

GUIDANCE FOR EXPLORATION IN SWEDEN



SveMin

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PREFACE

The intention of this document is to provide guidance for exploration in Sweden. The document will help companies to continuously improve their work in issues concerning safety, external environment and social responsibility, and to integrate these three aspects into their exploration program. The document is partly based on previous guidelines developed by SveMin (Guidelines for exploration work - 2006) and is a complement to "Guidelines for good environmental practice for exploration in protected areas - 2007".

In the process of developing this document, also similar international guidelines have been considered, such as "e3 Plus", developed by an exploration organisation in Canada (PDAC) and "Good Practise Guidance for mining and biodiversity", developed by the International Council on Mining and Metals (ICMM).

The member companies of SveMin undertake themselves to follow, in applicable parts, the ethical rules that apply to the member companies. This guidance has been developed as a support to fulfil the ethical rules within the exploration area. The guidance is to be seen as a support and help for the work only, and is not to be seen as an all-embracing review of the legal requirements that apply to prospectors in Sweden. It is the responsibility of the prospector to make sure he or she is aware of what rules and regulations apply to each situation.

The guidance is primarily intended for prospectors and holders of rights, but it is also relevant for legislators, supervisory authorities and other rights holders and organisations that may be affected by exploration activities. It is developed by the SveMin Exploration Committee and applies primarily in applicable parts to the metallic minerals covered by the Minerals Act (1991:45)¹.

During the work, a dialogue has been held with, for instance, the Mining Inspectorate concerning contents and structure. The following persons have been part of the working group who contributed to the work in this document:

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Stockholm in May 2012

¹ Exploration and exploitation of deposits of the following mineral substances (concession minerals): antimony, arsenic, beryllium, bismuth, cesium, chromium, cobalt, copper, gold, iridium, iron occurring in the bedrock, lanthanum and lanthanide series, lead, lithium, manganese, mercury, molybdenum, nickel, niobium, osmium, palladium, platinum, rhodium, rubidium, osmium, palladium, platinum, rhodium, rubidium, ruthenium, scandium, silver, strontium, tantalum, thorium, tin, titanium, tungsten, uranium, vanadium, yttrium, zinc and zirconium, alum shale, andalusite, apatite, baryte, brucite, refractory clay or clinkering clay, coal, fluorspar, graphite, kyanite, magnesite, nepheline syenite, pyrite, pyrrhotite, rock salt or other similar salt deposits, sillimanite and wollastonite, oil, gaseous hydrocarbons and diamonds.

INTRODUCTION

1 Background

1.1 About the guidance

The intention of this document is to provide guidance for how exploration work can and should be conducted in Sweden, to comply with stipulated safety and external environment norms, regulatory requirements and to minimise the impact on other land users and the community. The basic principle is that a well-planned and correctly managed exploration project should have minor or no lasting impact on the environment.

Since this document provides guidance to legislative, regulatory and policy requirements, it is also subject to future changes. For that reason, this document should not be regarded as a complete interpretation of applicable laws and practices. It is the responsibility of the prospector to make sure he or she is aware of what rules and regulations apply to each situation. This guidance is not only relevant to prospectors, but also to legislators, supervisory authorities and other rights holders and organisations that may be affected by exploration activities.

1.2 Purpose of the guidance

Today, there are many interests that together with the mining industry compete for the usage of land. The historical development reflects a conflict between primarily four parties: 1) landowners, 2) other rights holders, 3) the government, and 4) the finder; that is, the prospector. All with different starting-points and interests.

- The landowner may be interested in obtaining benefit from the mineral resources found in the ground for himself/herself. It is also possible that the landowner does not want to accept the land encroachment the exploitation results in.
- Other rights holders may have a special right to use the land that the prospector encroaches on.
- The government may have several in some cases conflicting interests, such as tax revenue, employment, and protection of other public interest, such as the natural environment and cultural heritage.
- The prospectors have an interest in obtaining benefit from the mineral resources they have found after making significant investments.

These interests have over the centuries been given varying weight, which also has been reflected in the legislation. The investigative work performed in recent years upon formation of protective areas, however, has had an imbalance in which there has been no balancing between the protection interest and the industrial interests.

The price development and the increased material needs of society has resulted in that the ore potential in Sweden today is great, even outside areas that previously did not have any mines. Many metals that to date not have been mined, or mined in small scale (e.g. Te, Ni, W, U, Li, the platinum group elements, rare earth metals, etc.) have potential both within and outside the classic ore fields.

In this context, it should be emphasised that the geology is 3-dimensional and that ore-bearing units very well may be located under rock that is not associated with ore occurrences. From a national interest perspective, it is relevant to discuss the upper 2 km of the crust. A map showing the geological conditions at 2 km depth may look very different from the one we currently have over the outcrop of different geological formations.

Technology development and increased awareness within the industry has created opportunities to explore in an efficient and environmentally acceptable way. There is thus an interest to, based on existing legislative framework and the latest technology, provide guidance for exploration both within and outside protected areas.

1.3 Exploration

Mineral exploration (prospecting) is defined in the Management of waste from extractive industries directive 2006/21/EG as:

“The search for mineral deposits of economic value, including sampling, bulk sampling, drilling and trenching, but excluding any work required for the development of such deposits, and any activities directly associated with an existing extractive operation.”

Mineral exploration according to the Minerals Act is the search for economic mineral deposits and may be conducted both on private and/or governmental land.

The typical activities that commonly take place during mineral exploration in Sweden are:

- Identification of geologically interesting areas
- Approval procedure
- Geological mapping and boulder tracing
- Geophysical surveys from land or air
- Till or other soil sampling (geochemical sampling)
- Drilling
- Evaluation of the technical feasibility and the commercial viability of extracting a mineral resource

In general, the methods used in mineral exploration have minor impact on the natural environment and cultural heritage. In the initial stage, there are usually measurements of the rock properties with instruments from land or from aircraft. At a later stage, more intrusive investigations are performed, for example till sampling and core drilling. The investigations may also include usage of other methods.

Potential consequences on the natural environment during exploration work can be:

- Felling of trees and impact on vegetation
- Temporary impact on surface drainage
- Temporary increase of noise and light levels
- Temporary impact on water and soil

1.4 From exploration to the start of a mine

It is a governmental general interest that the extraction of ores and minerals within the country is secured. The wealth evolved during the past centuries in industrialised countries, is to a large extent based on that a large number of metals and minerals can be extracted from the bedrock.

That exploration (prospecting) of the bedrock in accordance to the Minerals Act is conducted is thus a public interest. This is also essential for the mining industry, the metal and mineral industry, and the engineering industry; sectors of traditionally great importance for the economy of Sweden and for the employment. Mineral exploration within the country also reduces the vulnerability of the supply of raw materials for the industry. Exploration of the bedrock in order to find exploitable deposits require advanced knowledge and a major economic effort with high risk.

Exploration does not include mining. Mining is a commercial exploitation of minerals under a special approval procedure, under both the Minerals Act and the Environmental Code, and involves refining and processing of the ore. This guidance is limited to cover exploration only. Regarding the impact on the environment and the surroundings, exploration can never be comparable to mining activities.

Exploration permits and exploration comprise large areas and normally causes minor damages and encroachment. Only a fraction of the number of exploration permits results in the establishment of a mine.

Mineral extraction supplies the industry with important metals and minerals. The basis for the mineral supply is exploration. Without exploration, there will be no new mines and no mine expansions, which in turn will have an impact on the supply of important raw materials to the metal and manufacturing industry.

In 2010, exploration for about 675 MSEK was conducted in Sweden. Around 100 companies held exploration permits, which in total covered 20 000 km² (source: SGU, Geological Survey of Sweden).

In Europe, Sweden is a leading ore producer, with 93 % of the production of iron ore in the EU area in 2010. Corresponding percentages are for lead ore 38 %, zinc ore 27%, copper ore 10%, silver ore 17 %, and gold ore 37 % (source: SGU, Geological Survey of Sweden). Sweden's role as ore producer in Europe is strengthened by the fact that EU as a whole only produces about 3 % of the world production of metallic minerals, but consumes about 20 %. The consumption of the EU countries exceeds in other words many times what is produced in the EU, which in the long term is not

desirable. The fact is, however, that EU is geologically under-explored, which means that the potential to find more deposits has not been sufficiently investigated.

1.5 Legal framework

Mineral exploration in Sweden is governed under the Minerals Act (1991:45).

The purpose of the Minerals Act is to promote an economically viable mining industry, which in the best way utilises the Swedish mineral resources and is consistent with Sweden's economic, social, and environmental goals.

The Minerals Act is about exploration and extraction of certain mineral deposits on land, regardless of who owns the land. The Act defines exactly which mineral substances that the rules apply to, the so-called concession minerals, see Chapter 1. § 1. Primarily these are the traditional metals, certain industry minerals, as well as oil, gas, and diamonds. All other minerals and rocks are outside the Minerals Act. They are therefore usually called landowner minerals.

The Mining Inspectorate is the authority in Sweden to decide on conditions for exploration, exploration permits, and exploitation concessions. An *exploration permit* gives exclusive right to explore, access to the land within the permit area, and preferential rights to an exploitation concession. An exploration permit does not give right to undertake *exploration work* in contravention of any environmental regulations applying to the area. Applications for exemption are normally submitted to the County Administration Board. An *exploitation concession* gives the holder the right to exploit a proven, extractable mineral deposit. The right is valid for 25 years and may be prolonged.

Acts and regulations governing exploration work include:

- Minerals Act (1991:45)
- Mineral Ordinance (1992:285)
- Environmental Code (1998:808)
- Work Environment Act (1977:1160)
- Work Environment Ordinance (1977:1166)
- The Work Environment Authority's Statute Book (AFS)
- Off-Road Driving Act (1975:1313)
- Off-Road Driving Ordinance (1978:594)
- Forest Conservation Act (1979:429)
- Forest Conservation Ordinance (1993:1096)
- Heritage Conservation Act (1988:950)
- Heritage Conservation Ordinance (1988:1188)
- Protection Act (2010:305)

1.6 Protected areas

The Swedish legislation allows for the protection of areas, species, and groups of organisms. The protection of area is by far the largest part of the nature preservation, and implies that the nature conservation authorities with legal support establish *various types of area protection*. The protection means that valuable habitats and vulnerable species are protected where they remain today. The value of the areas as habitats for plants and animals is often the main reason for the protection. A variety of cultural heritage values as well as recreation and outdoor life values are also often the purpose of the protection of areas. It should be noted that all exploration activities are prohibited in national parks. Exploration may, however, after approval be allowed in all other types of protected areas. A detailed description of this is available in "Vägledning för god miljöpraxis vid prospektering i skyddade områden" (Guidelines for good practice for exploration in protected areas) prepared by SveMin 2007.

Examples of protected areas with various types of restrictions:

- National park
- Natura 2000 area
- Nature reserve
- Culture reserve
- Natural monument
- Biotope protection areas

- Animal and Plant protection area
- Shoreline protection
- Environmental protection area
- Environmental risk area
- Water conservation area
- Protection area for wild birds
- Protection area for habitats and wild animals and plants
- Large unaffected areas
- Ecologically sensitive areas
- National interest for reindeer husbandry
- National interest for nature conservation
- National interest for cultural heritage management
- National interest for outdoor recreation
- National interest for mineral extraction
- National interest for water supply
- National interest for total defence
- National interest for wind farming
- Area for tourism and outdoor recreation
- Coasts where environmentally damaging facilities are prohibited
- Unbroken mountain areas
- Ancient monuments
- Embattlement area
- Cemetery, public road, church, power plant, industry
- Detailed development plan and special area regulations

DESCRIPTION OF EXPLORATION

This chapter outlines some of the most commonly used methods for exploration. Other methods may exist and should follow the same general principles with regard to the environment, etc.

2 Geological mapping and boulder tracing

2.1 General description

To find mineralisations, studies of the bedrock and the rock are required. In the exploration work, boulder tracing and geological mapping are often included as a first step.

- *Boulder tracing* means searching for mineralised and geologically altered boulders. Geologically interesting boulders are mapped and sampled with hammer. The sample is sent for analysis to determine the metal content.
- Geological mapping means searching for outcrops in the terrain. The outcrops are mapped and interesting outcrops are sampled for analysis of the metal content. The geological information is compiled in databases and on geological maps, together with all other available information such as geophysics and geochemistry. The information is collected by geologists, geophysicists and field technicians through surveys in the field.

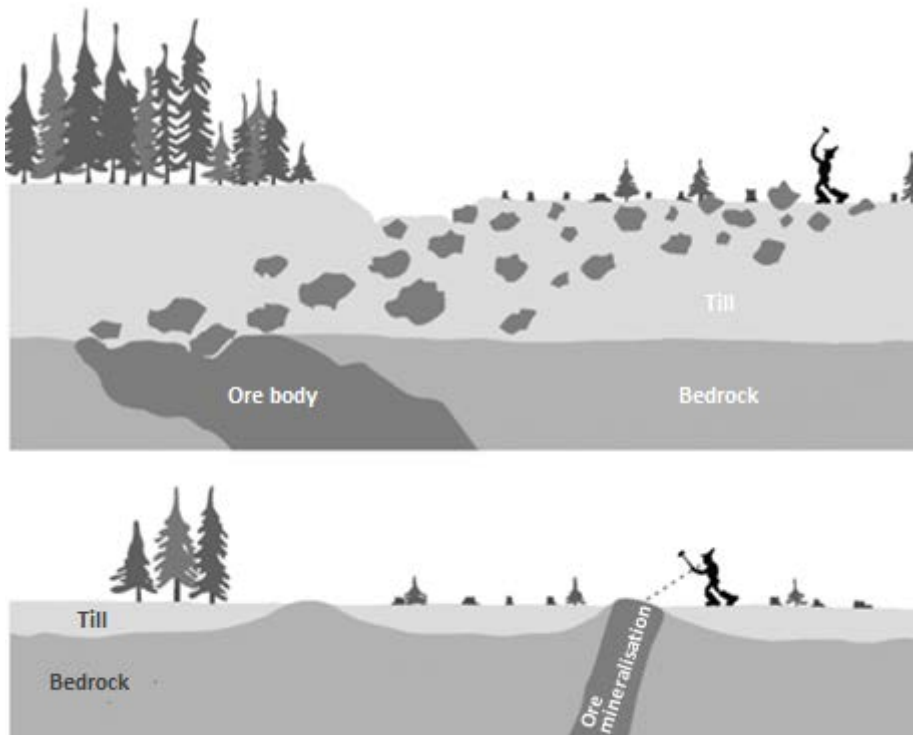


Figure: Boulder tracing provides great chances to find previously undiscovered, soil-covered occurrences of ore and industry mineral. As illustrated in the upper figure, surface boulders may reveal the existence of an ore body further down in the soil layers. Also searching for outcrop may give results (lower figure). The Kiruna ore, for example, was found in this way.

2.2 Consequences for the external environment

Boulder tracing and geological mapping generally causes no land damage. For geological mapping, however, it may be necessary to remove moss to expose the appropriate rocks and boulders.

3 Geophysical ground surveys

3.1 General description

General geophysical surveys from airplanes or helicopters provide the basis for the mapping of the geology over large areas – often several hundred square kilometres. The results guide the prospector to places with promising geological conditions. Geophysical ground surveys are performed when a promising area for exploration has been marked off. The physical characteristics of the ground are then surveyed with different types of portable equipment.

Geophysical ground surveys are conducted throughout the year. The technicians walk, ski, or go by snow mobile over the working area and measure the physical characteristics of the ground with different types of portable measurement equipment. Some of the measurement methods require that a long cable is laid in the area. This is done by using a lighter terrain vehicle (snow mobile, quad) that feeds the cable from a cable drum. The technicians send the measurement results to geophysicists for interpretation.

The measurement is performed in a grid, where the distance between the survey lines varies from 10 to 200 metres and the distance between the survey points usually varies from 5 to 50 metres. Today, the measurements and the orientation are almost exclusively conducted with GPS (Global Position System) navigation.



3.2 Consequences for the external environment

The impact on the ground and the environment at geophysical ground surveys is non-existent or very small. In some cases, sight-clearing is done along the base line and the measurement line, but usually this is not required. The development of the GPS technology has led to that staking and clearance of staking lines is used less. For some geophysical measurements, lighter terrain vehicles are used. If the work is planned and conducted properly, there are no damages or the damages are very limited.

4 Till sampling (geochemical sampling)

4.1 General description

The bedrock is often overlaid with loose soil layers, usually till, which the continental ice crushed down from the bedrock and spread as the ice moved. In the till, traces of minerals and metals from the surrounding bedrock may therefore be found. Till sampling can be performed in different ways; with shovel (surface till) and with vehicle-mounted drill (basal till).

When sampling with a shovel, a hole is dug in the ground until untouched mineral soil is reached, the so called C-horizon, which is sampled. The hole is typically 0.5-1 m deep. The sample is collected in a sample bag and then the hole is backfilled with the dug-up material.

When sampling with a handheld drill, a small hole is drilled in the till (approx. 5 cm in diameter) down to the desired depth, usually one to a few metres, after which the drilling is stopped and the sample is collected in a bag. The sampler, located at the bottom of the drill string, captures the sample at the depth where the drilling is stopped.

4.2 Consequences for the external environment

Surface till sampling generally causes no damage. The till is exposed in some cases, but only in very small areas. Shovel sampling with well executed back coverage entails no impact on the external environment. The consequences of basal till sampling are described below.

5 Drilling

5.1 General description

When an interesting area has been identified, different types of test drilling is done to conclude the nature of the rock at depth. Since drilling is costly, careful analysis of where the drilling should be performed is required. Drilling takes place in a small and limited part of the exploration permit.

The drill rigs can vary in shape and size. Although there are a number of different sizes, manufacturers, and types of drill rigs, there are a few simple rules that apply to most of them. The drill rigs are almost always primarily driven by a diesel motor. They have a secondary driving mechanism which is hydraulic.

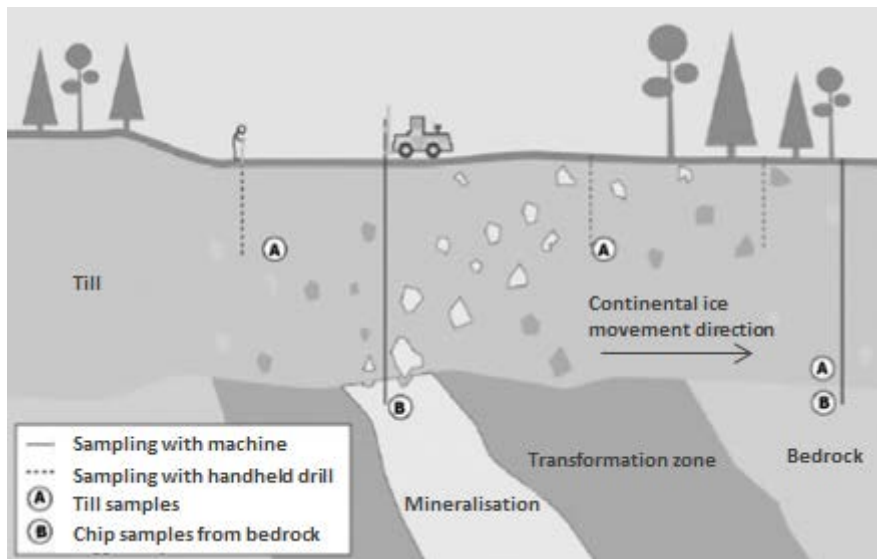


Figure: Different types of sampling with drill (source: Lapland Goldminers)

5.2 Soil drilling

Soil drilling and surface rock sampling is performed when an interesting area has been identified by geological mapping, geophysical surveys, and/or boulder discoveries. At soil drilling, samples are taken from the soil layer, normally at a depth of 0-20 metres, above the solid rock. Normally samples are also taken from the top surface of the bedrock. The soil and rock samples are analysed. The purpose of this type of sampling is to investigate a larger area, in which there are indications of mineralisations.

Soil drilling and surface rock sampling are, like diamond drilling, relatively expensive exploration methods. Drilling usually costs SEK 300-800 per metre. The distance between the samples usually vary from 10 to 400 m. Increased concentrations of interesting metals can lead to the next stage in the exploration work, normally diamond drilling.

A drill rig, often mounted on tracks or a terrain vehicle, is driven to the drilling site. The best available route is used, preferably on hard foundation and in consultation with the landowner. For natural reasons, certain areas, such as wetlands, can only be drilled during the winter when the ground is frozen. Sometimes the snow is compacted by driving for example a snow mobile or a tractor along the transportation route before the drill rig is driven to the site. In some cases, a few trees are cut down in order to position the drill rig. The soil and rock samples are placed in packages and transported away on a lighter terrain vehicle and are then sent for analysis.

5.3 Core drilling

Core drilling is often the last step in the exploration work. An interesting area has been identified through geological mapping, geophysical surveys, and/or basal till drilling and surface rock sampling and needs to be investigated more in detail. The rock is drilled with a circle shaped drill bit covered with small diamonds, which cuts out a cylindrical core of rock, usually approximately 5 cm in diameter. The drill hole length can vary from some 10 metres to >1000 m. When the drill tube is full, it is brought up and emptied. The drill cores are placed in special boxes and then transported on a lighter terrain vehicle to a drill core archive for geological mapping and sampling. Mineralised parts of the drill core are sent to a laboratory where the metal content is analysed.

Core drilling is often performed with a tracked machine. The best possible route to the drilling site is chosen in consultation with the landowner.

Water for cooling and transport of drill cuttings is taken from a nearby drill hole, lake, or a tank.

Core drilling is an expensive but necessary exploration method. One drill hole generally costs between SEK 500 and 1500 per metre, depending on depth.

5.4 RC drilling

RC drilling ("reverse circulation") is used when larger amounts of samples are desired and is for that reason most commonly used for gold exploration. The principle is that pressurised air blows liberated rock fragments, called rock chips or drill cuttings, upwards. Normally, the drill cuttings are collected in large sacks for each drilled metre. These samples are recorded and a smaller but representative portion of the sample is then sent for analysis of the metal content.

The RC drilling can be compared with diamond drilling when it comes to the size of the drill rig and at what stage of the exploration it is performed. Normally, holes that are 10-15 cm in diameter and up to 200 m deep are drilled. No water is needed for this type of drilling. In some cases, a few trees are cut down in order to position the drill rig.

The RC drilling technology is in general faster and somewhat cheaper than core drilling. Because of its costs, RC drilling, like diamond drilling, requires good planning to delimit an interesting area within the exploration permit.



5.5 Consequences for the external environment

The impact on the environment at exploration drilling is equivalent to driving in the terrain with forest machinery. The drill rigs are in general diesel driven and mounted on a tracked vehicle or forest tractor.



To access a drilling site, existing routes are primarily used but sometimes felling of forest is required to provide a driveway. Land damage may occur, but by planning the work both in terms of time and terrain, damages can normally be limited.

Drilling itself involves certain amount of noise from the machine. However, it can be kept relatively low with a silencer and/or shielding. By restoring the drilling site in the best possible condition after the drilling, only driveways in the terrain, smaller amounts of drill cuttings, and a sealed iron pipe at the drilling site will be visible when the drilling is completed. Remaining pipes are cut at ground level or just above and are provided with a cap.

Water from the drilling normally drains in the ground at the drilling site. In sensitive areas, sedimentation in basins or containers may be employed to reduce the amount of suspended material.

APPROVAL PROCEDURE

6 Permits

6.1 Right of public access

By the Right of public access, for example boulder tracing in its simplest form is allowed for anyone, without the permission of the landowner and without a special permit. Walking over land to measure with different types of instruments normally requires no permission. However, use of the Right of public access presupposes that no damage or encroachment occurs.

6.2 Exploration permit

An exploration permit entails the holder exclusive right to exploration and a preferential right to an exploitation concession.

- The application for exploration permit is under the Minerals Act supplied to the Mining Inspectorate. Before the decision is made, the County Administration Board shall always be given the opportunity to comment and all affected parties in the area shall be informed. If the application relates to alum shale, oil, gaseous hydrocarbons, or diamond, the application shall be proclaimed and also the municipality shall be given the opportunity to comment.
- Before the work starts, there must be a *work plan*. It is the responsibility of the prospector to establish the plan and communicate it to landowners and other holders of rights. If a landowner objects to the work plan and the prospector cannot come to an agreement with the landowner, the work plan can instead be examined by the Mining Inspectorate.

In many cases, an exploration permit and a valid work plan are sufficient to be able to start the exploration. Some action may, however, require special permits/trials and within certain areas special regulations apply. Those who primarily may arise are:

- *Notification to consultation with the County Administration Board according to 12:6 of the Environmental Code:* Consultation is required for activities that significantly may change the natural environment² and for which no other notification or permit is required according to the provisions of the Environmental Code. The performer of the activities is responsible for the consultation to take place. Some County Administration Boards, for example Västerbotten, generally require consultation for more extensive forms of activities that may concern certain designated protection areas. What is to be considered as a significant change of the natural environment may be difficult to determine and is not only depending on the action to be taken, but also on the sensitivity of the area. In doubtful cases, consultation should be made even if the performer believes that the change of the natural environment is of no damage. The County Administration Board has the possibility to impose conditions for the exploration work in order to reduce the risk for damage to the natural environment. The County Administration Board can in certain cases prohibit the present exploration permit. It is advisable to enclose the work plan or a draft of the work plan to the notification to consultation. The notification shall include particulars of the affected landowners and tenants.
- *Within natural reserves, Natura 2000 areas, and other areas protected under chapter 7 of the Environmental Code,* permits or exemptions may be required for the exploration activities. What is allowed or may be allowed varies a lot between the different areas. For that reason, it is necessary to check what applies to the place where the work is to be conducted. Many of these issues are to be examined by the County Administration Board, but sometimes you should turn to the municipality instead.

² The term natural environment is wide and includes bedrock, soil layers, air, water, lake bottoms, and all organisms both above and under the ground and the water surfaces. The term also includes the landscape, outdoor recreation, and the cultural heritage.

- To go by a motor driven vehicle on bare ground³ or in certain cases on snow covered ground, application for exemption from the prohibition in the Off-Road Driving Act must be submitted. Such exemptions are examined by the County Administration Board.
- To move, remove, dig out, or in other ways alter or damage ancient monuments, *permission according to chapter 2 of the Heritage Conservation Act* is required from the County Administration Board. If an ancient monument is found during digging or other activities, the work that has an impact on the ancient monument should immediately be stopped and the County Administration Board should be notified.

6.3 Permission for test mining

Test mining⁴ is part of the exploration under the Minerals Act, and therefore both a valid exploration permit or an *exploitation concession* and a work plan that includes the test mining is required.

For *test mining*, also permission according to chapter 9, and sometimes chapter 11, of the Environmental Code is required. Permission for test mining is examined by the County Administration Board. An environmental impact assessment (EIA) according to chapter 6 of the Environmental Code is required.

Table 1: Summary of the permission process

(☒ = EIA required, ☐ = EIA normally not needed, but may be required
EC = Environmental Code, MA = Minerals Act)

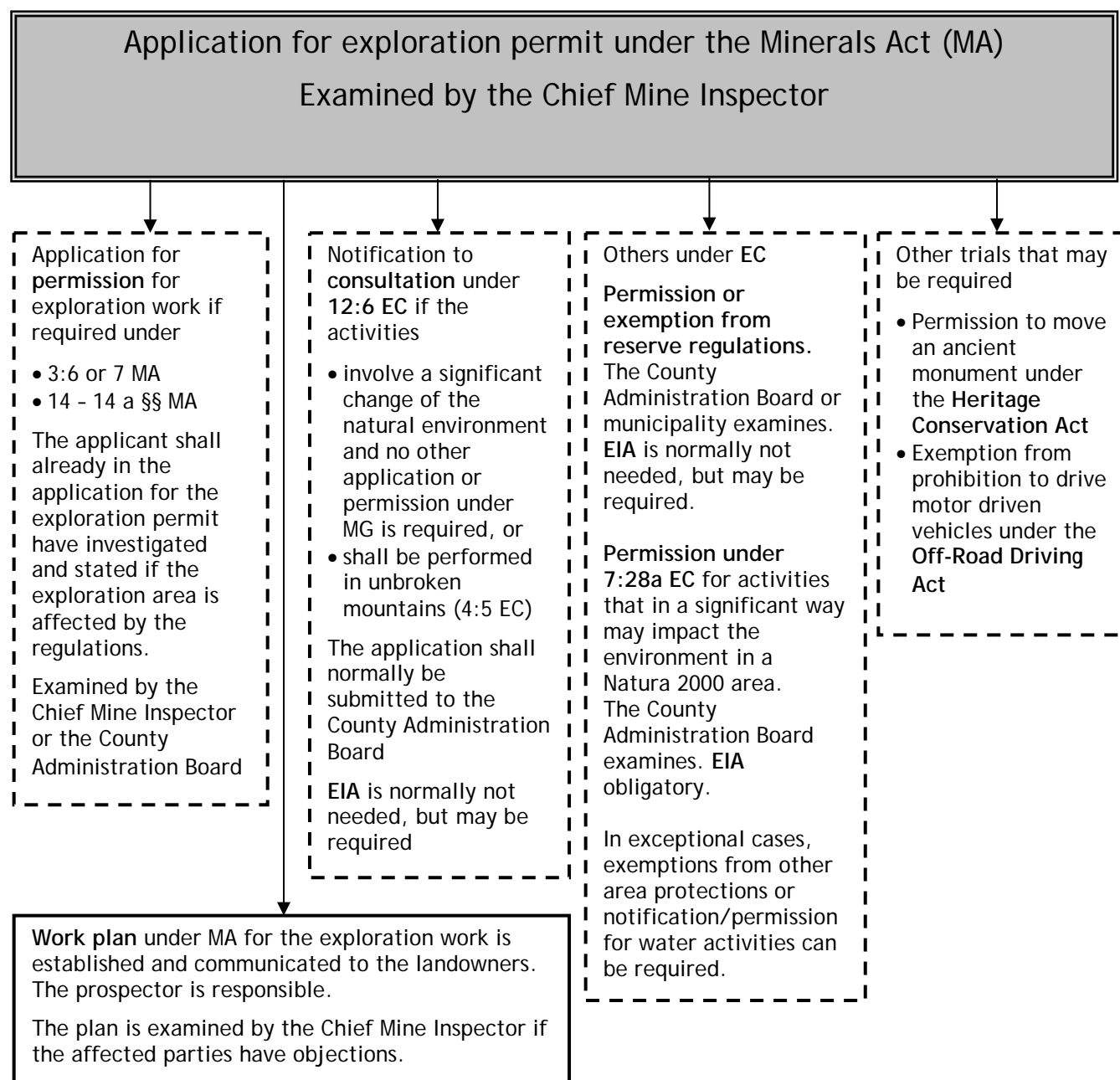
Phase	Always required	May be required under EC/MA	Other regulations that may apply
Exploration	Exploration permit under MA Work plan under MA	Permission under 3:6 and 7 MA Consultation 12:6 EC (☐) Exemption/permission from reserve rules (☐) Natura 2000 permission (☒) Other area protections (☐) Other permission applications under EC (☒☐)	Off-Road Driving Act Heritage Conservation Act
Test mining	Valid exploration permit under MA Work plan under MA Permission under chapter 9 EC (☒)	Additional permissions (☒) or notifications (☐), under chapter 9 or 11 EC, e.g. crushing plant Exemption/permission from reserve rules (☐) Natura 2000 permission (☒) Other area protections (☐) Consultation 12:6 EC is not required for test mining, but e.g. for construction of driveways to the area (☐)	Off-Road Driving Act Heritage Conservation Act Planning and Building Act

³ Bare ground refers to ground that is snow-free. All driving which means that the motor driven vehicle is in contact with the ground, is considered as bare ground driving. In cases where the snow depth is small or the snow so loose that the vehicle comes in contact with the ground is therefore considered as bare ground driving.

⁴ Test mining means that the soil layer is removed and the bedrock is exposed in an area within a near-surface deposit. A certain amount of the rock is taken for concentration tests to establish the quality of the deposit. The exploration also provides further input for assessment of the environmental factors in order to limit the environmental impact and costs of remediation and disposal of waste products.

Table 2: Summary of the regulations (source: Geological Survey of Sweden)

Text within solid line always applies. Text within dotted line may be relevant.



The exploration work can be started when:

- there is a valid exploration permit,
- required permissions under MA are provided,
- three weeks have passed from the date when the work plan was communicated to all the affected parties and no written objections have been made, or from the date when the decision by the Chief Mine Inspector regarding ratification of the plan became final (the Mining Inspectorate may decide that the plan shall be valid before it has become final),
- at least six weeks have passed since a complete notification to consultation under 12:6 has been submitted to the County Administration Board, if such is required,
- other permissions and exemptions required under MG have been provided AND
- permissions and exemptions required under other legislation have been provided.

6.4 Protected and excluded areas

The Swedish legislation provides for the protection of areas with special values, species, and groups of organisms. Areas can also be protected on the basis of their usage or planned usage.

Fundamental to all types of protections is that the prospector is obliged to have knowledge of the known protections within the area of work and what rules and permit requirement apply. The prospector is also obliged to pay attention and identify such protection objects that are not known and registered.

Information on protected areas is unfortunately not available in one place and in a consistent format. A summary of examples of where the information on protected areas can be found is available in appendix 1. This summary is not complete.

The Minerals Act contains certain regulations and permit requirements that apply in addition to the area protection regulated by other laws.

Permission from the County Administration Board is for example required within unbroken mountain areas, within 200 metres from public installations (defence objects), within cemeteries, and within the rocket firing field Esrange.

Permission by the Mining Inspectorate is required within 30 metres from a public road, railway, channel open for public traffic, and public airport, within 200 metres from residential building, church, community centre, education institution, hotel, guest house, health care establishment, nursing school, or other similar institution intended for more than 50 persons, electrical power station, industrial plant, and within area with a detailed development plan or special area regulations according to the Planning and Building Act.

“Vägledning för god miljöpraxis vid prospektering i skyddade områden” (Guidelines for good practice for exploration in protected areas) has been prepared by SveMin 2007 and is available in Swedish on the SveMin website.

7 Contents of the application

7.1 Application for exploration permit

What an application for an exploration permit shall contain is extensively regulated in section 1 of the Minerals Act.

The application shall among others include particulars of whether there are, within the area, areas covered by the provisions of chapter 3, sections 6-7, or chapter 17, section 3 of the Minerals Act.

What is to be noted is whether such areas exist at all, not if the areas may be affected by the planned work.

7.2 Application for permission to conduct exploration work

There are no provisions on application contents regarding the permission under chapter 3, sections 6 and 7 of the Minerals Act.

To facilitate the work of the examination authority, it is appropriate that the applicant specifies the basis for the request for permission. Since the permission shall refer to certain activities, these activities must also be specified in terms of place and method of execution. It is also appropriate to attach a map to the application.

7.3 Application for exemption

The contents of the application for permission or exemption under chapter 7 of the Minerals Act, or under provisions announced based on that, is regulated in section 23 of the Ordinance on protection of areas under the Environment Code (FOM).

The application shall according to the provisions be in written and accompanied by a map and, to the extent necessary in each case, an environmental impact assessment (EIA) under chapter 6 of the Environmental Code. According to chapter 2, section 1, the operator is also required to prove that the rules of consideration in chapter 2 are followed. These include that sufficient restrictions are planned for in order to prevent damage to the natural environment. The question whether an EIA is

required, is normally assessed only after the application has been submitted. Nothing prevents, however, that contacts are made in advanced for a preliminary assessment.

If the application relates to an exemption from a prohibition, it is also important that the applicant states the reasons that would justify that the exemption is granted in the present case.

If the application relates to a permission under the provisions of Natura 2000, the application shall always be accompanied by an EIA. If the EIA is established only for the permit examination under the provisions of Natura 2000, the EIA only needs to contain the particulars required for that examination.

An exemption/permission application within nature reserve/snow mobile regulated area, or notification to consultation should include the following particulars in order for the County Administration Board to examine the case:

- Name and number of the exploration permit
- Municipality
- What protected areas/regulated areas are affected?
- General map (topographic map 1:50000 or 1:100000) with the exploration permit marked
- Detail map (1:20000) with the exploration permit marked may be required in certain cases
- The time period during which the exploration work will be conducted
- Description of what will be done. What work will be executed? (For example geophysical surveys, digging, drilling, cutting, sight-clearing, etc.). How will the work be done? Manual sampling, machine work?
- How will transports be handled? Bare ground or frozen/snow-covered ground? For heavier transports, the type of vehicle, gross weight with payload, ground pressure. Transportation route (map).
- What environmental impact is foreseen? What measures will be taken to avoid damage?
- What remedial measures will be taken?
- Description of the natural conditions in the affected area.

For application relating to an exemption from natural reserve provisions, the examination fee according to the fee ordinance (1998:940) for the examination and supervision of the Environmental Code must be paid before the case is examined.

7.4 Notification to consultation

Notification to consultation shall under section 8 of the *Ordinance (1998:940) on Fees for Examination and Supervision* be in written and accompanied by a map. It shall also contain a description of the planned operation or measure. An EIA may, as for exemptions and permissions under chapter 7 of the Environmental Code, be required. Particulars of the affected landowners and tenants shall also be included. For larger work undertakings, it is important to seek prior consultation with the County Administration Board.

7.5 Application for exemption from prohibition to drive in the terrain

Driving on bare ground terrain is forbidden in Sweden. All natural land outside road – for example parks, fields, meadows, forests, moorlands, beaches, and bare mountains – is considered as terrain. Also paths, trails, and jogging tracks are terrain in the legal sense.

Driving in terrain is not included in the Right of public access. Terrain driving with motor driven vehicles is primarily regulated in the *Off-Road Driving Act* and its ordinance. A motor driven vehicle is any vehicle powered by an engine, such as car, motorcycle, scooter, quad, tracked vehicle, or snow mobile. Driving is allowed on well snow-covered or frozen ground if there is no risk for damage on land or vegetation.



Note that snow mobiles are not allowed to run on:

- Bare ground
- Forest land with recently planted or young forest, if not obvious that the driving can be done without any risk for damage to the forest. The forest shall have an average height of 2 m over the snow for it to be allowed to drive there.
- Agricultural land, if not obvious that the driving can be done without any risk for damage to the land.

The County Administration Board can approve exemption from the prohibition of driving with motor driven vehicle in terrain, if there are particular reasons and if the driving does not in a significant way affect public interests or sensitive nature. Note also that permission from the landowner always is required, even if the County Administration Board has granted an exemption.

An application for exemption from the terrain driving prohibition shall include:

- Purpose of the drive
- The special reasons invoked
- Type of vehicle
- Time period
- Map where the area and driveway are marked

7.6 Environmental impact assessment for exploration

For exploration, no environmental impact assessment is normally required as there is no or minor impact on the environment. A summary of when an environmental impact assessment (EIA) is required is provided in table 1.

For investigations that may have a significant impact on specified/agreed protection values in protected areas, an EIA according to the specific protection values of the area shall be attached. The EIA shall be designed so that it can be a separate document; that is, independent from the main application. The EIA shall provide a basis for an overall assessment of what impact the operations will have on the specified protection values of the area. For simpler exploration in protected areas, no EIA is required. For advanced exploration and for test mining, an EIA is required.

The EIA shall always be in proportion to the work to be performed. This is done in consultation with the County Administration Board and is based on the unique protection values of the area.

8 Work plan

8.1 General description

According to the Minerals Act, chapter 3, section 5, exploration work may only be carried out in accordance with the current work plan. The work plan shall be established by the permit holder and contain a review of the planned exploration work, a time schedule for the work, and an evaluation of to what extent the work may affect public interests and private rights. Simpler activities that are carried out or could be carried out according to the Right of public access do not require a work plan.

The landowner of the area where the work will take place as well as the owners of private rights that are affected by the work shall be informed of the work plan. Information to a holder of reindeer husbandry rights may be given to the Sami village that the holder belongs to. It is an offence to begin exploration work without a valid work plan. It is thus important that the notification is carried out properly. For information on the notification procedure, see the webpage of the Mining Inspectorate www.bergsgstaten.se. The work plan shall also be sent to the Mining Inspectorate and should be sent to the contractor.

Objections to the contents of the work plan shall be presented in writing to the permit holder within three weeks from the presentation of the work plan.

8.2 Contents

The purpose of the work plan is to give landowners and other holders of rights the possibility to estimate the impacts of the planned activities and to contribute to the least possible damage and encroachment being caused. The work plan should therefore be as detailed as possible without

diminishing the flexibility that is required for the planning and performance of the exploration activities. An example of how a work plan can be formulated is available in appendix 2. The prospector shall ensure that the work plan has been received.

Contents that the work plan should include:

- An introductory description of exploration and what a work plan is, what permits the prospector holds, the rights and obligations of the individual, the procedures for objections to the work plan, and what authorities that can be contacted.
- What kind of exploration work is planned, for example measurements, moraine sampling, or drilling, as well as a description of how the work is to be carried out. The location of the work area as well as planned transportation routes should be marked on an enclosed map.
- A description of what equipment and vehicles will be used.
- A description of what public interests are present in the local area and what consequences the work may have on these interests
- A description of what consequences the work might have for private rights, for example the need to cut down trees or clear for visibility, products dropped behind such as drilling sludge, feed supply pipes, or marks, the risk of drive and road damages as well as the risk of noise and vibrations.
- A time schedule for planned activities, indicating an interval when the execution is planned. Of particular importance may be to specify what time of the year the work is planned for.
- A map with property borders and descriptions that as detailed as possible show how the property will be affected by the exploration work and vehicle transportation routes.
- A declaration of how compensation for utilised forest and damaged land and roads will be regulated. In connection with this, the form of security the prospector has to fulfil the compensation payment should be specified.
- Name, phone numbers, and addresses to contact persons at the permit holder, contractor (if relevant), as well as regulatory authority.

SAFETY, EXTERNAL ENVIRONMENT AND SOCIAL RESPONSIBILITY

9 Safety

9.1 General

Good and continuous improvement of work place safety is an important objective for the Swedish mining industry.

With regard to the health and wellbeing of the individual, the reputation and objectives of the company, as well as the public perception of the mining and exploration industry, it is important that the safety management maintains a high standard. The exploration work in the field and in particular the use of machinery such as for drilling, involves a number of processes and operations with an increased level of risk. The use of heavy machinery, temporary and often remote sites, and the lack of supervision and other support functions mean that there are extra demands on the safety management. For that reason, operations and associated risks must be identified, analysed, and minimised in order to obtain a safe work place.



9.2 Routines

9.2.1 Safety Management System

Prospectors and contractors that perform drilling or other services in connection with exploration shall have a Safety Management System, which means a control policy that ensures systematic planning, management, and control of the operations so that the safety requirements are continuously considered. Furthermore, the concept means that the safety issues are included as a natural part of the overall operations.

9.2.2 Safety inspections

Safety inspections are a good way to verify that the workplace is in good order, that protection equipment is in place and in use, and that no new risks have emerged. Safety inspections shall be conducted regularly, for example once per month, following a check list, be documented and followed up. It is appropriate that both the client and the contractor participate in the safety inspection if a contractor company is engaged. The responsibility for carrying out safety inspections lies with the respective employee's employer.

9.2.3 Risk analyses

The rules on Systematic Work Environment Management by the Swedish Work Environment Authority state that risks shall be investigated and analysed. Equally important is to analyse the environmental risks. As part of the Systematic work environment management/Environment management, the risk analyses are an important instrument for identification of hazardous conditions before these lead to accidents, illness, or unwanted environmental impact. Particularly important is to perform risk analyses when changes are planned or have been implemented. This could for example be the modification of a machine, the establishment of a new drilling site, the introduction of a new chemical, or other situations where the conditions are new or changed.

The process for risk analyses could in short be described as: *Identify - Assess - Deal with*. Templates for risk assessment and more information on risk analyses is described in the brochure Systematiskt Arbetsmiljöarbete - Gruvindustrin, which can be ordered from Prevent, www.prevent.se.

9.2.4 Deviation management

Deviation management means that, within the operations and within the organisation, deviations that arise or are likely to arise are documented and that those are used for systematic improvements. This improvement work also means that there shall be a routine describing how the deviation reporting should be done. It also describes how the deviation shall be dealt with, if an investigation of the accident or incident is required, and who is responsible for the process. Deviations are not only accidents, included in the concept are also undesirable environmental impacts, incidents, hazards, and disorder. Many of the accidents that occur have often been prompted by an incident or a hazard. Having a routine for handling of deviation reports and encouraging reporting may mean that lessons are learnt before an incident becomes an accident. It is important that all deviations are reported promptly. Increased awareness of work and external environment also contributes to improved competitiveness and increased profitability.

9.3 Known risks and measures

9.3.1 Heavy lifting

Exploration work in the field involves a number of tasks with manual and mechanical heavy lifting.

It is important to remember for example:

At manual lifting

- proper lifting technique
- use lifting aids
- work rotation

At mechanical lifting

- trained and competent personnel
- approved and inspected lifting equipment
- communication
- barriers

9.3.2 Rotating parts and moving machine parts

When drilling mainly the drill string and the rotation unit constitute a danger. You should ensure that existing protection is used and that signage and markings are intact. To prevent that somebody is injured by the unplanned start or operation of a machine, some type of Break/Secure routine must exist.

9.3.3 Heavy vehicles

Exploration drilling means that heavy vehicles are used for transport of the drilling equipment to and from the workplace and for transport of drilling equipment in the field. Transport of heavy equipment to and from the workplace is often conducted by professional personnel with competence and experience. Certain risks may, however, arise in connection with loading and unloading in connection with heavy lifting. It is important that the communication is clear. For transport of drilling equipment in the field, different types of supports and frames which could be both wheeled and tracked are employed. These are often run in difficult terrain. It is important that the personnel have documented and good knowledge of the machines and the risks associated with them. It is recommended that barrier tape is set up around the drilling site, with information signs regarding access prohibitions and requirements for personal protective equipment.

9.3.4 Working alone

Exploration work is often conducted in isolated places and is associated with a number of known risks, where working alone in many cases increases the risk for or the consequences of an accident. For isolated individual work, there shall be clear instructions in order to secure that communication takes place at regular time intervals and measures are taken if no contact is obtained. Coverage for cellular phones shall be checked. If the coverage is inadequate, satellite phone or other alarm equipment shall be used.

9.3.5 Climate

An important factor affecting the work environment is the climate. At exploration in the field, the personnel are exposed to varying climate. The main risks are wetness and coldness. Drill rigs used for longer core drilling missions should have some type of built-in and heated workplace (drill shed)

where the personnel are protected from the climate. Certain work will, however, always be conducted outdoors, why clothing and footwear shall be adjusted accordingly.

9.3.6 Noise

The drilling personnel are working in a noisy environment and must almost always, without exception, use approved hearing protection when drilling.

To reduce the exposure to noise, you can:

- Avoid having machines running at idle
- Position generator and other noise sources away from the drilling site
- Place out noise mats
- Build in the diesel motor in a separate, well sound-isolated unit

9.3.7 Working at heights

The drill rig can be equipped with a high mast, in whose top there is one or several pulleys for hoses and cables. It happens that these must be corrected or repaired and then the drilling personnel have to climb the mast. It is important that the correct equipment for this is available, as well as a secured ladder, fixed crampons, and/or personal fall protective equipment.

9.3.8 Slip/stumble

Workplaces at exploration work are always temporary and often located at highly variable surfaces, which could be uneven, icy, and snowy. This in combination with the need to lift and carry equipment makes the risk for slipping/stumbling great.

Ensure that:

- foot paths and workplaces are kept clean, dry, and illuminated
- de-icing chemicals, sand, or salt is available
- there is good housekeeping, that no hoses and cables are on the foot paths and workplaces
- suitable footwear is used

9.4 Protective equipment

9.4.1 Personal protective equipment

The requirement for personal protective equipment can vary from different clients and contractors. However, at least a minimum standard shall be followed, which includes:

- Helmet with chin strap
- Hearing protection
- Safety shoes/boots with steel toecap
- High visibility work clothing

For certain work, such as wood cutting, maintenance, operation of four-wheel motor cycle, or snow mobile, etc. the protective equipment shall after risk analysis be adjusted accordingly.

9.4.2 Other protective equipment

At the drilling site, the following shall be easily accessible and well labelled:

- First aid kit with eyewash
- Fire extinguishers, at least a 6 kg powder extinguisher on each machine
- Safety goggles/visor
- Protective equipment for chain saw operation; trousers, gloves, visor, and appropriate footwear
- Fall protection

9.5 Communication

At the drilling site or in its immediate vicinity, there must be access to reliable communications. In most cases, regular cellular phones work. It is important that this is verified in connection with the establishment of a new drilling site. Missing cellular coverage may require procurement of a satellite phone or alternative alarm equipment.

It is also important to clarify what phone numbers to call in case of an accident. The drilling personnel must also be able to tell the coordinates of the drilling site.

9.6 Responsibilities

At procurement, it shall be clarified who is responsible for coordination of safety according to the Work Environment Act, chapter 5, section 7d. As contractor, it is also important that all personnel on site are aware of the rules that apply to the current project. The following items shall be clarified before the start of the project:

- Safety Coordinator
- BAS U - Construction health and safety coordinator Execution (if required by the Work Environment Act AFS 1999:3)
- Permit issuer, Hot works
- Are all permissions from landowners, the Mining Inspectorate, other relevant authorities (County Administration Board, municipality, etc.) in place
- Reporting:
 - Who reports to the appropriate authority in case of environmental damage
 - Who shall register deviations and to whom shall those be reported
- Risk analysis
- Are there cables in the ground or power lines in the area around the drilling site
- Safety inspections
 - Who should call to safety inspections
 - Who should participate
 - Intervals
- Training requirements for personnel (e.g. Hot works, CPR, etc.)
- Local safety regulations

9.7 Personnel facilities

Within a reasonable distance from the drilling site, the personnel shall have access to a rest hut and toilet. Those shall comply with the instructions provided in AFS 2009:2 Workplace design.

9.8 Check lists and recommendations

- Safety inspection protocol, see example in appendix 3
- Check list for establishment of a new drilling site, see example in appendix 4
- Check list for drilling site inspection, see example in appendix 5
- Prevent's brochure "Borrningssäkerhet" (Drilling safety), <http://www.geotec.se/upload/cms/file/borrguiden.pdf>

10 External environment

10.1 General

Exploration work is, as previously described, to a large extent conducted with methods that do not cause significant environmental damage. For certain types of work, however, such as drilling or moraine sampling or when staying long or recurrent in the same place, there is risk of environmental impact. The basic principle is, however, that a well-planned and correctly managed exploration project should have minor or no lasting impact on the environment.

Each company that performs field exploration shall have an environmental work that aims at minimising the impact on the nature. It is not only the authorities and the laws that set the level for the environmental work of the companies. Conducting an active environmental work is today the same as increasing the market value and lowering the costs, for example by reduced energy costs or decreased costs for remediation.

What is then required by the companies? For a company to be able to say that they conduct a systematic environmental work, they shall have established routines and documentation and shall also revise the operations recurrently. This is called *self-regulation* by the authorities.



10.2 Routines

10.2.1 Environment management system

As mentioned above, some of the parts included in the Environment Management System are to have established routines and that audits are conducted. Besides that, another important part within the Environment Management System is that the company has established an environment policy, in which the company describes what environmental impact the operations of the company has and how that should be minimised. Based on the environment policy, the company shall also declare what environmental objectives the company shall work towards. When the environment policy and the environmental objectives have been established, the tasks and responsibilities of the environmental work must be delegated within the company so that it is clear who is responsible for what.

10.2.2 Environmental inspections

Environmental inspections are a means to ensure that the company follows the environment policy and that the work with the environmental objectives progresses. Environmental inspections are very similar to the previously mentioned safety inspections, with the difference that it is the environment and not the work environment that is inspected. As help and as a way to ensure that the critical parts are inspected, many companies have developed check lists. These are used during the environmental inspection to ensure that the inspection is directed to known environmental hazards, such as the condition of hydraulic hoses and that there is decontamination equipment at the machines. By inspecting and reviewing the operations, the company obtains much information on how the environmental work is conducted in the field.

10.2.3 Risk analyses

See previous section 9.2.

10.2.4 Deviation management

See previous section 9.2.

10.2.5 Waste management and remediation

Companies that store, transport, or handle hazardous chemicals shall have routines to handle and be prepared to in a safe manner collect and dispose of waste that otherwise could cause health and environmental risks. To have documented routines for an environmental accident often means that the consequences of the accident are reduced. The documentation then includes what decontamination material to be available depending on the chemicals to clean-up, how the remediation shall be conducted and what contact persons, for example authorities, to inform about the accident. This is often described in an emergency preparedness plan. What should be described in a routine for waste management or an emergency preparedness plan and should be clarified with the client are:

- who reports the incident to the regulatory authority
- immediately remedy any waste and notify the client
- equipment for decontamination and adsorption shall be available within the work area
- oil or liquid emissions on land or paved surfaces shall immediately be cleaned up by excavating or by other means dispose of soil or absorbent material
- equipment and routines for handling of waste oil and oil contaminated garbage
- do not use chemicals (dispersing agents such as detergents or similar) to dissolve oil spillage. Use absorbent materials and equipment suitable for the environment for the collection of spillage.

10.3 Known risks

10.3.1 Impact from off-road driving

Exploration involves in many cases transport of heavy materials, equipment, and vehicles. These take place both on existing roads and off-road. At exploration, the risk of damage is usually larger during transport than during the actual exploration work. Damages arise for example by pressure and erosion of the underlying ground when vehicles are driven in the summer. Ground pressure, vehicle weight, engine power, and tire design are some of the factors that affect the damage caused to the vegetation. Damages can occur even if the ground is covered with snow, especially on poorly frozen ground. Ground damages can result in slower growth of trees, risk of leakage and

spreading of sludge and sediment in watercourses and the spreading of root-rot. To minimise the risk of driving damages:

- work should be planned in time of the year so that work on weak roads and land takes place on frozen ground
- routes to drilling sites should be planned carefully, preferably in consultation with the landowner
- good contact should be maintained between the client and the contractor at the risk of damage
- vehicles should be chosen based on transportation needs
- terrain vehicles with low ground pressure should be used
- wood or so-called log mats should be used when driving on sensitive ground or when crossing watercourses

During all field activities, any damaged caused shall be documented to serve as basis for calculation of compensation. For use of private roads, driving in particularly sensitive locations, or where there is damage before, it could be suitable to document the area in advance through photos.

More information on how transports can be conducted to further reduce the risk of land damage is available in SveMin's "Vägledning för god miljöpraxis vid prospektering i skyddade områden" (Guidelines for good practice for exploration in protected areas).

10.3.2 Handling and usage of chemicals, oils, and fuels

Storage and handling of chemicals, oils, and fuels always involve a risk and these shall be handled so that no negative impact on health and environment arises. The consequences of a spillage may have major environmental impact and be costly. This can be avoided by:

- transports and storage of diesel are made in ADR approved tanks (ADR is an abbreviation of European **A**greement Concerning the International Carriage of **D**angerous Goods by **R**oad).
- waste oil tanks and other cisterns for petroleum products are equipped with collecting vats
- fuelling of machines shall be done in such a way that spillage of fuel and oil in the nature does not occur. Drip protection, spill plates, or spillage collection trays shall be used.
- tanks and containers for the storage of fuel and oil are properly marked, placed in a safe distance from watercourses, and in a spill plate with impermeable bottom, designed to hold the contents in a tank or container in the event of a leakage or other spillage accident
- at the drilling site, there is a chemical list with the products available on the site, including a safety data sheet (should not be older than 2 years) for all chemicals
- all chemicals are reported and approved by the client before they may be used at the workplace and no new ones may be used until approved by the client
- during the drilling, use environmental friendly and rapidly degradable oils, such as the oils that meet the environmental requirements of the Swedish Standard SS 15 34 15 and those by SP Technical Research Institute of Sweden tested and approved hydraulic oils and lubricant greases
- petrol and diesel in volumes exceeding 100 l shall be stored in ADR approved tanks. These shall be maintained in good condition and shall not be used if damaged, rusted, or leaking, and shall undergo regular inspection.

More information on handling of fuels is available in SveMin's "Vägledning för god miljöpraxis vid prospektering i skyddade områden" (Guidelines for good practice for exploration in protected areas).

10.3.3 Handling of water

In connection with exploration drilling, there is a need for cooling water. Such water is normally taken from a previous drill hole or in a tank from a well, lake, or nearby watercourse.

Withdrawal of water may under certain circumstances risk to be classified as water activity and for such a special permit is required.



10.3.4 Surface water

Classifying withdrawal of surface water as a water activity according to the Environmental Act would require that some sort of plant or construction, such as a ditch, pip, or pump pit, is made on the property. Occasional removal of water to a mobile tank (without any installation on the property) would fall outside the definition and thus outside the permit requirement. If the withdrawal is so small that it could not affect opposing interest, it falls in any event outside the permit requirement.

If the withdrawal is such that the water level in a watercourse risks to be affected, the regulatory authority should always be consulted before the withdrawal is made; that is, regardless if installations are made on the property or not.

10.3.5 Groundwater

Withdrawal of groundwater from previous drill holes should be presumed to fall under the permit requirement.

If the withdrawal is so small that it could not affect opposing interest, it falls outside the permit requirement according to the exemption provision. An assessment of whether the exemption provision applies is done in each individual case.

10.3.6 Landowner's permission

It should be presumed that withdrawal of water not could be made without the permission of the property owner. However, withdrawal of cooling water can probably be included in the exploration activities that are allowed under an exploration permit according to the Minerals Act. By describing the withdrawal of cooling water in the work plan, it should be clear that the water withdrawal is allowed without special permission from the property owner.

In some areas, there may be a shortage in water supply and in that case planning is required to ensure that the water suffices. To minimise the environmental impact, the work and the workplace should be planned so that no unnecessary water is used. The work should also be planned and conducted so that contaminants in the water are minimised. Water for the drilling should be pumped up from appropriate places as close to the drilling site as possible and in consultation with the client/landowner.

10.3.7 Handling of drill cuttings

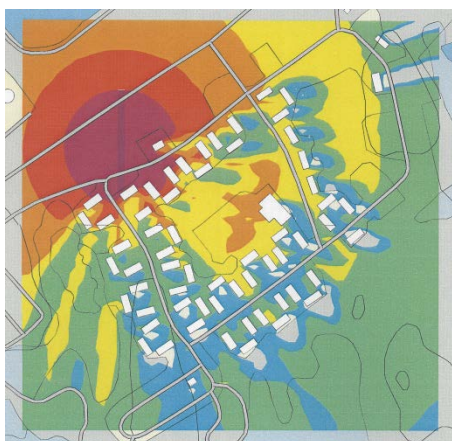
To minimise the environmental impact of the drill cuttings, drill water shall not be led directly to any watercourse. The drill cuttings should be led in such a way that the cuttings are drained into the ground and when the drill water reaches a watercourse or a lake, it is free from drill cuttings. In certain sensitive areas or when watercourses or lakes are in the immediate proximity of the drilling site, a sedimentation tank may be relevant. The size of the tank should be a couple of cubic meters, so that the velocity of the water is sufficiently low to allow the drill cuttings to settle.

10.3.8 Noise to the surroundings

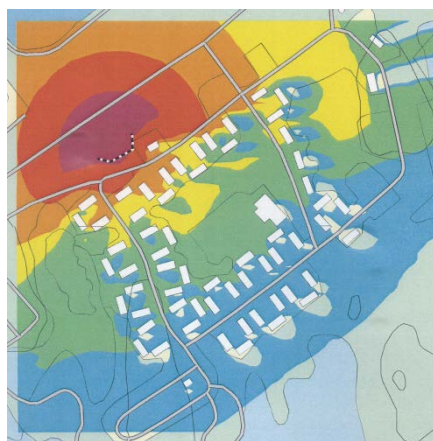
Noise is an environmental damaging and undesired sound and in some areas it can be perceived as disturbing. In these areas, the contractor should:

- seek to minimise the occurrence of noise, for example by
 - avoid having machines running at idle
 - place out noise mats
 - build in the diesel motor in a separate, well sound-isolated unit
- ensure noise from the operations to the nearest located buildings does not exceed the guidelines of the Environmental Protection Agency (SNV RR 1978:5), which are stated below.

Equivalent sound level, LAeq8h			Maximum noise level, LAFmax
Day at 07-18	Evening at 18-22 and Sundays and holidays at 07-18	Night at 22-07	Night at 22-07
50 dBA	45 dBA	40 dBA	55 dBA



Noise distribution from a diamond drilling rig with diesel power



The same rig with a noise mat of three metres mounted by one of the sides

10.3.9 Hot work

Personnel performing work tasks where there is risk of fire shall be trained in Hot works. Persons who are trained in hot works have knowledge of how welding and other hot works shall be conducted in order to minimise the risk of fire. They have also been trained to handle fire equipment. This training along with information on the risk of fire in the forest reduces the risk of a simple welding job generating a forest fire. Besides hot works, burning outdoors may cause forest fires. Information on the current fire risks can be obtained from SMHI's fire risk forecast and when "high risk of fire" or "very high risk of fire" applies, no burning must be performed. When this classification applies, there must for all work where chainsaw, larger drilling equipment, or other petrol driven equipment is used, within a reasonable distance, be access to water (at least 10 litres) or powder extinguisher (at least 6 kg capacity).

10.3.10 Drilling on ice and lakes

Drilling on ice and lakes occur in isolated cases and then requires special measures to prevent the work from causing environmental damage. How this work should be conducted is described in SveMin's "Vägledning för god miljöpraxis vid prospektering i skyddade områden" (Guidelines for good practice for exploration in protected areas).

10.4 Responsibilities

10.4.1 Clarify at procurement

As previously mentioned, it is important to clarify who does what. An example of this is who reports to the authority in the event of a spillage. As contractor it is also important that all personnel on site are aware of the rules that apply to the current project. Also refer to section 9.6 under Safety.

10.5 Post-drilling work

After the completion of a drill hole:

- The drill contractor shall clean up the drilling site, storage areas, and transportation routes. All rubbish, waste, waste products, and surplus working materials shall be transported away after the completion of the work.
- The drill contractor shall himself or through a representative participate in an after inspection of the drilling site together with the client. The inspection shall take place on bare ground for control of cleaning, damages, and that reporting has been made.
- Left-behind casings shall be maximum about 100 mm above the surface and be provided with a firmly fit cap.
- Drill holes leaking water to the surface shall be sealed according to the client's instructions.

10.6 Check lists

To ensure that the work is conducted according to the SveMin's guidelines, there is a check list, see example in appendix 6, where several of the items mentioned in the chapter above are described. A regular inspection and documentation of the inspection of these items is a part of the safety management system.

11 Social responsibility

11.1 General

Social responsibility is an issue that is receiving increasing attention in the society. The issue is of particular importance to the mining industry as a result of increased requirements for the approval procedure and the perception the public opinion has of the industry.

Sweden is historically a mining country and the political preferences are generally and still that more mining establishments are welcome. The Minerals Act, for example, gives an exclusive right to land for exploration and mining. However, it is becoming increasingly clear that this must not be done at too great expense of other interests.

Both at exploration and at mining, it is essential that the operator takes responsibility for these issues.

There are, however, significant regional differences and the perception of prospectors and mine establishments differ from areas where mines already exist, for example in Malmfälten, Skelleftefältet, and Bergslagen, compared to the rest of the country.

11.2 Consultation and collaboration

As described above, it is important to distinguish between exploration and mining operations, and thus the extent of the consultation activities that might be deemed appropriate.



At exploration, there is normally only a limited encroachment for other stakeholders, why a simplified consultation procedure can be performed. For simpler work, a thorough work plan can normally serve as a consultation. For more extensive exploration efforts within a limited area, however, it may be appropriate to meet with the stakeholders and hold information meetings.

Exploration and mining operations require a certain level of local support and understanding. An open, free, and honest dialogue with the stakeholders and land users is important and the dialogue should be conducted in such a way that it becomes efficient and appropriate to its context.

The stakeholder dialogue and consultation should be seen as a two-way communication with a flow of information and ideas between the prospector and affected parties. It is not sufficient to keep the stakeholders informed, you must also try to get to know and understand the situation of the

other affected parties, their concerns, needs, and visions. Building trust requires time and resources, meaning that you must be prepared to invest in these matters. The exploration work and mining projects can thus be adjusted and designed in such a way that they fit as well as possible into their context.

With the increasing requirements of the society, work is on-going on these issues in several industries. Within the wind power industry, for example, a guidance to consultation between the wind power developers and the reindeer husbandry has been developed (the project VindRen, see <http://www.vindkraftsbranschen.se/rapporter/vindren/>). Also within the mining industry, as a part of the Georange project, a guidance has been developed for how consultation and dialogue with other land users should be conducted: "Vägledning för samråd och dialog" (Guidance to consultation and dialogue), see http://www.georange.se/News.aspx?r_id=39726.

Some conclusions are common:

11.2.1 Collect background information and identify stakeholders

The planning of consultation and stakeholder dialogue requires time, effort, and care. The first step is to learn to understand the area where the project is to take place and the other parties who might be affected. The stakeholders shall be identified, described, and understood and this provides a good base for the further work. The stakeholders include both those who have something to gain from the project and those who have something to lose. It is particularly important to identify those who have "special rights", for example landowners, Sami villages, and hunting/fishing rights holders.

11.2.2 Start early

The formal requirements for consultation as part of the approval procedure are not until the environmental assessment of the operations. However, already at more extensive exploration work it may be appropriate to initiate consultation.

Swedish law (Environmental Code) requires the formal consultation to start when an environmental assessment is made, which in turn results in a relatively limited time period for consultation and that the process starts quite late. It is therefore recommended that prospectors start the stakeholder dialogue earlier than that and that preliminary meetings with relevant authorities (County Administration Board, municipality), rights holders, and other affected parties are initiated already when more extensive exploration activities take place in a limited area.

During these early meetings, it is of great importance that the prospector is open and respectful to all parties. The prospector and other stakeholder may have entirely different views on a project. Other parties may have legitimate reasons to feel threatened by the development or even oppose to the project. The project should be presented as far as possible in this early phase and the application process for exploration permit, exploitation concession, and environmental permit should be described thoroughly. There is often a great deal of uncertainty over what the exploration and mining operations really mean and about the legal situation. The objective of these early meetings should also be explained and it should be noted that these initiatives to early consultation are voluntary and beyond what the law requires, and that a more formal consultation process will follow later.

Even if these early meetings are not a part of a formal process, what is said and done should be documented in an appropriate way. Furthermore, it is good if the prospector early starts to think about how the larger public should be informed and how to enable all interested parties to submit questions and suggestions. The prospector should nominate a person (or several) to act as contact person. Different initiatives may be relevant, for example reference to supervisory authorities or where to find answers to frequent questions.

11.3 Reindeer husbandry

Much of the areas of interest for exploration are within areas with reindeer husbandry rights. Therefore, there is particular reason to pay attention to the need for cooperation with representatives of affected Sami villages to minimise the impact on the reindeer herding. A list of contact persons for different Sami villages is available on the website of the Sami Parliament (see Appendix 1).

Disturbances of reindeer herding may arise for example by noise from drilling and transport. This can cause disturbed grazing and collisions and extra work for the reindeer herders. At calving and

relocation of reindeer, the risk of disturbances is greatest. Noise or snow ploughing of forest roads can make the normal migratory routes harder to use and creates a burden.

In connection with the laying of cable for geophysical surveys, also the risk of reindeer getting caught with their horns in the laid cables should be observed.

The work plan is a good tool for consultation with the reindeer husbandry and usually the exploration work can be adapted, especially in time, in order to minimise the disturbance. If needed, it may be appropriate to hold special consultation meetings to discuss how to adapt each activity to minimise the consequences.



COMPENSATION FOR DAMAGE AND ENCROACHMENT

12 Compensation for damage and encroachment

12.1 What does the law say on compensation

For damage or encroachment resulting from exploration work, compensation shall be paid by the holder of the exploration permit or concession by virtue of which the work is undertaken. This is regulated by the Minerals Act. Compensation in connection with exploration work shall be based on the damage and the encroachment that the exploration work causes. The damages shall be compensated both for exploration work and transport to and from the work area. No particular compensation shall be paid for the right to carry out the work, such as for example the right to use roads.

12.2 How compensation is calculated

What is legitimate compensation varies from case to case, depending on the extent of the work, type of soil and forest, timing, etc. Normally, there is no such basis for compensation after boulder tracing, reconnaissance, or after measurement work carried out in the winter with snow mobile or in the summer with lighter terrain vehicles or by foot.

The factors that can give rise to compensation are listed below:

- For felled trees of merchantable timber size, the diameters should be measured, the volumes calculated and the trees should be compensated in line with the current local pricelist.
- Harvested wood should be left so that the landowner can choose whether it should be left as nature conservation or if he wants to process and utilise the timber. Felling of trees exceeding the Forestry Act demands for what may be left without risk of insect infestation, the prospector shall take care of the processing and transport of the timber for sale.
- Damaged young forest (> 1.3 m). The number of damaged main stems should be noted and compensated as if they fulfilled the minimum requirement for merchantable timber, which is 8 centimetres at breast height.
- Damaged recently planted trees (< 1.3 metres). The area of land surface should be measured and compensation be paid corresponding to the regeneration cost, with an addition for growth loss. The regeneration cost can vary between 8 000 and 20 000 SEK/ha, depending on where in the country you are.
- Scratch damages. Trees that have scratch damages should for spruce be compensated with the full value due to the risk of root-rot. Pine and leaf trees should be compensated with half of the timber value.
- Transportation routes for heavy vehicles on bare ground should be compensated. A suggestion is to base the compensation on a template of utilised routes. The basis for compensation is that damages can be caused by compacting of the soil, damages to root systems, etc. In the definition of heavy vehicle, four-wheel motorcycles, snow mobiles, and similar are not included. For heavy vehicles, an appropriate level of compensation might be 2 SEK/m mileages.
- Damages caused by driving, for example when wheel tracks occur, must be evaluated and compensated from case to case. An alternative to the compensation is that the damages are repaired by an excavator.
- Every drilling site should be compensated according to a template due to left-behind drill cuttings, left-behind feed supply pipes, compacting, or driving related damage. An appropriate level might be 600 SEK/drilling site for core drilling and 200 SEK/drilling site for cutting drilling.
- Damages on roads vary greatly and must be evaluated from case to case. An alternative to the compensation is that the damages are repaired and/or that the road is gravelled. A recommendation is to use photography to in advance document the condition of the roads to be used.
- Compensation to affected parties for consultation, for example in connection with work plans, should normally not be needed. In situations when affected parties actively contribute beyond normal consultation, reasonable payment for extra work and time spent should be paid.

In accordance with the revised rules of the expropriation legislation, an addition of 25 % should be made on the aggregated compensation, as a voluntary alignment of the compensation level to what is applicable at expropriation.

An example of calculation templates for compensation according to the above is available in appendix 8. The calculation templates are also available in digital format on the website of SveMin.

12.3 Tax issues

A special guidance on how compensation should be declared by the landowner has been developed by Skatteverket in cooperation with SveMin among others; see the brochure of Skatteverket at <http://www.skatteverket.se/foretagorganisationer/blanketterbroschyrer/broschyrer/info/254.4.70ac421612e2a997f85800049043.html>.

Sale of standing timber that is not related to transfer of the land constitutes taxable turnover for the landowner. This means that the encroachment compensation that the mining company pays to the landowner in principle is subject to VAT to the extent it relates to compensation for the right to harvest forest. For harvesting of such small volumes that the felled forest is left-behind for the landowner to take care of, the compensation for the encroachment as a whole should be classified as compensation not subject to VAT. The compensation paid for felled trees in such cases should rather be compared with compensations for damages on soil and vegetation in general.

USEFUL LINKS TO FREE DATA AND INFORMATION

Länsstyrelserna
(County Administration Boards):
Data concerning e.g. national interests, nature reserves, etc.

<http://gis.lst.se/lstgis/> (In Swedish only)

Select "Starta program för nedladdning av data".

No login

Miljödataportalen, Naturvårdsverket
(Environmental data portal, Swedish Environmental Protection Agency):
Data/Reports/Maps concerning e.g. inventory of nature values

<http://gpt.vic-metria.nu/GeoPortal/#/searchHuvudPortalMenu> (In Swedish only)

No login

Fornsök, Riksantikvarieämbetet
(Swedish National Heritage Board):
Data concerning ancient remains

<http://www.fmis.raa.se/cocoon/fornsok/search.html> (In Swedish only)

Login: user name: riwi, password: oma2rmik

The login is personal, but is used for "training purposes".

Skogens källa, Skogsstyrelsen
(Swedish Forest Agency):
Data concerning e.g. woodland key-habitat, habitat protection, etc.

<http://193.183.24.13/Geowebshare/default.asp> (In Swedish only)

Login: user name: anvandare, password: anvandare

Environmental data, SLU:
Publishes links to data concerning e.g. the water data bank, forest data, etc.

<http://www.slu.se/sv/miljoanalys/statistik-och-miljodata/miljodata/> (In Swedish)

<http://www.slu.se/en/environment/statistics-and-environmental-data/> (In English)

Sametinget (the Sámi Parliament): e.g. material regarding the land use of the reindeer husbandry.
Land usage maps of the Sámi Parliament/the Reindeer husbandry

<http://www.sametinget.se/1134> (In Swedish)

Sveriges Geologiska Undersökning (Geological Survey of Sweden): www.sgu.se

Bergsstaten (Mining Inspectorate of Sweden): www.bergsstaten.se

Appendices

1. Useful links to free data and information
2. Example of Work plan
3. Example of Safety and Environmental inspection
4. Example of Establishment of a new drilling site
5. Example of Report from drilling site inspection
6. Example of Environmental control - Check list
7. Example of Instructions when working alone
8. Example of compensation calculation template

Guidance for exploration in Sweden is compiled by the Exploration committee of SveMin. It can be downloaded from the website of SveMin, www.svemin.se.

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Reservation: SveMin does not guarantee the accuracy, completeness, or update of the information in the document

EXAMPLE OF WORK PLAN

Place and Date

Name and address of the company

Name and address of the property owner

WORK PLAN for exploration work within the exploration permit xxxx no. xxx

The company xxxx has by the Mining Inspectorate of Sweden been granted an exploration permit for the area called xxx no. xxx, located in the xxx municipality, in the xxx county.

We plan to start exploration work in terms of ground geophysical measurements and core drilling within the area. Information on the exploration methods is attached.

The exploration work concerns your property xxx.

We attach a map where the exploration area is marked.

The exploration work is planned for the period 20xx-xx-xx to 20xx-xx-xx.

The exploration work is expected to affect the area such that a few trees may need to be felled at the drilling site and along the route to the drilling site. Minor ground damage may also arise during the drilling. Cooling water may be taken from the drill hole or nearby watercourses.

In the case the exploration work should cause any damages, compensation will be paid to the property owner. We will contact you after completion of the exploration work to settle any damages. A financial guarantee for compensation is set by the Mining Inspectorate.

You have the opportunity to influence the work plan, by contacting us within three weeks after you received this information. Of course, you are welcome with questions, comments, and suggestions also after that. In case you do not get in touch with us within three weeks, the exploration work will be conducted according to the work plan (unless it is cancelled). Comments should be sent to the Company xxxx, Address xxxx.

You can also contact the Mining Inspectorate if you have any questions. Bergsstaten, Varvsgatan 41, 972 32 Luleå, 0920-23 79 00.

XXXX is contact person for the exploration work.

Phone xxxx Fax xxxx Email xxxx

Best regards,

Xxxx xxxx

Company xxxx

EXAMPLE OF WORK PLAN

Place and Date

Name and address of the company

Name and address of the property owner

WORK PLAN for exploration work within the exploration permit xxxx no. xxx

The company xxxx has by the Mining Inspectorate of Sweden been granted an exploration permit for the area called xxx no. xxx, located in the xxx municipality, in the xxx county.

We plan to start exploration work in terms of ground geophysical measurements and core drilling within the area. Information on the exploration methods is attached.

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You can also contact the Mining Inspectorate if you have any questions. Bergsstaten, Varvsgatan 41, 972 32 Luleå, 0920-23 79 00.

XXXX is contact person for the exploration work.

Phone xxxx Fax xxxx Email xxxx

Best regards,

Xxxx xxxx

Company xxxx

EXAMPLE OF SAFETY AND ENVIRONMENTAL INSPECTION

Activity:	Date:
Contractor:	

Participants:

Delete non-applicable headings	With remark	No remark		With remark	No remark
1. General order			2. Closing devices		
3. Lighting			4. Fire protection		
5. Noise and vibration			6. Dust, exhaust, steam		
7. Fuel			8. Fall protection		
9. Hazardous substances/chemicals			10. Gas/flammable materials		
11. Source separation of waste			12. Machinery		
13. Blast work			14. Temporary electricity		
15. Temporary water supply			16. Traffic		
17. Spillage contingency			18. Heavy elements		
19. Drilling			20. Sawing/felling		
21. Other					

No.	Defects/deficiencies to be rectified	Place/location	Proposed actions

1. **General order**
 - 1.1. Notices/signs (work environment, environment, etc.)
 - 1.2. Aid material/Stretcher
 - 1.3. Material depot/Protective cover
 - 1.4. Personnel facilities
 - 1.5. Personal safety equipment
 - 1.6. Tidy building, cleaning
 - 1.7. Signs/No unauthorised access
2. **Closing devices**
 - 2.1. Fencing
 - 2.2. Enclosure
3. **Lighting**
 - 3.1. Work place light
4. **Fire protection**
 - 4.1. Fire protection responsible
 - 4.2. Fire-fighting equipment
 - 4.3. Hot work/Work involving exposure to heat
 - 4.4. Compressors/hoses
5. **Noise and vibration**
 - 5.1. Hearing protection or similar
 - 5.2. Measures to reduce noise
6. **Dust, exhaust, smoke, steam**
 - 6.1. Exhaust
7. **Fuel**
 - 7.1. Diesel MK1 (environmental class 1)
 - 7.2. Diesel tanks
 - 7.3. Empty drums
 - 7.4. Spillage of diesel
8. **Fall protection**
 - 8.1. Slipping risk
 - 8.2. Guard rails
9. **Hazardous substances/chemicals**
AFS 2000:4
 - 9.1. List of hazardous substances
 - 9.2. Safety data sheet
 - 9.3. Storage
10. **Gas/flammable materials**
 - 10.1. Responsible
 - 10.2. Signs
 - 10.3. Storage location gas
 - 10.4. Storage location flammable materials
11. **Source separation of waste**
 - 11.1. Is hazardous waste separated
 - 11.2. Number of fractions, other
 - 11.3. Is waste correctly separated
 - 11.4. Waste oil
 - 11.5. Is there a record of outgoing waste
12. **Machinery**
 - 12.1. Inspections
 - 12.2. Licences
13. **Blast work**
 - 13.1. Vibrations
14. **Temporary electricity**
 - 14.1. Are cables suspended
 - 14.2. No damaged cables
15. **Temporary water supply and sewerage**
16. **Traffic**
 - 16.1. Transport roads
 - 16.2. Parking
 - 16.3. Walkway
17. **Spillage contingency**
 - 17.1. Routines for machinery control
 - 17.2. Decontamination materials
 - 17.3. Leakage secured, trays, containers
18. **Heavy elements**
 - 18.1. Workload ergonomics
 - 18.2. Aids
19. **Drilling**
 - 19.1. Safely set-up drill shed
 - 19.2. Emergency stop
 - 19.3. Emptying of core barrels
 - 19.4. Water swivel drill pipe
 - 19.5. Hydraulic hoses
20. **Sawing/felling**
 - 20.1. Protective equipment, helmet with visor, protective trousers
21. **Other**

EXAMPLE OF THE ESTABLISHMENT OF A NEW DRILLING SITE (from a drilling contractor)

Purpose

This instruction describes the establishment of a new drilling site. The purpose of the instruction is to ensure that activities affecting safety and environment are allocated between client and contractor, and that the workplace is properly equipped and designed for safety.

Instruction

Drill rigs are portable workplaces and can be placed in most areas. There are several points to go through before and during the establishment, to make the workplace as safe as possible. Here is a checklist for this procedure.

Coordination

Before the project starts, the allocation of responsibility between the client and the contractor should be determined. The following needs to be made clear:

- Safety Coordinator
- BAS U - Construction health and safety coordinator Execution (if required by the Work Environment Act AFS 1999:3)
- Permit issuer, Hot works
- Are all permissions from landowners, the Mining Inspectorate, other relevant authorities (County Administration Board, municipality, etc.) in place
- Reporting:
 - Who reports to the appropriate authority in case of a chemical accident?
 - To whom shall deviation reports be reported?
- Risk analysis
- Are there cables in the ground or power lines in the area around the drilling site?
- Safety inspections
- Who should call to safety inspections?
 - Who should participate?
 - Intervals
- Are there any requirements regarding roads to the drilling site?
- Are there any requirements regarding the water supply?
- Education requirements for personnel (e.g. Hot works, CPR, etc.)
- Local safety regulations

Project file

Before the start of the drilling, the health and safety coordinator prepares a so called project binder. This binder should include the documents that must be available at the workplace and it should be at the drilling site when the establishment starts.

The file should at least include the following:

1. Client and workplace information
 - Contact persons
 - Agreement
2. Safety
 - Safety plan (if required by the Work Environment Act AFS 1999:3)
 - Safety and environmental inspection records
 - Current safety instructions and routines (e.g. the secure and break instruction)
 - The document "Safety information"
3. Environment
 - Environmental plan (including safety data sheet, chemical list)
 - SveMin's Guidance for exploration
 - Environmental assurance checklist

4. Quality
 - Quality plan
5. Instructions and routines
 - Instructions and routines for the current project
 - Emergency contingency plan (incl. GPS coordinates)
 - Fall protection plan (incl. rescue plan)
 - Routine for deviation reporting (incidents, accidents, hazards)

Before the establishment, ensure that the following materials are available at the machine:

Equipment for accidents and spillages

- Project file
- Approved fire extinguisher
- Decontamination equipment (oilcloth and absorbers)
- First Aid equipment and eyewash. Information signs showing where they are.
- Other safety equipment that may be relevant (e.g. protective trousers, visor, fall protection equipment). - The fall protection equipment must be checked; that it is clean and inspected by a qualified person
- Hand-held tools are in good condition
- Emergency and ground fault interrupter works

Chemicals

- Safety data sheet for all chemicals
- All chemicals are correctly labelled, including containers for fuel and waste oil.
- Only ADR(UN) containers are used to store large volumes of diesel

Lighting

- Functional check. Do not forget transport vehicles, e.g. forestry tractors; is supplementary lighting needed?

Briefing of project file

Before the drilling starts, a briefing of the project file should be made with the work crew. Check that the personnel have the relevant education and are informed of any local safety instructions from the client. After the briefing, all personnel should sign that they have knowledge of the project file. The signatures are made in the file.

At the establishment, check the following:

Contact possibilities

- Is there coverage for mobile phones, so that rescue personnel can be alerted in an emergency?
- If not, the workplace must be equipped with a satellite phone.

Study the area to minimise ground damages

- Has the client proposed a driveway?
- If not, which is the best driveway from a safety perspective and to minimise ground damages?
- Has the client decided how water should be supplied?
- If not, where is the nearest water?

Placement of equipment

- To reduce the risk of fall and stumble hazards, the workplace should be planned in such a way that the distance between the equipment is short
- As early as possible in the establishment phase, lights should be mounted so that the workplace has sufficient lighting
- The workplace area and walkways must be made free from obstructions (e.g. roots, stones, ditches, etc.)
- Nothing flammable must be near the exhaust pipe
- Check the hydraulic hoses, that they have not been damaged during the establishment and that the protection around the hydraulic hoses are in place

- Generators are grounded
- Any lockable legs are locked

Security

When the establishment of the workplace is completed, the area should be fenced off. This is done with barricade tape around the workplace area and with "No access to unauthorized persons" signs mounted by the access roads to the area.

Documentation

To ensure that the checklist above is followed, a checklist based on all points should be made. This checklist should be completed for each project.

EXAMPLE OF CHECK LIST - REPORT FROM DRILLING SITE INSPECTION

Drilling site: _____ Drill hole no: _____ Hole length: _____m

Date: 20__-__-__ Time: __:__

Contractor: _____ Machine no: _____

Core drilling: ☐ Cutting drilling: ☐ RC drilling: ☐

	Yes	No
Can the personnel of the contractor show a valid SSG certificate?	<input type="checkbox"/>	<input type="checkbox"/>
Is personal safety equipment used during operation?	<input type="checkbox"/>	<input type="checkbox"/>
Is there a cellular phone/communication radio with network connection at the drill rig?	<input type="checkbox"/>	<input type="checkbox"/>

Comments: _____

Have previous deficiencies been corrected? (If no, a deviation report shall be made!)	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------

Have there been any incidents or accidents since the last inspection? (The contractor shall ALWAYS submit a written report to the project manager for action!)	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------

Comments: _____

Is the drilling site in good order (safety or fire risk)?	<input type="checkbox"/>	<input type="checkbox"/>
---	--------------------------	--------------------------

Are core boxes/samples stored in a safe way? Is the marking correct and clear?	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------

Comments: _____

Is there any waste at or around the drilling site?	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------

Is there any oil spillage or similar?	<input type="checkbox"/>	<input type="checkbox"/>
---------------------------------------	--------------------------	--------------------------

Is there any decontamination material for oil?	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------

Comments: _____

Responsible driller: _____

Signature, driller: _____

Drilling site inspected by: _____ Department: _____

Signature, Company X employee: _____

The originals of Drilling site inspection and Final inspection of drilling site have been submitted to:

IF THE COMMENTS FIELDS ARE NOT ENOUGH WRITE ON THE BACK OF THE FORM!

EXAMPLE OF ENVIRONMENTAL CONTROL - CHECK LIST

1. All hydraulic hoses and fittings are checked visually **once per day at 12** with respect to condition and leakage. If the condition is poor, the component shall be replaced and any leakage be dealt with immediately.
2. All hydraulic components such as pumps, engines, etc. are checked **once per day at 12** with respect to condition and leakage. If the condition is poor, the component shall be replaced and any leakage be dealt with immediately.
3. Check that oil basins, cans, and tanks are kept in purpose-designed containers. This check should be carried out **every day at 12** by the site manager and the principal driller.
4. Check that there are enough oil absorbers at the drilling site. This check should be carried out **whenever such equipment has been used** and supplies should be maintained as a result of the check.
5. Check **once per day at 12** that hoses and tanks that contain oil or other chemicals are not placed in such a way that they can become scuffed and start leaking. Should this still occur, these must be replaced and any spills must immediately be addressed.
6. A check of generator and compressor is carried out **once per day at 12** to ensure that there is no leakage. Any leakage must be dealt with immediately.
7. **During service and oil changes**, measures shall be taken to avoid spillage to the ground and into the drill hole. The replaced oil shall be deposited in a can designed for this purpose and type and the quantity shall be noted in the waste oil record that shall be available at the drilling site.
8. **All machines and tanks shall be equipped with spill and drip trays**. This is checked at the drilling site in connection with the **establishment of the project and after each move**.
9. **At the drilling site, there shall be a phone list with contact persons for the client, contractor, and authorities to be contacted in the event of emission of hazardous substances.** All personnel should be informed of when, how, and who to contact. This is checked at the drilling site in connection with the **establishment of the project**.
10. **At the drilling site, there shall be a file with product information about all chemicals being used at the drilling site.** This file should be updated continually if new products are added. The advices and directions available in the product information shall be followed when handling each product. This is checked at the drilling site in connection with the **establishment of the project**.
11. **Good order** shall be kept at the drilling site and waste shall be placed in containers intended for the purpose.

Table to Appendix 6 Environmental control - Check list

MONTH	Performed inspections										
Item:	Performed every day at 12			After consumption	Performed every day at 12		After oil change	At establishment & after moving			REMARKS:
	1	2	3	4	5	6	7	8	9	10	
Day	Sign.	Sign.	Sign.	Sign.	Sign.	Sign.	Sign.	Sign.	Sign.	Sign.	
1											
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EXAMPLE OF INSTRUCTIONS WHEN WORKING ALONE

The person responsible for the exploration work ensures that all personnel are part of a group of at least three persons.

When working alone, the following routines shall be applied:

At planning of work alone

The exploration management ensures that all personnel that work alone belong to a team of at least 3 persons that keep track of each other. Within these teams, all shall have phone numbers to each other, also home numbers.

All employees ensure that they are part of such a team.

Before the start of the work

Mark the area where you are going to work on a map intended for the purpose and notify a person (your contact person) in your team that you are going out in the field, which car you have (make, colour, and registration no.), which time you expect to be back, where you are going, and if there is anything else of interest.

Check that vehicles are in good condition.

Bring your cellular phone or other emergency equipment! Make sure it is charged and bring a charger that works in a car.

If you cannot reach your contact person, call the alternative contact person.

During the day

Call and confirm that everything is OK at 12:00 and 16:00, or as you have agreed. If there is no phone coverage, try to use SMS.

At return

When you have reached a larger road, call once again and report that you are on your way back. The timing shall have been agreed with the contact person in advance.

If these routines are not followed, the contact person will call you or look for you to verify that everything is in order.

NOTE! Cellular phone or other emergency equipment shall always be carried when working alone!

LANDOWNER:

PROPERTY:

Exploration permit

PINE										SPRUCE										LEAF												
DBH* cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	
8		0	0.017	0	300	0.00	0.00	8		0	0.017	0	300	0.00	0.00	8		0	0.016	0	320	0.00	0.00	0.00			0	0.016	0	320	0.00	0.00
10		0	0.038	0	300	0.00	0.00	10		0	0.036	0	300	0.00	0.00	10		0	0.040	0	320	0.00	0.00	0.00			0	0.040	0	320	0.00	0.00
12		0	0.064	0	300	0.00	0.00	12		0	0.064	0	300	0.00	0.00	12		0	0.065	0	320	0.00	0.00	0.00			0	0.065	0	320	0.00	0.00
14		0	0.093	0	300	0.00	0.00	14		0	0.098	0	300	0.00	0.00	14		0	0.095	0	320	0.00	0.00	0.00			0	0.095	0	320	0.00	0.00
16		0	0.130	0	300	0.00	0.00	16		0	0.141	0	302	0.00	0.00	16		0	0.130	0	320	0.00	0.00	0.00			0	0.130	0	320	0.00	0.00
18		0	0.175	0	329	0.00	0.00	18		0	0.194	0	337	0.00	0.00	18		0	0.170	0	320	0.00	0.00	0.00			0	0.170	0	320	0.00	0.00
20		0	0.223	0	363	0.00	0.00	20		0	0.252	0	375	0.00	0.00	20		0	0.215	0	320	0.00	0.00	0.00			0	0.215	0	320	0.00	0.00
22		0	0.284	0	394	0.00	0.00	22		0	0.320	0	399	0.00	0.00	22		0	0.270	0	320	0.00	0.00	0.00			0	0.270	0	320	0.00	0.00
24		0	0.353	0	419	0.00	0.00	24		0	0.390	0	422	0.00	0.00	24		0	0.330	0	320	0.00	0.00	0.00			0	0.330	0	320	0.00	0.00
26		0	0.425	0	441	0.00	0.00	26		0	0.472	0	442	0.00	0.00	26		0	0.390	0	320	0.00	0.00	0.00			0	0.390	0	320	0.00	0.00
28		0	0.505	0	461	0.00	0.00	28		0	0.559	0	458	0.00	0.00	28		0	0.460	0	320	0.00	0.00	0.00			0	0.460	0	320	0.00	0.00
30		0	0.593	0	476	0.00	0.00	30		0	0.653	0	469	0.00	0.00	30		0	0.525	0	320	0.00	0.00	0.00			0	0.525	0	320	0.00	0.00
32		0	0.686	0	484	0.00	0.00	32		0	0.752	0	482	0.00	0.00	32		0	0.600	0	320	0.00	0.00	0.00			0	0.600	0	320	0.00	0.00
34		0	0.793	0	488	0.00	0.00	34		0	0.856	0	487	0.00	0.00	34		0	0.675	0	320	0.00	0.00	0.00			0	0.675	0	320	0.00	0.00
36		0	0.902	0	489	0.00	0.00	36		0	0.974	0	488	0.00	0.00	36		0	0.755	0	320	0.00	0.00	0.00			0	0.755	0	320	0.00	0.00
38		0	1.001	0	490	0.00	0.00	38		0	1.008	0	488	0.00	0.00	38		0	0.840	0	320	0.00	0.00	0.00			0	0.840	0	320	0.00	0.00
40		0	1.133	0	491	0.00	0.00	40		0	1.208	0	489	0.00	0.00	40		0	0.925	0	320	0.00	0.00	0.00			0	0.925	0	320	0.00	0.00
42		0	1.241	0	492	0.00	0.00	42		0	1.338	0	489	0.00	0.00	42		0	1.010	0	320	0.00	0.00	0.00			0	1.010	0	320	0.00	0.00
44		0	1.381	0	492	0.00	0.00	44		0	1.458	0	489	0.00	0.00	44		0	1.110	0	320	0.00	0.00	0.00			0	1.110	0	320	0.00	0.00
46		0	1.491	0	326	0.00	0.00	46		0	1.578	0	311	0.00	0.00	46		0	1.200	0	320	0.00	0.00	0.00			0	1.200	0	320	0.00	0.00
0		0		0.00		0.00	0.00		0	0		0.00		0.00	0.00		0	0		0.00			0.00	0.00		0	0				0.00	0.00

Timber volume total: 0.00 m3fub

No. of trees:

Young forest, no. of trees:

Recently plant. trees, damaged area M²:

TIMBER VALUE: 0.00 Kr
VAT 25%: 0.00 Kr
SUM TIMBER VALUE: 0 Kr

OTHERS: (2 SEK/metre)
Transp. Route, metres: 200 SEK/drilling site
No. of drill holes: 0 Kr

Notes:
Young forest: 0 Kr
Scratch damages: 0 Kr
Recently planted trees: 0 Kr

SUM OTHERS:

Sum (excl. VAT) : 0 SEK
TOTAL: 0 SEK

Addition: x 25% 0 SEK

The price list is valid from 2012-02-01
Mellanskog price list/VMF Qbera calculations

LANDOWNER:

PROPERTY:

Exploration permit

PINE										SPRUCE										LEAF											
DBH* cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage
8		0	0.017	0	300	0.00	0.00	8		0	0.017	0	300	0.00	0.00	8		0	0.016	0	320	0.00	0.00	8		0	0.016	0	320	0.00	0.00
10		0	0.038	0	300	0.00	0.00	10		0	0.036	0	300	0.00	0.00	10		0	0.040	0	320	0.00	0.00	10		0	0.040	0	320	0.00	0.00
12		0	0.064	0	300	0.00	0.00	12		0	0.064	0	300	0.00	0.00	12		0	0.065	0	320	0.00	0.00	12		0	0.065	0	320	0.00	0.00
14		0	0.093	0	300	0.00	0.00	14		0	0.098	0	300	0.00	0.00	14		0	0.095	0	320	0.00	0.00	14		0	0.095	0	320	0.00	0.00
16		0	0.130	0	300	0.00	0.00	16		0	0.141	0	302	0.00	0.00	16		0	0.130	0	320	0.00	0.00	16		0	0.130	0	320	0.00	0.00
18		0	0.175	0	329	0.00	0.00	18		0	0.194	0	337	0.00	0.00	18		0	0.170	0	320	0.00	0.00	18		0	0.170	0	320	0.00	0.00
20		0	0.223	0	363	0.00	0.00	20		0	0.252	0	375	0.00	0.00	20		0	0.215	0	320	0.00	0.00	20		0	0.215	0	320	0.00	0.00
22		0	0.284	0	394	0.00	0.00	22		0	0.320	0	399	0.00	0.00	22		0	0.270	0	320	0.00	0.00	22		0	0.270	0	320	0.00	0.00
24		0	0.353	0	419	0.00	0.00	24		0	0.390	0	422	0.00	0.00	24		0	0.330	0	320	0.00	0.00	24		0	0.330	0	320	0.00	0.00
26		0	0.425	0	441	0.00	0.00	26		0	0.472	0	442	0.00	0.00	26		0	0.390	0	320	0.00	0.00	26		0	0.390	0	320	0.00	0.00
28		0	0.505	0	461	0.00	0.00	28		0	0.559	0	458	0.00	0.00	28		0	0.460	0	320	0.00	0.00	28		0	0.460	0	320	0.00	0.00
30		0	0.593	0	476	0.00	0.00	30		0	0.653	0	469	0.00	0.00	30		0	0.525	0	320	0.00	0.00	30		0	0.525	0	320	0.00	0.00
32		0	0.686	0	484	0.00	0.00	32		0	0.752	0	482	0.00	0.00	32		0	0.600	0	320	0.00	0.00	32		0	0.600	0	320	0.00	0.00
34		0	0.793	0	488	0.00	0.00	34		0	0.856	0	487	0.00	0.00	34		0	0.675	0	320	0.00	0.00	34		0	0.675	0	320	0.00	0.00
36		0	0.902	0	489	0.00	0.00	36		0	0.974	0	488	0.00	0.00	36		0	0.755	0	320	0.00	0.00	36		0	0.755	0	320	0.00	0.00
38		0	1.001	0	490	0.00	0.00	38		0	1.008	0	488	0.00	0.00	38		0	0.840	0	320	0.00	0.00	38		0	0.840	0	320	0.00	0.00
40		0	1.133	0	491	0.00	0.00	40		0	1.208	0	489	0.00	0.00	40		0	0.925	0	320	0.00	0.00	40		0	0.925	0	320	0.00	0.00
42		0	1.241	0	492	0.00	0.00	42		0	1.338	0	489	0.00	0.00	42		0	1.010	0	320	0.00	0.00	42		0	1.010	0	320	0.00	0.00
44		0	1.381	0	492	0.00	0.00	44		0	1.458	0	489	0.00	0.00	44		0	1.110	0	320	0.00	0.00	44		0	1.110	0	320	0.00	0.00
46		0	1.491	0	326	0.00	0.00	46		0	1.578	0	311	0.00	0.00	46		0	1.200	0	320	0.00	0.00	46		0	1.200	0	320	0.00	0.00
	0	0		0.00		0.00	0.00		0	0		0.00		0.00	0.00		0	0		0.00		0.00	0.00	0.00		0	0			0.00	0.00

Timber volume total: 0.00 m3fub

No. of trees:

0

Young forest, no. of trees:

Recently plant. trees, damaged area M²:

TIMBER VALUE:

0.00 Kr

OTHERS:

(2 SEK/metre)

0 Kr

VAT 25%:

0.00 Kr

Transp. Route, metres:

200 SEK/drilling site

0 Kr

SUM TIMBER VALUE:

0 Kr

No. of drill holes:

Young forest:

0 Kr

Notes:

Scratch damages:

0 Kr

Recently planted trees:

0 Kr

Sum (excl. VAT) :	0	SEK
TOTAL:	0	SEK
Addition: x 25%	0	SEK

The price list is valid from 2012-02-01
Mellanskog price list/VMF Öbera calculations

Claims - Cutting Drilling 2012 Northern Sweden

LANDOWNER:

PROPERTY:

Account
Exploration permit

PINE										SPRUCE										LEAF												
DBH* cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	
8		0	0.020	0	300	0.00	0.00	8		0	0.020	0	300	0.00	0.00	8		0	0.020	0	330	0.00	0.00	0.00			0	0.020	0	330	0.00	0.00
10		0	0.040	0	300	0.00	0.00	10		0	0.035	0	300	0.00	0.00	10		0	0.032	0	330	0.00	0.00	0.00			0	0.032	0	330	0.00	0.00
12		0	0.065	0	324	0.00	0.00	12		0	0.065	0	300	0.00	0.00	12		0	0.053	0	330	0.00	0.00	0.00			0	0.053	0	330	0.00	0.00
14		0	0.095	0	398	0.00	0.00	14		0	0.100	0	319	0.00	0.00	14		0	0.078	0	330	0.00	0.00	0.00			0	0.078	0	330	0.00	0.00
16		0	0.130	0	444	0.00	0.00	16		0	0.140	0	357	0.00	0.00	16		0	0.105	0	330	0.00	0.00	0.00			0	0.105	0	330	0.00	0.00
18		0	0.180	0	487	0.00	0.00	18		0	0.200	0	389	0.00	0.00	18		0	0.140	0	330	0.00	0.00	0.00			0	0.140	0	330	0.00	0.00
20		0	0.220	0	512	0.00	0.00	20		0	0.250	0	416	0.00	0.00	20		0	0.175	0	330	0.00	0.00	0.00			0	0.175	0	330	0.00	0.00
22		0	0.280	0	530	0.00	0.00	22		0	0.320	0	431	0.00	0.00	22		0	0.220	0	330	0.00	0.00	0.00			0	0.220	0	330	0.00	0.00
24		0	0.350	0	545	0.00	0.00	24		0	0.390	0	442	0.00	0.00	24		0	0.265	0	330	0.00	0.00	0.00			0	0.265	0	330	0.00	0.00
26		0	0.420	0	552	0.00	0.00	26		0	0.470	0	453	0.00	0.00	26		0	0.315	0	330	0.00	0.00	0.00			0	0.315	0	330	0.00	0.00
28		0	0.510	0	557	0.00	0.00	28		0	0.560	0	456	0.00	0.00	28		0	0.370	0	330	0.00	0.00	0.00			0	0.370	0	330	0.00	0.00
30		0	0.590	0	559	0.00	0.00	30		0	0.650	0	464	0.00	0.00	30		0	0.425	0	330	0.00	0.00	0.00			0	0.425	0	330	0.00	0.00
32		0	0.690	0	561	0.00	0.00	32		0	0.750	0	465	0.00	0.00	32		0	0.480	0	330	0.00	0.00	0.00			0	0.480	0	330	0.00	0.00
34		0	0.790	0	563	0.00	0.00	34		0	0.860	0	467	0.00	0.00	34		0	0.540	0	330	0.00	0.00	0.00			0	0.540	0	330	0.00	0.00
36		0	0.900	0	564	0.00	0.00	36		0	0.970	0	468	0.00	0.00	36		0	0.600	0	330	0.00	0.00	0.00			0	0.600	0	330	0.00	0.00
38		0	1.000	0	564	0.00	0.00	38		0	1.090	0	468	0.00	0.00	38		0	0.665	0	330	0.00	0.00	0.00			0	0.665	0	330	0.00	0.00
40		0	1.130	0	564	0.00	0.00	40		0	1.210	0	469	0.00	0.00	40		0	0.735	0	330	0.00	0.00	0.00			0	0.735	0	330	0.00	0.00
42		0	1.240	0	565	0.00	0.00	42		0	1.340	0	469	0.00	0.00	42		0	0.805	0	330	0.00	0.00	0.00			0	0.805	0	330	0.00	0.00
44		0	1.380	0	565	0.00	0.00	44		0	1.460	0	470	0.00	0.00	44		0	0.880	0	330	0.00	0.00	0.00			0	0.880	0	330	0.00	0.00
46		0	1.490	0	565	0.00	0.00	46		0	1.580	0	470	0.00	0.00	46		0	0.950	0	330	0.00	0.00	0.00			0	0.950	0	330	0.00	0.00
0		0		0.00		0.00	0.00		0	0		0.00		0.00	0.00		0	0		0.00			0.00	0.00		0	0		0.00		0.00	0.00

Timber volume total: 0.00 m3fub

No. of trees:

0

Young forest no. of trees:

Recently plant. trees, damaged area M²:

TIMBER VALUE:

0.00 Kr

VAT 25%:

0.00 Kr

SUM TIMBER VALUE:

0 Kr

OTHERS:

Transp. Route, metres:

(2 SEK/metre)

0 Kr

No. of drill holes:

200 SEK/drilling site

0 Kr

Young forest:

Scratch damages:

0 Kr

Recently planted trees:

0 Kr

Notes:

SUM OTHERS:

0 Kr

Sum (excl. VAT) :	0	SEK
TOTAL:	0	SEK
Addition: x 25%	0	SEK

The price list is valid from 2012-02-01
SCA price list/VMF Nord calculations

LANDOWNER:

Account

PROPERTY :

Exploration permit

PINE										SPRUCE										LEAF												
DBH* cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	DBH cm	Qty pcs	Qty damage	Cube no.	Vol. m3f	SEK/ m3f	Sum SEK	Sum damage	
8		0	0,020	0	300	0,00	0,00	8		0	0,020	0	300	0,00	0,00	8		0	0,020	0	330	0,00	0,00	0,00			0	0,020	0	330	0,00	0,00
10		0	0,040	0	300	0,00	0,00	10		0	0,035	0	300	0,00	0,00	10		0	0,032	0	330	0,00	0,00	0,00			0	0,032	0	330	0,00	0,00
12		0	0,065	0	324	0,00	0,00	12		0	0,065	0	300	0,00	0,00	12		0	0,053	0	330	0,00	0,00	0,00			0	0,053	0	330	0,00	0,00
14		0	0,095	0	398	0,00	0,00	14		0	0,100	0	319	0,00	0,00	14		0	0,078	0	330	0,00	0,00	0,00			0	0,078	0	330	0,00	0,00
16		0	0,130	0	444	0,00	0,00	16		0	0,140	0	357	0,00	0,00	16		0	0,105	0	330	0,00	0,00	0,00			0	0,105	0	330	0,00	0,00
18		0	0,180	0	487	0,00	0,00	18		0	0,200	0	389	0,00	0,00	18		0	0,140	0	330	0,00	0,00	0,00			0	0,140	0	330	0,00	0,00
20		0	0,220	0	512	0,00	0,00	20		0	0,250	0	416	0,00	0,00	20		0	0,175	0	330	0,00	0,00	0,00			0	0,175	0	330	0,00	0,00
22		0	0,280	0	530	0,00	0,00	22		0	0,320	0	431	0,00	0,00	22		0	0,220	0	330	0,00	0,00	0,00			0	0,220	0	330	0,00	0,00
24		0	0,350	0	545	0,00	0,00	24		0	0,390	0	442	0,00	0,00	24		0	0,265	0	330	0,00	0,00	0,00			0	0,265	0	330	0,00	0,00
26		0	0,420	0	552	0,00	0,00	26		0	0,470	0	453	0,00	0,00	26		0	0,315	0	330	0,00	0,00	0,00			0	0,315	0	330	0,00	0,00
28		0	0,510	0	557	0,00	0,00	28		0	0,560	0	456	0,00	0,00	28		0	0,370	0	330	0,00	0,00	0,00			0	0,370	0	330	0,00	0,00
30		0	0,590	0	559	0,00	0,00	30		0	0,650	0	464	0,00	0,00	30		0	0,425	0	330	0,00	0,00	0,00			0	0,425	0	330	0,00	0,00
32		0	0,690	0	561	0,00	0,00	32		0	0,750	0	465	0,00	0,00	32		0	0,480	0	330	0,00	0,00	0,00			0	0,480	0	330	0,00	0,00
34		0	0,790	0	563	0,00	0,00	34		0	0,860	0	467	0,00	0,00	34		0	0,540	0	330	0,00	0,00	0,00			0	0,540	0	330	0,00	0,00
36		0	0,900	0	564	0,00	0,00	36		0	0,970	0	468	0,00	0,00	36		0	0,600	0	330	0,00	0,00	0,00			0	0,600	0	330	0,00	0,00
38		0	1,000	0	564	0,00	0,00	38		0	1,090	0	468	0,00	0,00	38		0	0,665	0	330	0,00	0,00	0,00			0	0,665	0	330	0,00	0,00
40		0	1,130	0	564	0,00	0,00	40		0	1,210	0	469	0,00	0,00	40		0	0,735	0	330	0,00	0,00	0,00			0	0,735	0	330	0,00	0,00
42		0	1,240	0	565	0,00	0,00	42		0	1,340	0	469	0,00	0,00	42		0	0,805	0	330	0,00	0,00	0,00			0	0,805	0	330	0,00	0,00
44		0	1,380	0	565	0,00	0,00	44		0	1,460	0	470	0,00	0,00	44		0	0,880	0	330	0,00	0,00	0,00			0	0,880	0	330	0,00	0,00
46		0	1,490	0	565	0,00	0,00	46		0	1,580	0	470	0,00	0,00	46		0	0,950	0	330	0,00	0,00	0,00			0	0,950	0	330	0,00	0,00
0		0		0,00		0,00	0,00		0	0		0,00		0,00	0,00		0	0		0,00		0,00	0,00			0				0,00	0,00	

Timber volume total: 0,00 m3fub

No of trees:

0

Young forest no of trees:

Recently plant trees damaged area M²:

TIMBER VALUE:

0,00 Kr

VAT 25%:

0,00 Kr

SUM TIMBER VALUE:

0 Kr

OTHERS:

Transp. Route, metres:

(2 SEK/metre)

0 Kr

No. of drill holes:

200 SEK/drilling site

0 Kr

Young forest:

Scratch damages:

0 Kr

Recently planted trees:

0 Kr

Notes:

SUM OTHERS:

0 Kr

Sum (excl. VAT) :	0	SEK
TOTAL:	0	SEK

Addition: x 25%

0 SEK

The price list is valid from 2012-02-01

SCA price list/VMF Nord calculations