

Strategic Lean Project Report



Streamlined Processing of Reference Samples for Forensic DNA Testing

Agency: Washington State Patrol

Project Impact

The Washington State Patrol Marysville Crime Laboratory improved its testing method of reference samples for forensic DNA testing, resulting in over \$11,000 annualized cost savings in testing supplies and a 48% reduction in processing time per sample.

The laboratory's application of continuous performance improvement resulted in the implementation of a streamlined method for DNA testing of reference samples that is more cost-effective and delivers high-quality DNA profile results faster. The saved resources of time and money will now be allocated to increase the laboratory's capacity to test additional casework samples submitted in criminal investigations that affect Washingtonians who may be victims or suspects involved in sexual assault, homicide, and other serious crimes that threaten public safety. Increased testing capacity for forensic DNA testing improves the effectiveness of the DNA results, which are crucial in aiding criminal investigations in a timely manner to identify perpetrators, link series of crimes, and exonerate the innocent.

Project Summary

Approximately 20% of the DNA casework samples tested by the WSP Marysville Crime Laboratory are reference samples (blood or saliva from a known individual), yielding about 530 samples annually. These samples are subjected to the same six-step process as evidence samples to develop a DNA profile; however, alternative methods exist that allow for a streamlined process for reference samples by eliminating the purification and quantitation steps. DNA reference samples are currently being over-processed, leading to wastes of time and money. Additionally, because reference samples are processed in the same manner as casework evidence samples, there is a greater risk of contamination or other defects to quality.

Reference samples are processed for DNA in a six-step method compared to our target four-step method, which we wanted to reach by 6/15/2018.

The laboratory improved their method for processing reference DNA samples by:

- Validating the direct amplification, 4-step method of processing DNA reference samples. The method chosen uses pre-existing equipment and DNA testing kits already utilized in the WSP Crime Lab Division, and is already established, accepted, and utilized in the national forensic DNA testing community.
- Training scientists in the new processing method and establishing their competency to apply it in casework.
- Implementing the new processing method in casework for all reference samples and continuously evaluating its effectiveness at generating high-quality DNA profiles.

The WSP Marysville Crime Laboratory DNA section successfully adopted a streamlined, cost-effective, and rigorous method for developing DNA profiles from reference samples. Reference samples are now processed in a completely separate manner than casework samples to ensure optimum quality and minimal contamination risk. This method will now be available for use in the other four DNA laboratories in Washington.

Project Results



Cost

Decreased the cost for testing a reference sample **from** \$30.92 per sample **to** \$10.25 per sample.



The new method saves over \$20 per sample in supplies, saving the lab about \$11,000 annually.

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Quality

Increased the separation between evidence samples and known reference samples **from** the minimal required separation **to** complete separation.



The risk for contamination error is minimized and increases the integrity of the DNA results.



Time

Decreased reference sample DNA processing time **from** 5.25 hours **to** 2.75 hours.



Timely DNA results are reported to law enforcement to assist criminal investigations.



Employee Engagement

Increased innovation derived **from** the front line staff **by** management sponsoring scientists to implement an improvement idea that would make their work easier and deliver better customer service.



Scientists feel empowered to effect change and improve their work. Increased employee engagement increases productivity, customer satisfaction, and retention of a highly skilled workforce.

Project Details

Date improvement project was initiated: 11/30/2015(Project completed in 2018)

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