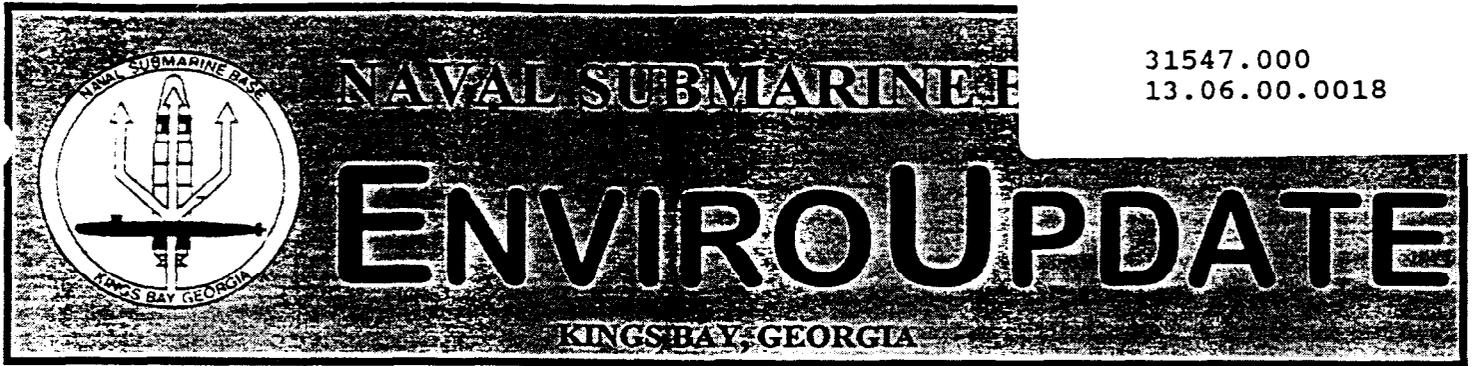


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Installation Restoration Program Newsletter

June 1996

Volume 1, Number 9

This newsletter is provided to the community on a quarterly basis or when significant developments occur in the environmental cleanup program. Copies of previous editions of EnviroUpdate can be obtained through the Public Affairs Office. For more information, contact Robert Steller, Public Affairs Office, (912) 673-4714.

Enhancing Our Cleanup Efforts

Pumping Tests and Upgrades to the Treatment System

All efforts continue to be focused on treating the affected groundwater in the area of the Old Camden County Landfill (Site 11) and determining the best long-term cleanup actions. Since our last newsletter, Naval Submarine Base's (SUBASE's) technical team has been working closely with the Georgia Department of Natural Resources (GADNR), the US Geological Survey (USGS) and the Restoration Advisory Board (RAB) on many technical issues. The team has been busy in the field collecting data to better understand groundwater flow in the area during pumping and nonpumping conditions. To give you the latest update on these activities, we will summarize in this newsletter some of the discussions presented to the RAB in early May. Questions posed by the community RAB members at this meeting are included in the *Question & Answer* section on page 3.

Treatment System Is Up and Running!

After a temporary shutdown for maintenance, the treatment system is now back on line. We replaced key parts, ordered spare parts, and cleaned the system's components. While the system was down SUBASE and the USGS had an opportunity to collect more data under normal groundwater flow conditions, that is "with the pumps turned off". We need to understand the groundwater movement as well as contaminant movement during both nonpumping and pumping conditions. It is also important to assess how pumping and treating of groundwater can be accelerated or enhanced by changing how we pump groundwater to the surface. As the system starts up again we will conduct a

series of pumping tests to determine how the pump and treat system can be optimized with resulting cost savings.

Pulsed Pumping Tests

Since March 1994, the extraction and treatment system has been pumping groundwater from five recovery wells. Continuous pumping at a fairly constant rate (5-9 gallons per minute depending on the well) results in approximately 36 gallons of water being removed from the aquifer every minute so that groundwater can be treated. To date, we have treated more than 24 million gallons of groundwater.

Now we want to physically bring *less* groundwater to the surface for treatment but remove *even more* contaminants from the aquifer at a faster pace. *Can we do it??* The technical literature and field studies demonstrate that, if the right conditions exist, it may be possible by varying the pumping conditions and rates. This is referred to as pulsed pumping instead of continuous pumping. By pulsing the system on and then off, we may be able to draw more contaminants out of the system at a faster rate. This is what we are currently investigating during a pilot-scale pulsed pumping test. This test was started in late May and will continue into the summer.

For conditions at SUBASE, we have decided to test pulsed/rest cycles of pumping. The pulsed pumping test includes two ON/OFF sequences. The first sequence is 8 days on and 8 days off. The second sequence will be designed based on the first and will likely include a longer pumping period. Sampling and test results during these periods will give key information about the

chemistry of the affected groundwater and if more contaminants are being removed. In addition, we will be able to evaluate how the aquifer and contaminants pond to the changes in pumping or stress on the system.

During the system shutdown in the spring, we collected groundwater samples to define nonpumping or equilibrium conditions for the aquifer. Information on the amount of contaminants removed during the pulsed pumping test will be compared to the amount removed during continuous pumping. We will then determine if the pulsed pumping is more efficient and can potentially decrease the overall cleanup time.

Treatability Study

Naturally-occurring microorganisms in soil and groundwater are capable of breaking down certain contaminants and converting them to nonhazardous substances. Data indicate that subsurface conditions at SUBASE are favorable for this biological activity to occur. As described in the March 1995 edition of *Environmental Update*, SUBASE has been evaluating *insitu* bioremediation as a long-term treatment option to be used in addition to the existing air stripping technology. As more data are collected during the

pumping tests, we will continue to evaluate the biological activity at the "hot spot" (area with significant contaminant levels), landfill, and subdivision.

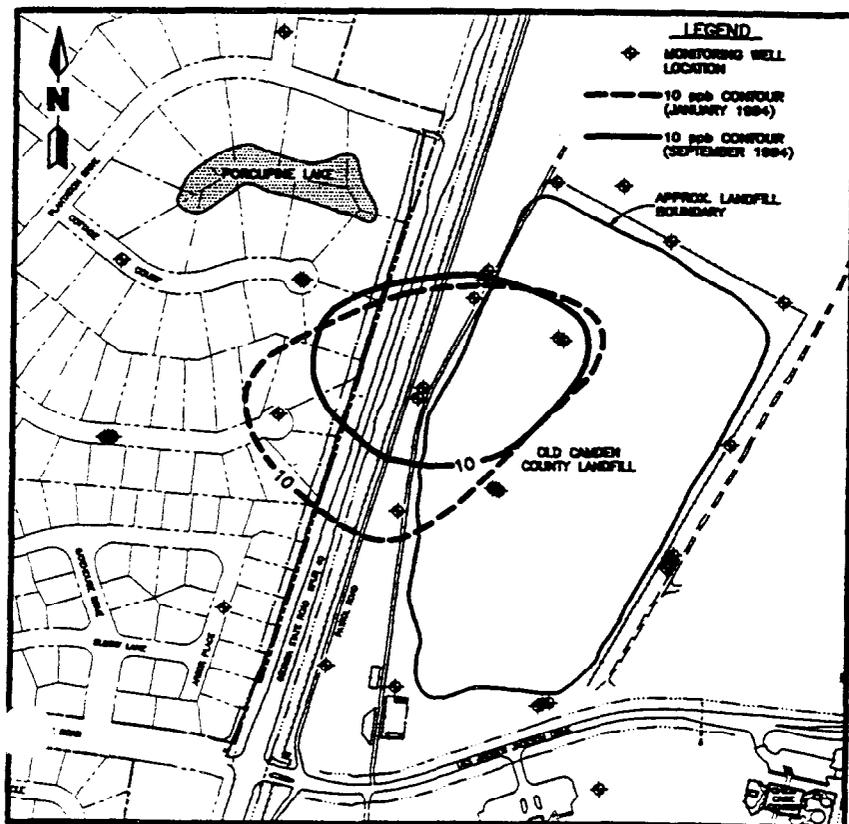
Interim Measure Upgrades

As discussed in the last newsletter, SUBASE is planning upgrades to the current treatment system. These include redeveloping existing wells, developing a performance evaluation plan, and installing additional recovery well(s). In addition to improving the existing system, the upgrades will be designed to increase pumping from the hot spot. Necessary activities are now underway. Design of the upgrades is expected to start in mid-summer.

Supplemental Resource Conservation and Recovery Act (RCRA) Facility Investigation

The USGS is currently reviewing the Supplemental RCRA Facility Investigation report. At the RAB meeting in May, SUBASE presented a summary of the findings. Although the findings have been reported in earlier editions of *Environmental Update*, maps showing chemical concentrations over time were presented and discussed. Locations and chemical levels in groundwater were shown for January 1994 (before the interim measure started) and for September 1994 (5 months after the interim measure started). As shown on Figure 1, groundwater quality improved over that period. This demonstrates that the treatment system is performing as planned by keeping the more toxic compounds from moving into the subdivision. Figure 1 shows the changes in the concentrations for the chlorinated solvents from January to September 1994.

Figure 1.



⇐ Chlorinated solvents are the group of compounds that the Navy, GADNR and USEPA are most concerned about because of their toxicity. Figure 1 shows the approximate area where chlorinated solvents have been found in the groundwater. The dashed line indicates the area contaminated at levels equal to or greater than 10 parts per billion (ppb). This represents conditions in January 1994 before the Navy started cleanup efforts. In September 1994, after treating groundwater for 5 months, data (solid line) appear to indicate that the area contaminated with similar levels of chlorinated solvents is now significantly smaller than in January.

*Parts per billion, ppb, is a way of expressing tiny concentrations of pollutants in air, water, soil, and food. If a chemical is found at 10 ppb, this amount is comparable to finding 10 specific corn kernels in a corn-filled silo 45 feet high and 16 feet in diameter.

Community Q&A

Is the current interim measure treatment system capable of performing the complete groundwater cleanup or will some other system or action be needed?

The current system is effective in controlling the further movement of affected groundwater and has treated millions of gallons of groundwater. However until cleanup standards for the groundwater and soil at the landfill are finalized by GADNR and the Navy, it is difficult to say if the current system will achieve the standards or if additional measures will be needed.

As we have reported previously GADNR is not able to use risk assessment results to establish appropriate cleanup standards for a site. In other words to what level should the soil and groundwater at the landfill be cleaned up in order to protect human health and the environment. GADNR has been working diligently towards setting cleanup goals based on risk assessment results. The agency is in the process of establishing guidance for performing risk assessments and has asked for the public to comment on the proposed guidelines. Once this policy and technical issue is resolved we will be able to complete the human health and ecological risk assessments that will help determine realistic and technically-attainable cleanup standards. The public comment period has been extended until August 30, 1996. We should have more information on this issue from the agency by the next newsletter.

For the system's recent maintenance activities, how much money did SUBASE spend on equipment?

The recent overhaul of the system cost approximately \$25,000 in parts and labor. SUBASE's contractor ABB Environmental Services performed a comprehensive maintenance check with thorough cleaning of all the system's components. Several spare parts were also ordered to facilitate future maintenance.

In regards to cleanup requirements, is the GADNR more or less stringent than the US Environmental Protection Agency (USEPA)?

GADNR is more stringent in its cleanup policy than the USEPA. The USEPA has primary responsibility and authority for implementing the Resource Conservation and Recovery Act and the Hazardous and Solid Waste Amendments. The USEPA, upon review of a State's program and regulations may authorize a State to implement the law and amendments. For a State to be authorized, it must demonstrate requirements and regulations that are at least as stringent or more stringent than the Federal requirements. The GADNR representative indicated that GADNR must proceed conservatively on the issue of cleanup standards and risk assessments to ensure that decisions are consistent with USEPA and Federal guidelines.

Will the State provide any funding to complement the Federal funding for the cleanup of the site?

According to the GADNR representative, no State money would be used to fund the cleanup. SUBASE added that there is a possibility that other responsible parties may help with cleanup costs. The landfill was used in the past as a municipal landfill and if other parties used the landfill and contributed to the contamination, they may be asked to share in the cleanup costs.

**Join us at our next RAB
meeting to have your
questions addressed and to
hear our cleanup progress!**

**Date: Thursday, September 19th
Time: 10:00 am
Place: St. Marys Library**

***For more information on general
activities at SUBASE, visit our
homepage on the World Wide Web!***

**Our internet address is
[http://www.gnatnet.net/
~kingsbay/](http://www.gnatnet.net/~kingsbay/)**

Questions & Answers

Naval Submarine Base, Kings Bay - Who To Call?

For general questions or information about SUBASE and the environmental program, contact:



Robert Steller
Public Affairs Officer
(912) 673-4714



An Information Repository containing documents related to the environmental cleanup activities at SUBASE is also available to the public.

The Information Repository is located at:

St. Marys Public Library
100 Herb Bauer Drive
St. Marys, Georgia 31558
Telephone: (912) 882-4800

Become involved in the environmental program at SUBASE, attend a RAB meeting!
These meetings are held quarterly and are open to the public.
Mark your calendars for the next meeting scheduled for September 19 at 10:00 a.m.

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