Proposed Plan for the Installation Restoration Program

Naval Surface Warfare Center White Oak

Dahlgren Division Detachment, White Oak
Silver Spring, Maryland

Engineering Field Activity Chesapeake

July, 1994

Summary

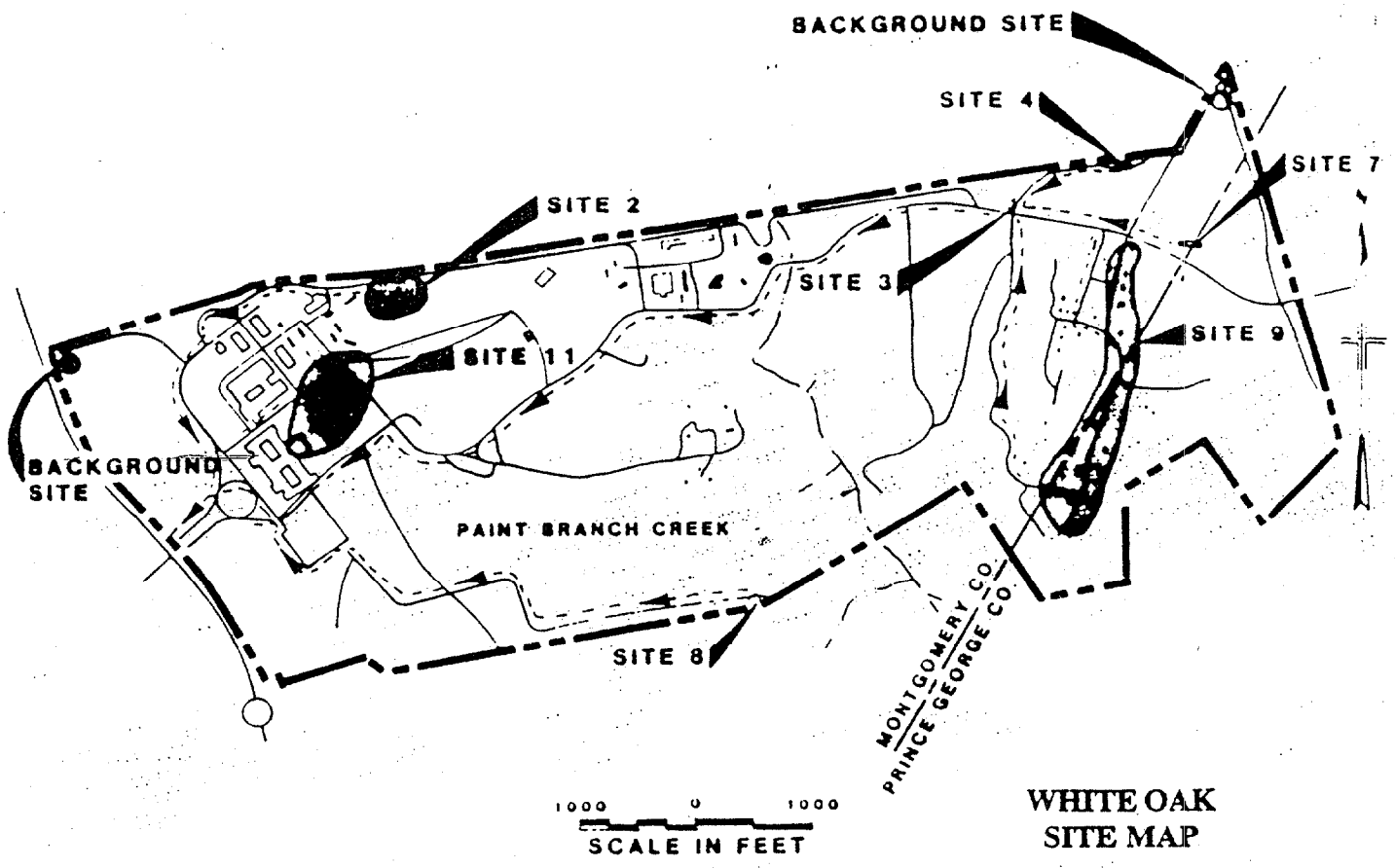
This plan describes the restoration of several areas on the Naval Surface Warfare Center, White Oak. The public is invited to comment on this plan during the comment period (August 1- September 30, 1994), and at a public meeting on September 22, 1994 at the White Oak Auditorium. White Oak and the Navy are committed to ensuring that community and environmental concerns are resolved. The plan is divided into sections titled **Introduction**, **Results**, **Restoration Plan**, and **How to Participate**.

Introduction

BACKGROUND

White Oak is a Navy-owned and -operated facility for naval surface warfare research. The facility is located about 5 miles north of Washington, D.C., and consists of about 732 acres of land. A mixture of residential, park, industrial, commercial, and federal properties surrounds the site.

In 1944, the Navy acquired 870 acres of land in White Oak. The land was used for the expansion of the Naval Ordnance Laboratory (NOL). In 1945,



WHITE OAK SITE MAP

the facility carried out its first work in naval ordnance and development. In 1948, the bulk of NOL was transferred from the Washington Navy Yard to White Oak. In 1969, 137 acres of land was transferred to the U.S. Army. In 1974, NOL was renamed the Naval Surface Warfare Center.

RESTORATION PROGRAM

This plan describes the restoration of several areas at the Naval Surface Warfare Center, White Oak, Maryland, where trash, transformer oils, research solvents and materials used to make explosives were disposed of many years ago.

None of the disposal areas is still used. When they were in use, they were managed responsibly and in accordance with all laws. Because so much more is now known about the effects of such areas on the environment, the Navy is working with the U.S. Environmental Protection Agency to carry out a program to restore its installations around the country. This is called the "Installation Restoration Program." One part of the program is the creation of a proposed plan.

At White Oak, seven areas were selected for restoration. They do not pose an appreciable risk to human health now. They were selected because restoration at these sites is needed to assure that they stay safe in the future. The seven areas are called throughout this plan:

Site 2 Apple Orchard Landfill
Site 3 Pistol Range Landfill
Site 4 Chemical Burial Site
Site 7 Ordnance Burn Area
Site 8 Abandoned Chemical Disposal Pit
Site 9 Industrial Waste Water Disposal Area
Site 11 Industrial Waste Water Disposal Area 100

The Site Plan on page 1 shows where these sites are located. Other areas were also investigated (during the Initial Assessment Study), but samples and studies showed they were safe, and that restoration was not needed. That is why some site numbers are missing from the above list.

The research which led to the identification of these sites was performed by environmental scientists and engineers, and the results were reviewed by a committee which included members from NSWC, the local community, Montgomery and Prince George's Counties Departments of Environment and Health, and the Maryland Department of the Environment.
All information on the research of the sites at White Oak, the way sites were selected and investigated, and how the proposed restoration plan was forged, is also available to the public. We would appreciate your comments on this plan. Later in this plan, there is information on how you can comment on or participate in White Oak's Installation Restoration Program.

Dates to Remember
Comment Period:
August 1 - September 30, 1994
Public Meeting:
September 22, 1994 7:00 PM
White Oak Auditorium
NSWC White Oak, Md.

Results

CHEMICALS

Investigations to date have shown that there are areas that need restoration. Several chemicals have been found at concentrations that, if not addressed, could cause harm.

Solvents, such as paint thinner (trichloroethane), chloroform, alcohol, and other cleaners were disposed in dry wells on the base. The studies found them in the ground and, to a limited extent, in the ground water at sites 2, 3, 4, 8, 9, and 11. These chemicals are traveling very slowly, and are easily cleaned up by evaporation, or granular activated carbon filtering.

Acids, used for cleaning and in the preparation of explosives, were placed in dry wells on base. Acids are in sites 2, 4, 8, and 11. The pH, or acidity, of local soil is still within the normal ranges of 5-7. The ground water is not acidic. The Navy will ensure that all acids are neutralized during restoration.

PCBs, the major component of transformer oils manufactured before 1980, were found in the ground at site 2. Sampling of the stream water failed to turn up any PCBs in the water. This is to be expected, because PCBs stick very tightly to soil and typically will not be released by soil into flowing water. PCBs were used in transformers because they are a good fire retardant. In the 1980s, research showed that exposure to high concentrations of PCBs presented a cancer risk, and manufacture of PCB-based oils was stopped.

Explosive ingredients (dynamite, TNT, RDX, HMX, DNT) have been found in the ground, and to a limited extent, the groundwater at site 7. These compounds can explode in pure form, but are not concentrated enough to do so. Soil washing will clean the ingredients off the soil.

Metals (mercury, lead, copper) were used in the manufacture of explosives. These also occur naturally in soil. Metals were found at sites 2, 3, 4, 8 and 11, and have been found in local minnows in low concentrations. There is no evidence of mercury problems in local plants or wildlife.

RISK ASSESSMENT

The Navy, through Malcolm Pirnie, has conducted modeling to get an estimate of the health hazards, or risk posed by each site. Two types of risk, present and future, were evaluated. The present risk found that all chemicals are still on base. The future risk found that, if left unrestored, the sites will expose the community to these chemicals. The Navy is going to clean up all sites as quickly as possible.

Worker Risk. There is one site on base (the Apple Orchard Landfill) where workers are potentially exposed to PCBs. The site is fenced off and warning signs are posted. The site is a cancer risk for anyone that works on site every day, for 30 or more years. There is no danger from occasional contact with soil or dust. Because animals tend to move a lot, site 2 does not pose a risk to wildlife. All other sites do not have chemicals at the surface that will cause problems.

Community Risk. The community is not exposed to any soil, surface water, or ground water needing restoration. Base restoration will keep the community from being exposed. The soil and ground water that contains chemicals is on base and underground. Normally edible local plants and berries are safe to eat. The local trout, children and household pets are safe.

Wildlife Risk. All actions proposed will maintain or improve water quality in the Paint Branch Creek. The Interstate Commission on the Potomac River Basin found "restricted access has protected this segment". However, possibly because of the nearby city, minnows and eels sampled have PCBs and mercury in them, at low concentrations. The source is uncertain. So, the Navy will remove or contain all possible sources from the base, and investigate other ways to improve stream quality. There is no sign that trout, deer, or birds have been affected.

Restoration Plan

METHODS

In the plan, five different techniques to restore the various kinds of materials from the areas of White Oak are proposed. All techniques considered are listed, with the sites that are proposed next to the title. Each technique will be used at the areas where it works best.

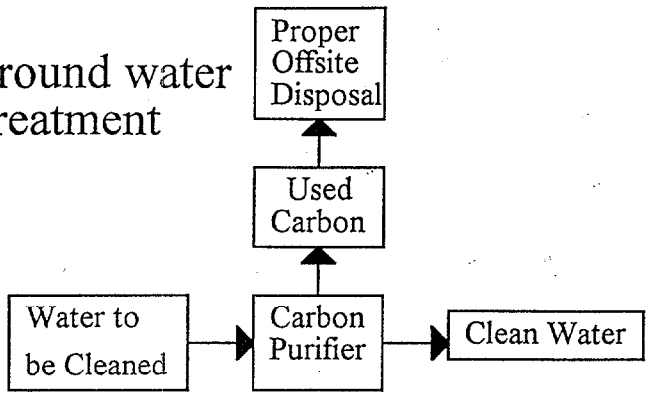
No Action **Sites NONE**

The No Action alternative was evaluated, as required by law. This alternative was found not to be protective of human health and the environment and is not recommended for any site.

Granular Activated Carbon Purification
Sites 3,4,7,8,9,11

Underground water is pumped through a container of specially activated carbon, which purifies it. It is similar to the water purification systems found in some homes, but on a much larger scale. The purified water is tested to assure it is clean, and then released into a stream. Each unit will be about the size of a van. This method will be used to finish restoring sites 3, 4, 7, 8, 9, and 11. However, groundwater purification is effective only if the soil it passes through is clean.

Ground water Treatment



Air Stripping **Site NONE**

Water is pumped into a tower through which air is being blown, and the chemicals are transferred to the air. The chemicals are then collected out of the air, and transported away. This technique is not recommended because the towers would have to be very large to clean the water completely, the technique would be expensive, and it would be too noisy.

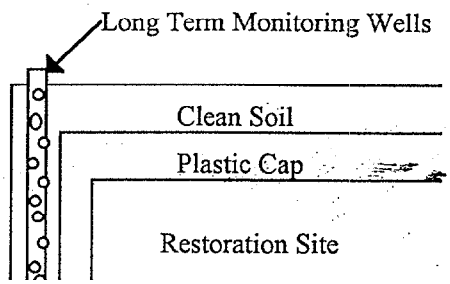
Excavation and Removal **Site 4,8,9,11**

In some areas, containers and old electrical equipment were buried. The containers may still contain some solvents or other materials, and the electrical equipment may still contain transformer oils. These large items will be dug up and removed from White Oak. This method is not very practical for soil and ground water that is contaminated. This method will be used to treat any containers found at sites 4, 8, 9 and 11.

Landfill Cap **Site 2,3**

This technique involves placing a many-layered, impenetrable barrier, or "cap," on the top of a landfill. The cap ensures that the solvents and oils in the landfill do not move upward to the surface, or downward into underground water. Careful monitoring is done to assure that the cap keeps its effectiveness over the years. This method will be used at sites 2 and 3. The EPA recommends landfill capping for sites with PCBs in the Remedial Action Technology Guide.

Landfill Cap



Solidification **Site NONE**

Solidification is the process of making the waste into a rock. As a result, the chemicals cannot travel to local streams. This technique is expensive, and therefore is not recommended for any site.

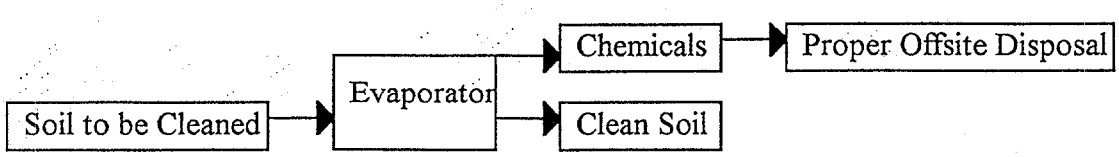
Incineration **Site NONE**

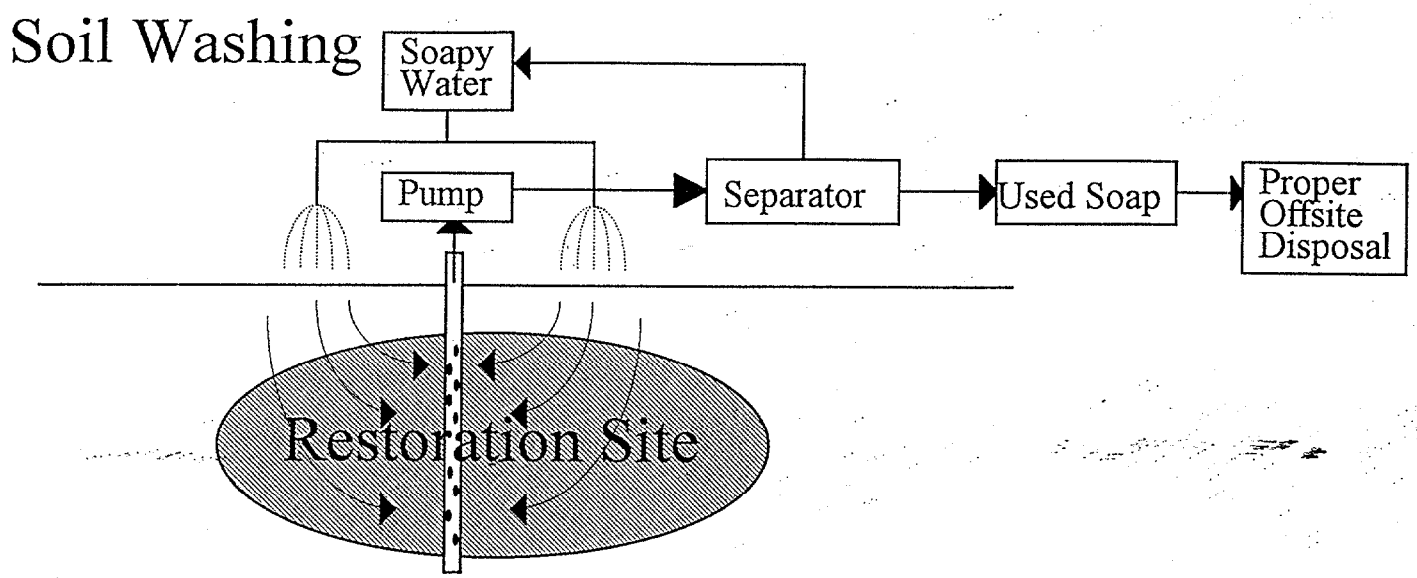
This technique involves heating the soil to 2000-3000 degrees Celsius so that atom-to-atom bonds are broken apart. This process leaves elemental Carbon, Hydrogen, Chlorine, etc. Because of the high temperatures, this technique is hard to control, and very expensive; therefore, it is not recommended for any of the sites.

Low-Temperature Evaporation **Site 4,8,9,11**

This technique involves setting up a large oven (about the size of a mobile home), into which soil is placed. The soil is heated so that the solvents in the

Evaporator





soil evaporate out. The evaporated solvents are collected and transported away. The cleaned soil can then be returned to the ground. The process will be carefully monitored so that it does not release any more chemicals, or more noise than a Diesel engine. This method will be used to treat most of the soil at sites 4, 8, 9 and 11. However, some chemicals do not evaporate easily, and other methods will be used.

Soil Washing **Site 7**

There are two ways this can be done. The soil may be dug up and placed in a machine with a washing solution, which removes the desired materials. The clean washing solution is reused, the chemicals are taken to proper off-site disposal, and the cleaned soil is returned to the ground. In another method, a washing solution is sprayed directly onto the ground. It is allowed to filter through the soil and pick up chemicals on the way, and then is pumped out. The used washing solution is transported away, and the cleaned soil never has to be moved from the ground. This method will be used at site 7.

ORDERING OF CLEANUP

The highest priority for cleanup is the ground water. However, the water will get contaminated again unless the source is removed. Therefore the cleanup will be undertaken in two stages.

Source removal is the first stage. It will include placing a cap over sites 2 & 3, and using the low-temperature evaporator to clean the majority of the soil at the other sites.

Ground water cleanup, the most important stage, will begin after the source has been addressed. The soil washing will also be done then. This stage will take up to ten years because of the slow rate that ground water flows.

During and after all stages of the restoration, the area will be continually sampled and monitored to ensure protection of human health and the environment.

How to Participate

FIND OUT MORE

The Navy has placed all investigation reports to date in an administrative record that can be found at:

White Oak Library
8901 Colesville Road
White Oak, Md.
301-565-7410
301-565-7689

COME TO THE PUBLIC MEETING

There will be a public meeting at the White Oak Auditorium on September 22, 1994 at 7:00 P.M. Everyone interested is invited to attend. Additional meetings will be held . Anyone interested in being on the Installation Restoration mailing list may sign up at the public meeting.

SEND YOUR COMMENTS

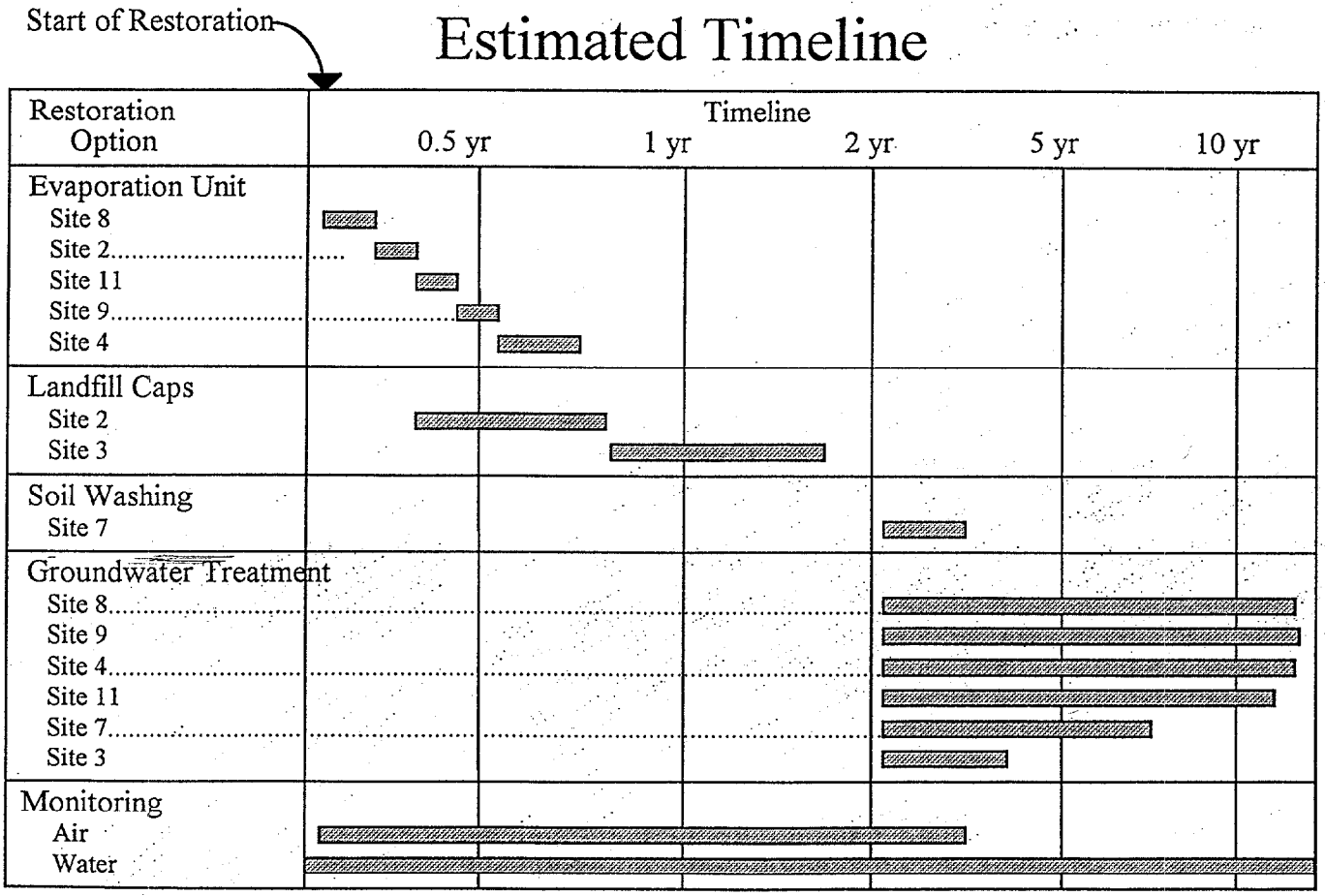
You are invited to comment on anything in the plan or in the administrative record. Please send your comments to:

Heath Wells
EFA Chesapeake NFEC
901 M St SE Bldg 212
Washington DC 20374-5018
202-685-3281

or to:

Dorn Carlson
Environmental Office C19
NSWC White Oak
10901 New Hampshire Ave
Silver Spring MD 20903-5000
301-394-3762

Please submit comments before September 30, 1994.



Site No.	Substances of Concern	Ground Water Need Restoration?	Current Exposure to Community	Main Restoration Methods	Estimated Restoration Complete
2	PCBs Solvents Acids Metals	No	Surface soil on site (fenced to prevent access)	Landfill cap Evaporation (soil) Long-term monitoring	3/4 year
3	Solvents Metals	Yes	None*	Landfill cap Monitoring Granular activated carbon filtration (ground water)	1 1/2 years (cap) 6 years (ground water)
4	Solvents Acids Metals	Yes	None*	Evaporator (soil) Excavation and removal (glass, metal, etc) Granular activated carbon filtration (ground water)	1 year (soil) 10 years (ground water)
7	Explosives	Yes	None*	Soil washing	3 Years
8	Solvents Acids Metals	Yes	None*	Evaporator (soil) Excavation and removal (glass, metal, etc.) Granular activated carbon filtration (ground water)	1/2 year (soil) 10 years (ground water)
9	Solvents Explosives	Yes	None*	Evaporator (soil) Excavation and removal (glass, metal, etc.) Granular activated carbon filtration (ground water)	3/4 year (soil) 10 years (ground water)
11	Solvents Acids Metals	Yes	None*	Evaporator (soil) Excavation and removal (glass, metal, etc.) Granular activated carbon filtration (ground water)	1/2 year (soil) 10 years (ground water)

* Substances are all underground