Environmental Assessment (EA)

Puerto Rico Institute of Forensic Sciences (PR-IFS)

Prepared By:

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Environmental Assessment (EA)

Prepared to Fulfill National Institute of Justice (NIJ) Requirements that Ensure that Activities Sponsored by NIJ Awards Comply with the National Environmental Policy Act (NEPA)

Project Name:

Continuing Modernization of the DNA-Serology Laboratory at the Puerto Rico Institute of Forensic Sciences (PR-IFS)

Grant Program:

Forensic DNA Backlog Reduction (FDNABR)

Award #:

2007-DN-BX-K136

EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared to address the effects of activities related to the acquisition of robotic equipment soon to be acquired through Forensic DNA Backlog Reduction Program (FDNABRP) funding**.** The EA has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA, 40 CFR Parts 1500-1508, and the National Institute of Justice (NIJ) Draft Guidance for Preparing EAs.

PURPOSE AND NEED OF THE PROPOSED ACTION

As part of its strategic plan of continued improvement, the PR-IFS identifies resources with which to enhance its capabilities for investigation of scientific forensic evidence. One area of improvement deals with its technology base, reason for which financial support from NIJ in the form of a proposal was submitted to the NIJ to acquire state-of-the-art technology in order to augment the PR-IFS DNA-Serology Laboratory's Human Identification capabilities.

PROPOSED ACTION

The FDNABRP funds will assist in the implementation of a strategic plan wherein the DNA-analysis technology base (i.e., DNA Robotic Unit, Upgrade Kit for a genetic analyzer) will be acquired in order to improve the Human-Identification operational-environment workflow, and thus enhance the quality, timeliness and throughput of forensic and Convicted-Offender (CO) DNA analyses. This strategic plan will assist the PR-IFS and other elements of the Criminal Justice expedite the process of justice adjudication.

ALTERNATIVES

The generation of genetic profiles for human identification at the PR-IFS, and elsewhere where forensic analyses are routinely performed, involves highly standardized methodologies and technologies that are unique in the sense that no alternatives are available with which to achieve the proposed action. This evaluation will also consider a "no action" scenario as a possible alternative.

ENVIRONMENTAL AND SOCIOECONOMIC CONSEQUENCES

There exists no direct or indirect impact when considering the environmental and socioeconomic consequences of this action towards the environment or the surrounding area. None of the resources to be used in the proposed action will impact the environment in any direct or indirect way.

This action will not impact Puerto Rico environmentally or socio-economically. Sociologically, the action will indirectly benefit the quality of life/security of the people by enhancing the technology base with which DNA evidence is analyzed, and thus the timeliness with which the DNA scientific evidence is made available for presentation in local and federal courts; this in turn effects timely convictions.

CONCLUSION

After evaluating the positive and negative aspects of this action, and upon consideration of all the possible environmental and socioeconomic factors that may adversely affect the environment, the

outcome determined is one of "no findings." Based on the above, a Finding of No Significant Impact (FONSI) is appropriate.

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1.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This EA for the PR-IFS evaluates the potential impact related to the acquisition and operation upon implementation of a DNA Robotic Unit and upgrade of a genetic analyzer currently in use. The funds will be obtained by means of NIJ funding, through the FDNBRP Grant entitled: "Continuing Modernization of the DNA-Serology Section at the Puerto Rico Institute of Forensic Science." The EA has been prepared pursuant to Section 102(2) (c) of the National Environmental Act (NEPA) of 1969, (42 USC 4331 *et seq*.), Council on Environmental Quality (CEQ) regulations that implements NEPA procedures (40 CFR 1500-1508), and the National Institute of Justice (NIJ) Draft Guidance for Preparing EAs. The information presented herein will serve as the basis for deciding whether the implementation of the proposed action would result in a significant impact to the environment, requiring the preparation of an Environmental Impact Statement, or if no significant impacts would occur, wherein a Finding of No Significant Impact (FONSI) will be issued.

1.1 Background

The PR-IFS located in San Juan, Puerto Rico, (see figure 1) identifies on a yearly basis federal funds with which to continue improving its capabilities/technology base for DNA analysis at the DNA-Serology Section. Thus, as part the funds solicitation process, the NIJ requires that an EA be made of the impact, if any, that use of the technologies acquired through these funds may have on the environment. The PR-IFS is requesting financial support through the FDNABRP in order continue developing its DNA Human Identification Program to such an extent that it will serve the DNA needs of the People of Puerto Rico.

1.2 Purpose and Need

The FDNABRP's aforementioned funded project will expand the technology base/equipment and efficiency with which DNA human identification of victims and convicted offender (CO) are generated at the PR-IFS DNA-Serology Laboratory. State funds are limited for such acquisitions and thus the federal funds obtained through this grant are needed to achieve strategic plans of continuing capability enhancement at the DNA-Serology Laboratory and the PR-IFS as a whole.

1.3 Alternatives

1.3.1 Proposed Action

The PR-IFS will be using the actual infrastructure without any mayor or minor modifications. The purchase of a DNA Robotic unit, one 3130 XL Genetic Analyzer Upgrade Kit, and supplies are necessary to accomplish the expressed goal of this project.

The chemicals/supplies used as part of the operation will be disposed off in conformance to strict local and federal regulations. The by-products/waste generated (a minimum) from this operation shall be handled as hazardous waste using a certified company. The required reports and manifest will be generated to comply with the concerned partner agencies.

The health and safety of PR-IFS's employees is of utmost importance and has been evaluated as an integral part of this EA. PR-IFS's employees will wear adequate protective equipment and observe universal precautionary measure during all activities involving DNA human identification associated with the proposed action. Furthermore, personnel will receive periodic safety training by the Environmental, Health and Safety Officer in accordance with OSHA and other applicable requirements.

1.3.2 No Action

The No Action alternative would prevent the PR-IFS DNA-Serology Laboratory technology-base enhancement via automation of the DNA-Analysis Sample-Preparation Process, currently performed manually. These important steps precede the DNA genetic-profile determination process (i.e., genetic human identification) and its automation will certainly enhance the precision and expediency with which results are obtained and, certainly, the quality of DNA results.

As far a the environment, the no action alternative would pose no additional impacts because the PR-IFS has a Environmental, Health and Safety Program in place whereby all hazardous waste generated are disposed off by a certified Hazardous Waste Disposal Company.

1.4 Alternatives Considered But Not Carried Forward

Since there is no significant impact due to this action, no other reasonable alternative was considered to evaluate environmental impact. Every environmental aspect was contemplated within the context described in alternative 1.3.1. This alternative is not only the most feasible, but the most reasonable and economical.

2.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS

This chapter describes the existing condition of environmental resources potentially affected by the implementation of the technology base to be acquired through the FDNABRP funds obtained by the PR-IFS through NIJ. The boundaries of the affected environment vary according to the nature of the potential impact and the aspect of the environment under consideration. Certain potential impacts (*e.g.*, impacts on topography or drainage patterns) are site-specific and are likely to be contained entirely within the project boundaries. Other impacts (*e.g.*, potential economic impacts or impacts to traffic patterns) may affect areas outside of the identified project area, and need to be evaluated.

Potential impacts of the action alternatives are discussed in this chapter in terms of short- and long-term impacts. Short-term impacts are those of a limited duration, such as the impacts that would occur during the implementation of the action. Long-term impacts are those of greater duration, including those that would endure for the life of the proposed project and beyond, including impacts associated with the operation of the action. These terms are further qualified as being negligible, minor, moderate, or major. Impact thresholds for each resource are established in the environmental consequences section for that resource. For impacts judged to be less than significant, a range is given to facilitate comparisons among the alternatives, using the terms of negligible, minor, and moderate. Impacts that are "major" for a resource are considered to be a significant impact.

The Proposed Action was evaluated for applicability to the impact areas in NIJ Draft Guidance for Preparing Environmental Assessments. It was determined that certain environmental and socioeconomic resources that frequently receive attention in NEPA analyses would not be applicable to the Proposed Action. The following are the resources areas that have been dismissed from analysis, and the reason for their dismissal:

- Air Quality: This project involves a research action. No new emissions will be created or result as the implementation of this action. There would be no impact to air quality.
- Water Resources (Water Quality, Surface Water, Wetlands, Floodplains, Coastal Barrier Resources, Wild and Scenic Rivers): The Proposed Action involves a research and testing action within an existing facility. No additional construction will occur and any wastes generated from this research will be disposed of in accordance with all applicable state, federal, and local regulations and would not impact water resources. No impacts to water resources would occur.
- Geology, Topography, Soils (Includes Farmland Protection): The Proposed Action involves a research and testing action within an existing facility. No additional construction or other ground disturbing activities would occur. There would be no impacts to geology, topography or soils.
- Land Use: The Proposed Action would occur within an existing facility and involves research and testing activities. These activities would not require a change in land use of the site and will not result in a change of land use on surrounding sites. There would be no impact to land use.

- Transportation: The Proposed Action would not generate new traffic or create an additional need for parking. No impact would occur to the regional traffic network.
- Natural Environment (Wildlife, Wildlife Habitat, and Vegetation): The Proposed Action would occur within an existing facility and involves research and testing activities. There would be no impact to the natural environment.
- Endangered Species: The Proposed Action would occur within an existing facility and involves research and testing activities. There would be no impact to endangered species.
- Human Population (Socioeconomics/Environmental Justice): The Proposed Action would not change the composition of the population, change housing demand or employment levels, or change property values. Furthermore, the action will not occur in an area that has a high proportion of minority residents or residents living below the poverty level. There would be no impact to the human population, including socioeconomics and environmental justice.
- Historic Preservation: The Proposed Action would occur within an existing facility that is not considered historic, as determined by consultation with the State Historic Preservation Officer (SHPO). No historic or cultural resources would be impacted by this action.
- Construction: The Proposed Action would occur within an existing facility and it involves research and testing activities. No additional construction would occur and there would be no impact to the environment.
- Energy Impacts: The Proposed Action would occur within an existing facility and it involves research and testing activities. Testing activities would not require additional energy or put additional demand on regions of energy supply. There would be no impact to the energy supply.

2.1 Waste and Hazardous Materials Management

Proposed Action

The proposed action would generate new liquid waste, but will not necessitate any special waste-handling protocols other than the ones currently in place at the PR-IFS. The waste generated by the proposed action will not have any impact on current hazardous waste management practices at the PR-IFS. Furthermore, there will be no impact on the environment, for a certified hazardous waste company has been under contract at the PR-IFS to handle and dispose of such waste (see TABLE 2 for type and approximate amounts of waste to be generated by the proposed action.)

No Action

The No Action Alternative would not generate or create any additional liquid waste besides the other alternatives and will not impact activities associated with Waste and Hazardous Material Management.

2.2 State Environmental Policy Act

The EQB requires a liquid waste disposal method. The PRIFS complies with this requirement by having under contract a certified hazardous waste management company that handles and

disposes of chemical waste generated through the project, and other activities where waste is generated at the PR-IFS.

2.3 Cumulative Impacts

There will not be any significant Cumulative Impacts during the duration of the proposed project affecting the environment created by the proposed action.

2.4 Unavoidable Adverse Impacts

There will not be any Unavoidable Adverse Impacts towards the environment created by the proposed action.

2.5 Mitigation Measures

Extensive protocols dealing with proper chemical use, personal protective equipment, training in the handling of hazardous chemicals, maintenance of readily-available Material Safety Data Sheets (MSDS), and other security measures, are in placed and their enforcement is monitored by the PR-IFS Environmental, Health and Safety Officer.

2.6 Conclusion

The implementation of the aforementioned DNA equipment into the DNA-Serology Laboratory operational environment, as proposed, is not expected to result in a significant adverse impact to the environment. Therefore, an environmental impact statement is not required and a Finding of No Significant Impact (FONSI) is appropriate.

3.0 WORKS CITED

- **PUERTO RICO ENVIRONMENTAL QUALITY BOARD (PREQB) REGULATIONS**
- **UNITED STATES GEOLOGICAL SURVEY (USGS): TERRASERVER – SAN JUAN, PUERTO RICO QUADRANGLE**

4.0 LIST OF PREPARERS

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FIGURES

Figure 1. ***Puerto Rico Institute of Forensic Sciences (PR-IFS), San Juan, Puerto Rico***

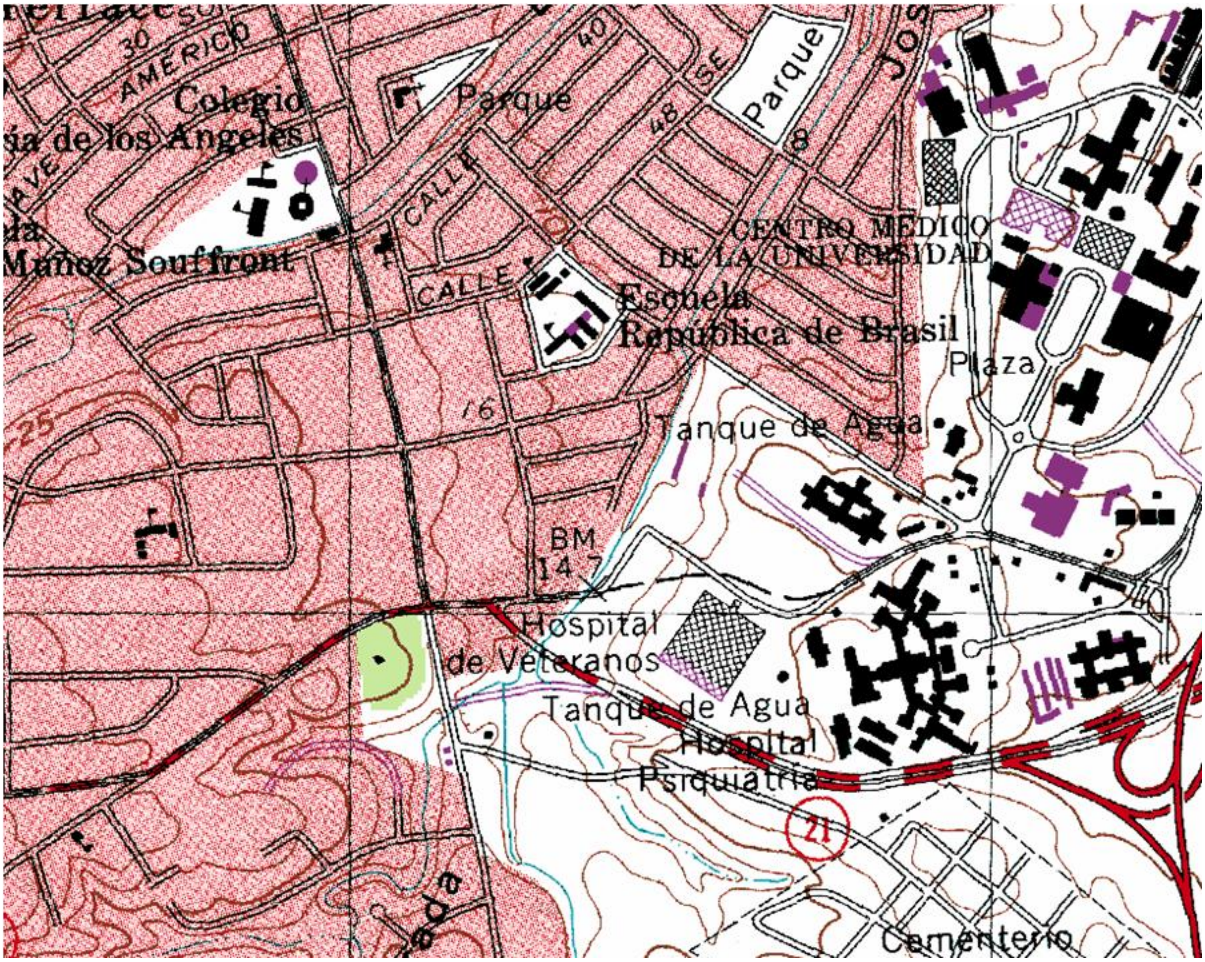

Figure 2. ***USGS Quadrangle for Puerto Rico Institute of Forensic Sciences, San Juan, Puerto Rico***

TABLES

TABLE 1 LIST OF CURRENT CHEMICAL INVENTORY (DNA-SEROLOGY LABORATORY)

Health, Flammability, Reactivity, and Protective Equipment, and Disposal Codes are located on the next worksheet titled Code Key	Health Code	Flammability Codes	Reactivity Code	Protective Equipment	Source of Information	Chemical Abstract Service Number	Use of Chemical	Storage Location	Disposal Codes
CHEMICAL	***H***	***F***	***R***	***PE***	***SOURCE***	***CAS #***	***USE***	***STORED***	***DISPOSAL***
									1
agarose	0	1	0	C	MSDS	9012-36-6	Screening	Serology	2
albumin standard (bovine)	1	0	0	C	MSDS	7647-14-5 26628-22-8	Screening	Serology	1
sucrose RNAse Free and DNAse Free	0	0	0	C	MSDS	57-50-1	Screening	Serology	1
ammonium persulfate	1	3	0	C	MSDS	7727-54-0	Electrophoresis	DNA	1
sodium persulphate	2	0	0	C	MSDS	7778-27-1	Electrophoresis	DNA	1
acrylamide	2	2	2	C	MSDS	79-06-1	Electrophoresis	DNA	1
bromophenol blue	1	0	0	C	MSDS	115-39-9	Electrophoresis	DNA	1
chelex (bt) (polystyrene-divinylbenzene)	1	0	0	C	MSDS	68954-42-7	Electrophoresis	DNA	2
citric acid monohydrate	3	1	0	C (HOOD)	MSDS	5949-29-1	Extraction	DNA	1
acetic acid	3	2	0	C (HOOD)	MSDS	64-19-7	Quantification	DNA	1
EDTA (ethylenediaminetetraacetic acid)	3	1	0	C	MSDS	60-00-4	Screening	DNA	1
EDTA , disodium dihydrate	3	1	0	C	MSDS	6381-92-6	Reagents Preparation	DNA	1
EDTA, disodium salt	3	1	0	C	MSDS	139-33-3	Reagents Preparation	DNA	1

Health, Flammability, Reactivity, and Protective Equipment, and Disposal Codes are located on the next worksheet titled Code Key	Health Code	Flammability Codes	Reactivity Code	Protective Equipment	Source of Information	Chemical Abstract Service Number	Use of Chemical	Storage Location	Disposal Codes
CHEMICAL	***H***	***F***	***R***	***PE***	***SOURCE***	***CAS #***	***USE***	***STORED***	***DISPOSAL***
ethanol	2	3	0	C	MSDS	64-17-5	Reagents Preparation	DNA	1
ethidium bromide	3	1	1	C(HOOD)	MSDS	1239-45-8	Staining	DNA	1
formamide	2	1	0	C (hood)	MSDS	75-12-7	Electrophoresis	DNA	1
Hydrion buffer salt pH 10.00	0	0	0	C	MSDS	144-55-8	Calibration	DNA	1
Hydrion buffer salt pH 4.00	0	1	0	C	MSDS	877-24-7	Calibration	DNA	1
Hydrion buffer salt pH 7.00	0	0	0	C	MSDS	7778-77-0	Calibration	DNA	1
hydrogen peroxide, 3%	2	0	1	C	MSDS	7722-84-1	Screening	Serology	1
hydrogen peroxide, 30%	2	0	3	C (hood)	MSDS	7722-84-1	Quantification	DNA	1
boric acid	2	0	0	C (HOOD)	MSDS	10043-35-3	Electrophoresis	Serology	1
							Decontamination		1
sodium dodecyl sulfate	2	3	0	C	MSDS	51-21-3	Decontamination	DNA	1
methanol	1	3	0	C (HOOD)	MSDS	67-56-1	Decontamination	DNA	1
glycerin	1	1	0	C (hood)	MSDS	56-81-5	Screening	Serology	1
phenolphthalein	1	1	1	C	MSDS	77-09-8	Screening	Serology	1
phosphate buffered solution	0	0	0	C	MSDS	7647-14-5	Screening	Serology	1
potassium chloride	2	0	0	C	MSDS	7447-40-7	Screening	Serology	1
isopropanol	1	3	0	C	MSDS	67-63-0	Decontamination	Serology	1
sodium chloride	1	0	0	C (HOOD)	MSDS	7647-14-5	Screening	Serology	1
sodium carbonate	2	0	1	C	MSDS	497-1-8	Screening	Serology	1
sodium citrate	1	0	0	C	MSDS	68-04-2	Reagents Preparation	DNA	1

Health, Flammability, Reactivity, and Protective Equipment, and Disposal Codes are located on the next worksheet titled Code Key	Health Code	Flammability Codes	Reactivity Code	otective Pr Equipment	Source of Information	Chemical Abstract Service Number	Use of Chemical	Storage Location	Disposal Codes
CHEMICAL	***H***	***F***	***R***	***PE***	***SOURCE***	***CAS #***	***USE***	***STORED***	***DISPOSAL***
sodium dodecyl sulfate (lauryl sodium sulfate)	1	0	1	C	MSDS	151-21-3	Quantification	DNA	1
sodium hydroxide	3	0	2	C (hood)	MSDS	1310-73-2	Extraction	DNA	1
	0	0	1	C	MSDS	7772-98-7			1
sodium citrate dihydrate	1	0	0	C	MSDS	4/3/6132	Quantification	DNA	1
									1
sodium hydroxide solid	3	0	1	C (HOOD)	MSDS	1310-73-2	Reagent Preparation	DNA	1
sodium hydroxide solution 10N	3	0	1	C	MSDS	1316-73-2	Reagent Preparation	DNA	1
genetic analyzer buffer with EDTA	1	1	0	C	MSDS	N/A	Reagent Preparation	DNA	1
TEMED	2	4	1	C (HOOD)	MSDS	110-18-9	Reagents Preparation	DNA	1
tris or trizma base	1	1	1	C	MSDS	77-86-1	Electrophoresis	DNA	1
									2
urea	1	0	0	C	MSDS	57-13-6	Reagents Preparation	Serology	2
Xylene	2	3	0	C (HOOD)	MSDS	1330-20-7	Screening	Serology	1
STR 2x Loading solution	1	1	0	C (HOOD)	MSDS	N/A	Screening	Serology	1
Zinc Metal Dust	1	1	1	reacts w/ H20 C	MSDS	7440-66-6	Screening	Serology	1
zinc (mossy zinc)	0	1	2	C-reacts w/H2O	MSDS	7440-66-6	Screening	Serology	1
indigo carmine	2	1	0	C	MSDS	860-22-0	Staining	Serology	1
iodine	3	0	2	C	MSDS	7553-56-2	Screening	Serology	1

Health, Flammability, Reactivity, and Protective Equipment, and Disposal Codes are located on the next worksheet titled Code Key	Health Code	Flammability Codes	Reactivity Code	Protective Equipment	Source of Information	Chemical Abstract Service Number	Use of Chemical	Storage Location	Disposal Codes
CHEMICAL	***H***	***F***	***R***	***PE***	***SOURCE***	***CAS #***	***USE***	***STORED***	***DISPOSAL***
nuclear fast red	1	0	0	C	MSDS	6409-77-9	Staining	Serology	1
picric acid wet	2	2	2	C	MSDS	88-89-1	Screening	Serology	1
pyridine	3	3	0	C	MSDS	110-86-1	Screening	Serology	1
potassium iodine reagent acs granular	1	1	0	C	MSDS	7681-11-0	Screening	Serology	1
calcium chloride	3	1	0	C	MSDS	10043-52-4	Screening	Serology	1
ammonium sulfate	3	0	0	C	MSDS	7783-20-2	Reagents Preparation	Serology	1
ammonium sulfide light	3	3	1	C	MSDS	12135-76-1	Electrophoresis	DNA	1
									1
2-Propanol	1	4	2	C	MSDS	67-63-0	Decontamination	DNA	1
sodium acetate	1	0	0	C	MSDS	127-09-3	Screening	Serology	1
sodium succinate hexahydrate	0	0	0	C	MSDS	6106-21-4	Reagent Preparation	Serology	1
sodium sulfite	2	0	0	C	MSDS	7757-83-7	Screening	Serology	1
aluminum sulfate	1	0	0	C	MSDS	7784-31-8	Screening	Serology	1
acetone	1	4	2	C	MSDS	7784-31-8	Screening	Serology	1
magnesum, chloride	1	0	0	C	MSDS	7786-30-3	Screening	Serology	1
magnesum, chloride hexahydrate	3	0	0	C	MSDS	7791-18-6	Screening	Serology	1
2-Amino-2-(hydroxymethyl)-1,3- propanol	1	1	1	C	MSDS	77-86-1	Screening	Serology	1
ferric ammonium citrate	1	0	1	C	MSDS	1185-57-5	Screening	Serology	1
hepes	1	1	1	C	MSDS	7365-45-9	Screening	Serology	1
brilliant blue G 250	1	0	0	C	MSDS	6104-58-1	Screening	Serology	1
isopropyl alcohol solution	1	3	0	C	MSDS	N/A	Decontamination	DNA	1

TABLES

TABLE 2. LIST OF APPROXIMATE CHEMICAL-WASTE AMOUNTS GENERATED BY PROPOSED ACTION (DNA-SEROLOGY LABORATORY)

Name of Chemical	**Approximate Waste Amount**
agarose	2 lbs
albumin standard (bovine)	2 Kg
sucrose RNAse Free and DNAse Free	2 Kg
ammonium persulfate	1 kg
sodium persulphate	8 gal
acrylamide	8 gal
bromophenol blue	500 gr
chelex (bt) (polystyrene-divinylbenzene)	1 kg
citric acid monohydrate	5 kg
acetic acid	12 gal
EDTA (ethylenediaminetetraacetic acid)	4 L
EDTA , disodium dihydrate	4 L
ethanol	12 gal
ethidium bromide	4 gal
formamide	8 gal
Hydrion buffer salt pH 10.00	500 gr
Hydrion buffer salt pH 4.00	500 gr
Hydrion buffer salt pH 7.00	500 gr
hydrogen peroxide, 3%	4 L
hydrogen peroxide, 30%	4 L
boric acid	4 L
sodium dodecyl sulfate	500 gr
methanol	8 gal
glycerin	1 L
phenolphthalein	1 L
phosphate buffered solution	1 L
potassium chloride	1 kg
isopropanol	8 gal
sodium chloride	1 kg
sodium carbonate	5 kg
sodium citrate	1 kg
sodium dodecyl sulfate	500 gr
sodium hydroxide	2 kg
sodium citrate dihydrate	1kg
sodium hydroxide solid	1 kg
sodium hydroxide solution	4 gal
genetic analyzer buffer with EDTA	1 L
TEMED	500 gr
tris or trizma base	500 gr
urea	500 gra

Name	Approximate Waste Amount
Xylene	1 gal
Zinc Metal Dust	500 gr
zinc	500 gr
indigo carmine	1 L
iodine	4 L
picric acid	4 kg
pyridine	4 kg
potassium iodine	1 lb
calcium chloride	1 kg
ammonium sulfate	1 kg
ammonium sulfide	500 gr
2-Propanol	4L
sodium acetate	500 gr
sodium succinate hexahydrate	500 gr
sodium sulfite	500 gr
aluminum sulfate	500 gr
acetone	4 gal
magnesum, chloride	500 gr
magnesum, chloride hexahydrate	500 gr
2-Amino-2-(hydroxymethyl)-1,3- propanol	4 L
ferric ammonium citrate	2 L
brilliant blue G 250	500 gr
isopropyl alcohol solution	12 gal

APPENDIX

APPENDIX A: DESCRIPTION OF EQUIPMENT

DNA ROBOTIC UNIT

The DNA Robotic Workstation Unit is a stand-alone platform about 5 feet in length x 3 feet wide x 2 feet in height that will allow the automation of labor intensive steps involve in genetic human identification, currently manually performed. The DNA robotic unit provides automated protocols and the necessary hardware to conduct the fundamental processes of DNA analysis, namely, DNA extraction, DNA-normalization, and DNA PCR-Sep Up. These steps have been identified as being bottlenecks in our operation and their automation is mandatory. It will increase the forensic scientist's productivity, eliminate human error, reduce sample contamination, and increase sample throughput. This system reliably performs tedious and repetitive tasks inherent to the DNA sample preparation process prior to DNA genetic analysis by the Genetic Analyzer, thus freeing precious personnel time that can be devoted to other important tasks.

APPLIED BIOSYSTEMS 3130XL UPGRADE KIT

The 3130XL Upgrade Kit consists of an accessory (i.e.., a 16 capillary column array) that will be fitted to one of our two genetic analyzers (i.e., 3130 Genetic Analyzer). It will allow for augmentation in the number of samples that this sophisticated instrument is capable of analyzing at any given time by virtue of increasing the number of capillary columns in this genetic analyzer, currently 4, to 16. The 3130XL upgrade will increase DNA-analysis capacity and efficiency.