ANNUAL REPORT
FISCAL YEAR 2013-2014

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Senator Buck Newton
Representative Jamie Boles
Representative Pat Hurley
Co-Chairs, Joint Legislative Oversight Committee on Justice and Public Safety

North Carolina General Assembly
Raleigh, North Carolina 27601-1096

Re: Report on work of the NC State Crime Laboratory during FY 13-14

Dear Members:

Pursuant to Session Law 2013-360, Section 17.2, the Department of Justice is pleased to submit the Fiscal Year 2013-2014 Annual Report for the NC State Crime Laboratory to the Joint Legislative Oversight Committee on Justice and Public Safety. In addition to the data on evidence submissions, case completions, and other workload measures, the report provides updates on significant achievements and internal improvements that focus on quality of analysis, efficiency of analysis, and transparency of analysis.

Thank you for the opportunity to provide this information. We would be happy to respond to any questions you may have regarding this report.

Very truly yours,

Kristi Jones
Chief of Staff

cc: Kristine Leggett, NCGA Fiscal Research Division
Christy Agner, NCDOJ, Legislative Liaison

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Executive Summary

Unprecedented quality assurance, dual accreditation and scientist certification, among other significant accomplishments, were achieved in fiscal year 2013-2014 at the North Carolina State Crime Laboratory (State Crime Lab).

In May, 2014, and earlier during 2013, the State Crime Lab was separately accredited by two independent agencies under ISO/IEC 17025, the highest international standards applicable to forensic laboratories. North Carolina became the only publicly funded forensic laboratory system in the nation to achieve dual accreditation.

All eligible Crime Lab scientists currently performing casework are independently certified by an outside agency, another quality assurance measure unparalleled in other forensic laboratories.

The State Crime Lab maintained its focus on internal efficiencies to increase productivity. Using Lean Six Sigma, a private industry workflow system, processing time was markedly reduced in selected disciplines. Improved guidelines for case management have almost eliminated new bottlenecks in pending work queues caused by cases with a disproportionate number of evidentiary items.

The Forensic Biology/DNA and DNA Database Sections again successfully met rigorous FBI standards during independent Quality Assurance Standards Audits.

On June 2, 2014, Attorney General Roy Cooper appointed Brigadier General John A. Byrd as Laboratory Director to succeed Judge Joseph R. John, Sr., who had served since 2010.

Pursuant to a 2013 Budget directive, architects engaged by the State Crime Lab designed a new Western Regional Laboratory to be located at the North Carolina Justice Academy campus in Edneyville. Notably, the plan provides for toxicology and forensic biology/DNA services that previously were not available in the Western Regional Laboratory.

The 2013 Budget also funded 19 additional Lab toxicology positions. Applications have been vetted, interviews have been conducted, and the training of successful candidates is in progress. Placement of toxicologists upon completion of training is projected to commence in early 2015.

An extensive outreach program has been established to engage, solicit feedback from, and educate prosecuting and defense attorneys, judges, law enforcement officials and other criminal justice system participants. The program includes Laboratory tours, instructional and informational presentations, annual surveys and court testimony evaluations.

The North Carolina Forensic Science Advisory Board, 16 renowned national forensic experts, continues to complement the Crime Lab's work, and the ongoing efforts of full-time, on-site legal counsel greatly facilitate the Lab's interaction with the State criminal justice system.

However, notwithstanding substantial progress, Crime Lab operations were faced with ongoing challenges.

Most significantly, the attrition of skilled Crime Lab scientists to higher paying equivalent positions remains a grave concern. Although appropriations in 2013 and 2014 funded a portion of the positions requested, there was no appropriation from the legislature to increase scientist salaries. Past experience warns that many of these new employees, after being fully trained, becoming independently certified, and receiving on-the-job experience, will pass through a

"revolving door" to other laboratories because of the lack of competitive pay for Lab scientists. These vacancies significantly hamper productivity until the positions become filled with trained replacements.

Between January, 2010 and the first half of this year, 35 departing scientists, or 28% of the Lab's case working scientists, gave "better employment" as an explanation for leaving. Factoring in selection, hiring, training, salary and other Lab costs, it is estimated that the State's loss from the departure of these 35 scientists to other employment reaches a stunning $4,011,875.

A 2013 comparative survey commissioned by the NC Department of Justice (DOJ) reviewed scientist salaries authorized at public forensic laboratories in the region. Pay levels for State Crime Lab scientists were found to be a striking 16% "below the average minimum, maximum, and survey total averages." In 2014, after urging by DOJ and the Crime Lab, a special legislative study committee proposed a 10% salary increase for crime lab scientists, a proposal the chairs introduced as HB 1093. Despite bi-partisan support and a push from the NC Sheriffs' Association, NC MADD, the NC Association of County Commissioners, and the NC Forensic Science Advisory Board, HB 1093 was not incorporated into the 2014 Budget.

The ramifications from the June, 2009, US Supreme Court decision in *Melendez-Diaz v. Massachusetts* continued to divert lab scientists from daily lab work. Mandated to testify live in all criminal trials, Crime Lab scientists expended 2,835 hours (70.9 forty-hour work weeks) away from the Laboratory in meeting the requirement. Only 275 hours, or 9.7%, represented actual live court testimony, the remainder being consumed by travel and wait time.

Over 28,500 case work submissions, including nearly 50,000 items of evidence, and over 26,500 Database submissions were accepted at the Crime Lab's three locations, more than 55,000 total submissions. Nonetheless, total case work completions, reflecting the Lab's methodology and processing improvements, exceeded incoming case work submissions by approximately 10,000 cases, and the DNA Database Section eliminated its inventory of several thousand Convicted Offender and Arrestee samples. However, the Lab logged 7,776 overtime hours in reaching these numbers.

In short, the fiscal year featured multiple critical successes, but certain recurring challenges remain.

NORTH CAROLINA STATE CRIME LABORATORY REPORT

FISCAL YEAR 2013-2014[1]

This Report is presented to the Chairs of the North Carolina General Assembly Joint Legislative Oversight Committee on Justice and Public Safety and to the North Carolina General Assembly Fiscal Research Division as directed by Section 17.2 of S.L. 2013-360, the Appropriations Act of 2013. Under the Section, DOJ must report annually each October 1st on the work of the North Carolina State Crime Laboratory (State Crime Lab) during the previous fiscal year.

I. Crime Lab Accomplishments

1. New Laboratory Director

Effective June 2, 2014, John A. Byrd was named State Crime Laboratory Director by Attorney General Roy Cooper following a nationwide search, succeeding Judge Joseph R. John, Sr., who had led the laboratory since 2010.

Director Byrd, a scientist with twenty years of service at the State Crime Lab, has been a manager over four different disciplines--digital evidence, latent evidence, forensic biology and the DNA database. In addition, Byrd was deployed by the military in Operation Iraqi Freedom and has achieved the rank of Brigadier General in North Carolina's National Guard. Judge John continues to work with the Lab on special projects and as a legal consultant.

2. Dual ISO/IEC 17025 Accreditation

In May, 2014, State Crime Laboratory operations were accredited under stringent international standards, ISO/IEC 17025, by an independent accrediting agency, the American Society of Crime Lab Directors Lab Accreditation Board (ASCLD/LAB). This recognition, coupled with the Lab's earlier June, 2013, ISO/IEC 17025 accreditation by a separate independent agency, Forensic Quality Services (FQS), makes North Carolina's forensic laboratory organization the sole state forensic system in the nation to be dually accredited. These dual designations recognize the Crime Lab's conformity with the highest international standards and protocols applicable to forensic science laboratories, and highlight the exceptional quality and integrity of the work performed by Crime Laboratory scientists.

Both accreditations followed painstaking onsite inspections of every forensic discipline at the three State Crime Lab locations and a comprehensive review of all Lab procedures. Each accreditation runs for a four year period, contingent upon an annual review by the accrediting agency.

3. Western Crime Laboratory Planning Approval/Toxicology Positions Appropriation

The substantial use of Crime Lab scientist time in court appearances attributable to the *Melendez-Diaz* decision (*see* ¶ III. 3. below) has been aggravated by the absence of toxicology capability at the Western Regional Laboratory.

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[1] *This Report addresses the statutorily mandated "previous fiscal year" (July 1, 2013 - June 30, 2014), and thus only briefly mentions, when required by context, important Crime Lab developments occurring on or after July 1, 2014, including, for example, legislative funding in the 2014 Appropriations Act (ratified August 2, 2014, and generally effective July 1, 2014), for construction of a new Western Regional Crime Laboratory ($15,400,000) and for ten new forensic biology/DNA positions.*

Toxicology involves the analysis of blood for the presence or absence of alcohol or controlled substances, singularly or in combination, typically in DWI offenses. Approximately 36% of all toxicology submissions to the Crime Lab during FY 2013-2014 originated in counties served by the Western Regional Laboratory, but of necessity were transmitted to the Raleigh or Triad Labs for analysis. As a consequence, in addition to this physical transfer of evidence, Crime Lab toxicologists have been required to travel daily from Raleigh or Greensboro to testify regarding test results in District and Superior Court trials throughout the thirty-eight western counties. This circumstance has had a severe negative impact upon the Lab's productivity and efficiency (*see* ¶ III. 3 .C. below).

That being said, the State Crime Lab acknowledges the North Carolina General Assembly has begun to recognize these challenges by taking several noteworthy actions during the previous and present fiscal years..

a. Western Regional Crime Laboratory Planning

In its budget request for 2012-13, DOJ had requested funding for construction of a western lab. The legislature declined, but in S.L. 2012-142, Section 15.4, directed that DOJ and the State Crime Lab present to the General Assembly a proposal for "a Western Regional Laboratory to be located on the Edneyville Campus of the Training Academy." As required, the Crime Lab delivered a formal design proposal to the legislature on Feb. 1, 2013.

Next, S.L. 2013-360, the Appropriations Act of 2013, allocated $1,442,000 in Section 36.2 (a) "to complete full planning for the Western Crime Laboratory." Architects engaged by DOJ and the State Crime Lab expanded the previously submitted proposal with blueprints, schematics, site plans and other requisite documentation which envisioned a 36,050 square foot, $16.8 million dollar facility at the designated Edneyville location.

The planned building layout includes the Drug Chemistry, Latent Evidence, and Firearm and Tool Mark disciplines currently provided at the existing Western Lab in Asheville as well as additional services in the Toxicology, Forensic Biology/DNA, and Digital Evidence disciplines and in Vehicle Processing.

Crime Laboratory representatives joined architects in the planning to generate a forensic laboratory that is scientifically functional, efficient and practical. For example, Lab scientists suggested saving money and increasing efficiency with open work areas for multiple scientists rather than individual offices. As FY 2014-15 progresses, the selection of a contractor and the beginning of construction on a new Western Regional Crime Laboratory[2] are anticipated. Upon completion, the facility will afford western counties better and quicker access to Crime Lab forensic scientists analyzing evidence and providing expert testimony, closer availability of a broad range of forensic disciplines (including DNA[3] and toxicology analysis), decreased casework turnaround time, and a substantial reduction in the court/travel time of Crime Lab scientists. At the same time, Crime Lab scientists located elsewhere will be freed to

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[2] See FN[1] referencing the $15,400,000 appropriation "to finance the capital facility costs of a Western Crime Lab) set out in Section 36.12 (f) (1) of the 2014 Appropriations Act.

[3] The 2014 Appropriations Act also included funding for 10 positions to "establish a new Forensic Biology/DNA Unit at the Western Regional Laboratory, effective March 1, 2015." Filling these positions will commence later in the current fiscal year. It is noted that roughly 16% of forensic biology submissions during FY 2013-14 came from Western Lab counties but, because the Western Lab lacked DNA analysis capabilities, could only be worked at the Raleigh Lab.

concentrate on matters arising in central and eastern North Carolina with similar benefits to those areas.

b. New Toxicology Positions

Seeking to address the western North Carolina issues discussed above, the Appropriations Act of 2013 funded 19 additional Lab toxicology positions. Further, the Crime Lab was directed to work with the Office of State Personnel (OSP) to create an apprentice level Lab scientist position, a directive that was subsequently accomplished by OSP approval of the Lab's request for a Forensic Associate employee classification.

Using a new, more efficient "continuous posting" process (also approved by OSP) as opposed to the traditional State method of posting an individual position, the Crime Lab screened scores of applications. One hundred forty-two potential candidates were interviewed during the fiscal year, with 94 approved for hiring. Unfortunately, over 37% of that group either declined the salary or accepted other jobs with higher pay.

Several applicants also withdrew for unspecified reasons and a number were eliminated in the background and/or polygraph process. Background investigations remain a critical component of the Crime Lab's hiring process because of the sensitive and extremely serious nature of its work in analyzing evidence for use in the criminal justice system. Recent issues resulting in the closing of publicly funded forensic laboratories operated by the Massachusetts Department of Public Health (2012) and, closer to home, by the Columbia (SC) Police Department (2014), underscore the necessity for continued prudence and caution in the choice of scientists to be employed at the North Carolina State Crime Laboratory.

Training of the selected toxicologists in State Crime Lab procedures has been outsourced to a select private forensic company rather than being conducted in-house. This allows compression of the timeline for completion of training and frees current Lab toxicologists to continue ongoing case analysis rather than training new hires.

As hired toxicologists begin to complete training in early 2015, it is anticipated that placement of positions at the Western Regional Laboratory will commence. Rather than waiting until completion of the new Western Regional Laboratory, space adjacent to the current Lab location is being renovated and up-fitted in 2014. New toxicology instrumentation has been purchased for this purpose with the non-recurring appropriation of $1,055,773 in the Appropriations Act of 2013 "for equipment to expand the Crime Lab's ability to provide toxicology services in the western part of the State."

4. Outreach and Education

With the goal of bringing transparency and awareness to the work of the Crime Lab, an outreach program has been established to engage, solicit feedback from, and educate prosecuting and defense attorneys, judges, law enforcement, and other criminal justice system participants.

Approximately fifteen Laboratory tours were conducted during the fiscal year with nearly 250 participants. Lab employees have also provided instructional and informational lectures, programs on Lab evidence submission guidelines and computer linkages, and reports at meetings of various criminal justice system representatives. A full-day course for prosecuting attorneys covering all Crime Lab disciplines was presented in September, 2013, in compliance with Section 17.3 (a) (b) of S.L. 2013-360. The Lab voluntarily replicated this course for defense counsel in January, 2014, through the auspices of the Institute of Government. Lab scientists testifying in court routinely provide evaluation forms eliciting comment from presiding

judges, prosecutors and defense counsel, and unrepresented defendants. An annual questionnaire surveying multiple facets of Lab operations is delivered to representatives of all components of the criminal justice system.

5. Forensic Scientist Certification

The independent certification of Crime Lab scientists by an outside agency in their respective forensic disciplines continues. All eligible Crime Lab scientists currently performing casework are independently certified.

In addition, Crime Lab scientists must complete proficiency tests provided by an external agency annually with 100% accuracy required, and each case completed by a Crime Lab scientist receives thorough peer review by a different qualified Lab scientist before a Laboratory Report may be issued.

6. DNA Section

In FY 2013-14, the Crime Lab's Forensic Biology/DNA Section was again found in compliance with rigorous FBI standards during the annual independent Quality Assurance Standards Audit.

Of note, DNA scientists, in working evidence submitted to the Lab over the fiscal year in a given case, eliminated 75 individuals previously viewed by investigators as suspects.

7. DNA Database Section

The DNA Database Section of the State Crime Laboratory processed 242 database "hits" during the fiscal year. "Hit" information is provided to law enforcement agencies as an investigatory lead to assist in solving a stated crime or crimes.

The Database Section was also found in compliance with FBI standards during the annual independent Quality Assurance Standards Audit.

In addition, the Database Section entered into a mutually beneficial agreement with the Department of Public Safety Division of Adult Correction (the Division). In early 2014, the State Crime Lab provided the Division with standardized DNA cheek cell collection kits, and conducted extensive training for Division personnel in the use of the kits. The kits replaced the Division's more costly and time-consuming blood sample collection procedure under the Convicted Offender program.

Division employees were also instructed in use of Live Scan fingerprinting system terminals in conjunction with collecting DNA swabs to determine immediately whether the Crime Lab had previously entered an offender's DNA sample into the CODIS system. If so, no submission to the Lab would be necessary, thereby substantially reducing duplicative handling both by the Division and by the Crime Lab.

8. Forensic Science Advisory Board

The North Carolina Forensic Science Advisory Board, composed of 16 renowned national forensic experts, continued to offer its collective experience as a complement to the Crime Lab's work.

In a May 8, 2014, letter to the North Carolina General Assembly reviewing Crime Lab operations, the Board praised the Lab's "efficient and effective use of available resources" and its "significant, measurable progress in a remarkably short time frame." However, at the same time the Board registered deep "concern that the Laboratory lacks critical resources necessary

to serving North Carolina taxpayers and the criminal justice system at the highest operational level."

In previous communications to the General Assembly, the Board highlighted the Lab's "dedicated and well trained and knowledgeable analytical staff," its "impressive, innovative paperless electronic system for recording analytical tests," and its use of "an industry leading policy of releasing all laboratory casework notes with each laboratory report to streamline fulfillment of discovery requests."

II. Methodology Successes

The State Crime Lab also maintained its focus on internal measures designed to ensure the most effective and efficient use of existing personnel and resources.

1. Lean Six Sigma Project

In early 2013, Lean Six Sigma, a private industry workflow system, was introduced into the Crime Lab with the goal of process improvement through addressing customer driven needs with internal efficiency adjustments. "Lean" principles deal with "removing the unnecessary" and "six sigma" concepts center on "improving the necessary." Lean Six Sigma also requires input from each individual worker, and routine production meetings were implemented in all Lab Sections concentrating upon process flow, personal accomplishment and case output.

Ultimately, Crime Lab scientists were successful during FY 2013/14 in shrinking Lab processing time in pre-selected disciplines. For example, the Trace Evidence Section experienced a 62% reduction in pending cases. In addition, the streamlined Lean Six Sigma approach enabled the DNA Database Section to eliminate its entire inventory of several thousand Convicted Offender and Arrestee samples waiting processing. Today, the Database Section addresses samples immediately upon arrival, allowing a transition to the more efficient and less expensive approach of completing analysis in-house rather than the past practice of outsourcing a portion of the work to an outside agency. This transition is expected to be completed during the upcoming fiscal year.

Expansion of the Lean Six Sigma methodology into other Lab disciplines progressed during FY 2013-14. Additionally, eight Crime Lab personnel were selected to achieve Lean Six Sigma "Green Belt" certification through in depth development of processing skills and statistical analysis tools. Projects involving enhancement of new employee training, streamlining the "rush" analysis system, and expediting DNA casework flow through use of extraction robots are being completed in conjunction with the "Green Belt" program.

2. Lab Information Management System

Enhancements to Forensic Advantage, the Crime Lab's electronic information management system, have been ongoing during FY 2013/14. Although the system routinely produces discovery information from the Lab to prosecutors, communication from prosecutors to the Lab regarding case dispositions has now also been integrated into the electronic system. This eliminates the prior practice of requiring hard copy notification.

In addition, DOJ IT specialists, at the request of the Crime Lab, have developed software for use by the Lab to compare its pending cases docket with court criminal history records. This allows identification of cases which appear to have cleared the court system, but for which the Crime Lab has received no case disposition notice (electronic or hard copy) from the prosecutor. Lists of such cases are periodically sent to prosecutors requesting confirmation that the case is completed and that no further Lab work is required. The NC Conference of District Attorneys has been helpful in facilitating prosecutorial review of these notices.

Use of both the recent Forensic Advantage enhancements and the new software has identified completed cases which may be returned to the submitting agency because no further Crime Lab work is required. As a result, the number of cases being unnecessarily analyzed by the Lab due to lack of notice has decreased.

3. Lab Legal Counsel

Full time, on-site Crime Lab Legal Counsel continues to play an invaluable role in the Lab's work by daily contact with representatives of all components of the criminal justice system to coordinate the progress of Crime Lab cases.

Of note, Lab Counsel, in conjunction with the Forensic Science Initiative at West Virginia University, hosted the inaugural Forensic Science Training for Laboratory Counsel two-day meeting at the Crime Lab in August, 2013.

4. Case Management Guidelines

Case Management Guidelines, similar to those in place at public forensic laboratories throughout the country, were fully implemented during the fiscal year with the aim of sequencing and streamlining the Crime Lab's evidence intake procedures. The new system has almost entirely halted the creation of new bottlenecks in pending work queues caused by cases submitted with a disproportionate number of evidentiary items.

The Evidence Control Unit, through which incoming evidence is received, has also fully implemented and conducted multiple training sessions in its new evidence pre-logging system, both live and online. Nearly 200 of the largest law enforcement departments in the state received this training and are actively participating in the pre-logging system. For these agencies, all paperwork associated with evidence submissions may now be presented electronically and the sealed evidence delivered by USPS, a private delivery service (UPS, FedEx, etc.), or in person by a local evidence technician without the case investigating officer being required to travel to the Laboratory. Wait times for submitting evidence in person at the Crime Lab have also been eliminated.

5. Technology Advances

Robotic technology has now been fully integrated into operation of the Crime Lab's Forensic Biology/DNA Section, and has facilitated expedited DNA analysis through use of its automated DNA extraction capabilities.

In addition, Liquid Chromatograph-Mass Spectrometer/Mass Spectrometer (LC-MS/MS) instrumentation has been introduced into the toxicology process at the Raleigh and Greensboro laboratories. This instrumentation, utilized by Crime Lab toxicologists in suspected DWI-Drugs cases, features faster analytical runtimes and improved detection limits, thereby improving Lab capabilities in blood-drug analyses.

III. Ongoing Challenges

Notwithstanding substantial progress, Crime Lab operations during FY 2013-2014 also reflected ongoing challenges extending from previous years.

Submissions to the Crime Lab in great numbers from North Carolina's 100 counties persist and there has been no modification of the "live" courtroom testimony requirement imposed upon forensic scientists by the June, 2009, US Supreme Court decision in *Melendez-Diaz v. Massachusetts.*

Most significantly, however, the attrition of highly trained, experienced and independently certified Crime Lab scientists to substantially better paying equivalent positions in both the public and private sectors, many within the state, remains a constant concern. Although the General Assembly in 2013 and 2014 funded 19 toxicology and 10 Forensic Biology/DNA positions[4], crime lab managers fear attrition. In other words, based on past experience, there exists the real possibility that these new employees, after being fully trained, becoming independently certified, and receiving on-the-job experience, will pass through a "revolving door" to other locations because of the lack of competitive pay for North Carolina Crime Lab scientists.

In the upcoming fiscal year, the Crime Lab will continue to be proactive and recruit scientists at colleges and universities, especially in North Carolina, as well as at meetings of national forensic science organizations. However, the success of these efforts will be dependent upon the ability to offer competitive pay. An internal Retention Committee has also been established among Lab scientists, concentrating on issues other than compensation which may affect employee longevity.

Meanwhile, the Crime Lab will continue its focus on maintaining the highest and best standards for scientist expertise and operations. Standards statutorily mandated by H27, Session Law 2011-19, were accomplished although no appropriation was provided for the accreditation requirement, scientist certification requirement or the Ombudsman position which serves as a liaison with the Crime Lab and DOJ.

1. Submissions

In North Carolina, the nation's 10th most populous state, more than 20,000 law enforcement officers and over 600 law enforcement agencies routinely submit evidence in criminal cases to the Crime Lab. In FY 2013-2014, over 28,500 case work submissions, including nearly 50,000 items of evidence, were accepted at the Crime Lab's three locations. The Raleigh Crime Lab received 18,050 case work submissions in addition to 15,968 Convicted Offender and 10,581 DNA on Arrest sample submissions for a total of 44,599. The Triad and Western Regional Laboratories took in 5,658 and 4,824 case work submissions respectively, bringing the Crime Laboratory overall total to 55,081.

a. Forensic Discipline & Lab Location Submissions Breakdown

Broken down by forensic discipline and Crime Laboratory location, the FY 2013-2014 distribution of case submissions is as follows:

	Raleigh	Triad	Western
Drug Chemistry & Toxicology	14,475	5,171	4,566 (incl. 2 Toxicology*)[5]

[4] *See FN[3] and ¶ I. 3. b.*

[5] *Case submissions to a Regional Laboratory for a forensic discipline not offered at that Lab (identified by the * symbol) are transferred to the appropriate Lab location for analysis. The chart reflects all cases received at each Lab location, regardless of whether the requested analysis was offered at that Lab.*

The Western Regional Laboratory provides Drug Chemistry, but not Toxicology, analyses as well as Latent Evidence and Firearm & Tool Mark examinations. Introduction of Toxicology analysis at the present Western Regional Laboratory is anticipated in early 2015 (see FN[4]). In Trace Evidence, only fire debris in arson cases is examined at the Western Lab. The Western Lab currently does not conduct Forensic Biology analyses (see FN[3]) nor is it able to accept Convicted Offender or DNA upon Arrest samples.

Forensic Biology	1,426	197*	13*
DNA Database	26,549	0	0
Latent & Digital	914	129	121 (incl. 2 Digital*)
Trace Evidence	739	130*	69
Firearm & Tool Mark	496	31*	55

b. County by County Submissions Breakdown[6]

Case work and evidence item submissions over the past four fiscal years broken down by each individual North Carolina county may be found in Appendix A.

2. Case Completions

Because of the time required to complete the hiring and training of the 19 new Crime Lab toxicologists funded in the Appropriation Act of 2013, the case work and evidence item submission numbers reflected above were addressed only by the 124 case working scientist positions available from FY 2012-13. It also must be remembered that budget cuts in FY 2011-12 eliminated five Crime Lab positions. The adverse impact of scientist attrition also persisted.

Nonetheless, by diligently working thousands of hours, Crime Lab scientists at the Raleigh Lab completed 19,116 cases during the fiscal year in addition to processing 7,460 Convicted Offender and 5,550 DNA on Arrest samples for a total of 31,401. In addition, 8,956 cases were completed at the Triad Lab and 5,186 at the Western Lab, bringing the Crime Laboratory total to 46,268.

Importantly, the 33,258 case work completions, an increase of several thousand over the previous fiscal year, outnumbered the year's 28,532 case work submissions, reflecting the Lab's methodology and processing improvements. The DNA Database Section also eliminated its inventory of several thousand Convicted Offender and Arrestee samples. Case work completions exceeded case work submissions at each of the Crime Lab's three locations. However, in accomplishing this, Crime Lab staff logged 7,776 overtime hours during FY 2013-14, the equivalent of 3.7 FTE working a full 40 hour week the entire year, at a cost of $318,401.

a. Forensic Discipline & Lab Location Case Completion Breakdown

Broken down by forensic discipline and Crime Laboratory location, the FY 2013-2014 distribution of case completions is as follows:

	Raleigh	Triad	Western
Drug Chemistry & Toxicology	12,679	8,831	4,871
Forensic Biology	3,060	0	0
DNA Database	13,010	0	0

The Triad Regional Laboratory provides Drug Chemistry and Toxicology analyses as well as Latent & Digital Evidence examinations. The Triad Lab does not perform examinations of Firearm and Tool Mark or Trace Evidence, does not conduct Forensic Biology analyses, nor is it able to accept Convicted Offender or DNA upon Arrest samples.

[6]*This information is provided in compliance with S.L. 2013-360 (3) which requires that the Annual Crime Lab Report contain "A breakdown by county of the number of submissions received by the Laboratory in the previous fiscal year." The numbers in these tables do not include Convicted Offender or DNA upon Arrest submissions.*

Latent & Digital	910	125	150
Trace Evidence	1,559	0	87
Firearm & Tool Mark	908	0	78

3. *Melendez-Diaz*

During FY 2013-2014, the effect on Crime Lab operations emanating from the June, 2009, *Melendez-Diaz v. Massachusetts* US Supreme Court decision continued unabated.

In that case, the high court ruled that the Confrontation Clause of the US Constitution required a forensic scientist to present evidence of testing results against a criminal defendant "live" at trial rather than by means of a sworn affidavit, the previous long standing practice, not only in North Carolina, but across the US. As a result, Crime Lab scientists began traveling thousands of miles across North Carolina to testify in criminal cases, including both District and Superior Court DWI trials in all 100 counties.[7]

The effect upon the Crime Lab was immediate and devastating. Within six months, the court/travel time of Raleigh Crime Lab toxicologists had multiplied 600%. Similarly, DNA scientist court time doubled between 2009 and 2011. Absent additional offsetting Crime Lab scientist positions being funded (none allocated prior to FY 2013; five Lab positions lost in 2011), pending caseload inventories in all disciplines began growing inevitably and inexorably with every scientist hour expended in court requirements necessarily constituting an equivalent hour not being spent in scientific casework at the Laboratory.

Expanding overtime to cover lengthy drive times to and from courts across North Carolina and other travel costs were additional outgrowths from *Melendez-Diaz*.

a. Court Hours

In FY 2013-2014, Crime Lab scientists accumulated 2,835 hours in court time, of which only 275 hours, or 9.7%, represented time in actual court testimony. The total hours translate into 70.86 five-day weeks, well over an entire year of scientist time away from the Laboratory.

4. Forensic Scientist Pay

Complicating the mission critical challenges created by unrelenting numbers of case submissions, limited personnel, and time-consuming court appearances are the related factors of non-competitive pay for Crime Lab Forensic Scientists and persistent employee attrition from the Lab to better paying equivalent positions in both the private and public sectors.

In FY 2013-2014, the Crime Lab lost 20 employees, 11.6% of the Lab workforce (not including the 19 new toxicology positions). The percentage is somewhat higher than the 10.5% in the previous fiscal year.

a. "Better Employment"

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[7] *HB 369, effective Sept. 1, 2014, amended G.S. ¶ 15A-1225.3 to allow "forensic analyst remote testimony" upon written prosecutorial notice to the defendant and the defendant's subsequent consent or failure to demand live testimony. Although no attendant funding was appropriated by the General Assembly, the section may allow a "test" case to be put forward to gauge the manner in which NC appellate courts may view the statutory procedure in light of the Melendez-Diaz decision. For the foreseeable future, however, the effects of Melendez-Diaz upon the State Crime Laboratory will remain unchanged.*

Seven of the FY 2013-2014 departing employees, or 35%, indicated "better employment" as their reason for leaving, six were retirements and the remainder fell into some aspect of the "other" category. When the 70 scientist departures between Jan. 1, 2010, and June 30, 2014, are considered, thirty-five or 50% have given "better employment" as an explanation.

An independent survey commissioned in early 2013 by DOJ studied the salaries of State Crime Lab forensic scientists in comparison with those offered at other public forensic laboratories in North Carolina as well as in the neighboring states of Virginia, South Carolina and Georgia. To provide review only among analogous organizations, pay levels at private forensic labs were not considered.

The survey results revealed a striking disparity. Forensic scientist salaries at the North Carolina State Crime Laboratory fell 16% "*below* the average minimum, maximum, and survey total averages."

These findings are consistent with anecdotal information received by the Crime Lab that the "better employment" explanation noted in exit interviews frequently included salary increases at the $20,000 level. Presented with an opportunity to boost household income by raises approaching 50%, young parents/Lab scientists understandably put family interests first and move to more lucrative employment.

It may also be noted that the 2011 legislation which mandated independent certification of Crime Lab forensic scientists (without any additional pay) not only greatly increased the requirements of the job, but also enhanced the marketability of those scientists to other employers both in this State and beyond.

b. Vacancy Consequences

Unlike other state employee positions, a vacated Crime Lab position creates two extremely detrimental effects: 1) a void in the workforce, with a consequent reduction in productivity attributable to the open position until such time as it becomes filled with a trained replacement, and 2) a time-consuming process to hire and train that replacement employee. The latter procedure routinely includes position posting, application reviews, live interviews, and background investigations coupled with polygraph testing, followed by employee selection, and then an internal training period of eight to ten months or longer depending upon the discipline and the experience of the hired scientist.

Crime Lab forensic scientist positions demand highly-skilled, well-educated individuals, usually with extensive chemistry or biology credentials. Given the nature of forensic work, involving contraband materials and evidence intended for criminal trials, as well as the 100% accuracy required in analysis, great care and caution in the recruitment, hiring, training and development of a viable and proficient new forensic scientist is absolutely necessary to ensure employees of the highest caliber. The serious responsibilities to the public and the criminal justice system imposed upon the Crime Lab and its scientists demand nothing less.

However, the high quality of Crime Lab employees and the enhancement of their credentials with independent certification make them attractive to private and public employers with greater funding. It is not uncommon for the Crime Lab to receive reports of active recruitment of Lab forensic scientists by other agencies. Nine former Crime Lab employees are currently working at publicly funded local forensic laboratories located within North Carolina.

Assuming a two year investment in employing, training and developing a new Crime Lab scientist, coupled with the attendant salary and the Laboratory costs associated with selection and hiring, DOJ Human Resources estimates that the State loses a minimum of $114,625 per position when a Crime Lab scientist departs for other, "better," employment. Not included are the related costs to, and the frustration of, our State's criminal justice system attributable to case postponements resulting in part from a shortage of scientists available to address the Crime Lab's caseload inventory.

The "revolving door" created by the seven FY 2013-14 "better employment" Crime Lab departures, therefore, came at a cost to North Carolina taxpayers of at least $802,375. When the total thirty-five employees since Jan. 1, 2010, who gave "better employment" as their reason for leaving are factored in, the loss to the State reaches $4,011,875. Allocating even a fourth of that amount to salary increases for Crime Lab Forensic Scientists would likely have closed the "revolving door" in most instances.

c. Legislative Study Committee Finding

Late in the fiscal year, a special Committee of one chamber of the General Assembly authorized by the Legislative Research Commission, the House Committee on Judicial Efficiency and Effective Administration of Justice (the Committee), formally acknowledged the Crime Lab's compensation issues.

The Committee included "Legislative Proposal # 12" ("An Act to Appropriate Funds to Provide a Ten Percent Salary Increase to Employees of the State Crime Laboratory") in its April, 2014, Report to the General Assembly. Shortly thereafter, House Bill 1093, which tracked Proposal # 12, was introduced under the sponsorship of the Co-Chairs of the Committee joined by a bi-partisan group of twenty-four House members. The bill also had the support of the North Carolina Forensic Science Advisory Board, the North Carolina Sheriffs' Association, North Carolina Mothers Against Drunk Driving, and the North Carolina Association of County Commissioners.

HB 1093, which unfortunately was not ultimately included in the 2014 Budget, contained an appropriation of $992,237 to fund a 10% salary increase for all Crime Laboratory Forensic Scientist I, II, III, Forensic Scientist Supervisor and Forensic Scientist Manager positions.

It is believed that the Committee, in specifying the 10% figure, adjusted the 16% Lab scientist pay disparity disclosed in the independent salary survey by the average 6% increase many Crime Lab employees received under the Appropriations Act of 2013 Salary Adjustment Fund. Assuming the average market figures reflected in the early 2013 study have remained stable, it is estimated that the $1,000 annual recurring salary increase ($1,236 salary and benefit increase) accorded to all State employees in the Appropriations Act of 2014 will produce a further adjustment of between 1% and 2%.

Notwithstanding the 2013 and 2014 legislative adjustments, however, the salaries of State Crime Lab scientists still remain, at a minimum, a stark 8% below market. The recruitment and retention of scientists by the Lab in light of that pronounced deficiency continues to be a major cause for concern.

5. Outsourcing

The Appropriations Act of 2014 reduced by two-thirds (to $250,000) the $750,000 designated in the Appropriations Act of 2013 as a recurring appropriation for Crime Lab outsourcing of toxicology cases to begin in FY 2014-15.

A toxicology outsourcing Request for Proposal (RFP) issued by DOJ in early 2014 resulted in one successful bidder, National Medical Services d/b/a NMS Labs, a Pennsylvania corporation. NMS' bid includes an analysis fee of $374 per case and a $2,225 per case per day court appearance fee (which includes travel from Pennsylvania).

Efforts are ongoing to partner with a select group of District Attorneys as a pilot of the overall project and to seek alternative funding for the court testimony component of toxicology outsourcing. Using this methodology to defray court appearance costs, the available funds of $250,000 could be maximized to outsource approximately 668 cases (668 cases X $374 analysis fee = $250,000) during the forthcoming fiscal year.

6. Conclusion[8]

To conclude, in FY 2013-2014 the Crime Lab has persevered in upgrading its efficiency through the use of enhanced forensic laboratory workflow methodology, streamlined evidence management processes, advanced instrumentation, improved coordination with the courts and the strategic redistribution of Crime Lab work. Concurrently, the fiscal year has featured international accreditation by separate independent agencies, individual external certification for all eligible Lab scientists, and successful outside audits. Initiated by action of the General Assembly, the promising infusion of 19 additional toxicology positions into the Lab workforce has begun and a new Western Regional Laboratory is on the horizon.

However, heavy caseloads persist, aggravated by the judicial requirement that Lab scientists personally testify in criminal trials across North Carolina. Most significantly, the fiscal year saw no diminution in the exodus of well-qualified and highly trained Crime Lab scientists to higher paying forensic science opportunities elsewhere, creating workforce voids and consequent Lab productivity issues.

As the 2013-14 House Study Committee on Judicial Efficiency recognized, the recruitment of replacements for departed Lab scientists and the ability to retain those replacements over a period of years are dependent upon the establishment of a competitive pay scale for their services.

Respectfully submitted, this 1st day of October, 2014,

John A. Byrd
Director, North Carolina State Crime Laboratory

[8] *S.L. 2013-360 (4) also provides that the Annual Crime Lab Report contain "[a]n average estimate of the dollar and time cost to perform each type of procedure and analysis performed by the Laboratory." The Crime Lab has not had the capability in the past to calculate this data. However, late in the fiscal year, the Lab initiated participation in "Project Foresight," operating out of West Virginia University, which compiles such information for forensic laboratories. The data collection deadline for the Project Foresight Annual Report published the next May is Dec.1. Because the Crime Lab's data for the May, 2015, Report, will not represent a full year and will thus be incomplete, the first meaningful (containing data for a full year) Foresight Project Report reflecting a comparative breakdown of analysis costs (including the State Crime Lab) will not be issued until May, 2016. Therefore, category 2013-360 (4) will be addressed more thoroughly in the FY 2016-17 State Crime Laboratory Annual Report.*

Appendix A - County by County Submissions Breakdown

	7/1/2010 to 6/30/2011		7/1/2011 to 6/30/2012		7/1/2012 to 6/30/2013		7/1/2013 to 6/30/2014	
	Submissions	Items Submitted	Submissions	Items Submitted	Submissions	Items Submitted	Submissions	Items Submitted
County								
Alamance	529	1200	497	964	520	893	420	689
Alexander	136	327	188	273	135	282	66	108
Alleghany	44	140	31	58	32	50	21	22
Anson	70	197	93	264	102	280	89	326
Ashe	49	114	59	128	77	132	61	115
Avery	98	121	74	112	84	143	83	136
Beaufort	596	953	519	735	514	656	432	616
Bertie	86	136	96	165	73	105	61	86
Bladen	192	402	216	364	145	249	67	118
Brunswick	459	755	514	822	494	634	521	660
Buncombe	1112	2070	1133	1845	1213	2061	985	1745
Burke	349	665	407	705	370	547	327	547
Cabarrus	671	1271	1002	1680	901	1460	615	1113
Caldwell	266	593	268	537	366	743	376	638
Camden	24	25	23	31	18	26	26	53
Carteret	434	660	419	593	409	549	397	544
Caswell	72	155	88	204	52	125	127	146
Catawba	703	1403	709	1411	663	1315	573	1066
Chatham	148	361	181	284	200	493	135	235
Cherokee	130	226	119	318	97	264	66	106
Chowan	46	69	66	96	48	79	27	49
Clay	61	111	41	64	27	37	25	50
Cleveland	546	1128	556	1125	430	978	322	607
Columbus	229	465	277	522	229	401	247	388
Craven	441	884	371	689	324	632	316	511
Cumberland	2312	3774	1909	3212	1465	2299	916	1532
Currituck	78	194	88	132	79	179	80	133
Dare	211	500	318	809	304	595	220	339
Davidson	1381	2552	1375	2197	1112	1793	650	972
Davie	61	186	71	129	55	76	58	77
Duplin	325	751	414	790	376	782	262	408
Durham	1440	3655	1952	4346	1859	4434	1706	3822
Edgecombe	260	507	277	480	455	834	358	492
Forsyth	981	1874	824	1564	696	1292	471	852
Franklin	159	336	144	432	129	414	141	313
Gaston	1203	1689	1618	2128	1094	1656	859	1170
Gates	15	65	18	48	13	29	7	9
Graham	102	290	73	206	56	222	95	236
Granville	186	328	245	378	336	495	322	449
Greene	114	371	166	517	189	331	75	162
Guilford	1622	3212	1902	3350	1857	2967	1494	2197

	7/1/2010 to 6/30/2011		7/1/2011 to 6/30/2012		7/1/2012 to 6/30/2013		7/1/2013 to 6/30/2014	
	Submissions	Items Submitted	Submissions	Items Submitted	Submissions	Items Submitted	Submissions	Items Submitted
Halifax	270	837	359	1619	314	956	220	590
Harnett	296	607	268	495	336	604	349	500
Haywood	237	480	236	429	235	352	203	299
Henderson	361	683	325	546	376	626	353	536
Hertford	115	189	97	149	102	151	71	124
Hoke	341	1172	279	799	267	844	212	574
Hyde	24	86	45	64	32	44	22	54
Iredell	611	1054	645	1115	528	730	382	503
Jackson	117	313	128	283	139	301	164	333
Johnston	963	1995	870	1726	693	1374	672	1048
Jones	118	249	80	124	57	73	62	95
Lee	329	555	300	566	433	586	265	409
Lenoir	401	695	360	590	214	373	392	613
Lincoln	209	447	145	281	110	225	76	137
Macon	115	303	125	261	112	187	124	168
Madison	91	122	62	101	88	139	71	141
Martin	120	340	143	273	151	241	67	88
McDowell	171	299	157	247	158	215	141	200
Mecklenburg	423	726	432	749	402	535	406	573
Mitchell	91	135	77	117	50	88	46	84
Montgomery	126	246	171	287	157	206	89	150
Moore	516	926	514	792	443	749	466	672
Nash	445	839	358	683	378	645	367	561
New Hanover	684	1659	599	1590	565	1164	437	827
Northampton	84	141	60	199	20	37	45	106
Onslow	620	1222	959	1718	675	1264	603	958
Orange	294	686	429	786	453	843	520	811
Pamlico	85	112	55	71	39	40	25	49
Pasquotank	211	537	167	359	190	386	175	249
Pender	150	252	167	319	118	167	110	149
Perquimans	55	113	31	73	29	58	38	78
Person	150	274	231	305	182	218	173	229
Pitt	722	1414	800	1226	644	1032	346	525
Polk	79	165	89	155	77	109	48	60
Randolph	609	1007	700	1094	607	968	567	798
Richmond	315	617	318	620	344	624	384	648
Robeson	460	1252	496	1364	496	1189	371	908
Rockingham	336	721	426	872	391	790	340	691
Rowan	392	709	386	753	315	576	220	396
Rutherford	241	399	250	417	199	321	120	173
Sampson	255	598	391	692	261	613	359	567
Scotland	304	858	367	1018	264	642	167	382
Stanly	189	375	179	377	145	302	135	253

	7/1/2010 to 6/30/2011		7/1/2011 to 6/30/2012		7/1/2012 to 6/30/2013		7/1/2013 to 6/30/2014	
	Submissions	**Items Submitted**	**Submissions**	**Items Submitted**	**Submissions**	**Items Submitted**	**Submissions**	**Items Submitted**
Stokes	168	332	195	312	174	347	142	248
Surry	344	778	390	620	422	779	327	504
Swain	93	279	87	255	84	293	83	142
Transylvania	103	245	95	146	106	176	69	110
Tyrrell	37	46	26	39	24	67	44	45
Union	365	914	458	824	438	747	436	684
Vance	181	401	148	397	187	498	163	291
Wake	895	2272	1010	1956	490	1524	228	802
Warren	64	189	43	115	27	88	32	73
Washington	65	85	30	53	106	120	32	57
Watauga	219	397	232	365	273	586	200	290
Wayne	451	1013	550	1281	482	1272	404	837
Wilkes	264	485	342	550	256	592	282	508
Wilson	520	1135	575	1303	614	1322	488	835
Yadkin	98	183	126	251	99	147	152	237
Yancey	132	198	163	227	95	158	58	111