EVENT: NAVY RESTORATION ADVISORY BOARD MEETING

DATE: AUGUST 05, 2004

START TIME: 7:00PM ENDING TIME: 9:30PM

LOCATION: HYATT REGENCY GUAM (BALLROOM A)

Community Co-Chairperson Mike Gawel thanked everyone for attending the Navy Restoration Advisory Board or RAB meeting. He then introduced Lt. Kenneth Culbreath, Co-Chairman representing Navy. Lt. Culbreath praised Navy for assigning him to places such as Guam. He indicated that Guam was definitely one of the most beautiful places that he and his family had lived. He thanked the public for their interest and their attendance.

Mr. Gawel took the floor again and stated that there were numerous handouts and information regarding the ongoing clean-up work available at the desk just outside the door that could answer some questions. Then he introduced Navy's meeting facilitator Mr. Roy Tsutsui. Mr. Tsutsui reminded the attendees that the event was for the public and invited the attendees to ask any questions they may have during the course of the meeting and the presentations. He also indicated that the refreshments were available and the attendees could help themselves to it at any time during the meeting.

Mr. Gawel stated that he had just returned from his RAB meeting at Salt Lake City held for the RAB Co-Chairpersons Nationwide. When comparing notes at his meeting he indicated that similar pollution problems existed elsewhere. Mr. Gawel thanked Lt. Culbreath for attending the meeting and hoped that he would attend future RAB meetings.

Mr. Gawel summarized the night's first item of the agenda presented by Ms. Darlene Ige as a report on the status of all the IR sites, and the relative risk evaluation process. Then he mentioned Mr. Eric Wetzstein's presentation on the Orote Landfill. Finally he indicated that Mr. John Fern would be presenting a report on the Former Building 3009 site cleanup. He then stated that other related items of concern could also be discussed during the meeting. He then introduced Ms. Darlene Ige.

Ms. Ige greeted the audience. She introduced herself as the Pacific Division Naval Facilities Engineering, Head of the Installation Restoration (IR) Program for Hawaii and Guam. She indicated that her work involved a total of 19 cleanup sites on Guam. Work on three sites (Ritidian Point, USS Proteus Fire Fighting Training Area, and NEX Garage Septic Tank) had already been completed. She also mentioned that there were 3 sites pending closure, which meant that the cleanup or investigative work were already completed, and the sites were either undergoing long term monitoring or no further action was recommended. She indicated that for the Construction Battalion (CB) Landfill, capping was completed in 1998 and the site was undergoing a long term monitoring program. For the Dry Cleaning & Carpentry Shop Dip Tank no further action was recommended and decision documents were being developed for those sites. Then she mentioned that there were 10 sites that they would be addressing in the future (Valve Pits at Tenjo Vista, Area behind the Fenceline, X-Ray Wharf (a former UST site), Tear Gas Burial Site, Barrigada Substation, Harmon/Piti Substation, Piti Electrical Storage Area, Various Transformer

Sites, RTF Barrigada Golf Course, and Building 27 Boiler Facility) and she indicated that 3 sites (Orote Landfill, Building 3009, and the Lower Sasa Fuel Burning Pond) with work in progress. She then focused her updates on the three sites with work in progress. A map was presented depicting the 3 sites all located within the Apra Harbor. The Lower Sasa Fueling Burning Pond located across the street from the COMNAVMARIANAS Fuel Farm or formerly known as FISC. The other two sites Building 3009 and Orote Landfill are located within the Navy Base.

She explained that a seawall and cap were constructed at the Orote Landfill in 2001. Basically this was done to prevent erosion of the cliff and any exposure of landfill material going out into the ocean. In September 2001 the Guam Department of Public Health and Social Services issued a Seafood Advisory in this area, therefore Phase I work was focused on refining the boundaries of that seafood advisory. Phase II work concentrated on the groundwater because it was suspected that chemicals were transported from the landfill into the ocean. A work plan describing the scope of the groundwater study was completed in Feb 2004. As a part of that work a dye trace study was completed in June 2004. Ms. Ige stated that Mr. Wetzstein was going to make a presentation addressing the groundwater study in more detail later on.

In 1997 an interim cleanup work was completed on Building 3009 that was a former transformer shop. Eleven thousand eight hundred (11, 800) tons of PCB contaminated soil was treated using a base catalyzed decomposition process, which destroyed the PCBs. The interim cleanup focused on the areas that had the highest concentration of PCBs. A Work plan and Sampling and Analysis plan for a Site Investigation at Bldg 3009 was completed in July 2004. Following the completion of the work plan, the fieldwork was to commence in August 2004. The Draft Site Investigation Report is scheduled for completion in summer of 2005.

Fuel related chemicals were the concern at the Lower Sasa Fuel Burning Pond. In 1999 the Evaporation Pond, considered as the source of contamination, was removed. An ecological risk assessment was underway with primary focus at the moorhen as a receptor. Cleanup strategies and design works are scheduled to complete by Spring 2005.

Ms. Ige indicated that the above three sites were the subject of her update for the night and she was to give the folks an idea of the financial magnitude of the IR program in Guam. The first chart showed the amount of funds that were spent to date on investigations and cleanups in the IR program. Between the fiscal year of 1990 and fiscal year 2004 a total of $88.4 million Dollars has been spent in Guam. A peak in expenditure in 1992 could be observed due to commencement of the investigation work on most sites on Guam. There were other peaks in 1995 and 1996 due to the interim cleanup at Building 3009 using the base catalyzed decomposition process. Orote Landfill Seawall and Cap created peaks in spending during 1999 and 2000.

Another chart showed estimates of what would be required to complete the remaining investigation and cleanup works. For instance looking at fiscal year 2005 through 2015 an estimated total of $37.7 million Dollars would be spent in the IR program. This amount averaged about $3.4 million Dollars per year.

Ms. Ige then spoke about the importance of prioritizing funds for the proposed work on the sites. Hence she introduced the concept of Relative Risk Evaluation. She explained that the model was what the Department of Defense (DOD) used in prioritizing work on the sites. She emphasized that relative risk evaluation was a tool to prioritize investigations and cleanups and that it was not

an absolute risk, and was one of the several factors DOD considered to determine which sites they would cleanup first. The ranking process was conducted in the mid 90's and was completed for all of the existing sites. She defined relative risk as a tool used by DOD, which includes Army, Navy, and Air Force in sequencing the Environmental Restoration Work and it was designed to handle a broad range of sites that existed in the DOD installation program. It grouped the sites in high, medium, or low relative risks, and was used to establish priorities in the IR program.

The relative risk evaluation work was needed because the cost of cleanups and investigations far outweighs the available environmental restoration funds. Therefore it was necessary for the DOD to arrive at a priority scheme. As a historical note back in 1993 Sherry Goodman who was the Deputy Under Secretary of the DOD for Environmental Security, made a commitment to pursue relative risk as a working tool for prioritizing sites. Then in April 1994 DOD came up with guidelines that promoted the risk management concept. In 1995 and Summer of 1996 instructions were developed to calculate the relative risk.

There were three factors in the Relative Risk Model. They were described as the Contaminant Hazard Factor (CHF) and that was just the maximum concentration divided by a standard such as EPA preliminary risk goals, or the ambient water quality criteria, or the National Oceanic and Atmospheric Administration (NOAA) sediment criteria. The second factor was described as the Migration Pathway Factor (MPF) and that was the likelihood that the contamination might migrate. Last was the Receptor Factor (RF), which was the likelihood that a receptor was exposed to the contamination. This showed that on each site on Guam, information had to be gathered concerning the source, pathway, and receptors. Then the obtained information was evaluated using the CHF, MPF, and RF to determine whether the relative risk was High, Medium, or Low.

Then Ms. Ige explained how to calculate the relative risks. First, the CHF was calculated so that the maximum concentrations could be compared against those standards. If greater than a 100 then it was to be considered significant. If CHF was between 2 and 100 then it was considered moderate. If CHF was less than 2 then it was considered as minimal. As an example, a CHF of 50 (less than 100 and greater than 2) was considered as moderate. Then we would look at MPF. If there were any evidence that the contamination had migrated then we would look at the top row. If there were potentials for migration then we would look at the middle row. If there were no potentials for migration or the contamination was confined then we would look at the bottom row. For the RF if there were identified receptors that had been exposed then we would look at the first column. If there were potential for receptors to be exposed then we would look at the second column. If there were no receptors or very limited exposure then we would look at third column.

So for example if the contamination hazard was moderate and there was potential migration factor, and potential receptor factor then the relative risk would be medium.

Therefore for each site, each media was taken and a relative risk factor for each one was assessed. For the ground water a relative risk was calculated. For the surface water sediments a relative risk was calculated. For the soil a relative risk was calculated. Whichever risk became the highest governed as the overall risk for the given site.

Therefore the relative risk evaluation was utilized as a screening tool to categorize the sites into high, medium, and low risks using the 3 different factors of CHF, MPF, and RF.

Relative risk site evaluation was not considered as an absolute risk evaluation, it was not considered as a substitute for a baseline risk assessment, and it was not be considered as a substitute for a health assessments.

Advantage of using relative risk assessment was that it would provide a consistent approach by DOD in categorizing sites and it insured that the most urgent sites were identified and that focus was made on the high relative risk sites. This also served as a basis for communications with the stakeholders on sequencing the work.

As mentioned earlier, the relative risk was one of several factors used to prioritize the work. Taking into consideration the stakeholders concerns, like the input provided from the folks here in the RAB Meeting was also a factor to consider. Program execution would be another factor to consider. We took a look at the economic considerations, such as property ownership, land use, and the property values. The Defense Planning Goal was considered as one of the program execution considerations. DOD's goals were to complete all high relative risk sites by 2007, all medium relative risk sites by 2011, and to complete all IR sites by 2014.

Ms. Ige presented the ranking of all the sites on Guam. All the high-risk sites were anticipated to be completed by 2007, work on all medium risk sites would probably begin around 2008 and be completed by 2011, and the low risk sites probably would start in 2011 and would be completed by 2014. Keeping in mind that the rankings were done in the mid 90's prior to any of the cleanups.

Then Ms. Ige concluded her presentation and requested the attendees to ask any questions they may have.

Mr. Tsutsui took the floor and thanked Ms. Ige and asked whether anyone had any questions for her.

Question: Mr. Gawel asked if there were some flexibility to shift funds to other IR environmental cleanup projects.
Answer: Ms. Ige responded yes there was.

Mr. Gawel introduced the next speaker of the evening, Mr. Eric Wetzstein.

Mr. Wetzstien of AMEC Environmental introduced himself as a contractor for the U.S. Navy. He stated that he would be speaking about Orote Landfill Site. This was a site that he had over 10 years of experience with performing investigations and cleanup works. He mentioned that the focus of his presentation was groundwater investigation. This work is a part of the Phase II project. He then gave a history of what the phases were within the context of his presentation. His agenda began with a bit of a site history. There were 3 components to this groundwater investigation; first groundwater movement and the impact of tidal activities and rainfall precipitations on the groundwater, item two was determining where the dye that was introduced into the groundwater would migrate to, and finally a quarterly groundwater sampling/ testing and the analysis of the results. That is, physically obtaining groundwater samples and reporting the result of the chemicals found in the samples.

Next topic on the agenda was the future activities planned for this site. First a location map was projected. The Orote Landfill site was located on the Orote Peninsula along the Navy Base Southwest Edge of the Orote Peninsula. A bird's eye view of the site from the tip of the peninsula was shown.

As a historical note Mr. Wetzstein indicated that the site was an old natural limestone sinkhole located near the coast. In World War II it was used to dispose residential, industrial, and shipyard wastes. It was a common practice at that time to dispose the material and burn all the combustibles portions of the landfill. As it filled up, it was also a common practice that some of the material was bulldozed on to the beach. For those of you who remember the site in its previous form, there was a large amount of rusted metals on the beach. It was sometimes known as "Steel Beach". After the completion of the seawall and cap construction in 2001, the Navy investigated the reef fish communities off the landfill. Levels of chemicals found in fish resulted in the Guam Department of Public Health and Social Services issuing a seafood advisory off the Orote Landfill along the Southern portion of Orote Peninsula. Concurrently, a Seafood Advisory was also issued on the North side along the Gabgab Beach Area.

The chemicals of potential concern were PCBs or polychlorinated biphenyls, pesticides, dioxins/furans, metals, and polycyclic aromatic hydrocarbons (PAHs). These were just a class of chemicals that were usually associated with fuel related compounds. A photo of the Steel Beach was projected. The old landfill photos with material eroding down into the ocean were pointed out. There was a large mass of metal on the beach. In addition, there was metal debris within the near shore area just off the coast. Once it was recognized that the coast was retreating the Navy stepped in proactively and stabilized the slope. What they did first was to remove metals as much as they could. Actually GEPA and some of the other agencies helped identify some of the metal out there. The metal was removed and was placed on the surface of what is now known as the landfill. Also all the metal debris on the beach was removed down to the bedrock and it was placed on the surface of the landfill. Once that was done, a liner and series of progressively larger armaments were placed on the capped landfill. The sizes ranged from 150-pound concrete blocks all the way to 9-24 ton concrete cubes, which were placed at the very top. The blocks provided armor to protect the slope and kept the capping liner intact and therefore prevented erosion during great typhoon events and the wave action associated here on Guam.

Then a view down the coastline was projected depicting the front of the landfill appearing as a tall wall. Just looking down that area the Barracuda Rock could be seen. The picture showed the overall view of the capped landfill and the coastline.

Mr. Wetzstein indicated that once the chemical levels were identified in fish and a seafood advisory was issued, U.S. Navy and other regulatory agencies, specifically GEPA and USEPA, among others, got together and envisioned a 4-phase approach to address the issue. The most immediate task was to find out how far the contamination levels of fish had moved from the Orote landfill site. Initially the advisory boundary was fairly wide and seafood advisory was immediately set at the tip of the Orote Peninsula all the way down to Nimitz Beach. Once the analysis and sampling were completed, the boundary of the seafood advisory was reduced in size. Actually the current seafood advisory is limited from the Rizal Beach Area near the Navy Base Boundary up to the Orote Point. Phase II focused specifically on the chemicals in the advisory to evaluate impacts from the Orote Landfill. It was important to determine whether the pollutants were in the groundwater that moved underneath the landfill, or whether previous sedimentations

from the landfill affected the fish but discontinued later. Those were the type of questions that were being asked in Phase II.

Mr. Wetzstein stated that Phase III would look into other spots along the advisory area that could potentially contribute to the pollution. Finally Phase IV would determine whether added cleanup work would be needed or, for instance, if a monitoring program was required.

Mr. Wetzstein indicated that 3 main items of importance occurred during phase I work. The Navy needed to find the lateral extent of impacts in fish. One way to accomplish this task was to look at the territorial fish. Why territorial fish? That was because territorial fish stayed and lived within a certain defined area. They were representatives of the environment around them, so if there were chemicals around them, they would absorb them. The fish was sampled along the coast all the way to Nimitz Beach, and the chemical concentrations were measured in the sampled territorial fish. It was also realized that there was a great public concern in the communities of Agat, Santa Rita, and the areas surrounding the site. Some local fishermen were asked to take us to their fishing spots, and some fish samples were collected as a part of phase I work. Finally a thorough seafood consumption survey was conducted in surrounding communities of Agat, Santa Rita, and Piti, to look at how much seafood people consumed, what kind of seafood they consumed, where they caught them, and how they prepared them. These questions were important because they all would have bearing on how we assessed health in those communities. The amount of seafood consumed by the above mentioned communities as compared to other places was also factored into the study.

Mr. Wetzstein indicated that the particular objectives of the groundwater studies were number 1 potential for finding excessive chemicals in the groundwater under the capped landfill. When the landfill was built the wells that were drilled during previous IR investigations had to be abandoned. New wells were installed. It was important to determine whether chemicals were present underneath the landfill, and whether these chemicals were hovering upgradient. Also we wanted to find out what the chemical concentrations were or how they moved. Did they go inland, or across the peninsula, into the ocean? Then springs were identified near the site and offshore from it. The effect of tidal fluctuations and rainfall on the groundwater movement was also investigated. Finally once all the information was analyzed, we could assess the impact on the marine life and ultimately as it pertained to the seafood advisory.

A portion of Phase II groundwater work has included the installation of the monitoring wells. This work was completed in May 2004. A photo of a rig was shown drilling through the landfill cap. When they drilled through the cap they made sure that the liner underneath was sealed against the well itself, so that it would keep rainwater from infiltrating into the landfill material. Then a dye trace study was performed, which was still ongoing. Influence of tidal activities on the groundwater was also investigated. Also groundwater sampling and testing from the wells were performed in order to obtain information on any chemicals present. The first quarterly sampling/testing round was completed in 2001. The second quarterly round was actually on going.

Mr. Wetzstein explained the difference between monitoring wells and piezometers installed on the site. He indicated that use of a piezometer was strictly for water level measurements as compared to a monitoring well which could in addition provide an option of taking water samples.

Then he showed a bird's eye view diagram of the onsite wells, piezometers, and springs. Red circles depicted the location of the monitoring wells and the yellow showed the piezometers, and the blue were the springs that were identified offshore.

Groundwater sample collection proceeded immediately after the well installation at the first round. Groundwater samples were taken directly from wells for the chemicals of potential concerns.

Preliminarily results from the sampling and testing conducted in May 2004 indicated that chemical levels were lower compared to the previous samples taken prior to the construction of the landfill cap. Mr. Wetzstein indicated that those were the preliminary results and they have not yet been thoroughly checked. He elaborated that anytime analytical data is collected before its release to the public it undergoes series of checks by the consultant and the regulatory agencies before it is declared certified, authentic and therefore usable. He also expressed that additional quarterly monitoring would continue so that the results would not be based on one round of sampling. This was due to the fact that often times groundwater levels could change due to rainfall and other factors. Therefore sampling and testing would be made over a period of time.

Regarding the groundwater movement at the landfill site, Mr. Wetzstein projected a colorful diagrammatic profile section taken through the landfill. Among other details the section showed the seawall, the cap, the landfill, and the ocean. The white color brick pattern on the diagram represented the limestone bedrock. The brown area indicated the landfill debris. The landfill liner was shown. The successively larger armor units shielded the liner and kept everything in place even when waves moved up and over the seawall and down back to the ocean. The liner prevented the waves from reaching into the landfill material. A liner installed over the 9-acre land behind the seawall was also shown to the attendees. The purpose of this particular liner was to limit the amount of rainfall that could infiltrate down and into the landfill materials. Then a typical monitoring well reaching into the groundwater table was shown and its purpose and use concerning groundwater sampling was demonstrated. Mr. Wetzstein indicated that it was critical to determine through groundwater monitoring whether any other chemicals were still leaching out although the landfill liner would prevent rainfall from penetrating the landfill material. He mentioned that discovering the groundwater movement pattern for the site was also quite important. Generally water would move from higher gradient to lower gradient. It was also important to know that in most of the areas the landfill material did not touch the groundwater table. However there was a small area where the landfill came very close to touching the groundwater table.

Regarding the groundwater movement, groundwater levels were measured in the 7 new wells, 3 new piezometers, and 2 existing wells. They were recorded manually and via automated sensors. Automated recording measured the water levels every 15 minutes. Through the frequent water level measurements effects of tide, weather, and precipitation could be studied and we could determine what direction the water moved. During dye trace studies, harmless dyes were introduced into the groundwater at one point and its movement was monitored. The dye trace work included two different color dyes. One in which red dyes were released in one well and another where green dyes were introduced in another well. The purpose was to track their movements. Where the dyes moved would determine the location of future monitoring spots such as the springs. Also the dye concentration levels (both high and low levels) detected in the monitored spots were of importance.

Dye tracing from the wells provided excellent data. Due to the high wave action during Tropical Storm Tingting, the spring monitoring locations off the coast were difficult to access. One of the springs however was monitored using a long PVC tube to retract a sample. All spring samples were not collected, however the one sample collected provided the effects of storm and heavy rainfall on the groundwater movement. It was also mentioned that charcoal receptors were utilized in locations where physical sampling was too difficult. A packet of activated charcoal would be placed at monitoring locations and as the dyes came across it would be absorbed by the charcoal. This was called passive sampler or granulated activated sampler. GEPA has agreed to help Navy and collect those samplers and replace new samplers in the ocean.

Two types of dye analysis were described; one used a field meter which could only detect dye concentrations at the higher detection levels and the other was performed in a laboratory that detected much lower levels. Preliminary results indicated that the dyes had moved through the groundwater system. In fact some of the green dye that was released in a well was later detected at the springs offshore. It appeared that groundwater was moving out towards the ocean. Charcoal receptors were installed offshore as far up as the Spanish Steps.

Mr. Wetzstein indicated that future activities would continue at the landfill site to collect groundwater samples from monitoring wells on a quarterly basis. The samples would be used to evaluate chemical levels. Using small receptors placed in each of the wells, groundwater movement and its direction would be further investigated. With the help of GEPA, samples were collected and retrieved at the springs as well. The Navy will continue to sample groundwater from the wells on a quarterly basis. Finally a draft initial phase II groundwater investigation report will be issued. A draft report is usually reviewed and commented on by the regulatory agencies first and it was expected to be completed in October of 2004. Therefore, evaluation of the marine life impacted by the landfill would continue through this investigation. Mr. Wetzstein asked if anyone had any questions and requested Lt. Culbreath to take the floor.

Question: What type of liner was used under the seawall?
Answer: HDPE, 100 mill.

Question: What is the life cycle of HDPE?
Answer: The design life is 30 + years, but this liner would have much longer life cycle.

Question: Within the last few years has the fish been sampled consistently?
Answer: Yes, the territorial fish were sampled in 2001 and early 2002 and then we looked a little deeper in the deep-water fish that were off the coast. That was sampled in 2003. Sampling has been continuous. The objective is to determine whether the chemical levels have increased, decreased, or remained the same. Based on the results obtained the seafood advisory is revisited.
Question: What has been done to ensure the public that the seafood advisory is in effect so that they do not consume the seafood in that area.
Answer: The seafood advisory is still in place. There are warnings signs still posted in the area, at all marinas, docks, and dive stations. The information is available in mayor's offices, and RAB meetings such as these. Also the information is published in the PDN warning people.

Question: Dr. Weare asked regarding the status of the risk assessment reports.
Answer: The subject of the last RAB, included the human health risk investigation. There is also a report on the Phase I regarding the mid to deep water fish that is available at the Agana Library.

Mr. Tsutsui clarified that RAB members such as the attendees here could obtain related reports and information from various sources. One way to obtain information was to simply ask Navy. Another way was to obtain information from the Research Section of the Guam Public Library in Agana.

Question: Was there a dye study at one of the hot spots in the Barracuda Rock Area?
Answer: Yes. There is a spring there; it was thought to be connecting to the Orote Landfill groundwater.

Question: Regarding the slide of groundwater results, chemical levels lower than the previous groundwater samples (prior to cap) how much lower and is there a model from the previous experiences where you would show a decrease leading to a healthier condition?
Answer: In relation to PCBs, where high levels of concentration were found in fish samples, the raw data indicated a couple of magnitudes lower than the previous samples. But we need to check it again to make sure that it is correct. This is the first sample. We need to monitor every month for the next two years.

Question: Do we have enough data to make a model?
Answer: No. Prior to the placement of the seawall there was enough time to take one sample. We are now back to take additional samples and over time there will be enough data to enable us to graph a model or chart.

Question: On locating proposed landfills on Guam from the lessons learned having a landfill next to the ocean and the impact it would have on marine life do you have any comments?
Answer: At the first glance you certainly should take into consideration a lot of the factors. You would want to ensure that thorough groundwater studies to understand where the water is going or coming from are performed. The geology underneath and the physical characteristics among other factors should be looked at.

Lt. Culbreath took the floor and stated that Navy was getting smarter on construction of their landfills. But not all landfills would accept hazardous materials. From all the cleanups that he had observed on Guam during recent years the hazardous materials had been shipped off island to places that accept hazardous material. He further elaborated that attention should be given to 3 items of importance, the groundwater study, the construction of the landfill, and type and classification of the landfill at hand.

Mr. Victor Wuerch, the Guam Hydrogeologist from GEPA, clarified that the 3 proposed landfill sites for Guam were presently undergoing evaluation and none were located on limestone formations unlike the Orote Landfill which was constructed over a highly fractured limestone formation and virtually adjacent to the ocean. The proposed sites are located on volcanic soils of Southern Guam and they are not near the ocean.

Mr. Tsutsui reassured the attendees that any other questions could be asked later on during the presentation or at the any given time during the meeting. He then introduced the new project Manager Ms. Jan Kotoshirodo. Jan introduced herself as the new Remedial Project Manager (RPM) for all the Navy Installation Restoration Programs on Guam.

Lt. Culbreath took the floor and on the subject of public involvement he encouraged everyone to participate and ask questions. He indicated that without public comments Navy would not know what the public concerns may be. Mr. Tsutsui encouraged attendees to help themselves to the available refreshments at any time. He then introduced Mr. John Fern as the last presenter for the evening.

Mr. John Fern introduced himself, as an employee of Earth Tech, a Navy Contractor. He indicated that he had worked on Guam for the last 15 years. His topic of presentation was Building 3009 located in the Apra Harbor Navy Base. This particular site was operated by COMNAVMARIANAS. He showed a site location map and pointed to the Orote Peninsula where the site was located at the Navy Public Work Center Industrial Complex.

He then gave some historical information on the site. The site was used from 1952 to 1977 as an Electrical Transformer Maintenance Shop. Building 3009 no longer existed but its previous location was shown to the attendees. In 1977 the facility was decommissioned.

At that time there were a couple of tanks associated with the building. The tanks were emptied and were removed. In 1982, there ~~were~~ was a series of investigations conducted to evaluate the soils around the site. It was discovered during the first investigation in 1982 that there was a drainage swale leading from the building down to a deeper drainage swale that bordered the site along Harbor Road and continued underneath Sumay Drive. Soil samples were taken from this location and it was found that they contained Polychlorinated Biphenyls or PCBs. In 1989 there were further investigations conducted. Subsequent investigation following the cleanup action by soil removal was conducted. Navy realized that they had PCB impacted soil around the area of the building and also within the drainage swale adjacent to the site. From 1993 to 1997, as Ms. Ige mentioned in her presentation, about 11,800 tons of soil was excavated and was treated using a based catalyzed decomposition process to basically cleanse the soil and disperse the PCBs rendering the soil harmless. After processing the soil the cleansed soil was returned to the site.

Primary chemicals of concerns were Polychlorinated Biphenyls or PCBs. In addition to that there were Dioxins and Furans, which were among chemicals usually present and created during the formulation of PCBs. Presence of chlorobenzenes commonly associated with PCBs were detected. They were detected in the oil ~~that~~ in which PCBs were found. This oil was used as an insulator inside the transformers that were maintained in this particular facility. Recent investigation has revealed that some onsite soils in certain areas still contain PCBs although most of the PCB containing soils have been cleansed. Mr. Fern also pointed out that the groundwater underlying the site was quite shallow at the depth of about just over 10 feet and was not used for drinking water purposes.

Mr. Fern showed a couple of photos of the site depicting the site condition including one taken in year 2000 showing the treatment facility mentioned earlier. In 1997 the treatment was discontinued while the building remained and it was later damaged by Typhoon Paka and it had since been removed from the site. Most of the site had been fenced. It was pointed out that

since the site is within the Navy Base it is therefore within control of the Navy. Portions of the site are still paved. Presently grass and tangantangan are growing in other areas of the site.

Previous cleanup actions and the interim actions focused on removing and treating as much soil as possible from what was considered the source. The highest concentrations of PCBs were located on site. It was expected that the 11,800 tons of soil that was removed and treated should yield to cleansed soil with less than 2 parts per million (ppm) individual PCB concentrations. Actually the treatment was able to cleanup the soil to less than 1ppm PCB concentration. Treatment was more successful than was predicted. Confirmation sampling was conducted following the excavation and removal of all the soils and it determined that in certain areas along the drainage ditch there still existed concentrations of PCBs.

Mr. Fern indicated that Navy, DOD, US EPA and GEPA start a typical investigation by performing a preliminary assessment. He then elaborated that preliminary assessment was primarily a desktop study where a lot of the information would be evaluated about the site and its history. Also in some cases there would be sampling involved. At this particular site the Navy did some sampling and that is how they discovered in 1982 that there was PCBs in the soil.

After completion of the site investigation, aggressive cleanup action at the source was conducted. Presently the planning documents have been completed. The fieldwork would start this month. After completion of the fieldwork a report will be prepared. As Ms. Ige mentioned a draft report is scheduled to complete in the summer of 2005. Following the site investigation phase, all the available information would be compiled to determine what to do next for this particular site. It might involve a response action that may require some cleanup work. Although it is anticipated that additional cleanup work may be required, we would not know until later in this phase of the work.

During the current site investigation phase, a series of surface and subsurface soil samples would be taken for analysis at a laboratory. 123 locations are proposed to be sampled throughout the site at various depths in the soil. Groundwater would also be evaluated specially considering that the PCB concentration in the soils had been relatively high in areas close to the groundwater. As mentioned before groundwater is at shallow depth (just over ten feet) and has not been used for drinking water purposes. A series of 4 monitoring wells will be installed for the upcoming groundwater investigation. In order to incorporate effects of seasonal fluctuations caused by rainfall, sampling will be performed during the initial site investigation in two rounds- one during the wet season and another during the dry season.

The scheduled fieldwork will start in August 2004. Soil and groundwater sampling and testing will take place during the fieldwork. In February 2005 a second round of groundwater samples will be performed. The information obtained from the laboratory analysis will be evaluated in preparation of the draft report scheduled to be completed by summer 2005. GEPA will provide their review comments and the technical support group would address their comments and will produce the final report which would be completed by Fall 2005.

Mr. Fern concluded his presentation by asking if anyone had any questions.

Question: Dr. Weare asked, where does the drainage ditch empty out?
Answer: This particular drainage ditch drains from the direction of Sumay and then no longer see daylight and then enters a box culvert and ultimately empties out into the Apra Harbor.

Question: Has the end point been sampled?
Answer: Yes. They have taken samples and it has been analyzed for PCBs and various other chemicals as a part of a harbor dredging program.

Question: What are the results so far?
Answer: The data is still preliminary and laboratory is still analyzing the data. So far it is known that the PCB concentration is low. Preliminary data shows levels of PCB as low as 0.06 ppm after the soil treatment.

Question: Are there any test results from previous sampling of the drainage ditch?
Answer: Before cleanup near Building 3009, the analyzed samples showed levels between 1 and 10 ppm of PCBs.

Question: What were the test results of the soil before the treatment?
Answer: Very high concentration near building 3009. About tens of thousands ppm.

Question: Do we know where does the ground water flow?
Answer: Based upon the topography of the site groundwater flows towards the Apra Harbor.

Mr. Tsutsui checked if there were any more questions. He requested attendees to ask questions freely. Mr. Gawel invited everyone to attend the next RAB Meeting scheduled for Thursday November 18, 2004, same time, same place. Mr. Tsutsui stated that in order to obtain any information about RAB simply provide your email address.

Question: Mr. Cole Herndon, representing Recycling Association of Guam and Pacific Diver's Club, raised concerns regarding diving in Apra Harbor and potential health issues that may be associated with that. He specifically sited few popular dive spots such as blue hole, crevice, an area near ~~Nichimoro~~ the Nichiyo Maru wreck and other sites within the Tipalao Bay and its sewer outfall. Basically he had concerns regarding the quality of water and the health effects or impacts stemming from Guam's recreational waters.
Answer: Mr. Rolf Schottle, a contractor with the Navy who was involved with collecting water and fish samples in June of 2001, spoke exclusively regarding the Orote Seafood Advisory Area. He performed numerous dives to collect samples at the time that concentrations were the highest. He indicated that even at that time the levels were safe for diving. Mr. Wetzstein.indicated that a professional toxicologist performed a human risk assessment study for the waters near the Orote Landfill and it was found to be safe for diving.

Question: Mr. Herndon indicated that his main concern was the oil leakage in the sewage outfalls.
Answer: Mr. Jesse Cruz from GEPA answered that test results showed some heavy metals and other chemicals but nothing in high concentrations and nothing to worry about. He indicated that overall, waters of Guam were safe for diving and there were only isolated areas in the harbor or elsewhere that concentration of chemicals were of any concern.

Mr. Cole Herndon indicated that he has been attending some RAB meetings before. In a previous meeting, Trini Torres had stated that "our people don't like filling out forms" (this is when the Navy tried to reimburse Agat and Santa Rita Fishermen for the loss of their former fishing grounds). He suggested that the Navy could mitigate this issue by building a simple boat launch (like the one near the Ylig River Bridge on Route 4 in Yona) in some location between Inarajan and Merizo.

Mr.Tsutsui gave the floor to Mr. Gawel for closing remarks. Mr. Gawel requested the Navy Co-Chair, Lt. Culbreath, for any inputs. Lt. Culbreath asked the attendees to keep in touch for more information and potential questions and communication through email or call the COMNAVMARIANAS. Mr. Tsutsui concluded the meeting by inviting all the attendees to help themselves to the refreshments.

Approved by:

MICHAEL J. GAWEL
Community Co-Chairperson

KENNETH CULBREATH, LT, CEC, USN
Navy Co-Chairperson.