# PUERTO RICO'S EXPERIENCE IN ACCIDENT PREVENTION

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## ACRONYMS

| | |
|---|---|
| **BFI** | Browning Ferries Industries |
| **DRNA** | Departamento de Recursos Naturales y Ambientales |
| **DC** | Defensa Civil |
| **DTOP** | Departamento de Transportación y Obras Públicas |
| **EPA** | Environmental Protection Agency |
| **HAZWOPER** | Hazardous Waste Operations Emergency Response |
| **JCA** | Junta de Calidad Ambiental |
| **MBI** | Maritime Bureau Incorporated |
| **NOAA** | National Oceanic and Atmospheric Administration |
| **NRC** | National Response Corporation |
| **OPA** | Oil Pollution Act |
| **OSHA** | Occupational Safety and Health Administration |
| **PR/USVI** | Puerto Rico/ United Virgin Island |

## CONTENTS

# METHODOLOGIES AND SUPPORT INSTRUMENTS IN PREPAREDNESS AND RESPONSE TO CHEMICAL ACCIDENTS

## INTRODUCTION

Because of its economic and industrial development, Puerto Rico is considered to be a high-risk area with respect to the release and discharge of extremely hazardous materials, fuels, and other materials. Indeed, there have already been events of this nature that have required the mobilization of the personnel of several agencies to protect lives and property. In addition, the island is located in a region of climatological and seismic instability prone to cyclonic phenomena and the possibility of the catastrophic effects from major earthquakes. The daily reality of isolated discharges and the possibility of multiple environmental emergencies occurring simultaneously make it necessary to maintain the highest levels of training for the personnel in the agencies that comprise the government response team.

Puerto Rico's experience with environmental emergencies caused by the release, spillage, or discharge of extremely hazardous substances, fuels, and other materials is a matter of great significance. It is useful to recall some of these incidents: the oil spill from the vessel Ocean Eagle off San Juan Bay in 1968; the oil spill from the vessel Zoe Colocotronics off the coast of Cabo Rojo in southern Puerto Rico in 1973; the chemical discharge in the northern aquifer, resulting from the rupture of a buried tank belonging to UpJohn Pharmaceutical Corp. in Barceloneta; the discovery of 70 extremely hazardous chemicals in a warehouse in a commercial center in the community of Dominguito in the municipality of Arecibo; and the most recent spill - of Bunker 6 fuel oil off the beach area of San Juan, which occurred on 7 January 1993. From these we have learned many lessons, particularly with respect to the need for preparing practical effective plans for responding to emergencies, whether man-made or the result of natural phenomena. It is imperative that programs be established to train personnel in preparedness and response to emergencies caused by natural phenomena or human activity (see Table 1). The study of these experiences increases our knowledge and, from a perspective no less civic than managerial, constitutes a real school for the planning of potential solutions to future emergencies. Each emergency caused by spills or releases of chemical substances in Puerto Rico has underscored the need for promulgating new laws, or amending those already in place, to furnish the responsible sectors with the criteria and necessary resources for preventing emergencies caused by human activity and mitigating natural disasters.

In Puerto Rico there have been hundreds of emergencies caused by chemical substances. It is appropriate to trace the trajectory of the events, which reveal a notable increase since the beginning of the industrial development program Hands to the Task in 1952 and, particularly, the uneven development between 1970 and 1990. During these past three decades, our industrial development has been based on the introduction of pharmaceutical, petrochemical, chemical, or chemically related industries that, together with a dependency on imported oil as source of energy, have increased the risk of damage to health, the environment, and the natural resources of the island. During this period the number of emergencies due to chemical discharges has also increased, involving in turn a large number of public and private agencies and requiring their participation. Table 1 contains descriptions of seven emergencies caused by discharges or spills of chemical substances, considered of major importance because of their magnitude, their effects on human beings, flora, and fauna, and the damage they cause to property and natural resources.

**Table 1. Environmental Emergencies in Puerto Rico Classified as Major Events**

| Date | Event | Damage |
|---|---|---|
| 1968 | Discharge of 3.7 million gallons of oil from the vessel Ocean Eagle, off San Juan Bay. | Damage to the tourist area and all the beaches of the northern coast (from Loiza, San Juan, to Arecibo) and to marine flora and fauna. |
| March 1973 | Discharge of 1.5 million gallons from the vessel Zoe Colocotronics off the coast of Cabo Rojo (Bahía Sucia area). Area considered sensitive because of its ecological diversity. | Damage to marine flora and fauna, to fishing in the sector, and to the coastal area from Cabo Rojo to Mayaguez. |
| September 1982 | Discharge of 15,300 gallons of a mixture of 65% carbon tetrachloride ($CCl_4$) and acetonitrile ($CH_3CN$) from a buried tank belonging to UpJohn Pharmaceutical Corp. | Aquifers in the northern part of Puerto Rico from Barceloneta to Arecibo. The drinking wells were affected, requiring imports of water to serve the affected communities. |
| January 1985 to March 1986 | Gas leaks from six chemical plants in the Mayaguez industrial free zone. Several incidents of leakage of chemicals used by the plants (for example, trichloroethane). Detection of 22 aromatic chemicals under Level 6. | Cost of the scientific studies to check suspicions of impairment of the workers' health: $1.5 million. No impairment of health was found, either among workers or in the community. |
| January 1986 | Discovery of 70 extremely hazardous chemicals in a warehouse located in a commercial center in the community of Dominguito in the rural area around the municipality of Arecibo. | Damage to the economy and social problems, since the community was displaced. Cost of the clean-up operation: $1 million. |
| January 1989 | Discharge of chloroacetaldehyde, an extremely hazardous substance, from a 55-gallon receptacle on Pier 8 in the Port of San Juan. | The port and tourist areas remained closed for 72 hours. Objectionable odors. |
| January 1993 | Discharge of 750,000 gallons of Bunker 6 fuel oil from the barge Morris J. Bergman, off the tourist area of San Juan and Laguna del Condado. | Damage to marine flora and fauna of the area and to the tourist area and activities. Clean-up cost: $90 million. |

As an illustration, I shall describe two events that, because of their importance, served as the justification for the creation of the Environmental Emergency Program of Puerto Rico, established by the

Environmental Quality Board in coordination with other agencies in the Commonwealth of Puerto Rico (Civil Defense, the Fire Department, the Police Department, the U.S. Coast Guard, and the U.S. Environmental Protection Agency, among others).

## CASE STUDY: DOMINGUITO, EMERGENCY RESPONSE AND REMOVAL AT PUERTO RICO ORGANICS, INC.

### Background

On 30 January 1986 the Environmental Quality Board (JCA) notified the U.S. Environmental Protection Agency (EPA) of the discovery of a quantity of unknown chemicals in a warehouse in the Green Center building in Arecibo, Puerto Rico on 12 January 1986, after complaints by neighbors about the disagreeable odor emanating from the place. An inspector from the JCA made an initial inspection of the place without protective breathing apparatus and immediately after finishing the investigation developed symptoms typical of exposure to a toxic substance. The JCA immediately requested assistance from the EPA to evaluate the site and, if the situation merited it, to initiate remedial action, as prescribed in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). In addition, the JCA carried out the procedures for alerting local governmental agencies (Police, Fire Department, Civil Defense, etc.).

The JCA determined that the contents of the warehouse had belonged to a company by the name of Puerto Rico Organics, Inc., since 1962 and that the material had been stored in the Green Center building in 1980, when that company went bankrupt. The president of Puerto Rico Organics, Inc., furnished the JCA with a list that detailed the names and quantities of the chemicals stored at that site. The list included over 200 chemicals that were believed to be stored there in drums, gas cylinders, carboys, and other types of containers were identified. It was determined then that 27 of the chemicals reported at the site had been identified as toxic chemicals on the EPA Chemical Emergency Preparedness Program list. Among these were compounds that were carcinogenic, inflammable, water reactive, explosive, and highly toxic. The names of the chemicals are noted on the list of substances.

In view of the event, the EPA Office in the JCA for the Caribbean area and the JCA requested a response team from the EPA in the United States, which arrived in Puerto Rico on 31 January 1986. The initial activities involved state and federal officials in the coordination of a plan for response, evacuation, and community relations. By 1 February 1986 the entire Level A team, equipped with totally encapsulating suits, had already been mobilized at the site. The limits of the periphery were also studied with protection at Level B; and by 2 February the protection had already been increased to Level A. It was then that a warehouse was found there, full of containers of different type-- in very poor physical condition and filled, it was confirmed, with hazardous wastes. Some containers were reported to be leaking waste material. The situation was alarming and the risk extreme.

Meanwhile, both the owner of the company and the owner of the Green Center building indicated that they could not take charge of the clean-up Thus, the EPA hired O.H. Materials of Findlay, Ohio, to carry out the removal of the waste material. In coordination with trained personnel from the EPA, this company proceeded to train the personnel of the JCA, which until then had lacked the technical capability, in the use of the personal safety equipment and in the procedures for entry into and exit from the "hot"

work zone, where the chemicals were found. The contracting company also offered training in the procedures for decontamination and in the methods for preparing the materials for treatment and final disposal. The preparations and removal took six long months.

### List of Materials Stored in Dominguito (According to the EPA List)

| | |
|---|---|
| Aniline | Phosphorus oxychloride |
| Benzene | Phosphorus pentachloride |
| Bromine | Phosphorus pentoxide |
| Butyl vinyl ether | Potassium cyanide |
| Ethanol | Pyridine, 2-methyl-5-vinyl |
| Formaldehyde | Sodium cyanide |
| Hydrochloric acid | Sulfuric acid |
| Hydrogen peroxide | Toluene, 2-4-diisocyanate |
| Hydrogen sulfide | Toluene, 2-6-diisocyanate |
| Isopropyl alcohol | Pyridine, 4-amino |
| Mercuric chloride | Pyridine, 4-nitro, 1-oxide |
| Methanol | Phenol |
| Phosgene | Nitric acid |

### Contents of the Eight Cylinders Found at the Site, by Content, Total Weight, and External Condition

| Cylinder | Content | Weight | External condition |
|---|---|---|---|
| 1 | Phosgene | 150 lbs. | Poor |
| 2 | Hydrogen bromide | 50 lbs. | Poor |
| 3 | Hydrogen sulfide | 150 lbs. | Poor |
| 4 | Hydrogen sulfide | 150 lbs. | Poor |
| 5 | Hydrogen chloride | 125 lbs. | Poor |
| 6 | Hydrogen chloride | 75 lbs. | Poor |
| 7 | Isobutylene | 50 lbs. | Poor |
| 8 | Ammonia | 150 lbs. | Deficient |

### Methods for Preparing Hazardous Wastes for Treatment and Disposal

The handling and preparation of the hazardous wastes in the Dominguito case are detailed below in chronological order.

Six gas cylinder overpacks were received from the Chemical Site Control company of Elizabeth, New Jersey. An area outside the site was then prepared to receive the drums by covering it with a layer of stone gravel. In addition, a 30-cubic-yard rolloff container for the collection of the contaminated materials was ordered. The area adjacent to the warehouse was then decontaminated. The boxes, glassware, bottles, miscellany, and contaminated wastes were removed from the warehouse and placed in a previously designated area for subsequent classification. The glassware that could be reused was separated for eventual cleaning and repackaging, and the contaminated wastes were placed on a properly sealed rolloff dumpster. This operation was necessary to clear an area within the warehouse and thus facilitate the movement of personnel there.

In addition, the air at the perimeter was monitored with an photoionization detector (HNU), an explosimeter, and a Thyac III radiation detector. The tests for radiation and explosibility yielded negative results, while a reading of 0.2 ppm was recorded by the HNU. These tests were conducted by the company that had been hired by the EPA, O.H. Materials of Ohio, hereinafter referred to as O.H.

O.H. proceeded to clean the spots on the floor. The acids were neutralized. An absorbent material was applied to take up the organic materials and then collected in a drum that was placed in a designated area. The containers that contained acetyl chloride and phosphorous pentachloride were repackaged and placed in the designated area in order to minimize the danger of explosion.

A container with five gallons of ethyl ether and two pounds of radioactive palladium was removed and repackaged. A total of 26 drums were repackaged. Eight cylinders were moved outside the warehouse and then overpacked in special tubes. A total of 130 containers with unknown materials were neutralized, samples were taken, and then the materials were put in new drums, filling 10 of them. During all these operations O.H. tested the air with the HNU. Finally, O.H. removed the shock-sensitive materials--those that were reactive or explosive--and placed them in two drums for subsequent disposal.

## Final Disposal of the Hazardous Wastes from Dominguito

The final disposal of the chemicals and hazardous materials stored in Dominguito is summarized in Table 2 below.

**Table 2.**

| Material | Date | Location | Method | RCRA* ID |
|---|---|---|---|---|
| 1. Shock-sensitive explosives | 1/12/86 | Camp Santiago. Salinas, P.R. | Detonation | N/A |
| 2. Flammable/combustible, air & water reactive | 1/14/86 | Police Firing Range, Arecibo, P.R. | Treatment and detonation | N/A |
| 3. Solid sodium metal | 2/19/86 | Catholic Univ. | Pure product | N/A - Bill of lading |
| 4. Palladium carbon | 2/20/86 | Englehard, Newark, N.J. | Pure product | N/A - Bill of lading |
| 5. Sodium hydroxide and other bases and acids | 2/18/86 | Ind. Chem. Corp., Peñuelas, P.R. | Pure product | N/A - Bill of lading |
| 6. Compressed gas cylinder | 2/22/86 2/23/86 | Ind. Chem. Corp., Peñuelas, P.R. | Treatment by neutralization | N/A - Bill of lading |
| 7. Contaminated laboratory packages, soil, wastes, and water | 3/17/86 | CECOS Intern. Inc., Niagara, N.Y. | Treatment and disposal in soil | NYD080 336 |
| 8. Flammable liquids and carbon tetrachloride | 2/25/86 | McKesson Envirosystems, Manatí, P.R. | Incineration | PRD0903 987 |
| 9. Water oxidizer (ferric choride) | 3/1/86 | BDT, Clarence, N.Y. | Treatment | NYD000 6323 |
| 10. Benzoyl chloride | 4/08/86 | Resource Tech. Service, Devon, Pa. | Treatment | PAT44 |

* Resource Conservation and Recovery Act

The explosive materials were divided into three groups: the fluorinated reagents, other halogenated reagents, and nonhalogenated reagents. These were properly prepared and detonated at the facilities of Camp Santiago in Salinas, and at the police firing range in Arecibo. O.H. conducted the detonations under the supervision of the EPA and the JCA, in accordance with the following operating procedures for reactive substances ("SOP for Reactive Operations").

1. A command post shall be established upwind from the disposal site.

2. Only essential personnel shall be permitted in the immediate area during work with reagents.

3. Whenever possible, the detonation operations shall be conducted between 10:00 a.m. and 2:00 p.m.

4. Operations shall not be conducted during periods of inclement weather (such as rain or mist).

5. The air shall be monitored before and after each detonation, using Draeger tubes and photoionization detectors.

6. Soil samples shall be taken prior to any processing of the reactive substances.

7. Emergency personnel--ambulance and fire-fighting personnel--shall be kept on alert during the operations.

8. Soil pH shall be measured after each detonation of halogenated reagents. If the soil proves to be acidic, it shall be neutralized by an application of calcium carbonate.

9. One inch of soil and calcium carbonate waste shall be removed and stored in containers until it can be analyzed.

10. The hole produced by the detonation shall be filled with material from the surrounding area and the site shall be labeled.

**Detonation Procedures, by Type of Reagent**

(A) Fluorinated reagents: Detonation # 1
2, 4-dinitrofluorobenzene

(1) A pit approximately one foot deep and three feet in diameter shall be dug.
(2) The reagent shall be placed at the bottom of the pit.

(3) The explosive charge shall be placed on the reagent that is to be destroyed. The explosion shall be initiated by electric detonators.
(4) Approximately 50 lbs. of calcium carbonate shall be placed on the reagent.
(5) The detonating device (blasting cap) shall be put in place.
(6) The responsible personnel shall return to the safe area.
(7) The area and the detonation charge shall be checked.
(8) There shall be a 15 minute waiting period after the detonation. At that time personnel shall return to the area to measure soil pH and to monitor the air with a Draeger tube and photoionization detector.
(9) The calcium carbonate and one inch of soil shall be removed and deposited in a container in such a way that it may be properly analyzed.

(B) Other halogenated reagents: Detonation # 2
Benzyl chloride
Acetyl chloride
Phosphorus oxychloride
Phosphorus pentachloride

The same procedure shall be utilized as for fluorinated reagents.

(C) Nonhalogenated reagents: Detonation # 3

The procedure used for fluorinated reagents shall be followed, except that in this case calcium carbonate shall not be used. In the transportation of these reagents and explosives, as well as in their detonation on the artillery grounds of Camp Santiago and at the police firing range in Arecibo, the following standard procedures were introduced. It was also necessary to inform the community and the mayors of the municipalities located along the routes where the chemicals were to be transported.

Some of the materials that were still in good condition were recycled, as in the case of the metallic sodium, which was sent to Catholic University in Ponce for future research. The radioactive palladium, properly treated for final disposal, was sent to the United States, since Puerto Rico lacked the facilities for its disposal. The eight cylinders containing gases were transported to a chemical plant that manufactured sulfuric acid and, using a technology designed in Puerto Rico, were placed in a reactor and perforated to allow neutralization of their contents with a compatible chemical (conversion into carbon dioxide and water). Strict safety measures were observed in this operation to guarantee the protection of lives and property.

## Legal Action

After a legal investigation to identify the responsible parties, the Environmental Quality Board (JCA) referred the case to the Environmental Protection Agency for appropriate legal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The EPA communicated with the owner (the party responsible for the site) and she in turn offered her Social Security check to cover the expenditures incurred. The EPA did not accept the offer and did not institute

proceedings for recovery of the expenditures. The EPA covered the federal expenditures and Puerto Rico, the local expenditures.

### Expenditures Incurred during the Response to this Emergency and for Remedial Action

The Environmental Protection Agency activated the Emergency Fund under CERCLA and allotted $1 million, 35% of which ($352,954.93) was utilized. The Commonwealth of Puerto Rico assumed the logistical costs, including organization of the operations center, communications, area security, and food, which amounted to approximately $150,000.

### Lessons Learned

This case showed the need to have emergency plans that are practical and that provide the necessary flexibility to react efficiently, with coordination among the federal, state, and municipal agencies. It also showed the need for personnel trained to implement the response plans when emergencies of this nature arise. This led the Environmental Quality Board to establish an emergency preparedness training program to deal with environmental emergencies, with adequate coordination with other entities--federal and state agencies, private companies, and the affected community. Finally, this case established the necessary precedent for the enactment of Law No. 81 of 2 July 1987, known as the Environmental Emergency Fund Act of Puerto Rico, as amended. This law created a fund of $1 million to initiate responses and remedial actions, to match federal funds, and to take administrative and judicial action against people and/or entities responsible for polluting the environment with chemical substances. The law authorizing the Environmental Quality Board to collect funds to cover expenditures resulting from the response and clean-up is Law No. 9, known as the Environmental Public Policy Act, as amended.

The experience summarized here highlights the real justification for the prevention and preparedness plans, as well as the importance of coordination and communication with the community, the state, federal, and municipal agencies, and private companies. In every way, the most relevant impact produced by the case in question was the creation of the Environmental Emergencies Unit, under the Air Pollution Control Program of the JCA. Between this episode and 1993, the Program acquired its own technical capability and budget, which became notably evident in January 1993 with the Bunker 6 fuel oil spill from the barge Morris J. Bergman in the tourist area on the northern coast of San Juan.

As previously pointed out, each emergency is a school in itself, which obliges us to take action to support prevention and the training of personnel to safeguard life, property, and natural resources. Let us now see the results of the lessons learned in the reaction of the Environmental Emergencies Committee to the oil spill from the Morris J. Bergman in January 1993.

## DISCHARGE OF "BUNKER 6" FUEL OIL FROM THE BARGE MORRIS J. BERGMAN

### Background

Since 1968 accidents in the form of hazardous materials spills, specifically petroleum, have occurred along the coasts of Puerto Rico. A variety of causes have been adduced for these accidents, but they have all had an impact on our marine environment. The statistics indicate that 75% of the spills in

the United States came from tankers; 90% of them consisted of crude oil; 80% occurred within 10 miles of the coast; and 75% occurred within 25 miles of the port of arrival.

Discharge of petroleum in navigable waters of the United States and its incorporated territories constitutes a violation of the Oil Pollution Act of 1990 and, in the case of Puerto Rico, also constitutes a violation of the Environmental Public Policy Act of 1970. And precisely because of the potential environmental and economic impact of an accident of this nature, the Environmental Protection Agency demands that emergency plans be established to cover the eventuality of oil spills or discharges other materials harmful to the environment. The purpose of these plans is to establish a sequence of coordinated actions among state, federal, and community agencies that offer direction, logistics, and positive results in the face of disasters of this nature.

Viewed from a perspective no less civic than managerial, the consequences of each spill make it possible to evaluate the regulations, resources, and levels of effectiveness of the program. What can in every way constitute a disaster for the environment offers the opportunity to incorporate valuable lessons that enhance preparedness for the eventuality of discharges of greater magnitude. Notably, such a disaster can result in laws and regulations that permit better preparedness for accidents of this nature. This occurred in the case of the crude oil spill from the Exxon Valdez in 1989, off the coast of Alaska. In 1990, action by the U.S. Congress resulted in the Oil Pollution Act (OPA), which revolutionized the response to accidents of this type.

The responses and the removal activities by state, federal, and municipal agencies (in San Juan, P.R.) under the National Contingency Plan will be presented for the case of the oil spill from the Morris J. Bergman.

## Contingency Plan for Discharges of Hazardous Materials

A contingency plan can be defined as a document or set of documents whose content offers detailed descriptive information on the procedures to be followed for containment and clean-up of a hazardous material spill in a specific geographical area. When properly implemented, the contingency plan offers certain advantages: it facilitates a rapid and effective response to the emergency; it minimizes the risks to human health and the ecosystems in situ; and it can reduce the total cost of containment and clean-up operations while avoiding unnecessary and inadequate actions.

The Oil Pollution Act of 1990 improves on the provisions dealing with responsibility and compensation for such spills of laws such as the Federal Water Pollution Control Act (FWPCA), Title III of the 1978 Amendments to the Outer Continental Shelf Land Act (OCSLA), and the Trans-Alaska Pipeline Authorization Act (TAPA).

The OPA was a result of the oil spill from the Exxon Valdez in 1989, which demonstrated the need for mandating and regulating the preparation of contingency plans, as well as establishing responsibilities and standardizing the responses to discharges and information on them. Section 4201 (b) of the OPA amends Section 311 (d) of the FWPCA, stating that the President should draft and publish a National Contingency Plan for the removal of oil and seven other hazardous substances. This plan strengthens efficient and coordinated action to minimize the damage that spills of any other hazardous material can cause, as well as aspects related to the containment, dispersal, and removal of the hazardous

material. The law describes the actions that shall be taken to define the plan, the required participation, and the procedures that shall be followed once that plan is approved.

### National Contingency Plan

The National Contingency Plan was designed by the Environmental Protection Agency to ensure that the resources and experience of the federal government were available for discharges that represent a national risk. It has been implemented and is updated periodically through the National Response Team, which is made up of 14 federal agencies. That team does not respond directly to accidents, but remains in a state of alert, ready to offer advisory services and assistance in the coordination of responses. Under the law, the entity is responsible for the discharge must notify the National Response Center which, under the national response system, notifies the on-scene coordinator already named by the Coast Guard or by the EPA, depending on the circumstances of the discharge. This on-scene coordinator is the federal official responsible for the efforts of the federal government to contain, remove, and dispose of the discharged oil and he or she also coordinates the assistance and information supplied to the local, state, and regional organizations that respond to such emergencies.

In the case of the Morris J. Bergman, the Federal On-scene Coordinator (FOSC) was the representative of the Coast Guard, who was named by that same agency. The FOSC, for its part, is in charge of activating the regional response team for the Caribbean area

### Regional Response Team for the Caribbean Area

This team's area of responsibility is the archipelago of Puerto Rico, composed of the islands of Puerto Rico, Culebra, Vieques, and La Mona, and other islands in close proximity to Puerto Rico; the U.S. Virgin Islands; and adjacent waters belonging to the Exclusive Economic Zone.

The team is made up of the following governmental and nongovernmental agencies:

Governmental

1. Environmental Quality Board
2. Department of Environmental Natural Resources
3. Police Department of Puerto Rico
4. State Civil Defense
5. Civil Defense of San Juan
6. Fire Department of Puerto Rico
7. Electrical Energy Authority
8. Port Authority
9. Department of Housing
10. Department of Education
11. Water Authority
12. Department of Transportation and Public Works
13. Department of Health
14. National Guard