had a negative effect, my decision to allow staff to structure that workload according to their own prerogatives was morale-building.

As Louis Rowitz (Rowitz, 2009) points out, the most balanced type of leadership in public health is “community collaborative leadership”, akin to “organization man leadership” in the Blake and Moulton grid (Blake & Moulton, 1991). By employing a variety of techniques, to preserve the good function of the department, while attending to the individual needs of staff, I would like to think that I am employing this mode of leadership. As I grow as a leader, it is my goal to effectively employ this style to further the vision and mission of our department.

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## Appendices

- 1). The History of Environmental Health in North Carolina
- 2). The National Environmental Public Health Performance Standards
- 3). The Need for Programmatic Performance Measures in Environmental Health in North Carolina
- 4). Distributed Operations Procedure
- 5). The Balanced Scorecard
- 6). Developing a Balanced Scorecard for Catawba County EH
- 7). The Balanced Scorecard for Catawba County Environmental Health

## Appendix 1

### The History of Environmental Health in North Carolina

In its beginnings, public health *was* environmental health. The early practice of public health was to ensure basic sanitation to prevent disease from environmental conditions and preserve the safety of food and water (ASTHO, 2005). North Carolina first established a board of health in 1877 when the General Assembly constituted the 150 members of the Medical Society of North Carolina as the State Board of Health (Public Health Statistics Branch, 1977; Southern, 2004). The responsibility of the board was to investigate the sanitary and environmental conditions related to the causes of and prevention of disease, especially epidemics, and with disseminating information on health matters to the public (Southern, 2004). Thus the practice of environmental health has been a facet of public health since its inception in North Carolina. In 1879 such a large board having performed in an inefficient manner, “An Act Supplemental to an Act Creating the State Board of Health” reconstituted the board with a membership of nine, said members being appointed jointly by the State Medical Society and the governor (Public Health Statistics Branch, 1977).

In 1893 the public health law passed by the General Assembly expanded the duties of the state board to include advising institutions, towns, and corporations regarding the sanitary treatments of water supplies and sewage. Local officials were required to submit plans to the state board for sewage treatment systems (Southern, 2004).<sup>2</sup>

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<sup>2</sup> A report from an inspection at the University of North Carolina the same year provides some illumination on the methods of the day: “*There were no sanitary conveniences at the University until last year when the basement of the library building (Smith Hall) was fitted up with a fair number of water closets, urinals, bathtubs and showerbaths. The sewage is discharged into a small branch about one thousand feet from the buildings, and no fear of trouble arising from this method of control is apprehended*”. These “conveniences” were somewhat less useful than today’s as by 1895 reports noted that there was insufficient water supply to utilize them. As late as 1906, students routinely used the wooded area south of Gerrard Hall and South Building for sanitary purposes (Public Health Statistics

In 1899 public water supply protection was added as a responsibility of the State Board of Health and it was required to instruct local boards of health regarding water sampling and inspection (Southern, 2004).<sup>3</sup>

In 1919, regulation of the construction and maintenance of privies by the state board of health was authorized by the General Assembly. This was the beginning of the environmental health program that is today the Onsite Water Protection Section. The Bureau of Sanitary Engineering and Inspection oversaw the regulation. Regulation encompassed recommendation of types of privies suitable to soil conditions and watershed protection, and inspection, licensing and closure of operating privies (Southern, 2004).

In the 1930s and 1940s, acting on advice by the Brookings Institution, the General Assembly established changes in the State Board of Health. The Division of Sanitary Engineering was granted new authority to establish rules for fresh meat markets. Local inspectors filed reports with the local health officer or state health officer. This was the beginning of the current Environmental Health Services Section. During World War II, the Division of Sanitary Engineering's responsibilities were expanded to include milk, shellfish and restaurant sanitation (Southern, 2004).

By early 1970, there were over 300 state agencies or departments, and a plan was developed by the legislative Governor's Commission of State Government Reorganization to group "like" agencies to reduce administrative overhead (Odom, 2007). The Executive Organization Act of 1971 moved the State Board of Health into a cabinet-level umbrella agency

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Branch, 1977). Students strolling through Polk Place today might conclude that many advances in sanitation have been achieved through continuing environmental health efforts.

<sup>3</sup> The Old Well at UNC was an aesthetic victim of this regulatory authority. A 1902 inspection report states that the substitution of a pump for the accustomed bucket and chain "does violence to the sentiment which has clung to the well for a century", but nonetheless opines that the interests of public health had been served (Public Health Statistics Branch, 1977).

the Department of Human Resources (DHR). It retained its statutory powers and duties, but the subsequent Executive Organization Act of 1973 transferred all powers of the state in relation to public health to the Division of Health Services (DHS) of DHR. The State Board of Health thus ceased to exist (Southern, 2004).

The decade of the 80s saw many changes and developments in the field of environmental health. Activists, scholars, and public policymakers argue that the term “environmental justice” was first brought into the lexicon by events in Warren County, North Carolina, when the state proposed to place a hazardous waste landfill in the predominately poor, black community (Lowery, 2002; McGurty, 2007). Regulations were adopted and expanded to cover threats to health and safety such as public swimming pools and lead poisoning hazards (“Lead Poisoning in Children”, 1989, “Public Swimming Pools”, 1990). An act requiring environmental health practitioners to be registered created the Board of Sanitarian Examiners.

In 1997, all individual health services were placed under the Department of Human Resources, which was renamed the Department of Health and Human Services (DHHS). The current Department of Environment and Natural Resources (NC DENR) was reorganized to oversee the remaining programs, with sections including Environmental Health Services, On-Site Water Protection, Children’s Environmental Health, and the Office of Education and Training, Public Health Pest Management, Shellfish and Recreational Water Quality, and Radiation Protection.

The practice of environmental health thus has a long a storied history in North Carolina. Preserving and improving the practice of environmental health is in the interests of all its citizens.

## Appendix 2

### The National Environmental Public Health Performance Standards

The Division of Emergency and Environmental Health Services at CDC's National Center for Environmental Health has developed the National Environmental Public Health Performance Standards (NEnvPHPS) (Barron *et al.*, 2007), which are modeled after the National Public Health Performance Standards (NPHPS).

The program was piloted in June, 2007, at the National Environmental Health Association conference in Atlantic City, NJ. Environmental health managers from state, tribal, and local environmental health programs participated in this workshop. By the end of the 1 1/2-day interactive workshop, participants had developed an action plan to improve their programs' capacity to perform the essential services of environmental public health as measured by the NEnvPHPS. Nationwide rollout is due in 2008. (Centers for Disease Control, 2007)

The NEnvPHPS is a set of ten standards modeled after the NPHPS, and based on the ten essential environmental health services:

1. Monitor environmental and health status to identify and solve community environmental health problems
2. Diagnose and investigate environmental health problems and health hazards in the community
3. Inform, educate and empower people about environmental health issues
4. Mobilize community partnerships and actions to identify and solve environmental health problems

5. Develop policies and plans that support individual and community environmental health efforts
6. Enforce laws and regulations that protect environmental health and ensure safety
7. Link people to needed personal environmental health services and assure the provision of healthcare when otherwise unavailable
8. Assure competent environmental health and personal healthcare workforce
9. Evaluate effectiveness, accessibility and quality of personal and population based environmental health services
10. Research for new insights and innovative solutions to environmental health problems

Each standard addresses one of the ten essential services, and an accompanying assessment instrument determines the extent to which each of the standards is met. The assessment instrument allows entries of “Optimal 75%-100%”, “Significant 50%-75%”, “Moderate 25%-50%”, “Minimal 0%-25%” and “No Activity 0%”.

The NEnvPHPS were developed, according to CDC, to address two issues: the need to clearly define standards for environmental health, and to produce important information to strengthen environmental health. As noted earlier, the NPHPS addresses environmental health in relatively few standards. The NEnvPHPS manual claims that research shows “little if any correlation between the NPHPS and the NEnvPHPS”. (Centers for Disease Control, 2007) A separate set of standards for environmental health was judged to be of benefit to the evaluation of environmental health programs.

As with the NPHPS, the NEnvPHPS gathers information about the existence of programs for surveillance, diagnosis and investigation, education, partnership, policy development,

enforcement, linkages, workforce development, program evaluation, and research, but contains few “process-heavy metrics” (Russo, 2007) which would yield information useful to program managers in setting standards of operation and evaluating program outcomes.

## Appendix 3

### The Need for Programmatic Performance Measures in Environmental Health in North Carolina

In the State of North Carolina NC DENR governs the majority of the practice of environmental health. NC DENR divides environmental health into two major sections. The Environmental Health Services Section (EHSS) governs food, lodging, institutions, public swimming pools, tattoo establishments, and child care centers. The On-site Water Protection Section (OWPS) governs septic systems, wells, and “non-point” sources of pollution.

Program evaluation activities in the two sections are intended to be conducted on a four-year cycle. In practice, this goal is not met. The EHSS conducted program evaluations for Catawba County in 1988 and 2004. The OWPS conducted its evaluations 1992 and 2005. An official report of the 1992 evaluation was never delivered to the department. Such widely separated program evaluations as occurred in Catawba County can do little to improve the practice of environmental health.

In the North Carolina system local health departments are responsible for maintaining staff authorized by the state to enforce the state rules and regulations for the programs administered by their environmental health programs. In an earlier chapter problems caused by this system were discussed. Beyond the issues of intentional or unintentional actions against rules or law, customer complaints point to a lack of consistency of interpretation among local environmental health departments, extended times for delivery of service, and poor quality of services. Without a means of assuring that services are delivered in an effective and consistent manner by local environmental health departments, these complaints will continue. Performance measures addressing these issues could bring consistency among county departments and provide an increased level of service and protection of the public’s health.

Disparities in staffing levels contribute to the long time to service delivery. Counties with more attractive employment packages can more easily hire environmental health specialists, and often hire EHS away from smaller counties that are disposed to hire trainees, often just after the employee has earned the Registered Sanitarian certification.

Juran noted that “every system is perfectly designed to achieve exactly the results it gets” (Juran, 1988). The environmental health system in North Carolina, then, is in need of a redesign. What is needed to begin to bring environmental health in North Carolina into a state of cohesion is leadership in proposing a set of program standards that are consistent from county to county. Since the NCLHDAP does not contain programmatic standards for environmental health, state and local public health leaders should address the problem by developing a set of standards that address the critical processes necessary to improve consistency, quality and customer service. To stimulate discussion and provide a potential template for such a system, a set of measures is hereinafter proposed.

In developing a set of performance measures for environmental health in North Carolina herein, the Balanced Scorecard method will be employed. The work of public health centers on our customer, the public, and the inclusion of a customer perspective in the Balanced Scorecard will allow this essential consideration to inform development.

Appendix 4

**CATAWBA COUNTY PUBLIC HEALTH**

**Leadership in Building “YOU” a Healthier Tomorrow**



**ENVIRONMENTAL HEALTH DIVISION**

**2.5 - Policy and Procedures for Distributed Operations**

APPROVAL DATE: \_\_\_\_\_

SIGNATURES:

\_\_\_\_\_  
Originator

\_\_\_\_\_  
Environmental Health Division Administrator

\_\_\_\_\_  
Health Director

Title:	Distributed Operations	Policy Number:	2.5
Approved by:	Catawba County Public Health	Program Area:	Environmental Health
Effective Date:	February 7, 2009		
Revision Number/ Date:			

**POLICY:** It is the policy of the Catawba County Environmental Health (EH) Division to provide professional service within a distributed operations framework for all of its environmental health programs and activities.

**I. PURPOSE:** To insure that the public receives the highest quality of professional and technical support services from Catawba County Public Health in the Environmental Health Division, in a context of a “mobile” or distributed operations protocol.

**II. REFERENCES:** Refer to existing program policy references as applicable. Copies of statutes, rules, guidelines and protocols are housed in the Environmental Health Office at the County Government Center, 100A South West Blvd., Newton, NC.

**III. DEFINITIONS:** For the purpose of this policy, distributed operations are defined as a “vehicle-based” model for Environmental Health field staff, enabling the conduct of all operations in the field, as opposed to a traditional central office based operation for environmental health programs. All other definitions can be found in the applicable laws, rules, and local ordinances, for the specific programs involved.

**IV. FOCUS POPULATION:** All Catawba County residents.

**V. PROCEDURES:** Having the necessary technological capabilities to conduct all operations in the field, and considering the diminished necessity to have Environmental Health Specialist (EHS) field staff based in a central office setting, the Environmental Health Division will employ a “vehicle-based” model of operations for its field staff. The model employed will facilitate administration of the following operational procedures:

Schedule

- Normal working hours for EHS are from 8 a.m. to 5p.m., unless other provisions have been made with the program supervisor (early, evening, weekend inspections).
- EHS will be allowed one hour per day for lunch period. If a meal period is interrupted, the EHS must not deduct the time unless they have been completely relieved of all duties and uninterrupted for at least 30 minutes.
- Vacation, sick time and other time off will be approved according to personnel code.
- The EHS workday begins at the time the employee reports being on the job by phone call, email, or text message. If the EHS is a county resident, this is determined at the time they leave home for their first inspection. If the EHS is an out-of-county resident, this is determined at the time they cross the county line en-route to the first inspection.

### Accountability

- EHS will report “on the job” by phone call, email or text message when beginning work for the day so supervisors are advised.
- Cell phones are to be on and working at all times while on the job.
- Cell phones are to be left on after hours in case emergencies require that EHS respond.
- Phone calls will be answered if EHS is not actively engaged with a client, and voicemail returned promptly during the working day.
- Landline voice mail on the Outlook system will be checked routinely throughout the working day.
- Email will be checked routinely throughout the working day.
- Monthly staff meetings will continue: team staff meetings will be held as determined by supervisors.
- EHS will visit office at least once a week to perform necessary paperwork, collect mail, and report to supervisors.
- Mileage will begin at the time the employee reports being on the job by phone call, email, or text message. If the EHS is a county resident, this is determined at the time they leave home for their first inspection. If the EHS is an out-of-county resident, this is determined at the time they cross the county line en-route to the first inspection.

### Workload scheduling / management

- The On-Site Water Protection (OSWP) program workload will be divided among team members in an area in order to create the most expeditious and efficient routing, to reduce cost.
- OSWP program inspections will be assigned according to the following methods:
  - Direct contact by client to EHS by cell phone.
  - Inspection requests by client to Administrative Assistants.
  - Inspection requests by web form on EH website.
- New OSWP program applications will be distributed to team members by:
  - Email notification, phone calls and electronic methods.
  - Administrative assistants will scan and email new paperwork to EHS, or:
  - EHS can come into office to pick up paper forms required or if convenient to route.
  - When operating on Custom Data Processing (CDP) applications, all cases will be accessible to all EHS.
  - Team members will distribute cases within their areas by method noted above.
- Food, Lodging, and Institutional (FLI) program inspections will continue to be managed according to current methods.
- Completed FLI inspections will be delivered to Administrative Assistants by hard copy or electronic means (when facilitated by CDP and /or EnerGov), for local database maintenance.
- Complaints and other workload will be distributed to EHS by phone call, email, or electronic means.

### Customer Service

- Early / late OSWP inspections (before 8 am and after 5 pm) may be facilitated for clients if mutually convenient to EHS and client but are not required.
- Early / late inspections of FLI establishments may be performed if required by schedule of facility.
- Prompt return of client calls and efficient scheduling of appointments are expected.
- “Work-in” and “retrip” inspections convenient to scheduled appointments are desirable and should be facilitated when feasible.
- The period from 8 a.m. to 9 a.m. should be considered as a *client contact priority period* for OSWP as this has historically been the case, but inspections should also be scheduled during this time when feasible.

**VI. SERVICE PLAN:** Environmental Health Specialists are assigned and supervised by the environmental health administrator and individual program supervisors as appropriate to carry out the provisions set forth in this policy.

## Appendix 5

### The Balanced Scorecard

Realizing that financial measures, the traditional metric of performance through the industrial age, were inadequate to provide reliable feedback on the complex operations of modern corporations, Robert Kaplan and David Norton in 1990 embarked on a yearlong project involving 12 companies that had operating, innovative performance measurement programs in place. Their work considered systems such as the Corporate Scorecard created by Analog Devices to measure delivery times, quality, cycle times, and new product development. The result was the Balanced Scorecard, which provides managers a fast, comprehensive view of the state of their business operations (Kaplan & Norton, 1992).

The Balanced Scorecard includes financial measures as a part of the analysis, but

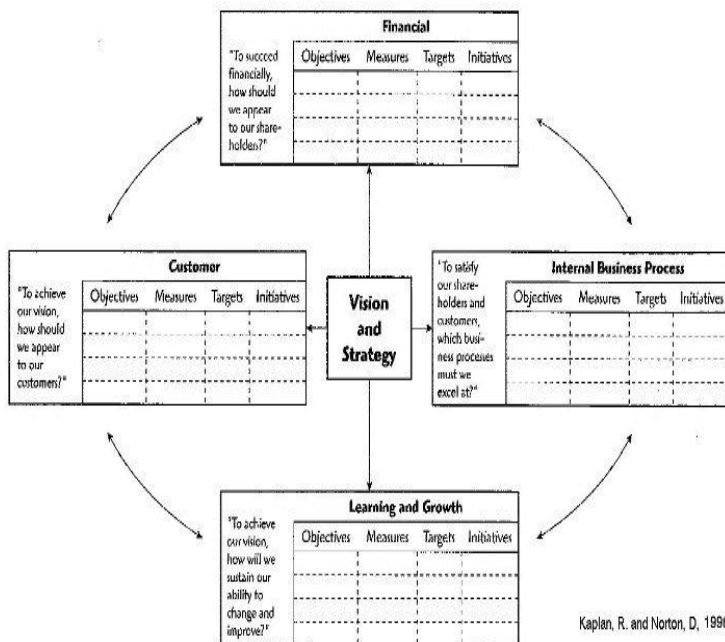


Figure 3

measures inform and guide the vision and strategy of the organization, as shown in Figure 3.

provides means to incorporate the customer perspective, the effect and demands of internal processes, and the need for learning and growth. This allows Balanced Scorecard users to look forward instead of relying on financial measures that merely indicate past performance. The four

Kaplan and Norton also understood the need for simplicity. In developing performance measures, there is the danger of information overload. The Balanced Scorecard limits the number of measures employed, in order to provide succinct, easily understood data, which forces the recipient to focus on a small number of critical measures essential to successful operation (Kaplan & Norton, 1992).

The format of the Balanced Scorecard requires the user to consider all important measures as a system, allowing managers to see where an increase in performance in one area may decrease performance in another. Kaplan and Norton note that even the best objective can be achieved badly. Implementing a crash staff education program (the learning and growth perspective) may take too much time away from performing tasks essential to everyday operations, and increase a backlog caused by an inadequate number of trained workers. Especially in government, where the financial perspective is controlled by factors other than the goal of maximizing profit, the systems approach is critical. To evaluate performance on the basis of how closely an agency toed the budgetary line or how much a department returned to the general fund at the end of the year says nothing about its overall performance (Kaplan & Norton, 1996).

Success for government agencies should be measured, Kaplan and Norton maintain, by how effectively and efficiently they meet the needs of their constituencies. Including the customer (or constituent) perspective is critical in determining performance of a government agency. The financial perspective can play an enabling or constraining role, but should not be viewed as the primary measure (Kaplan & Norton, 1996).

Paul R. Niven (Niven, 2003) published a guidebook for implementation of the Balanced Scorecard in government and non-profit agencies. In modifying the Balanced Scorecard for

government and non-profit organizations, the financial perspective was moved from the top domain, and replaced with the organizational mission. The customer perspective was placed directly beneath (Figure 4). The customer perspective flows from the organizational mission in government, not the financial perspective, as in industry<sup>4</sup>. Niven notes that determining who the customer is can be the most perplexing aspect of elucidating the customer perspective in government and non-profit organizations. In environmental health this issue can be even more of a conundrum.

In Niven's model, the financial perspective can be seen either as an enabler of customer success or as a constraint to be managed. The revenues and resources allocated to a public health

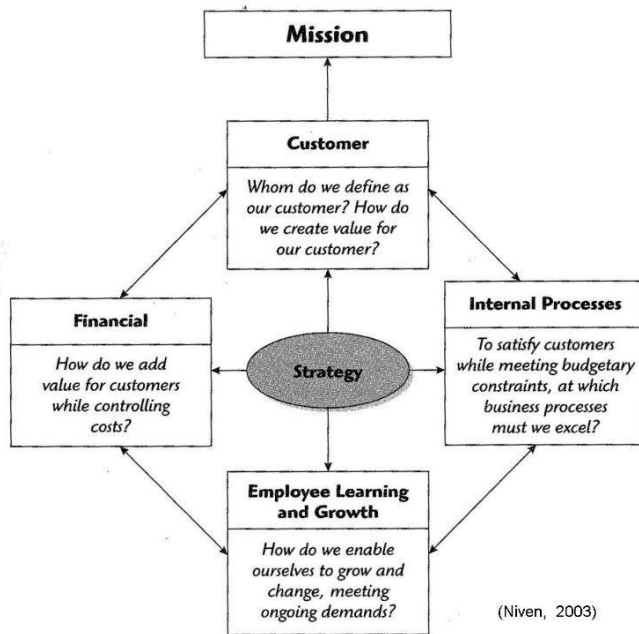


Figure 4

agency determine the number and level of programs it can provide.

Environmental health can sometimes take a back seat to clinical programs.

This requires environmental health managers to advocate forcefully for their programs, stressing the wide public health impact of the

environmental factors regulated by their departments.

The internal processes of environmental health departments in North Carolina are informed and dictated by General Statutes, the North Carolina Administrative Code, policies, interpretations, and local ordinances and rules. Benchmark 18 in the NCLDHAP requires that

<sup>4</sup> The core functions and essential services of public health are discussed above. For purposes of this exercise, the mission of public health will be considered as: "To protect the public health through the three core functions and ten essential services".

policies and procedures for enforcement of public health laws but does not define or list the required content of the policies and procedures. The internal processes perspective of the Balanced Scorecard will help organizations identify those high leverage processes that will lead to improved outcomes for the customer.

The learning and growth perspective takes on a more prominent role in public health and environmental health with the workforce development requirements in benchmark 37.6 of the NCLHDAP. Niven notes three areas for scrutiny: skill mix to meet challenges, information availability, and organizational climate (Niven, 2003). While the NCLHDAP benchmark requires a workforce development policy, as above, the benchmark does not provide specific requirements for the policy. The balanced scorecard will help organizations improve workforce development policies through the use of strategic system-wide measures of performance.

## Appendix 6

### Developing a Balanced Scorecard for Catawba County Environmental Health

The majority of activities in local environmental health programs fall under the EHSS and the OWPS. The Balanced Scorecard developed herein will be confined to these programs. This list of objectives also will not be exhaustive. In developing this Balanced Scorecard, the original vision of Kaplan and Norton is followed, in which a limited number of measures are used, forcing managers to focus on the most critical issues (Kaplan & Norton, 1992).

#### 1 The Customer Perspective

##### a. Who are our customers, and what do they expect?

In government, determining who the customer is can be one of the most perplexing aspects of operation (Niven, 2003). In the practice of environmental health, the proximate customer, a person applying for services or whose activities are being regulated by an environmental health department, is not the only customer. There are many customers to consider as a result of a request for service or a regulated activity. If the applicant for a septic system, for example, is the building contractor, the eventual homeowner should also be considered a customer. Neighbors in the vicinity of the home being built who may be affected by effluent runoff from septic system failure or whose wells may be contaminated are also customers. Further, anyone downstream of surface waters that may be contaminated by runoff or leachate should be considered customers.

Similarly, in regulating the foodservice industry, the regulated parties are certainly customers, but the ultimate customers are those who consume the food that the foodservice establishment produces.

Customer concerns fall largely into four categories: timeliness, quality, performance and

service (Kaplan & Norton, 1992). Including all customers in considering objectives is desirable, as the disparate needs and expectations of each will affect the success of any quality improvement initiative (Niven, 2003). Each customer in the above scenarios may assess these categories differently. The contractor may be primarily concerned with timeliness and service, while the neighbors value quality and performance in the protection of the public health. A restaurateur may value the service aspect: a professional, fair evaluation will be a highly desirable outcome. His customers will value timeliness, quality and performance in inspecting the establishment to protect them from foodborne disease.

b. Timeliness

Timeliness of service delivery is one of the customer concerns Kaplan and Norton (1992) posit. To define a performance standard for timeliness of environmental health services, the customer perspective is critical.

It has already been noted that, due to concerns in the legislature and among developers, a pilot program was established by a ratified bill ("Wastewater Approvals / Small Counties", 2006) that placed a 10-day deadline on approval of septic systems submitted to the local environmental health department in counties where the law was in effect. A report by Long and Staley submitted to the North Carolina Association of Local Health Directors (NCALHD) indicated that many local environmental health departments had waits of 3 to 4 weeks for customers applying for septic permits. The study noted that 70% of environmental health supervisors consider a wait of two weeks for an initial site visit to be unacceptably long.

When these factors are considered, the first objective for our balanced scorecard in the customer perspective emerges. This objective is tied to Activities 4.2 and 17.1 of the NCLHDAP benchmarks.

- Objective #1: Initial site visit times for septic system applications conducted within required period.
- Measure: Time in days to first site visit.
- Target: 10 days.

Another customer expectation of timeliness involves the investigation of complaints.

This requirement is contained in activity 7.3 of the NCLHDAP. Complaints about food establishments often relate conditions that may cause the transmission of a foodborne illness. Complaints regarding septic failures involve conditions that may lead to the transmission of disease, contamination of a well, or surface waters. Activity 7.3 of the NCLHDAP does not provide a timeframe for response to complaints. The National Voluntary Retail Food Regulatory Program Standards (NVRFRPS) (US Food and Drug Administration, 2007) provides a benchmark for response to food-related complaints. That requirement is a response to a complaint on a foodhandling establishment within 24 hours. Since the possibility of disease transmission also exists in complaints regarding septic systems, it is wise to apply the same standard.

- Objective # 2: Respond to complaints rapidly.
- Measure: Number of hours until initial response.
- Target: 24 hours.

### c. Quality

The quality of services provided is a customer concern to which environmental health departments must pay special attention. Errors and omissions by environmental health specialists can have serious financial implications for property owners and the counties in which

EHS who provide poor quality services.

Each LHD should have an internal quality assurance program that evaluates the work produced by its staff, identifies gaps and takes action to address them. Supervisors and administrators should review a statistically significant probability sample of inspections, permits, and other services each week to assure the work complies with generally accepted practices, relevant general statutes, rules, and regulations. A well-implemented quality improvement program will identify weaknesses in the system, and allow management to make adjustments in the process.

A simple method for determining sample size in small populations is  $n = \frac{N}{1 + N(e)^2}$ ,

where N is the number of permits processed and e is the desired precision (Israel, 1992; Yamane, 1967). If we specify a precision of  $\pm 5\%$ , and the number of permits processed each year is 2000, the sample size would be 333, or about 28 each month. The objective for assuring quality, therefore, is:

- Objective # 3: Evaluate a valid sample of work produced.
- Measure: Percentage of error in work evaluated.
- Target: Zero percent error.

d. Performance and service

Customers of public service organizations value a transaction that can be completed in one step (Niven, 2003). When obtaining environmental health services involves a complicated process, the customer estimation of the value of the department's performance and services can be lowered. Many environmental health departments are located in locations separate from Building Inspection, Zoning, and Fire Marshal's departments, making it necessary for the customer to go back and forth between and among the agencies to fulfill the requirements of

each, before an application for environmental health services can be tendered. An objective that addresses this problem could be proposed as:

- Objective # 4: Simple application and issuance process for environmental health services.
- Measure: Number of steps necessary to apply for and receive environmental health services.
- Target: One-step process for all services.

## 2. The Internal Processes Perspective

In the Internal Processes perspective, key processes at which the organization must excel in order to function effectively and efficiently are identified, and measures are developed that will track the organization's progress and provide information for future action to foster improvement. The services an environmental health department provides, the skills and resources necessary to provide them, and whether these services are properly matched to the community are prime elements of the internal processes perspective for environmental health.

### a. Skills, resources, and services

The ability of local environmental health programs to provide services will drive any other factors considered as part of the internal perspective. The ten essential services of environmental health and the NEnvPHPS have been discussed previously herein. As the top-level domain of any internal perspective framework, the ability of a department to discharge its obligations is paramount. The NEnvPHPS provides a method to assess an environmental health department, and develop action plans for improvement. Therefore, objective one of the internal perspective is proposed as:

- Objective # 1: Local environmental health departments meet nationally accepted

standards based on 10 essential services.

- Measure: Percent of “fully met” responses to indicator questions in the NEnvPHPS.
- Target 100% “Yes” responses to NEnvPHPS indicator questions.

#### b. Quality Improvement

Lag measures are an essential tool in assessing performance, but prospective measures (also referred to as lead measures) are also important. Whereas lag measures define where a program has been, prospective measures help to define where a program is going and provide a map for quality improvement.

Environmental health authorizations are extended to local environmental health specialists for activities that are a part of the EHSS, the OWPS, and the Children’s Environmental Health Section (CEHS). Local programs may enforce local ordinances regulating issues that are of concern in the community outside the programs authorized by the state.

In order to improve the quality of services offered by local departments, a standard method of community assessment that develops locally appropriate indicators should be employed. The PACE EH assessment is designed to systematically conduct and act on an assessment of environmental health status in localities (NACCHO, 2007). By employing PACE EH in local environmental health departments, a community’s need for additional environmental health programs can be determined.

- Objective 2: Provide environmental health programs based on community need.
- Measure: Percentage of indicated community need addressed by local programs.

- Target: 100% of local departments meeting needs identified by PACE EH assessment.

As noted in Figure 1, North Carolina is one of four states that have not adopted the FDA Model Food Code, or a set of rules that provides a regulatory foundation consistent with the Food Code.

The Food Code is a science based model code developed by the Conference for Food Protection, the FDA, CDC, the U.S. Department of Health and Human Services, and the Food Safety Inspection Service of the U. S. Department of Agriculture. It is the product of the most current research in food safety, and is employed by the great majority of states. One prime expectation of the foodservice industry is consistency of enforcement. Adopting a set of rules meeting Food Code requirements would bring North Carolina into line with the most current science in food protection and the expectations of the foodservice industry. The VNRFRPS provides an audit tool that evaluates a jurisdiction’s code, regulation, or ordinance against the Food Code.

- Objective 3: Foodservice regulatory programs meet national standards.
- Measure Percent of “full compliance” answers on VNRFRPS audit tool.
- Target: 100% compliance with FDA Model Food Code.<sup>5</sup>

### c. Productivity

Inspections of foodservice and other establishments are governed by general statute and the administrative code. The Fees and Statistics Section of the Department of Environment and Natural Resources maintains records submitted by local environmental health departments

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<sup>5</sup> The most effective means of ensuring full compliance with the FDA Model Code is to adopt it *et sequale* through legislation.

relating to inspections. Monies are disbursed to counties based on the percentage of required inspections performed by the departments. Despite this incentive, many NC counties do not maintain a 100% inspection rate. The customer expectation in this regard is that environmental health departments should perform those actions necessary to assure the safety of foodhandling establishments that they frequent. It is from this expectation as well as activities 4.2 and 17.1 of the NCLHDAP that objective four is derived:

- Objective # 4: Maintain inspection rate for permitted establishments required by rules.
- Measure: Percentage of establishments inspected according to frequency required by rules.
- Target: 100% of inspections conducted according to required frequency.

### 3. The Learning and Growth Perspective

This perspective contributes to the infrastructure to accomplish the objectives set in the other perspectives. Three issues are important: employees' capabilities, information systems, and organizational alignment (Kaplan & Norton, 1996). Most organizations developing a Balanced Scorecard find the Learning and Growth Perspective the most difficult section to complete (Niven, 2003). The decentralized structure of environmental health in North Carolina, in which each local environmental health department is a separate entity with disparate concerns and needs, makes this perspective even more challenging to formulate.

The NCLHDAP provides some guidance in Benchmark 37, activity 37.6, in requiring that "The local board of health shall approve policies for the recruitment, retention, and workforce development of staff". Variations in the interpretation of this requirement will necessarily lead to as many systems as there are local agencies.

A cohesive system of recruitment, retention and workforce development for environmental health in North Carolina is needed, in which the demands on the system in each local agency are met, providing a level of protection of the public health that is uniform, without respect to county lines.

Often, local environmental health agencies are understaffed, in large measure due to uncompetitive salary levels. Despite a sometimes booming development market, county governments may be loath to invest in personnel for environmental regulation. Without competitive employment packages recruitment will continue to be a major obstacle, which the Learning and Growth Perspective cannot address.

a. Employee capabilities.

The current system of workforce development in environmental health consists of a mandatory 15 hour continuing education requirement from the Board of Sanitarian Examiners. Environmental health specialists may choose from any offering from the NC Environmental Health State of Practice Committee, various other agencies, or submit a course for approval by the board. The sole requirement is that the course has a perspective relevant to the environmental health field. Courses are often chosen on the basis of proximity to the local department or cost. Some EHS delay until late in the year and are constrained to attend ad hoc educational opportunities scheduled to provide hours for those short of the minimum requirements. This system does not facilitate development of the capabilities of EH staff in any organized way.

What is needed is a system that develops environmental health staff through educational programs based on the 10 essential environmental health services. The requirement should be based on completion of programs covering all 10 essential services within a specified period of

time, whether for new employees or as continuing education. This program could be administered by the NC DENR Office of Education and Training, which is responsible for the Centralized Intern Training program and is positioned to oversee a program of this kind.

- Objective #1 Workforce development program based on the 10 essential services.
- Measure: Percentage of courses completed by EH department staff based on the 10 essential services.
- Target: 100% of courses based on 10 essential services

b. Information systems

The information system for environmental health is not well developed. NC DENR EHSS has maintained its electronic records on the Health Services Information System (HSIS) since the mid-1990s. The electronic system replaced a paper-based system for Food, Lodging and Institutional inspections that, by account and observation, was limited to stacks of inspection sheets in a storage room.

Recent plans to move away from HSIS to a new system, the Health Information System (HIS), were met by NC DENR with a plan to institute a standalone information system, now referred to as BETS (Best Environmental Tracking System). The move from the HSIS platform began in 2002 with a committee of state and local environmental health staff, and state information technology system staff designing a new system to meet environmental health program needs.<sup>6</sup>

Tight budgets, difficulties in recruiting and retaining programmers, and retirement of key staff stalled the implementation of this system. The system went online in August 2007, but is

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<sup>6</sup> When the HIS system began to be discussed as an eventuality, the committee decided to recommend that the current HSIS data structure be converted to the new platform and incrementally built after launch. That was in April 2004. August 2004 was set as the prospective rollout date.

intended to handle only Food, Lodging and Institutional data. There is no existing or planned system of data management for the OWPS. Data collection by this section is limited to the submission of a monthly Excel spreadsheet of activities.

The availability of data to properly manage environmental health programs in North Carolina is critical. The state must provide an information management system that administers the programs it mandates in environmental health. Despite the enforcement of the statutes, rules, and regulations promulgated by state agencies being enforced by local departments, it is the obligation of the state to facilitate the operation of these departments by maintaining an information system.

However, in the absence of a comprehensive information management system provided by the state for local departments, it is incumbent upon CCEH to work toward developing an integrated system to manage the department's data, and to provide information to facilitate a quality improvement program. Therefore, objective 2# for CCEH is:

- Objective # 2      Integrated information management system provides data to assess performance of department.
- Measure:            Percentage of program functions automated.
- Target:              100% of environmental health program functions automated.

#### IV. The Financial Perspective

In order to provide quality services in a timely and efficient manner, departmental budgets robust enough to provide a sufficient staffing level to meet the objectives set in the Balanced Scorecard must be allocated by the county or state.

County governments are often reticent to increase taxes or user fees at a level that is

sufficient to provide for the expanding role of environmental health. Traditional financial measures are “lag measures”, providing information about where the department has been, not where it is going. The budget process in government is also cumbersome and slow to react to a changing economy, and to rapid growth within a community. This places strain on the ability of environmental health departments to provide the required services in timely manner. Problems with long wait times to permit issuance discussed above are evidence that the staffing levels of environmental health departments are below the levels necessary to meet the demands of their customers. In addition, salary levels for some counties may act as a barrier to hiring the necessary number of qualified staff.

a. Staffing levels

The NC DENR EHSS and OWPS each have staffing analysis tools that calculate the required number of staff for a local environmental health department. The tools consider factors such as the number of foodservice and other permitted establishments, the number of improvement permits and authorizations to construct requested by customers, the number of complaints lodged, need for continuing education, and many other factors relevant to the workload of the department.

These analyses are performed as a part of the program evaluations conducted by the respective sections.<sup>7</sup> The tools are available to county departments for use, however, and can be of great value in determining staffing requirement for the budget process. Since the Customer Perspective and Internal Processes Perspective each have objectives concerning timeliness and productivity, the Financial Perspective must contain objectives that address a level of staffing that will facilitate those objectives. Therefore, the first objective in the Financial Perspective is

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<sup>7</sup> As noted above, the actual conduct of the evaluations is too far separated in time to provide timely information, and are lag based measures in the form they are conducted.

proposed as follows:

- Objective # 1: Staffing level enables the department to meet objectives for timeliness and productivity.
- Measure: Percentage of staff as defined in the NCDENR staffing requirements tools employed by the local department.
- Target: 100% of calculated staffing requirements.

b. Budget

Often, sufficient money is not available from the county general fund, and departments must assess user fees for those activities allowable under the general statutes. Fees can be assessed under the law for On-Site activities, swimming pool permits, tattoo permits, and foodservice establishment plan review. No fees may be assessed for any inspection related activity in the Food, Lodging and Institutional program.

In order to assure that sufficient funding is available to facilitate the objectives in the Customer Perspective and Internal Processes Perspective, a method that employs forward-looking perspective must be employed. User fees must be set at a level that contemplates the anticipated load for the forthcoming budget year. The philosophy of 100% recovery of departmental cost meets this test. The portion of the departmental budget not covered by the county general fund should be calculated based on the projected number of activities for the forthcoming year, and fees set on the basis that all anticipated costs are recovered.

- Objective # 2: Departmental budget facilitates level of staffing to meet objectives of timeliness and productivity.
- Measure: Percentage of required funding to provide staffing as defined by NC DENR staffing tools and resources to support that staff.

- Target: 100% of required funding.

The completed Balanced Scorecard for North Carolina Environmental Health is shown in Figure 5. This is a small but ambitious Scorecard, which considers the most critical threats to the practice of environmental health in North Carolina today. Implementing an evaluation method of this type may be difficult, but will improve the state of practice, and address long-standing problems that contribute to the disparate protection of the public health. These problems have been of concern to local departments and their customers, and have created the movement in the legislature toward privatization of services.

## Appendix 7

### The Balanced Scorecard for Catawba County Environmental Health

<b>Customer Perspective</b>		
Objective	Measure	Target
Initial site visit times for septic system applications conducted within required period	Time in days to first site visit	10 days
Respond to complaints rapidly	Number of hours to first response	24 hours
Evaluate a valid sample of work produced	Percentage of error in work evaluated	Zero percent error
Simple application and issuance process for environmental health services.	Steps necessary to apply for and receive EH services	One step process for all services.
<b>Internal Processes</b>		
Objective	Measure	Target
Local environmental health departments meet nationally accepted standards based on 10 essential services	Percentage of “fully met” responses to NEnvPHPS indicator questions.	100% “yes” responses
Provide environmental health programs by providing services based on community need	Percentage of indicated community need addressed by local program.	100% of needs identified by PACE EH assessment being met.
Foodservice regulatory programs meet national standards	Percentage of “full compliance” answers on VNRFRPS audit tool	100% “full compliance” answers
Maintain inspection rate for permitted establishments required by rules	Percentage of establishments inspected at required frequency	100% of inspections performed at required frequency
<b>Learning and Growth</b>		
Objective	Measure	Target
Workforce development program based on the 10 essential services	Percentage of courses completed by EH department staff based on the 10 essential services.	100% of courses based on essential services.

Integrated information management system provides data to assess performance of local environmental health departments.	Percentage of departmental functions automated.	100% of EH programs automated.
<b>Financial</b>		
<b>Objective</b>	<b>Measure</b>	<b>Target</b>
Staffing level enables the department to meet objectives for timeliness and productivity	Percentage of staff as defined in NC DENR staffing tools employed by local department	100% of staffing requirements
Departmental budget facilitates level of staffing to meet objectives of timeliness and productivity	Percentage of budget requirement to provide staff required by NCDENR staffing tool, and resources to support.	100% of necessary funding.