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DEPARTMENT OF THE NAVY
PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N. H. 03804-5000

IN REPLY REFER TO:

September 16, 1996

MEMORANDUM

FOR THE MEMBERS OF THE RESTORATION ADVISORY BOARD CERCLA REMEDIAL ACTION PROGRAM, PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Please find enclosed the draft minutes from the August 1, 1996 Restoration Advisory Board meeting for your review and comment. Comments are requested by October 2, 1996. You may provide your comments to me at 207-438-3830.

Sincerely,

Ken

Ken Plaisted
Navy Co-Chairman
Restoration Advisory Board

Distribution:
Juanita Bell
Jack McKenna
Doug Bogen
Cathy Wolff
Michele Dionne
Mary Marshall
Phil McCarthy
Guy Petty
Onil Roy
Jeff Clifford
Eileen Foley
EPA New England Region (M. Cassidy)
NOAA (K. Finkelstein)
MEDMR (D. Card)
USFWS (K. Munney)
NHF&G (J. Nelson)
MEDEP (N. Beardsley)
NORTHDIV (J. Conroy)
Brown & Root Environmental (B. Horne, L. Klink)
PNS (Codes 120, 121.10, 100PAO, 105, 105.5, NRRO)
COMSUBGRU TWO (R. Jones)

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RESTORATION ADVISORY BOARD MEETING
PORTSMOUTH NAVAL SHIPYARD
DAYS INN, KITTERY, MAINE
AUGUST 1, 1996

The meeting began at 7:08 pm and ended at 9:44 pm. Community members attending were: Juanita Bell, Doug Bogen, Michele Dionne, Mary Marshall, Phil McCarthy, Jack McKenna, Guy Petty, Onil Roy, and Cathy Wolff; regulatory member Nancy Beardsley, MEDEP; Natural Resource Trustees Donald Card, MEDMR, and Bruce Smith for John Nelson, NHF&W; and Navy members Ken Plaisted and Fred Evans. Others attending were Phil Kemp, MEDOH; Richard Heath and Denise Messier, MEDEP; John Dreisig, NHDHS; Louise House, ATSDR; Fran Endyke and Mary Anne Mascianica (PAO) from the Shipyard; Simeon Hahn, NORTHDIV. Eileen Foley called to inform the Shipyard she would be absent; Jeff Clifford was absent.

INTRODUCTION

Doug Bogen, the Community Co-Chair, welcomed everyone, and requested introductions around the room. Ken Plaisted, the Navy Co-chair, announced that SITE 12, a site included in the No Further Action Document, will have its tank removed in five or six weeks. He also announced that Fran Endyke, the Shipyard's IR Program Manager for two years, has received a promotion. Although Fran's successor will be announced at the next RAB meeting, he will continue to be involved with the IR program until the transition is complete. Ken presented Fran with an aerial photograph of SITE 8, and asked the RAB members to sign the back of the picture at the end of the meeting.

Nancy Beardsley outlined the two agenda items (denoted by the underscored headings) and introduced Phil Kemp, a toxicologist for the Maine Bureau of Health.

STATE OF MAINE ASSESSMENT OF OFFSHORE DATA RELATIVE TO SEAFOOD INGESTION RISKS

As part of its IR Program, the Shipyard conducted an assessment of the risk to people from eating seafood. The Shipyard's document, the Human Health Risk Assessment, was constructed based on the requirements of CERCLA (the Superfund law). The State of Maine has its own set of requirements for human health risk assessments; Phil's presentation was the result of Maine's review of the Shipyard's analysis. He shared a handout that included copies of the overhead graphics from which he spoke.

Human health risk assessments use two populations to assess human health risk: the average population and the high end exposed (subsistence) population, which consumes large quantities of seafood. In their risk assessment, the Shipyard estimated the amount of seafood consumed (for lobster meat, its tomalley, flounder, and mussels), the frequency of those meals, and the number of years over which that consumption occurred for both populations.

Using risk formulas for both cancer causing and non-cancer causing effects, a number results for both populations eating each of the four types of seafood studied. That number is compared to the EPA-established acceptable risk range to determine if a human health risk exists.

Although all known Shipyard compounds were factored into determining whether a human health risk exists based on seafood ingestion, Maine's analyses indicated that arsenic is the risk "driver" (the contaminant that leads all others in presenting a human health risk). Unfortunately, arsenic is a natural component of seawater; in addition, arsenic was also found in the seafood collected from "background" sites (not influenced by possible contamination from the Shipyard). Furthermore, the inorganic arsenic is toxic, while the organic arsenic is not; recent studies indicate that less than 1 percent of the total arsenic is the toxic inorganic arsenic.

The studies determined the risk for both populations from all four types of seafood taken from the area around the Shipyard, the Isle of Shoals, and the Gulf of Maine. Using 10 percent arsenic in the risk calculations results in unacceptable risks for human ingestion of seafood; however, at 1 percent arsenic, risks are only slightly elevated for Portsmouth Harbor subsistence ingestion. However, when the proportion of risk was decreased from 10 percent to 1 percent arsenic, the results indicated that PCBs and polycyclic aromatic hydrocarbons (PAHs)[a petroleum by product] also became significant risk factors. Maine compared the results of the Shipyard study to the data from its Surface Water Ambient Toxics (SWAT) program, where adult lobster meat from a number of areas along the Maine seacoast from Machias south was collected and analyzed.

Comparison of the concentrations for arsenic, PCBs, and PAHs from the SWAT stations versus the Shipyard samples indicates reasonably close levels, throughout. However, the data also indicate that the number of samples taken from the Shipyard study were few, resulting in a high standard deviation for those locations.

Comment: Are there similar levels of arsenic in seafood collected from various points around Maine?
Response: Yes, the readings are generally similar.

Comment: You have indicated that arsenic, PCBs, and PAHs are the principal contaminants that pose a threat to human health. Does that mean that other contaminants like heavy metals are not significant?
Response: Its does, from a human health risk standpoint.

Comment: I thought hot spots existed around the Shipyard.
Response: They are from mercury levels in mussels.

Comment: Can you explain why the arsenic numbers are not consistent within an individual scenario? With all the variability, what kind of credibility can we expect from the chart?

Response: We could take a mean across the numbers. The readings from the Shipyard samples may have the highest standard deviation because fewer samples were collected there than from the SWAT stations.

Comment: How can lobster have such variation? Your handout showing the risk estimate for the average seafood consumer indicates that at the Isle of Shoals, the risk from eating lobster meat is greater than that from Portsmouth Harbor; however, the risk from eating Isle of Shoals tomalley is less than that from Portsmouth Harbor. How can such variability exist in one sample?

Response: Contaminants tend to accumulate in the tomalley. Also lobsters migrate, up to 100 miles, so variations are expected.

Comment: The charts also indicate that few samples were taken at the Isle of Shoals station.

Response: The samples were from Phase II data. The Phase II data set has not been combined with the Phase I data because it would be like comparing apples and oranges. The samples were taken at different times of year and different weight species were collected. Fran added that CERCLA requires use of all sizes, whether or not they are legal for consumption (Phase I study). Phase II was designed to include bigger lobsters.

Comment: What lobster sizes were collected in the SWAT study?

Response: Twenty legal-size lobsters were collected into four composites. From a statistical standpoint, these samples are more representative than those collected during the Shipyard study.

Comment: How many lobsters were collected by the Shipyard?

Response: Between five and ten adults, during Phase II.

Comment: The variance at the Shipyard and at the Isle of Shoals is greater than at the SWAT locations. It might be interesting to look into this further.

Response: Detection levels (parts per million to parts per billion) are very low and that th variance is impacted by this. In addition SWAT samples were composited which will minimize variation from individual lobsters.

Comment: Why haven't you focused on the health risk from tomalley?

Response: Maine has already issued a health advisory warning pregnant women and women of child-bearing age to avoid eating tomalley. The tomalley contains many contaminants, including dioxin. Other states, including New Hampshire, Massachusetts, and Connecticut have also issued similar advisories.

Comment: How are these advisories broadcast?

Response: They are published in newspapers. Nancy Beardsley has a copy of some of them.

Comment: Why weren't scallops tested?
Response: Not much literature exists about toxicity factors for scallops so scallops were passed over for other seafood on which more information was available.

Comment: If your studies show risk right at the edge of EPA's acceptable limit, why haven't you issued a health advisory against eating seafood?
Response: We would need a good deal more information before issuing such an advisory, especially because of the uncertainty associated with arsenic, which drives the risk.

Comment: We recently had an oil spill. Would that affect the PAH levels shown in your handout?
R sponse: Yes, the levels would have changed.

Comment: How is it that the contaminant of most concern in freshwater fish is mercury, while we are seeing arsenic as the risk driver for seafood?
Response: Mercury is not a carcinogen; arsenic and dioxin are.

Comment: I would be interested to know if the Maine Department of Health knows anything about lead levels in Spruce Creek.
Response: The SWAT study could conduct some sampling. Fran mentioned that the Navy will include the Spruce Creek lead issue in the uncertainty analysis section of the ecological risk assessment.

Comment: What public health implications should we conclude from your presentation?
Response: We would like to have had more samples taken from the areas around the Shipyard but understand that these studies are very expensive. That's why it is good to also have the data from the SWAT stations, which correlate reasonably well with the results from the Shipyard study. We were not particularly concerned about the mussel sample readings from the area around the Shipyard because those beds are closed due to biological contamination.

Comment: Did you discover any flags?
Response: No real ones. Having information from the reference sites was helpful. Moderation in consuming anything needs to be stressed. The problems in the area around the Shipyard are no greater than elsewhere in terms of risk to humans eating area seafood.

Comment: Is the State comfortable about when the Shipyard collected its lobster samples?
Response: Lobsters tend to move out to warmer water in the offshore areas during winter. Phase I was conducted in the fall; Phase II in the spring.

some samples exceed the acceptable risk level but most of the risk is attributable to arsenic. The levels are not much different from anywhere else, including background areas. The SWAT study will continue for another year. Once the Shipyard's ecological risk assessment is finalized, monitoring may be conducted to fill in any data gaps. However, the human health risk assessment is final, except that a RAB presentation will be scheduled once the Phase II data has been analyzed for differences which may affect the human health risk assessment.

STATE OF MAINE ASSESSMENT OF SHIPYARD'S HYDROGEOLOGY

RAB members had requested another analysis of the Shipyard's conclusion that the island on which the Shipyard was constructed is, in fact, an island, hydrologically. Several RAB members expressed problems believing that Seavey Island and the mainland do not share some hydrologic connection. Richard Heath, the Maine DEP geologist for the Shipyard, discussed why he concurs that no connection exists between the two areas.

He provided a primer on water density. Since salt water is denser than fresh water, fresh water floats on salt water. In addition, at their interface, a "wedge" is created that further separates sea water from fresh water. From this perspective, he looked at the results of monitoring well samples collected at various locations at the Shipyard during the data gap study. He concurs with the Shipyard's conclusion that no fresh water is able to migrate from Seavey Island to the mainland or from the mainland to the Island. Richard noted that the density model was simplistic and truly applicable only to static systems but provided further support of the Shipyard's conclusion that the area has typical island hydrogeology

A lengthy discussion ensued about possible fractures and channels that might transect the mainland, Back Channel, and Seavey Island, thereby providing a pathway for freshwater migration. Richard agreed that many scenarios might be possible but the conclusion that Seavey Island and the mainland are isolated hydrologically has also been confirmed also by UNH and the US Geological Survey.

Comment: Fresh water extends down to 150 feet below the middle of Seavey Island. Where do you expect it is going?
Response: It must be becoming brackish. The aquifer below Back Channel is salt water.

Comment: Jim Tayon believed artesian system effects were occurring at the Shipyard.
Response: That was before the RFI Data Gap work was conducted to investigate facility hydrogeology.

FUTURE MEETINGS

Fran Endyke announced the dates and topics for upcoming RAB meetings:

September 19	Contaminant Fate and Transport Modeling Work Plan Low Flow Pilot Study Results TAG Advisor Discussion
November 7	Study Area Historical Review Site Management Plan Schedules
January 16, 1997	Round 1 Groundwater Monitoring Results from Low Flow Sampling Workshop on Possible Treatment Approaches that Could Appear in the Feasibility Studies

Comment: Please have the presentation on possible treatment approaches focus on those operable units that are being addressed first.
Response: Certainly.

Comment: What is the status of the historical study on the Shipyard's nuclear hazards?
Response: The document should be ready in July of 1997.

Comment: Another site tour would be appreciated. Not only do we have a new member but new sites have been added to the IR agenda.
Response: Certainly.

NEXT RAB MEETING

The next RAB meeting will be held on Thursday, September 19 at 7 pm.

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Portsmouth Naval Shipyard
Portsmouth, New Hampshire

Installation Restoration Program

RAB Update: August 1, 1996

The Portsmouth Naval Shipyard's Installation Restoration Advisory Board met on August 1, 1996 to hear a presentation by the State of Maine on their Human Health Risk Assessment and hydrogeological studies being conducted at the Shipyard.

Maine concurs - Consuming seafood from the Portsmouth Harbor area does not pose a threat to public health

Maine Department of Environmental Protection (MEDEP) and Department of Human Health Services officials reviewed the findings of their Human Health Risk Assessment, which was used to determine the risk associated with eating seafood taken from the waters around the Shipyard. The study focused on the levels of naturally occurring arsenic as the contaminant that leads all others in presenting a human health risk. Arsenic is a natural constituent of seawater. In many cases, the level of arsenic in lobsters and flounder taken from in and around the Piscataqua River was found to be below the levels seen in similar studies along the Maine coast line. The human health risk from consuming seafood taken from around the Shipyard poses no greater risk than the risk of consuming the seafood from other areas along the Maine coast.

Maine concurs - Groundwater from below the Shipyard does not effect the mainland

To answer the RAB's request for another analysis of the Shipyard's conclusion that Seavey Island (on which the Shipyard is located) and the mainland are isolated hydrologically, a State of Maine geologist was consulted. He concurred with the Navy's finding that no fresh water would be able to migrate from Seavey Island to the mainland or from the mainland to the island. The outcome of the hydrological studies conducted by the Navy has also been confirmed by the University of New Hampshire, the U.S. Geological Survey and the U.S. Environmental Protection Agency.

Questions?

If you would like more information, please contact:

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