UNEP/GEF Project

Russian Federation – Support to the National Programme of Action for the Protection of the Arctic Marine Environment

PRE-INVESTMENT STUDIES

Land remediation from oil products in the water protection area of the Northern Dvina River of White Sea basin near the settlement Krasnoe of the Primorsky district of the Arkhangelsk Region

FINAL REPORT

Project is funded by:

UNEP GEF

RAMBOLL

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ABBREVIATIONS

BEAC - Barents Euro-Arctic Council
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
DM - Dry matter
EBRD - European Bank of Reconstruction and Development
EPS - Environmental Protection System
ESA - Environmenal Site Assessment
GC-FID - Gas chromatograph with flame and ionizing detector
GEF - Global Environment Facility
HSE - Health, Safety, Environment
IFC - International Finance Corporation
IP - Investment project
NDEP - Northern Dimension Environmental Programme
NCM - Nordic Council of Ministers
NEFCO - Nordic Environment Finance Corporation
NIB - Nordic Investment Bank
PAH - Poly aromatic hydrocarbons
PID - Photo-ionizing detector
PINS - Pre-investment studies
RAP - Remedial Actions Plan
SAP - Strategic Action Programme
SPA - Specially preserved areas
THC - Total hydrocarbon content
UNEP - United Nations Environmental Programme

CONTENTS

SUMMARY

Project title	Land remediation from oil products in water protection zone of Northern Dvina River of White Sea basin near settlement Krasnoe of Primorsky district of Arkhangelsk Region
Project owner	Administration of Primorsky Municipal District
Branch	Municipal administration, damage caused by past development activity
Brief description of IP and its benefits	The contaminated land plot is located in a water protected area, approximately 5 km downstream the settlement of Krasnoe, on the river bank of the Norhern Dvina River. Oil contamination is continually leaking into the River Dvina via subsurface water and erosion of the polluted river bank. Due to the continuous leaking and further dispersion in the Northern Dvina River and the amount of oil (in the range 120 – 180 ton) the pollution is assessed as posing a hazardous risk to the local and regional environment, including the Arctic marine environment. The IP provides a 3-phase solution. Phase 1 is an environmental site assessment to determine quality and quantity of the pollution. Phase 2 is design of remediation and Phase 3 is remediation to environmental acceptable levels. Project implementation is assessed as contributing to reducing negative environmental impacts on the Arctic environment and contributing to capacity building for an integrated approach of remediating polluted sites in the Arkhangelsk Region.
Project implementation period	**4 years**
Total investments, minimum	**1 176 000 EUR**
Total investments, maximum	**7 776 000 EUR**

Project costs, EUR

	Expenditures	Cost
1.	**Stage 1: Environmental Assessment of the Area**	**27 040**
	Mobilization	2 290
	Contractors and subcontractors	7 950
	Chemical analyses	4 800
	Environmental specialist and project management	12 000
2.	**Stage 2: Development of Remediation Measures**	**49 000**
	Mobilization	4 000
	Contractors and subcontractors	20 000
	Chemical analyses	10 000
	Environmental specialist and project management	15 000
3.	**Stage 3: Remediation**	**1 100 000 -7 700 000**
	TOTAL:	**1 176 000 – 7 776 000**

Financing plan, EUR

IP Financing Source	Period of implementation				TOTAL	Share
	1st year	2nd year	3rd year	4th year		
International grant	41 200	315 600	296 000	288 000	940 800	80%
Regional and local budget	10 300	78 900	74 000	72 000	235 200	20%
Total, financing planned	**51 500**	**394 500**	**370 000**	**360 000**	**1 176 000**	**100%**

Financial analysis

Commercial risk	• The project is not commercial and does not provide for profit earning. The IP is more beneficial in respect of environmental and social sectors rather than financial. • It is based on the international grant as well as the local and regional co-financing. • Lack of the own municipal and regional funds for the IP co-financing.

1. INTRODUCTION

1.1 Description and Assignment

This report summarises the work related to preparation of regional pre-investment study for remediation of oil contaminated land in a water protected area upstream the Northern Dvina River. The river is a part of the White Sea basin and the site of oil contamination is located in the settlement Krasnoe of Primorsky District in the Arkhangelsk Region. The work has been undertaken within the frames of the project "Russian Federation – Support to the National Programme of Action for Protection of the Arctic Marine Environment (NPA-Arctic Project)". The overall aim of the Project is to protect the global marine environment in which the Arctic plays a fundamental role. More specifically the program shall contribute to developing and establishing a sustainable framework to reduce environmental degradation of the Russian Arctic from land-based activities on a systematic basis. NPA-Arctic has been established through cooperation between the Ministry of Economic Development of the Russian Federation and United Nations Environmental Program (UNEP) and is financed by the Global Environment Facility (GEF).

The NPA-Arctic Project is coordinated by the Executive Directorate of National Pollution Abatement Facility, NPA Arctic Project and consists of four main components:

1. The preparation and adoption of a Strategic Action Program (SAP)
2. Completion of a set of Pre-Investment Studies (PINS)
3. Development and implementation of an Environmental Protection System (EPS) consistent with the SAP
4. Implementation of three demonstration projects:
   - Preservation of indigenous people's traditional lifestyle in association with development;
   - Oil contamination remediation using marine alga; and
   - Environmental remediation of decommissioned military bases

Ramboll Barents has been given the assignment to develop pre-investment studies of 5-8 selected Investment Projects (IP) in the Central Arctic Region of Russia which includes Arkhangelsk Region, Nenets Autonomous Okrug, Republic of Komi, and Yamalo-Nenets Autonomous Okrug. The main criteria for the selection of IP have been to comply with the overall and specific objective of the NPA-Arctic Project. Furthermore, the IP have been proposed and supported by the regional authorities.

The following 5 IP in the Central Arctic Region of Russia have been selected and described in separate reports:

Komi Republic

1. Modernization of the Landfill for Municipal Solid Waste Disposal in Vorkuta.
2. Modernization of sewage water treatment system in Vorkuta.

Arkhangelsk region:

3. Land remediation from oil products in water protection zone of Northern Dvina River of White Sea basin near settlement Krasnoe of Primorsky district of Arkhangelsk Region.
4. Construction of new sewage treatment facilities in Lesnaya Rechka residential district of Arkhangelsk.

Nenets Autonomous Okrug:

5. Modernization of Waste Water Treatment Facilities in the Kachgort and Bondarny Settlements.

The project of land remediation from oil products in water protection zone of Northern Dvina River of White Sea basin near settlement Krasnoe of Primorsky district of Arkhangelsk Region is one of the priority projects for the Arkhangelsk region (Annex 1). The project was recommended by the Regional Administration (now the Government of the Arkhangelsk region) for pre-investment study development. The Regional Administration provided full support in preparation of the pre-investment studies report and intends to contribute to the further promotion of the project. Regional and local authorities are extremely interested in the implementation of the IP, as the oil pollution represents an environmental threat to the local and regional environment, including the marine Arctic environment.

The key objective of this report is to develop technical and economic parameters of remediation of oil contaminated land on the shore of the Northern Dvina River, upstream a water protected area, near the settlement Krasnoe in the Primorsky District of the Arkhangelsk Region.

1.2 Report Structure

In compliance with the requirements of the Terms of Reference the PINS should include the following information:

- Information about the owner of the project
- Description of the investment project
- Ecological and social assessment of the project
- Status of the investment project and its implementation activities;
- Project financial viability assessment;
- Legal or any other limitations for Russian and foreign investors;
- Assessment of potential risks and justification of choice and other additional information pertaining to the investment project.

Section 1 – introduction. **Section 2** describes the municipal entity Primorsky Municipal District, including its geographical position, demographical situation, ecological condition and social and economical situation in the Primorsky District. **Section 3** contains information about the owner of the project, its brief description and current financial status. **Section 4** contains information about the current status of the investment project, description of possible options for liquidation of land plot pollution and description of proposed technical solutions for implementation of IP. Project costs estimates presented in **Section 5**. **Section 6** includes an assessment of the environmental and social impacts of the investment project. **Section 7** describes project financial viability. **Section 8** covers project implementation status and arrangements. **Section 9** deals with risk assessments and selection justification. **Section 10** – conclusion.

Besides the above mentioned information presented in the relevant sections, the report contains additional information which gives a complete picture of current aspects and opportunities for implementation of the investment project.

2. DESCRIPTION OF THE PRIMORSKY MUNICIPAL DISTRICT

The Municipal District of Primorsky is situated in the Arkhangelsk Region, which is located in Northwest in Russia (Figure 1). The region has a wide net of lakes and rivers. All rivers (except Ileksa River) belong to the Arctic Ocean basin. The largest rivers are the Northern Dvina River (with feeders Vychegda, Pinega and Vaga), Onega, Mezen and Pechora. The region is characterized by fragmented population patterns with many small villages and towns. The largest town is Arkhangelsk, the regional capital with a population of 354 200 inhabitants.

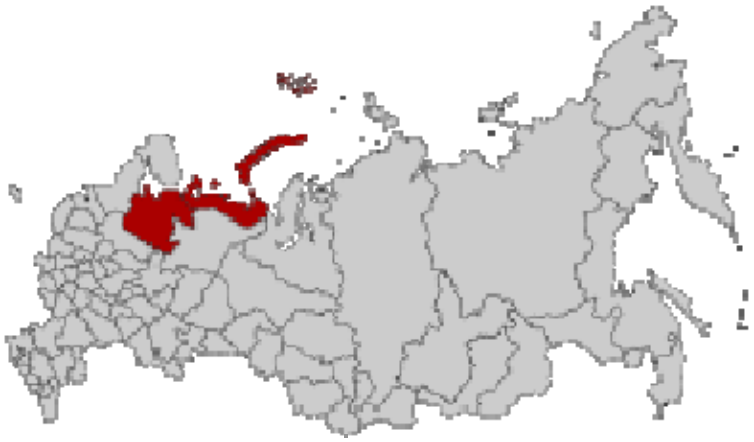

Figure 1. Location of the Arkhangelsk Region in Russia

Due to the challenging geographical location of the area, according to RF Government Decree No.402 of 23.05.2000 "On approval of the list of Far North areas and other areas with the same status of limited periods of cargo (products) delivery", Promorsky Municipal District is classified as an area of limited cargo delivery periods due to the limited port access for cargo supply during the winter time, when the White Sea is frozen. Cargo supply by land in the winter time is limited due to the weather conditions and local/regional infrastructure.

2.1 Geographical Position

Primorsky Municipal District is located in the north-western part of the Arkhangelsk Region in the delta of the Northern Dvina River where it runs into the White Sea. As of 1 January 2009, 19 municipal entities including 215 residential areas are included in the municipal district territory. The Solovetskoe settlement, Franz Joseph Land and the Victoria Island was included in the Primorsky Municipal District in 2006 and today the Primorsky Municipal District covers an area of 46 100 square kilometres. Arkhangelsk city is the administrative centre of the district. Three independent municipal entities of the Arkhangelsk region are located within the territory of the Municipal District – City of Arkhangelsk, City of Severodvinsk and City of Novodvinsk. The geographical location of the Primorsky Municipal District is given in Figure 2.

The settlement Krasnoe is located on the territory of the Primorsky District on the eastern bank of the Murmansk arm of the Northern Dvina River. The settlement is part of the municipal entity Lastolskoye. Krasnoe has an area of 7.5 hectares.

Figure 2. Geographical position of Primorsky District

2.2 Demographics

The permanent population as of 1 January 2009, was 27 000 people which represents 2.2% of the Arkhangelsk Region permanent population (excluding Nenets Autonomous Okrug population). The rural population density is 0.6 persons per square kilometre, which is lower than the critical level in the Russian Federation – 0.76 persons per 1 km^2.

Table 1: Population of the Primorsky District* and the settlement of Krasnoe as of 1st of January

Year	2005	2006	2007	2008	2009
Population, Primorsky District	27 200	27 700	27 400	27 100	27 000
Population, Krasnoe	9	9	9	12	7

* Excluding Settlement Solovetsky

In order to observe the provisions of Article 85 of the Federal Law "On general principles of local government in the Russian Federation" in 2009 the Arkhangelsk Regional Administration initiated the inclusion of the municipal entity Primorsky Municipal District in the List of constituent territories of the Russian Federation and individual districts of the constituent territories of the Russian Federation (within their current borders) which fall into the category of territories with low population density, which was approved by the RF Government Decree.

The population in 8 residential areas (out of 215) exceeds 1 000 persons, a number of population of 10 persons or less is found in almost 70 villages and at lighthouses, a number of population of up to 100 persons is found in 155 residential areas. 7 persons live in the settlement Krasnoe. During summer time the population of Krasnoe slightly increases due to the arrival of vacationers.

The demographical situation in the district has not changed significantly during the last 5 years. The birth rate remains low and amounts to 13.7 births per 1 000 people, death rate is still quite high – 16.9 deaths per 1000 people. The natural migration of population in 2008 (calculated per 1000 persons) resulted in the natural population loss factor of 3.2 %; the same factor in 2007 was 4.2 %.

2.3 Status of the Natural Environment

2.3.1 Climatic and Geographical Conditions

The Primorsky Municipal District is located in a temperate climatic zone and washed by the Arctic waters of the White Sea from the north.

General terrain features
The main part of the territory of the region is characterized by relatively homogeneous plain terrain with heights of up to 200 meters above sea level (Figure 3). Several hilly and ridge elevations are singled out in the general plain terrain. A unique orographic area, Belomorsko-Kuloiskoe plateau, characterized by the cavern forms, is located in the east of the district.

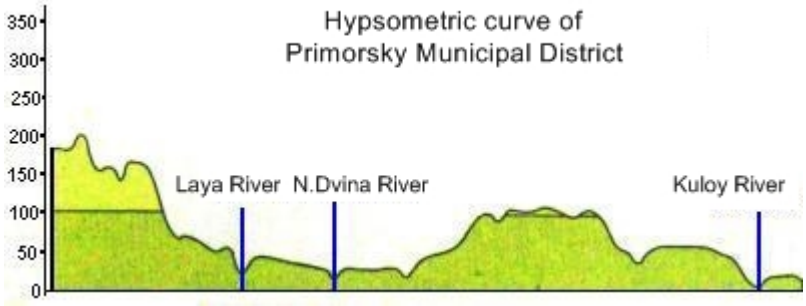

Figure 3. Hypsometric curve of Primorsky Municipal District

Geology
Various rock yields can be observed in the area, in the western and central parts of the district, starting from the ancient Proterozoic and Cambrian periods represented generally by clay, sands and siltstones. Sedimentary beds occur with sloping to the east and thus more ancient sediments are overlapped by the recent ones. So Proterozoic and Cambrian sediments in the east are overlapped by carboniferous sediments and partially by Permian formation represented by marl, clay, limestone and dolomite.

Subsurface water
Distribution of subsurface water is closely associated with geology. The main subsurface water deposits belong to the Northern Dvina artesian basin. Mineralization of subsurface water varies and increases from the west to the east, from 1-3 g/l (Onega peninsular) to 10-50 g/l (Belomorsko-Kuloiskoe plateau).

Climate
The Primorsky Municipal District has a subarctic marine climate with long-lasting winter and short cool summer. It is formed under the influence of the northern seas and air-mass transport from the Atlantic subject to low solar radiation level. The average temperature is -14.5° in January and +15.8° in July. The area is located in the excessive moistening zone. The annual precipitation is 560 mm and is characterized as excessive. Abundance of precipitation together with the plain terrain and widely spread low permeable soil provide for excessive surface water. River network is widely developed. The regional rivers belong to the White Sea basin. The main feed source of the rivers is melt snow water, therefore the main flow takes place during the spring period and is rarely accompanied with the impoundment of the territories. The largest flow is observed in the area of the Belomorsko-Kuloiskoe plateau and amounts to 500 ml. Water and power potential of the Northern Dvina River in the estuary is estimated as 8 000 000 kWh. The number of stable snow mantle days increases from the west to the east and amounts approximately to 175 days a year. Recently transfer of cold Arctic air during the

calendar summer months is observed. The height of the snow mantle on the contrary evenly increases from the center of the area (the Northern Dvina estuary).

2.3.2 Local Nature Conditions

Land resources

Primorsky Municipal District is located in the territory that relates to the rural area. The total area of the land is 46 100 m^2 where 19 400 m^2 is forest land, 755.8 m^3 is the controlled felling areas, 400 m^2 is the agricultural area, and 1 000 m^2 is the private land. Vegetation and distribution of land in the Primorsky Municipal District are presented in Figure 4 and Figure 5 respectively.

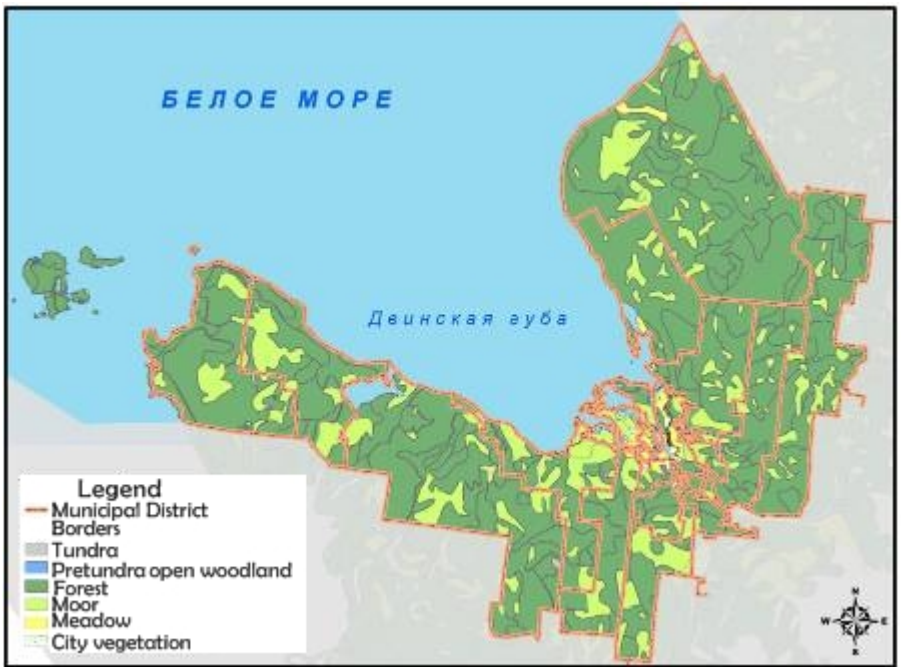

Figure 4. Vegetation of the Primorsky district

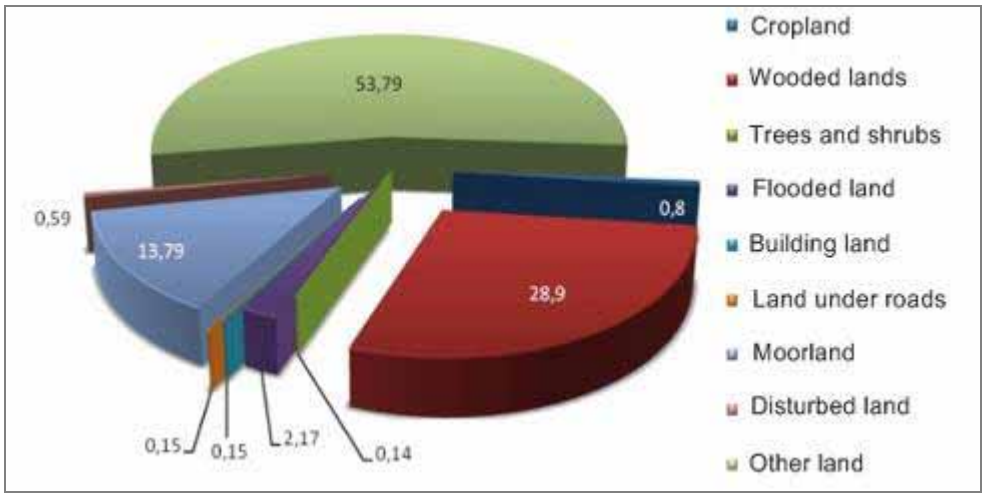

Figure 5. Distribution of land in the Primorsky Municipal District, % of the total area

Forest resources

Arkhangelsk, Severodvinsk and Solovetskoye forestries of the Arkhangelsk forestry department are located in the Primorsky Municipal District. As of 1.01.2009 the total area of forest resources of Primorsky Municipal District is 2 121 000 hectares or 7.3% of the total area of forest resources of the Arkhangelsk region.

Total area of forest resources includes forest land (65.1%) and non-forest land (34.9%). Land covered with forest vegetation (98.8%) and not covered with forest vegetation (1.2%) refers to forest land. Non-forest land includes agricultural land (cropland, hayfields, pastures and farms) – (0.5%), moorland – (89.9%), water – (7.6%) and other land (0.9%).

Subsurface water

Water resource potential of the Primorsky district is presented by the forecast resources of drinking subsurface water, explored deposits of drinking, mineral and industrial subsurface waters. The following deposits were explored on the territory of the district:

- 5 drinking subsurface water deposits with the total reserve of 494 950 m^3/day. One of five deposits is being utilized - Lesnoe (reserves are 145 m^3/day), for bottling of drinking subsurface water.
- 4 mineral water deposits (Belomorskoye, Severodvinskoe, Kurtyaevskoe and Lesnoe) with useful resources of 989 m^3/day. Two deposits are being utilized: Belomorskoe (620 m^3/day) and Kurtyaevskoe (100 m^3/day).
- 1 industrial iodide water deposit - Severodvinskoye (15 420 m^3/day), 1 chloride sodium brine deposit - Nenokskoe (6 340 m^3/day, mineralization of 120 g/dm^3).

Surface water

The Northern Dvina River is the most important river in the north of the European part of Russia and is inferior in respect of water content to Volga and Pechora only. The length of the river is 744 km, and the basin area is 360 000 sq.km. It springs from the territory of the Vologda region near Veliki Ustyug, is formed from two rivers confluence – Sukhona and Yug and further flows through the Arkhangelsk region and fall into the White Sea. It joins Vychegda near Kotlas and turns to the north-west and then gradually to the north. Almost in the very north it joins Pinega (Figure 6).

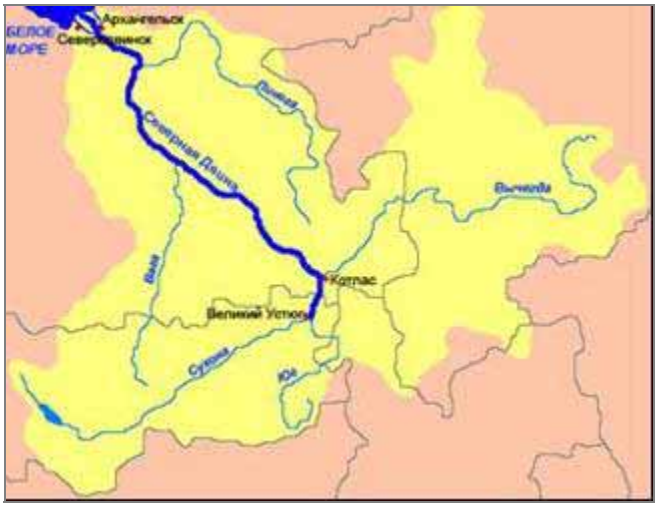

Figure 6. Basin of the Northern Dvina River

Main inflows are Vychegda, Pinega, Vaga. Connected to the Kula River through the Sukhona River and Lake Kubenskoe and others, through Volgo-Baltiyskiy waterway (Northern Dvina water system) and through the Pinega River.

The Northern Dvina has a tranquil flow with significant speed at shallows. The river stream flows through the wide valley with high banks consisted in part of chalky and sand stratum. The nature of banks varies from time to time, with beaches; in some parts the left bank is steeper, and the right one is pratal, bushy, or vice versa. The banks of the Northern Dvina River resemble the Volga River banks very much.

Freeze-up remains on the river surface from the middle of October until the end of April.

In spite of severe climatic conditions both winter and summer fishing in the Northern Dvina is excellent. Various fish species are found in the river. The largest inflows of the Northern Dvina, the rivers Vychegda, Vaga and Pinega are rich in salmonids.

Veliki Ustyug, Kotlas and Solvychegodks cities are located in the upper reach of the river; Novodvins, Arkhangelsk and Severodvinsk cities are located near the river mouth.

Lower to Pinega inflow the Northern Dvina River broadens and splits into numerous channels, and the width of the valley increases up to 18 km. There are a lot of sandbanks and islands in the upper stream. With the inflows joining the river, the Northern Dvina broadens and the stream becomes stronger. Strength of the current in the lower reaches depends on the sea tides. The depths are diverse. The bottom is slimy and sandy, and at shallows the bottom is gristly or pebbly.

The river merges in one channel near Arkhangelsk and forms delta of 900 km² consisted of several arms and numerous channels (Annex 2). The Northern Dvina delta starts from Novodvinsk. It flows into the Dvina Bay of the White Sea near Arkhangelsk and Severodvinsk.

The Dvina Bay is one of the four largest bays of the White Sea, along with Mezen Bay, Onega Bay and Kandalaksha Bay (Figure 7). The length of the bay is 93 km and the width at entry is 130 km. The depth is up to 130 meters. The bay divides winter and summer banks of the White Sea.

During many hundreds of years the Northern Dvina River has been the main waterway of the North.

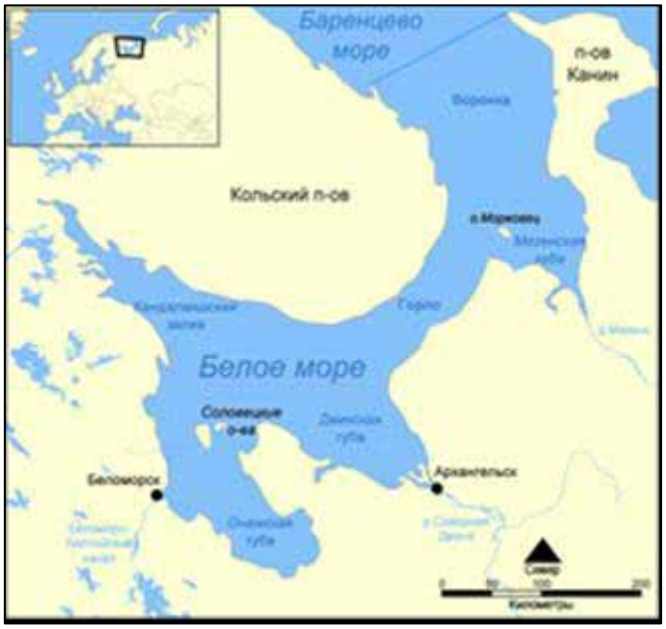

Figure 7. Dvina Bay of the White Sea

Protected areas
Nature conservation areas are located in the territory of the Primorsky district – regional preserves: landscape – Primorsky, Mudyugskiy; biological – Unskiy, Dvinskoy, Belomorskiy, Soyanskiy; and natural sanctuaries: forests, pine wood, abies.

2.3.3 Natural Resources

Atmospheric air
Monitoring of atmospheric air pollution in the territory of the Primorsky Municipal District was not carried out.

Subsurface water
The municipal district is characterized by a complex water management and geoecological environment, lack of protected water supply sources, pollution of surface water, occasional outbreaks of acute contagions connected with water consumption.

Prospects for significant increase in mineral water production are quite low due to the conditions of sanatorium and resort system and enterprises that have their own health

resorts. No regional programs of sanatorium and resort systems for 2005-2010 and for the long-term outlook were developed. The current low level of reserves development creates a reserve for production increase at operational water intakes; no tasks for identification of new deposits and promising facilities were set, and therefore no geological surveys were carried out. The investment prospects are only attributable to the mineral water deposits developed for the purpose of water bottling and certain operational health and recreation facilities where the therapeutic mineral water production is reasonable. Imported mineral water (very often faked) hampers the volumes of mineral water production for the bottling purposes.

Surface water

Typical pollutants of the Northern Dvina River are iron, copper, zinc compounds, organic matter, lignosulphonates, phenols and oil products at some sites in 2008.

The main pollution sources of the *mouth reach* of the Northern Dvina River are waste water from pulp-and-paper plants, woodworking industries, housing and utilities, river and sea vessels. The most prevailing pollutants are iron, copper, zinc compounds, oxidation-resistant matter under chemical oxygen demand, lignosulphonates and phenols.

In 2008 the *delta* of the Northern Dvina River (Nikolsky, Murmansky, Korabelny arms, Maimaksa and Kuznechikha channels) had a pollution level that didn't change much with respect to the majority of the rated indicators. According to integrated assessment, water quality in the majority of locations remained at the previous year level and was characterized as follows:

- Maimaksa and Kuznechikha channels, 4 km upstream of the mouth – class 4, category "a" (muddy),
- Nikolsky and Korabelny arms – class 3, category "b" (very contaminated),
- Murmansky arm – class 3, category "a" (contaminated).
- Kuznechikha channel, 3 km upper the Yuras river inflow, there was a change in quality class from 4 "a" (muddy) to на 3 "b" (very contaminated).

Drinking water supply

Water supply in the Arkhangelsk region is mainly carried out from the surface sources. The surface sources refer mainly to the Northern Dvina River basin. Three water supply intakes in the Primorsky district are supplied with water from the lakes Khainozero, Kholmovskoe and Korovie.

Surface water quality assessment carried out in 2008 by the regional state enterprise State Environmental Inspectorate of the Arkhangelsk region revealed deviations with respect to sanitary and chemical (COD, BOD, iron, manganese, lignine matter, synthetic SSAS) and microbiologic (total coliform bacterium, thermotolerant coliform bacterium, PFU) indicators. More than 50% of substandard (under sanitary and chemical indicators) water samples from the domestic drinking water supply system were revealed in the Primorsky district.

The Northern Dvina River including its numerous inflows is the major waterway of the region. Settlements, large industrial facilities (pulp-and-paper factories, waste water treatment plants etc.) are located along the river, and this contributes to the river pollution. One of such pollution sources is the oil contaminated land plot in the area of the Krasnoe settlement. The existing local pollution sources generated by human activity negatively impact the state of the Northern Dvina River flowing into the White Sea. The reduction of negative impact will lead to the improvement of environmental situation in the Northern Dvina River basin and also will influence positively on the improvement of the Arctic marine environment.

2.3.4 Local Environmental Pollution Sources

There are 100 legal entities in Primorsky District that use natural resources.

The main facilities polluting the environment are the fuels and lubricants storehouses (3 pcs), gas stations (5 pcs), WWTP (5 pcs) and boilers (37 pcs).

A critical problem for the Primorsky Municipal Distric is the environmental impact from the diamond deposit development by OAO Severalmaz.

In 2008 the environmental payments to the municipal budget from the users of natural resources located in the region amounted to 4 740 000 rubles. The environmental payments to the municipal budget during the last 4 years are presented in Table 2.

Table 2: Environmental payments to the municipal budget, thousand rubles

	2005	2006	2007	2008	2009 (Plan)
Environmental fees for negative impacts on the environment	3 330	4 223	3 417	4 741	3 800

The region faces burning issues of unauthorized domestic waste landfills and high quality drinking water supply for the population. The Administration of the Primorsky Municipal District pays special attention to finding solutions to these problems and this will allow improving the environmental and sanitary and epidemiologic situation in the region.

2.3.5 Regional and Municipal Environmental Programs

High quality of life and health of population, as well as national security can be achieved only by preservation of natural system and keeping the appropriate quality of the environment. The Government of the Arkhangelsk region takes regular integrated environmental preservation actions in the region. The development of the regional environmental policy is being performed subject to the local factors and environmental condition. The social and economic target program of the Arkhangelsk region "Environmental protection and security of the Arkhangelsk region for 2006-2008" (approved by regional law of 21 June 2006 No. 179-11-OZ) was complete in 2008. A long-term target program of the Arkhangelsk region "Environmental protection and security of the Arkhangelsk region for 2009-2011" was approved by Decree of the Administration of the Arkhangelsk region of 16 September 2008 No. 202-pa/30.

The main targets of the Program for 2009-2011 are stabilization and improvement of environmental situation and provision of environmental safety in the region; development of the specially preserved areas (SPA) system of regional significance of the Arkhangelsk region and the Nenets Okrug, preservation of biodiversity and natural resources; provision of environmental education and training of population, shaping of environmental responsibility.

The total amount of financing of the Program is 55 394 000 rubles, including:

- From the regional budget – 43 161 000 rubles;
- From the local budgets - 860 000 rubles;
- From the federal budget – 3 763 000 rubles;
- From the non-budgetary sources – 7 610 000 rubles.

The program provides for a set of measures aimed at combination of environmental and social and economic interests of population, reduction of negative environmental impacts of economic activity, increase of environmental protection culture and conservation.

The main economic effect of the Program will be a prevention of environmental contingencies and minimization of response costs.

The main social effect of the Program will be a preservation and improvement of environmental living conditions in the Arkhangelsk region, provision of population with bigger volumes of drinking water of a standard quality that will contribute to public health preservation, mitigation of risks of diseases caused by environmental pollution.

Environmental effects will be as follows:

- Reduction of environmental pollution level and prevention of deleterious effect of the economic activity;
- Reduction of the industrial and consumption waste environmental impact by removal and storage (disposal) management by environmentally justified method;
- Mapping and optimization of SPA of the Arkhangelsk region and Nenets Okrug;
- Development and maintenance of SPA infrastructure of the Arkhangelsk region and Nenets Okrug.

Implementation of the Program measures will help to structure the existing environmental information that will contribute to up-to-date information supply to the public authorities of the Russian Federation and the Arkhangelsk region, local autonomous bodies, organizations and population.

In spite of the program approach used by the regional Government while forming the entire environmental policy, the environmental situation in the Arkhangelsk region remains tense. The most critical and socially significant problems still are:

1. Industrial and consumption waste management.
2. Environmental state of the water bodies.
3. Deleterious effect of water, protection of waterside structures.
4. Special Protection Area of the regional significance.
5. State environmental monitoring.
6. Environmental education and training.

2.4 Review of Current Economical Structure and Development Prospects

2.4.1 Present Economic Situation

The Primorsky District has a comparatively small production capacity and the production activity is low. Economic development is based on the branches which are the most traditional for the region: agriculture, fishing industry, construction, transport and communications, consumer market and services. The

Annex 1

economical condition of the municipal entity is presented in Annex 1: Letter of Arkhangelsk Region Administration on ranked list of IP proposals

АДМИНИСТРАЦИЯ
АРХАНГЕЛЬСКОЙ
ОБЛАСТИ

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г. Архангельск, 163004,
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04.05.2009 № 06-40/23

На № _____

ООО «Рамболь Стурвик»

Н.У. Муртазалиевой

пр.Обводный канал, 13/3
163046, г.Архангельск

Уважаемая Нанда Убайдулаевна!

Администрация Архангельской области в связи с обращением ООО «Рамболь Стурвик» о ранжировании по значимости заявленных прединвестиционных проектов, планируемых к реализации на территории области, направляет запрашиваемый перечень в порядке, соответствующем уровню приоритетности их реализации с учетом установленных потенциальным инвестором критериев:

1. Ликвидация загрязнения нефтепродуктами земель водоохранной зоны реки Северная Двина бассейна Белого моря в районе населенного пункта Красное Приморского района Архангельской области;
2. Проектирование и строительство канализационных очистных сооружений в жилом районе Лесная речка г. Архангельска;
3. Проектирование и строительство водозабора с водоочистными сооружениями в поселке Поньга Онежского района Архангельской области;
4. Проектирование и строительство сетей канализации и очистных сооружений в г. Мезени Архангельской области;
5. Проектирование реконструкции системы очистки и обеззараживания сточных вод на канализационных очистных сооружениях г. Котлас.

Исполняющий обязанности заместителя главы администрации области по управлению природными ресурсами и экологии А.Ш. Давитиашвили

Коршунов Сергей Николаевич
28-85-08
Калевтюк Татьяна Александровна
28-51-54

Annex 1

Translation

To: Naida Murtazalieva
OOO Ramboll Barents

From: Alexander Davitiashvili
Acting Vice-Head of the Arkhangelsk
Region Administration on Natural
Resources Management and Environment

Re: Potential investment project

Dear Mrs. Murtazalieva,

Pursuant to Ramboll Barents request regarding ranking of the suggested pre-investment projects planned for implementation in the territory of the Arkhangelsk region, Arkhangelsk Region Administration hereby sends the requested list according to priority level of implementation subject to the criteria specified by a potential investor:

Land remediation from oil products in water protection area of the Northern Dvina River of the White Sea basin near settlement Krasnoe of Primorsky district of the Arkhangelsk region.

Design and construction of wastewater treatment plants in Lesnaya Rechka district of Arkhangelsk.

Design and construction of water intake with water treatment facilities in settlement Ponga of the Onega District of the Arkhangelsk region.

Design and construction of sewage system and wastewater treatment plants in Mezen city of the Arkhangelsk region.

Design of reconstruction of treatment and disinfection system of waste water at wastewater treatment plants in Kotlas city of the Arkhangelsk region.

Alexander Davitiashvili
Acting Deputy Head of the Arkhangelsk
Region Administration on Natural
Resources and Environment Management

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In accordance with the Statistical Register as of 1 January 2009, 642 companies are registered in the municipal entity; the main are agricultural (61), logging (39), construction (36), and industrial (11). Their number grew by 2.7% compared to 1st January 2008. The prevailing form of ownership of the registered enterprises is private, its share amounts to 73.4% of the total number of registered companies. The municipally owned companies comprise 14%.

The agricultural sector is of great social and economic importance for municipal entity. It includes 20 collective farms, 30 peasant farms, over 10 000 various private farm holdings (vegetable farming, dairy farming, pig breeding, poultry farming, fishing and fish breeding, animal breeding and meat products' processing). Harvesting from the sea plays an important part of the economy for many coastal settlements. Seal hunting and fishing have been associated with the Pomor culture for hundreds of years and still play a significant role for income and way of life. Fishing in the Northern Dvina River system and other rivers is well developed within the whole territory of the Primorsky district. 2008 catch amounted to 59.72 tons. Coastal fishing is developed in the whole water area adjacent to the White Sea, within the Primorsky Municipal District. 2008 coastal catch in the White Sea amounted to 3.12 tons. The main share of fishing in the White Sea is Atlantic salmon and navaga.

The cargo transportation share in the transport services amounted to 65% in 2008, passenger transportation – to 35%. In 2008 15 648 m^2 of residential houses were commissioned (which is 2.4 times more than in 2007), 11 133.7 m^2 of those were commissioned at the expense of the population.

There is no industrial production in the settlement of Krasnoe. The local population is mainly occupied in farming, breeding domestic animals and production of vegetables and garden berries.

2.4.2 Population Employment and Income

The working-age population makes 64.8% of the total population. The prevailing part of the employed population is occupied in the large and medium-scale enterprises. The number of vacancies occupied on payroll in 2008 was 9 535 (in 2007 – 10 005). Occupancy and sector:

- Agriculture and forestry – 576 persons
- Fishing and fish breeding – 234 persons
- Mining – 529 persons
- Construction – 754 persons
- Wholesale and retail trade – 1880 persons
- Transportation services – 291 persons
- Real estate – 139 persons
- Other branches and state-funded areas – 5 132 persons

As of 1 January 2009, the unemployment rate against the economically active population in the Primorsky District was 2.7% (in the region – 2.1%). According to the Primorsky District Administration there is a gap between the level of actual and registered unemployment, indicating that there is unofficial employment in the district.

The average accrued wages in large and medium enterprises amounted to 15 685.3 rubles which is 10.1% lower than the average regional value (17 454.8 rubles). In comparison with 2007 the average wages have increased by 30%.

2.4.3 Federal and Regional Development Prospects of the Arkhangelsk region

The Arkhangelsk region bases its economical and social policy on the general development concept for the Russian Federation. At the same time, the strategy and policy of the reforms in the Arkhangelsk region are being developed and implemented on account of local factors and the specific social and economic status. The Strategy for Social and Economic Development of the Arkhangelsk Region for the period to 2030 (further referred to as the Strategy) was approved in 2008.

The strategic aim of the Arkhangelsk region Government corresponds to the aims of the Russian Federation Government. The main aim of the regional Government - to achieve a high level of citizens' well-being and living standards – is divided into three aims of the second level (Table 3).

Table 3: Strategic aim of the Arkhangelsk region Government

Achieving of a high level of citizens' well-being and living standards		
1. Establishment of effective, dynamically growing and well-balanced economy in the region	**2. Establishment of favourable living conditions, environment for professional and creative personal fulfillment of the population in the region**	**3. Provision of efficient activities of the authorities of the region**
1.1. an economy structure that will provide employment of the population, mainly at the enterprises with high level of productivity and added value; 1.2. favourable conditions for business; 1.3. high level of productivity and modernization of the existing enterprises; 1.4. investment attractiveness of the region to establish new enterprises in top-priority economy sectors.	2.1. high-quality housing and public utilities infrastructure; 2.2. well-developed medical and education systems; 2.3. effective system of social welfare; 2.4. well-developed infrastructure of services to the population; 2.5. well-developed infrastructure for culture, sports, and leisure; 2.6. physical and **environment security**; 2.7. broad opportunities for professional and creative self-fulfillment.	3.1. management according to aims and results; 3.2. effective institutional structure and business processes; 3.3. availability of competent personnel.

The strategic analysis defined branch-wise priorities of the Arkhangelsk region development which are given in

Table 4.

Table 4: Branch-wise priorities in economic development of the Arkhangelsk Region

Annex 1

1 priority	2 priority	3 priority	4 priority
• ship-building • machine-building • forestry enterprises • transport • tourism	• fuel and power production (oil refinery plant) • mining operations, apart from fuel and power resources • fisheries	• trade • food industry • electric power engineering, gas and water • scientific and educational branch	• chemistry and oil chemistry • communications and telecom • construction materials industry • construction • jewelry industry • agriculture • metallurgy • fuel and power resources production

The branch-wise priorities of the Arkhangelsk Region correspond with the major directions of development of the regions in the North-West Federal Okrug stipulated by the Concept of RF Development until 2020. Among the identified promising directions are development of transportation services, military industrial establishment and ship-building, machine-building, offshore oil and gas production, forestry, as well as catch and processing of marine biological resources.

For the purpose of focusing the efforts and resources on solving the priority tasks aimed at achieving the objectives, the key directions of Government activities under implementation of the Development Strategy were defined: within the sphere of economy, social sphere and efficiency of state government (Table 5).

Table 5: Main areas of activities of the Arkhangelsk region Government

Main areas of activity of the Arkhangelsk region Government
Economy
1. Establishment of conditions for development of top-priority economy sectors 2. Development and implementation of a development strategy for top-priority economy sectors 3. Competitive growth and modernization of the existing enterprises 4. Raise of investments and increase of investments in the Arkhangelsk region 5. Development of small-size business and private enterprises 6. Establishment and provision of activities of development institutions 7. Provision of access to the facilities and resources of the Federal Centre 8. Support and development of the agricultural sector in the Arkhangelsk region
Social Sphere
1. Along with the implementation of the earlier planned initiatives in culture, sports, education and social insurance of the population, the Administration will focus their efforts on the three most problematic sectors in which the Arkhangelsk region falls behind other regions in Russia 2. Improvement and implementation of the demographical policy aimed at prevention of the population migration from the region
State Administration
1. Introduction of the management system according to the aims and results 2. Optimisation of business processes and institutional structure in accordance with a long-term strategy, aims and modern principals of effective organisations establishment 3. Advanced training of the regional administration personnel

The Strategy which stipulates the long-term objectives and priorities of activities of the regional Government will be revised on an annual basis with account of changes in the economic and social sphere.

2.4.4 Prospects of Development of the Primorsky Municipal District

There is no available development plan for the Primorsky Municipal District and Krasnoe settlement for the time being because the territory of the district represents a rural area with a small number of potentially industrial sectors. Every day life style is traditional and has been formed during decades. The development of the municipality will be based upon traditional life sectors and industrial activity. No significant industrial development is expected in the region. The same trend of development is expected to take place in the social and cultural fields, culture and tourism in particular.

3. PROJECT OWNER, CURRENT FINANCIAL SITUATION

The main parties interested in implementation of this project are the Administration of the Primorsky Municipal District and the Environmental Committee of the Arkhangelsk Region (now Agency of Natural Resources and Environment of the Arkhangelsk Region).

Administration of the Primorsky Municipal District

According to Federal Law No. 131-FZ "On General Principles of Local Government in the Russian Federation" dated 06.10.2003 the actions on environmental protection of inter-settlement nature refer to matters of local significance in the municipal district.

Agency of Natural Resources and Environment of the Arkhangelsk Region

The Agency of Natural Resources and Environment of the Arkhangelsk Region is competent in arrangement of activities on environmental protection of water resources.

The contact persons in the Administration of the Primorsky Municipal District and the Environmental Committee of the Arkhangelsk Region are presented in Table 6.

Table 6: Contacts

Owner:	**Administration of the Primorsky Municipal District**	
Address:	163002 Arkhangelsk, Lomonosov ave., 30	
Telephone/Fax:	+7 (8182) 68 22 17	+7 (8182) 68 20 19
E-mail	primadm@atnet.ru	
Contact Person:	Roudkina Valentina Alekseevna, Deputy Head of the Primorsky Municipal District on Economy, Romanova Natalia Valerievna, Senior Specialist on Occupational Safety and Ecology	
Telephone/Fax:	+7 (8182) 68 36 70, +7 (8182) 68 22 35	+7 (8182) 68 20 19
E-mail:	primek@atnet.ru	
Applicant:	**Agency of Natural Resources and Environment of the Arkhangelsk Region**	
Address:	163004 Arkhangelsk, Troitsky ave., 49	
Telephone/Fax:	+7 (8182) 21 55 19	(8182) 28 57 48
E-mail	eco@dvinaland.ru	
Contact Person:	Kaletiuk Tatiana Aleksandrovna, Chief of the Water Management Measures and Water Use Department	
Telephone/Fax:	+7 (8182) 28 55 48	(8182) 28 59 37
E-mail:	kaletjuk@dvinaland.ru	

3.1 Brief Description of the Primorsky Municipal District

The Primorsky District is a municipality formed in accordance with the RF legislation and legislation of the Arkhangelsk Region. It is located in the Arkhangelsk Region and has status of a municipal district by the law of the Arkhangelsk Region. The Primorsky

Municipal District has its Charter and other regulatory acts. The Charter is a legal document that has got supreme legal force in the system of legal acts of the local government authorities.

Matters of local significance as well as separate authorities from the state, which can be vested upon local authorities, are under the jurisdiction of the Primorsky Municipal District. Among others the following refer to matters of local significance:

- Ownership, use and management of the property owned by the municipal district
- Arrangement of environmental protection activities of inter-settlement nature
- Arrangement and implementation of environmental monitoring of industrial and social facilities in the municipal district, excluding the facilities environmental monitoring of which is conducted by the federal authorities
- Approval of the area planning schemes of the municipal district
    - Approval of area planning documentation prepared on the basis of the area planning scheme of the municipal district
    - Managing the information system for construction activities in the municipal district
    - Allocation and withdrawal of land plots in the municipal district for municipal needs, including that by acquisition
- Implementation of actions to provide safety of population at water bodies

The structure of the local government of the Primorsky Municipal District includes:

- Assembly of the delegates of the municipal entity Primorsky Municipal District – representative body of the municipal entity
- Head of the municipal entity Primorsky Municipal District
- Administration of the municipal entity Primorsky Municipal District – executive and administrative body of the municipal entity

Economic basis of the local government is formed by the municipal property, local budget as well as property rights of the municipal entity.

3.2 Current Financial Status of the Primorsky District

The budget of the Primorsky district is based on its local budget and municipal settlements budgets. The main financial indicators (revenues and expenses) for 2008 are presented in Table 7.

The revenues of the consolidated budget of the Primorsky Municipal District for 2008 amounted to 1 110.7 million rubles that exceeded the level of 2007 by 70% or 457.3 million rubles. The revenues of the municipal budgets of the settlements amounted to 173.9 million rubles and increased by 2.2 times as compared to 2007.

Tax and non-tax revenues of the consolidated budget of the municipal district were received in the amount of 258.2 million rubles. As compared to 2007, the level of own revenues increased by 60 million rubles or 30%.

Own revenues of the municipal settlements were received in the amount of 67.6 million rubles and exceeded the level of 2007 by 15.1 million rubles or 29%.

Non-repayable receipts (852.5 million rubles) amounted to 77% of the total revenues of the consolidated budget of the municipal district.

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The expenses of the consolidated budget of the municipal district for 2008 amounted to 1034 million rubles. The expenses of the municipal settlements amounted to 160.3 million rubles.

As compared to 2007, the expenses of the consolidated budget increased by 60% including the budgets of the municipal settlements which increased two times.

Surplus of the consolidated budget in 2008 amounted to 76.7 million rubles. The surplus of the budgets of the municipal settlements amounted to 13.6 million rubles.

No loans of credit organizations or public budget loans from the regional budget were attracted in 2008. There is no municipal debt as of the 1st of January 2009.

Table 7: The consolidated budget of the Primorsky Municipal District for 2008, thousand rubles

Item	Amount
REVENUES	
Revenues, tax and non-tax	258 183
among them:	
- fee for the negative environmental impact	***4 741***
Non-repayable receipts	847 835
Other non-repayable receipts	4 690
TOTAL REVENUES	**1 110 708**
EXPENSES	
National interests	102 901
National defence	1 536
National security and law protection activity	4 934
National economy	30 621
Housing and utilities	353 063
Environmental protection	***6 155***
Education	290 460
Culture, cinematography, mass media	33 496
Health care and sport	55 561
Social policy	31 542
Inter-budget transfers	123 734
TOTAL EXPENSES	**1 034 001**
surplus of income over expenditure (+), deficit (-)	76 707

Environmental fee for the negative environmental impact received in the municipal budget and expenses aimed at environmental protection measures are italicized in Table 5. Environmental fees in 2008 amounted to 4.75 million rubles and increased by 1.32 million rubles (or 39%) as compared to 2007. Environmental protection expenses amounted 6.16 million rubles and exceeded the level of 2007 by 3.63 million rubles (or 143%).

It shall be noted that the Primorsky district budget has been in surplus since 2006. Such trend has been kept until 2008 inclusive due to the economic stability in the Russian Federation started in the mid-2000s. The financial outcomes of the district for 2009 are expected to be not so optimistic due to the financial crisis occurred at the end of 2008. Hence, the budget of the Primorsky Municipal District for 2009 was planned accounting the deficit in the amount of approximately 116 million rubles.

Annex 1

Since 2009 financing of federal target programs including environmental programs has been reduced. Financing of regional and municipal programs was cut by up to 30% of the initially planned amounts or completely suspended due to the complicated economic situation.

Additional information will be presented below to assess the financial possibilities of the IP.

Fee for the negative environmental impact

Rates of the fees for atmosphere emissions of pollutants by stationary and mobile sources, pollutants discharge to the surface and subsurface water bodies, industrial and consumption waste disposal are approved by Decree of the Government of the Russian Federation No. 344 as of 12.06.2003

Fee for the negative environmental impact is paid by a single payment order with further distribution to the Russian Federation budget system levels in accordance with RF Budget Code No.145-FZ as of 31.07.1998. Specifically, a fee for the negative environmental impact is paid as follows: 20% to the federal budget, 40% to the regional budgets and 40% to the budgets of the municipal and city districts.

Environmental payments are a source of income for various levels of budgets for the time being. Article 35 of the RF Budget Code stipulates the total (aggregate) compensation principle. According to this principle of the budgetary system of the Russian Federation all budget expenses shall be covered by the total amount of the budget revenues and incomes from the funding sources of its deficit. The budget revenues cannot be attributed to certain budget expenses except revenues from specially allocated budget funds.

Thus, payments for natural resources utilization and fee for the negative environmental impact received to the budget of various levels have a no-purpose nature. Therefore environmental payments cannot be directly forwarded by the regional or municipal authorities to solve the local environmental problems. All budget expenses, including environmental expenses, in the regional or municipal budget should be approved. This, in its turn, will not guarantee that the amount of revenues received as environmental payments will be allocated for implementation of environmental protection measures in the same volume. Therefore, fees for the negative environmental impact cannot be considered as one of the funding sources for the local environmental projects.

4. DESCRIPTION OF THE INVESTMENT PROJECT

4.1 Project information

Oil pollution of a land plot near Krasnoe settlement and oil products leakage into the Northern Dvina River was discovered by the Agency of Natural Resources and Environment of Arkhangelsk region in October 2008.
To determine the qualitative characteristics of the observed oil pollution preliminary environmental surveys have been conducted. The quantitative environmental impacts of the oil pollution have not been investigated.

The oil pollution has been registered approximately 5 km downstream the settlement of Krasnoe in the Primorsky District (Figure 8).

Figure 8: Geographical position of the settlement of Krasnoe in Primorsky District, marked in red

The project goal is to improve conditions for environment and population that is at a risk due to the registered oil pollution.

The project provides for investigation and analysis of the existing situation of oil contamination of the land plot, hereafter referred to as the site, and development of recommendations on cleaning and remediation of the contaminated site. The work is undertaken in accordance with the Russian legislation in force and other regulations on response to oil contamination.

The implementation of the project will remove the oil contamination from the soil, ground water and surface water and reduce the impact on the environment.

4.2 Legal Framework

Review of the Russian Legislation on Prevention and Response to Oil and Oil Products Spills on the territory of the Russian Federation

This paragraph contains a list of normative and legal documents which apply to environmental protection and pollution control in Russia:

- RF Land Code.
- RF Water Code.
- Federal Law "On Protection of the Environment" of 10 January 2002 No. 7-FZ.
- Federal Law "On Sanitary and Epidemiological Welfare of the Population" of 30th March 1999 No. 52-FZ.

- Federal Law "On Protection of the Population and Areas against Natural and Man-made Emergencies" of 21st December 1994 No. 68-FZ.
- Federal Law "On General Principles of Municipal Government in the RF" of 6th October 2003 No. 131-FZ.
- RF Government Resolution on Regulations on Arrangement of Actions on Prevention and Response to Oil and Oil Products Spills on the RF Territory of 15.04.2002 No. 240.
- RF Government Resolution on Emergency Actions on Prevention and Response to Oil and Oil Products Spills on the RF Territory of 21.08.2000 No 613.
- Methodical Guidelines on Detection of Degraded and Contaminated Land approved by letter of the State Committee on Land Management and Use of 27.03.1995 No 3-15/582.
- General provisions on remediation of soils, removal, protection and sustainable utilisation of fertile soil layer approved by the Order of the RF Ministry of Natural Resources of 22nd December 1995.
- Guidelines on identification of the sources of pollution of water bodies with oil, approved by the Order of the RF Ministry of Natural Resources of 02nd August 1994.
- Regulations for development and approval of plans on oil and oil product spills prevention and response in the RF, approved by Order of the RF Emercom No. 621 of 28th December 2004.
- Procedural instructions on sanitary protection of water bodies from oil pollution approved by the Deputy Chief State Medical Officer of 23rd April 1976 no. 1417-76.
- The procedure of assessment of the extent of harm caused to polluted soils by chemical substances, approved by Letter of the RF Ministry of Natural Resources of 27th December 1993.
- Techniques on assessment of the extent of harm caused to ground waters, approved by Order of the RF State Committee for Environmental Protection of 11th February 1998 No. 81.
- SanPiN 2.1.5.980-00 Hygienic requirements to surface water protection.
- SanPiN 2.1.7.1287-03 Sanitary and epidemiological requirements to soil quality.
- State Standard (GOST) 17.1.3.05-82 General requirements to surface and ground water control against pollution by oil and oil products.
- State Standard (GOST) 17.1.3.06-82 General requirements for protection of ground waters.
- State Standard (GOST) 17.1.3.13-86 General requirements for surface water protection against pollution.

In addition to the federal legislation, the Arkhangelsk Region Administration passed two resolutions which regulate activities related to environment contamination by oil and oil products on the territory of the Arkhangelsk region:

- Resolution of the Head of the Arkhangelsk Region Administration on Regulations on Arrangement of Actions on Prevention and Response to Oil and Oil Products Spills on the Territory of the Arkhangelsk Region of 9.05.2003 No 82.
- Resolution of the Head of the the Arkhangelsk Region Administration on Actions for Prevention and Response to Oil and Oil Products Spills on the Territory of the Arkhangelsk Region of 29.04.2001 No 126.

Transfer of Responsibility for the Site

In order to identify the holder of responsibility for the registered oil pollution at the land plot, it is necessary to identify the landowner(s) in the operational period. The ownership of the land plot has proven to be complicated, as described below. Table 8 below briefly

summarizes the results/conclusions of identifying landowners of the land plot in the Krasnoe settlement in the period of 1960 - 2009.

Table 8: Overview of ownership of the land plot in the Krasnoe settlement.

Year	Landowner	Land use	Comments
1960	Administration of the Municipal District of Primorsky	-	
1969	Arkhangelsk Sea Commercial Port (ASCP)	Discharge of oil polluted water	
1998	? No registered owner	Reserve land	ASCP has been reorganized and consists of 3 organizations
2004	?	Reserve land	The land was transferred from industrial purpose land to reserve land, but was not registered in the Cadastral Register
2008	Primorsky Municipal District	Reserve land	

In the 1960s the area now polluted belonged to the Primorsky District. In September 1966 the Executive Committee of the Arkhangelsk Regional Council issued a permission to the Primorsky District Administration to register the land (6 hectares of bush) for permanent use to the Arkhangelsk Sea Commercial Port. The land plot was to be used for discharging oil-polluted waters from the Primorsky state farm on Nikolskiy Island (now Cape Knevatiy).

The Arkhangelsk Regional Department of the Russian Federal Service for Supervising Natural Resources (Rosprirodnadzor) carried out an administrative investigation in December 2008. It was found that Decision of the Arkhangelsk Regional Council Executive Committee No.850 of 28.09.1969 allowed the Primorsky District Administration to register the land in permanent use by the Arkhangelsk Sea Commercial Port.

In the course of long-term reorganization of the Arkhangelsk Sea Commercial Port three new organizations were formed in the beginning of the 1990-s:

- Federal State Enterprise Administration of the Arkhangelsk Sea Port
- Arkhangelsk Branch of Rosmorport
- JSC Arkhangelsk Sea Commercial Port

In 1998 the Pustoshinskaya Village Administration requested the Arkhangelsk Sea Commercial Port to re-register the land as the land used for industrial purpose. JSC Arkhangelsk Sea Commercial Port replied that they did not have the land registration documents (no Certificate of acceptance of this land plot) and the land plot was not required for the operational needs of the port. In 2003 the Pustoshinskaya Village Administration sent a second enquiry to JSC Arkhangelsk Sea Commercial Port and received the same answer.

Due to the fact that the land plot was not used for its intended purpose (industry), the Pustoshinskaya Village Administration requested the Primorsky District Administration of changing the land use from industrial purpose land into the category of reserve land in 2004. Decree of the Head of the Primorsky District No.70 of 10.03.2004 transferred the land to the Pustoshinskaya Village Administration as reserve land.

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In compliance with the letter from the Northern Territorial Department of the Federal Real Estate Register Agency (Rosnedvizhimost), the land plot was not registered in the Cadastral Register after it had been transferred into the category of reserve land. In compliance with Item 10 of Article 3 of FZ No.137 of 25.10.2001 "On enactment of the Land Code" land plots of which the state ownership is not delimited shall be managed by the local government authorities of municipal districts and city districts.

The Administration of the Primorsky Municipal District is currently listed as an owner of the land plot in question.

The investigations to identify landowners of the land plot in the period of 1960 – 2008 did not result in identifying landowner(s) responsible for the pollution caused by the discharge of oil products at the land plot in the 1970-s. As stated above, the Arkhangelsk Sea Commercial Port does not have official documentation of the land plot being used for the discharge of oil products and the Certificate for the land plot was not been issued.

Regardless of who is to be responsible for the oil pollution at the land plot, the pollution took place more than 20 years ago. In compliance with item 3 of Article 78 of Federal Law FZ "On environmental protection" the claims for compensation of the damage to the environment may be raised within twenty years".

In accordance with the Russian legislation it is thus not possible to hold former landowners responsible for pollution which occurred more than 20 years ago. In accordance with Chapter 1 of Article 13 of the Land Code of the RF, owners of land plots, land users, land-owners and landholders are obliged to take actions on land protection, mitigate contamination consequences and remediate disturbed soils. So the responsibility for undertaking actions to protect human health and environment at the polluted land plot in Krasnoe lies with the current landowner – The Primorsky Municipal District.

In accordance with the Regulations on actions on oil product spill prevention and response in the RF approved by RF Government Decree No. 240 as per 15.04.2002, the operations to respond to pollution of environment by oil and oil products due to economic activities of previous years should be implemented in compliance with the plans (programmes) on soil remediation and environment facilities rehabilitation.

In 2008 The Environmental Committee of the Arkhangelsk region recommended the landowner, the Primorsky Municipal District, to assess the level of residual oil pollution of the land for survey and to take actions to respond to the pollution in compliance with the legislation in force.

On 13th January 2009 the Arkhangelsk Regional Department of the Russian Federal Service for Supervising Natural Resources (Rosprirodnadzor) issued directions to the Primorsky Municipal District Administration to undertake the responsibility to take the following actions and provide oil spill response in the area of the Krasnoe settlement in the Primorsky District.

- To perform an environmental survey of the site located in the area of the Krasnoe Settlement of the Primorsky District and prepare a report in accordance with the RF legislation in force - by 01.08.2009.
- To develop the plan of the contaminated ground remediation and get it approved according to the established procedure - by 31.12.2009.
- To perform works related to the land plot contamination response and develop a relevant report by 01.08.2010.

4.3 Contaminated Site - Status

The Northern Dvina River is the largest river in the European North of Russia in terms of its area, providing 70% of all the river water to the White Sea. The contaminated land plot is located 5 km northwest of the Krasnoe Settlement (Annex 1: Letter of Arkhangelsk Region Administration on ranked list of IP proposals

Figure 9: Cape Knevaty – land plot contaminated with oil products

АДМИНИСТРАЦИЯ
АРХАНГЕЛЬСКОЙ
ОБЛАСТИ

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04.05.2009 № 06-40/23

На № _____

ООО «Рамболь Стурвик»

Н.У. Муртазалиевой

пр.Обводный канал, 13/3
163046, г.Архангельск

Уважаемая Нанда Убайдулаевна!

Администрация Архангельской области в связи с обращением ООО «Рамболь Стурвик» о ранжировании по значимости заявленных прединвестиционных проектов, планируемых к реализации на территории области, направляет запрашиваемый перечень в порядке, соответствующем уровню приоритетности их реализации с учетом установленных потенциальным инвестором критериев:

1. Ликвидация загрязнения нефтепродуктами земель водоохранной зоны реки Северная Двина бассейна Белого моря в районе населенного пункта Красное Приморского района Архангельской области;
2. Проектирование и строительство канализационных очистных сооружений в жилом районе Лесная речка г. Архангельска;
3. Проектирование и строительство водозабора с водоочистными сооружениями в поселке Поньга Онежского района Архангельской области;
4. Проектирование и строительство сетей канализации и очистных сооружений в г. Мезени Архангельской области;
5. Проектирование реконструкции системы очистки и обеззараживания сточных вод на канализационных очистных сооружениях г. Котлас.

Исполняющий обязанности заместителя главы администрации области по управлению природными ресурсами и экологии **А.Ш. Давитнашвили**

Коршунов Сергей Николаевич
28-85-08
Калетюк Татьяна Александровна
28-51-54

Annex 1

Translation

To: Naida Murtazalieva
OOO Ramboll Barents

From: Alexander Davitiashvili
Acting Vice-Head of the Arkhangelsk
Region Administration on Natural
Resources Management and Environment

Re: Potential investment project

Dear Mrs. Murtazalieva,

Pursuant to Ramboll Barents request regarding ranking of the suggested pre-investment projects planned for implementation in the territory of the Arkhangelsk region, Arkhangelsk Region Administration hereby sends the requested list according to priority level of implementation subject to the criteria specified by a potential investor:

Land remediation from oil products in water protection area of the Northern Dvina River of the White Sea basin near settlement Krasnoe of Primorsky district of the Arkhangelsk region.

Design and construction of wastewater treatment plants in Lesnaya Rechka district of Arkhangelsk.

Design and construction of water intake with water treatment facilities in settlement Ponga of the Onega District of the Arkhangelsk region.

Design and construction of sewage system and wastewater treatment plants in Mezen city of the Arkhangelsk region.

Design of reconstruction of treatment and disinfection system of waste water at wastewater treatment plants in Kotlas city of the Arkhangelsk region.

Alexander Davitiashvili
Acting Deputy Head of the Arkhangelsk
Region Administration on Natural
Resources and Environment Management

). It is a man-made site formed by the sand wash using the sand extracted during dredging works.

The land plot allocated for economic needs in 1969 was 6 hectares (60 000 m^2). At present the contaminated land plot is an artificial site with an area of 30 000 m^2. The bedrock banks in the area consist of sandy and silty sediments with 2.5 – 3.0 m high layers of sediments. The bank line of Cape Knevatyi is being washed away easily and the entire polluted area is expected to be washed away in a short period of time.

In 1969 the Primorsky District Administration officially registered the land plot for permanent use for the Arkhangelsk Sea Port. The land plot was since used as a storage site for oil contaminated water. Oil contaminated water was discharged from vessels/boats into pits on the land plot. There are no documents stating the type of oil waste discharged to the land plot. The operational period was in the 1970-s.

4.3.1 Surveys in 2008

In October 2008 the Environmental Committee in the Arkhangelsk Region undertook preliminary environmental surveys of the contaminated land plot. Several small spots of oil products of iridescent color were detected at the land plot and on the surface of the River covering an area of approximately 25-30 m^2.

Soil samples were taken in the bank line area and inside the pit with a diameter of 30 m (Annex 5) and were analysed for oil products at the laboratory of OOO TECH-Service. The concentration of oil products in the soil samples in the bedrock bank area is 7560 mg/kg, in the pit area – 95760 mg/kg. This is 95 times higher than the maximum allowable concentration - 1 000 mg/kg.

4.3.2 Site Inspection in 2009

In June 2009 the land plot was inspected within the framework of the PINS. Representatives from the Consultant, the Primorsky District Administration and the Environmental Committee of the Arkhangelsk Region were present at the site inspection (Annex 6).

The banks of the land plot were inspected (Figure 10). Ground water filtration with numerous tracks of oil products was observed in a line of approximately 70 m long at a level of approximately 0,5-0,7 m above the ground surface and up to 3 m deep. Oil film on the surface water, flowing from the bottom of the banks to the River, was observed in the hot spot area.

Annex 1

There are three ground pits on the site (Annex 5) with diameters of 15 m, 30 m and 50 m located at a distance of ca 20 m, 30 m and 100 m respectively from the water body.
The ground pits are partially diked with numerous passages in diking (Figure 10). The slopes and bottom of the pits are covered with a layer of dewatered oil sludge and there are a lot of oil products drums scattered in the ground pit with a diameter of 30 m.

Figure 10: Cape Knevaty – land plot contaminated with oil products

The air in the site area has a peculiar smell of oil products.

In July 2009 the Environmental Committee of the Arkhangelsk Region carried out a second survey of the land plot. The samples of soil, ground water and river water were taken (Annex 7). Concentrations of oil products exceeded the maximum allowable value (Chapter 6). According to the results of the survey the concentration of pollutants decreases from the centre of the polluted area (hot spot) towards its borders.

4.4 Extent of Pollution

Due to the limited sampling of soil and water in the area, the extent and quantity of pollution has not been possible to determine. Based on the observations made in the preliminary surveys in 2008 and 2009 the area of pollution has been assessed.

The dimensions of the polluted land have been estimated of 70 m long, 100 m wide and 3 m deep, which gives an approximate contaminated volume of 21 000 m^3.

To specify the quantity of the actual contamination, a full ecological survey of the site as well as soil and ground water should be undertaken.

4.5 TECHNICAL DESCRIPTION

4.5.1 Project Strategy and Objectives

The project objective is to assess the environmental impact of the registered pollution and on the basis of this, to develop and take actions for remediating the pollution to a level acceptable for human health and the environment.

To ensure a smooth implementation of the project, it is recommended that the project is divided into three phases:

Phase 1: Environmental Site Assessment (ESA)
Phase 2: Development of remediation actions
Phase 3: Remediation and control

If the results of the environmental site assessment demonstrate that the registered pollution does not cause significant and unacceptable impact on the environment and human health, the project will be closed subsequent to the completion of **Phase 1**.

The objective of **Phase 2** is to determine the most appropriate remediation strategy at the land plot, based on technological evaluation and cost benefit analysis of various remediation strategies. The output is a remedial action plan (RAP), which describes the remediation strategy in accordance with national guidelines and regulations.

The objective of **Phase 3** is to remediate the contaminated site to acceptable levels for human health and environment in accordance with the results of **Phase 1** and the RAP, including regulating monitoring. Any deviations in the remedial management should be continually reported.

4.5.2 Activities / Supposed Scope of Work

Phase 1: Environmental Site Assessment

In **Phase 1**, the pollution is mapped, the volume of contamination determined and the pollution risk assessed according to human health and the environment. The environmental site assessment shall be conducted according to national and international guidelines and regulations.

Phase 1 consists of three steps:

1.1 Sampling
1.2 Mapping of the pollution
1.3 Environmental Risk Assessment

Table 9 below outlines the main activities of the three steps of **Phase 1** along with the responsible parties for the physical work, monitoring & control and project management respectively.

Table 9: Steps of Phase 1 - Environmental Site Assessment

Activities	Physical work	Monitoring and control	Project coordination & management
1.1 Sampling			
1.1.1 Administration			Consultant
1.1.2 Mobilisation	Boat company		Consultant
1.1.3 Field survey	Survey company	Environmental expert	Consultant
1.1.4 Boring (3"/6")	Boring team/contractor	Environmental expert	Consultant
1.1.5 Sampling	Boring team/contractor	Environmental expert	Consultant
1.1.6 Chemical analysis	Laboratory	Environmental expert	Consultant
1.2 Mapping of pollution			
1.2.1 Data evaluation		Environmental expert	Consultant
1.2.2 Mapping (illustration)		Mapping expert	Consultant
1.3 Environmental Risk Assessment			

1.3.1 Environmental risk calculations		Environmental expert	Consultant
1.3.2 Data evaluation		Environmental expert	Consultant
1.3.3 Report		Environmental expert	Consultant

1.1 Sampling

Sampling operations shall be conducted in accordance with Russian and international standards and guidelines.

Sampling requires mobilization of sampling equipment and personnel to the oil pollution area (site). The only available travel route to the site is by boat. The site does not have any pier or any facilities for berthing the boat. In addition, there is a difference in level of approximately 2 meters from the River bank to the polluted sites. This should be taken into account when mobilizing the sampling equipment, e.g. by using a boat equipped with a crane for lifting equipment into the shore or by using light weight equipment. Generally speaking, the use of light weight equipment does not provide the same high standard of sampling. If this method is chosen, assessment of its influence on the sampling results should be made.

The surface geology of the polluted site consists of sand sediments. In order to take representative soil samples and make a borehole it is suggested to use boring as a sampling method. The boring operation should be conducted using casing to ensure representative soil samples and prevent vertical dispersion of pollution to non-polluted sediments. In addition case boring provides optimal conditions for constructing boreholes.

Monitoring boreholes are established so that subsurface water is protected from rain/melt water. Materials used for the construction of monitoring boreholes shall be non-reactive with subsurface water and shall not leach substances.

A suggested 5 – 10 borings shall be performed initially. Depending on the subsurface water conditions 3 – 5 monitoring boreholes are constructed.

Prior to soil sampling, the drilled sediments are described geologically by environmental expert and field PID measurements are made. Prior to water sampling the subsurface water flow shall be determined.

Soil and water samples are stored in cooling bags at 4 ^{o}C until delivery at licensed laboratory.

Based on field observations and PID measurements a suggested 8 – 10 soil samples and 3 – 5 water samples are chemically analysed at licensed laboratory for PAH and oil components, including BTEX (GC-FID). Selected samples are analysed for PCB and heavy metals.

1.2 Mapping of pollution

The results of the sampling and chemical analyses are evaluated and assessed. At this stage it is determined whether the scope of sampling and analyses is sufficient or additional environmental investigations are needed to determine the quality and quantity of pollution at the site.

An integrated evaluation of the dispersion routes of the pollution is made based on the environmental surveys, and hydrogeologic measurements.

Mapping of the results to illustrate the concentration levels and area of pollution is made based on the land survey undertaken in step 1.1.3.

1.3 Environmental risk assessment

Based on the results of the environmental mapping of the pollution, an environmental risk assessment is performed to quantify the impacts of the pollution on human health and the environment (dispersion).

The quantification of impact on human health is carried out based on the risk of contact and exposure in accordance to the specific human activities at the site and in the pollution dispersion zone (air and water).

The quantification of impact on the environment is based on the environmental risks/hazards the pollution poses on the ecology at the site and in the dispersion zone. This includes assessing the potential for alternation of the dispersion routes, e.g. by the increase in erosion occurrences.

Quantifying the impacts on human health and the environment includes assessing the volume of pollution compared to immediate and potential future environmental risks/hazards.

Based on the environmental risk calculations and evaluations, objectives of the remediation are determined. The remediation plan is based on the clean-up levels determined in the environmental risk assessment.

Phase 2: Development of remediation plan

In **Phase 2** remediation technologies are tested, screened and evaluated, and the most appropriate remediation technology is chosen for the remediation plan.

Phase 2 consists of three steps:

2.1 Remediation technology testing (optional)
2.2 Evaluation of tests and remediation technologies
2.3 Development of Remediation Plan

Table 10 below outlines the main activities in the three steps of **Phase 2** along with the responsible parties for the physical work, monitoring & control and project management respectively.

Table 10: Steps of Phase 2 – Development Remediation Plan

Activities	Physical work	Monitoring and control	Project coordination & management
2.1 Remediation technology testing (optional)			
2.1.1 Administration			Consultant
2.1.2 Mobilisation	Boat company		Consultant
2.1.3 Technology tests	Contractor	Remediation expert	Consultant
2.2 Evaluation of remediation tests			
2.2.1 Data evaluation		Remediation expert	Consultant
2.2.2 Technology assessment		Remediation expert	Consultant
2.3 Remediation Plan			

2.3.1 Remedial action plan		Remediation expert	Consultant

2.1 Remediation technology testing (optional)

Depending on the results of Phase 1 and the project owner, this step is optional. It is recommended that the consultant considers integrating some of the remediation testing with the field work in Phase 1.

Table 11 below gives examples of remediation tests according to various remediation technologies.

Table 11: Remediation technologies and examples of remediation tests.

Category	Remediation technology	Remediation tests (examples)
Physical remediation	Excavation and removal	-
	Isolation of contamination	Leaching tests Geochemical tests
	Pump & treat	Pump tests/slug tests
	Airsparging	Influence zone test Pressure tests
	Soil vapour extraction	Vacuum tests Influence zone tests Hydraulic tests
	Thermal desorption	Geothermal tests Geochemical tests
Chemical remediation	Chemical oxidation	Test of oxidants Geochemical tests
	Chemical reduction	Reduction test Geochemical tests
	Flushing	Aquifer pump test
	Electrochemical remediation	Electrochemical test Geochemical tests
Biological remediation	Natural degradation	Geochemical tests
	Stimulated biological degradation	Geochemical tests Influence zone tests
	Addition of bacteria/funghi	Geochemical tests Bacteria tests
	Phytoremediation	Geochemical tests

Mobilisation of testing equipment to the polluted site offers the same challenges as described in Phase 1. An initial screening of the technically relevant remediation technologies shall hence be undertaken, prior to the remediation testing and mobilisation of equipment.

2.2 Evaluation of tests and remediation technologies

The results of the remediation tests provide basis for a technical assessment of the various remediation technologies. Relevant remediation technologies are assessed according to environmental, technical and financial evaluations. Based on the remediation assessment, the most appropriate remediation technology is selected in collaboration with the project owner.

2.3 Remediation Plan

A site specific plan of remediation is developed based on the chosen remediation technology.

The remedial action plan shall describe the detailed physical work involved in the remediation. In addition, a monitoring and control program for the remediation shall be included.

The remediation plan is based on international standards and guidelines for remediation of contaminated land.

Phase 3: Remediation and control

In **Phase 3** the polluted site is remediated according to the remediation design and clean-up levels determined in the environmental risk assessment.

Phase 3 consists of three steps:

3.1 Remediation
3.2 Monitoring of residual contamination
3.3 Conclusive remediation

Table 12 below outlines the main activities in the three steps of **Phase 3** along with the responsible parties for the physical work, monitoring & control and project management respectively.

Table 12: Steps of Phase 3 – Remediation and Control

Activities	Physical work	Monitoring and control	Project coordination & management
3.1 Remediation			
3.1.1 Administration			Consultant
3.1.2 Mobilisation	Boat company		Consultant
3.1.3 Remediation	Contractor	Environmental expert	Consultant
3.1.4 Control sampling	Contractor	Environmental expert	Consultant
3.1.5 Chemical analyses	Laboratory	Environmental expert	Consultant
3.1.6 Mapping		Mapping expert	Consultant
3.2 Monitoring of residual contamination			
3.2.1 Monitoring programme		Remediation expert	Consultant
3.2.2 Monitoring	Contractor	Remediation expert	Consultant
3.2.3 Data evaluation		Remediation expert	Consultant
3.3 Conclusive step			
3.3.1 Conclusive report		Remediation expert	Consultant

3.1 Remediation

Mobilisation of the remediation equipment offers the same challenges as mentioned in Phase 1.

The remediation is carried out according to the remedial action plan. Any deviations from the remediation plan are reported immediately to the project owner and the pollution control authorities.

Control samples of soil and subsurface water is made in accordance with monitoring plan in the remedial action plan. Based on field work and PID measurements, selected

samples are sent to licensed laboratory for chemical analyses of oil products, BTEX and other relevant components determined in Phase 1. The samples shall provide documentation of clean-up level.

Mapping of the results of remediation shall provide illustration of the remediation and possible residual pollution.

3.2 Monitoring of residual pollution

In the event of incomplete remediation, a monitoring program to evaluate the impacts of the residual pollution on the environment shall be developed.

The monitoring program shall be developed in accordance with national and international standards and guidelines and shall be approved by the local pollution control authorities.

Based upon the results of the monitoring program the residual pollution is evaluated and the need for further remediation is assessed.

3.3 Conclusive step

Subsequent to completed remediation and documentation of possible residual pollution not posing a risk to human health and the environment, a conclusive report is made.

The conclusive report shall provide documentation and illustrations of the remediation.

4.5.3 Description of Supposed Equipment

A list of equipment needed for the project is given in Table 13. It is assumed that the parties involved in the project will provide the equipment and purchase of equipment will not be essential for project completion. At this stage of the project and based on the existing information and data of the pollution, a remediation technology has not been chosen. There are hence some uncertainties involved in describing equipment for remediation tests and remediation and these are shown in italics. Equipment for the remaining part of the project should not vary significantly from the equipment listed in Table 13.

Table 13: List of equipment in the project.

Phase	Activity	Equipment	Provider
Phase 1	1.1.2 Mobilisation	Boat with crane for transport	Boat company
	1.1.3 Land survey	Equipment for surveying	Geotechnical specialists
	1.1.4 Boring	Boring rig	Drilling company
		Equipment for establishing boreholes (filters, bentonite, filtersand, etc..)	Drilling company
	1.1.5 Sampling	Measuring equipment (GPS, tape measure, PID, etc.)	Consultant
		Sampling equipment (spade, pumps, batteries, etc.)	Consultant
	1.1.6 Chemical analyses	Sample packing (glass, rilsan bags, strips, insulated bag, etc…)	Laboratory

Annex 1

Phase 2	2.1.2 Mobilisation	Boat with crane for transport	Boat company
	2.1.3 Technology tests	*Pumping test equipment*	Consultant/Contractor/ Supplier
		Simple treatment test facilities	Consultant/Contractor/ Supplier
Phase 3	3.1.2 Mobilisation	Boat with crane for transport	Boat company
	3.1.3 Remediation	*Treatment equipment*	Consultant/Contractor/ Supplier
	3.1.4 Control sampling	Sampling equipment (spade, pumps, batteries, etc.)	Laboratory
		Measuring equipment (GPS, tape measure, PID, etc.)	Consultant
	3.1.5 Chemical analyses	Sample packing (glass, rilsan bags, strips, insulated bag, etc…)	Consultant

5. PROJECT COST ESTIMATE

The chapter includes cost estimates of investment project. There are no commercial activities on the polluted site and the remediation of the pollution does not entail future commercial activities on site. The project cost estimate includes capital costs for implementation of the remediation and possible monitoring of residual pollution. Subsequent to project implementation there will be no operational costs.

5.1 Capital costs

The capital cost estimate is based on local costs and on international costs of similar projects in Europe. The business proposals of appropriate contractors and subcontractors were not requested. Upon the Consultant's request the Environmental Committee provided preliminary quotations of the local contractors and subcontractors based on the previous experience of similar works implementation.

5.1.1 Phase 1: Environmental Site Assessment

The estimated cost for completing the environmental site assessment is presented in Table 14. An uncertainty margin of 20 % is provided. A cost estimate with a lower uncertainty margin can be made when contractors, subcontractors and consultants have given quotations for performing the work.

Table 14: Capital costs for Phase 1 – Environmental Site Assessment, EUR

Component	Cost
Mobilisation	2 290
Contractor and subcontractors	7 950
Chemical analyses	4 800
Environmental expert and project management	12 000
Total	**27 040**

The total cost estimate of performing an environmental site assessment amounts to € 27 040, - with an estimated uncertainty range of 20%.

The physical work of the environmental site assessment shall be undertaken by professional contractors with experience from similar projects. The chemical analyses shall be performed at nationally licensed laboratories. The work shall be supervised by qualified environmental expert of national/international renowned consultancy company.

5.1.2 Phase 2: Development of Remediation Plan

The estimated cost for development of the remediation plan is presented in Table 15. The scope of work in this phase depends on the results of Phase 1. A general uncertainty margin of 50 % is provided. A cost estimate with a lower uncertainty margin will be made subsequent to the completion of Phase 1 and based on quotations from contractors, subcontractors and consultants.

Table 15: Capital costs for Phase 2 – Remediation Plan, EUR

Component	Cost
Mobilisation	4 000
Contractor and subcontractors	20 000
Chemical analyses	10 000
Environmental expert and project management	15 000
Total	**49 000**

The total cost estimate of remediation design amounts to approximately € 49 000, - with an uncertainty range of 50%.

The work shall be undertaken by professional companies with sufficient remediation experience. The remediation tests and analyses shall be supervised by a qualified environmental expert of a Russian/international renowned consultancy company.

5.1.3 Phase 3: Remediation and Control

The total cost of the remediation has not been estimated at this point in the project due to the high uncertainty range. The scope of work depends upon the results of Phase 1 and Phase 2.

Based on international projects of remediating pollution of similar volume, composition and geological conditions, estimated unit prices of remediation technologies within the 3 overall methods are presented in Table 16. The indicative unit prices do not take into account potential financial, technical, climatic and environmental risks, which should be identified prior to selecting the most site specific appropriate remediation technology. It is further stressed that the unit prices are only indicative.

Table 16: Indicative unit prices for physical, chemical and biological remediation technologies, mill EUR

Remediation	Unit price (€/ton)	Volume of polluted soil (ton)	Total cost (mill €)
Physical remediation	125 – 300	8 500 – 25 000	1.1 – 7.7
Chemical remediation	180 – 300	8 500 – 25 000	1.5 – 7.7
Biological remediation	120 – 250	8 500 – 25 000	1.0 – 6.4

A specific cost estimate of the remediation and control will be made based on the results of Phase 2 and quotations from contractors, subcontractors and consultants during or subsequent to the completion of Phase 2.

All aspects of the remediation works shall be undertaken by professional companies with substantial experience of remediating oil pollution on land. The remediation work shall be supervised and assessed by an environmental expert of a Russian/international renowned consultancy company.

6. PROJECT PRE-INVESTMENT ASSESSMENT

This chapter includes description of environmental and social assessments of the project. The project site is located in the Arctic zone of Russia. Climate conditions of this area require thorough study. Hence during project development it is necessary to take into account natural and environmental peculiarities, living conditions of the population, and also existing and possible bottlenecks which could appear during implementation.

6.1 Environmental Assessment

The environmental assessment is based on preliminary sampling and evaluations of environmental impacts of the polluted site.

6.1.1 Preliminary Site Inspection and Sampling on the Polluted Site

Site Surveys
In June 2009 the site was inspected by the Consultant team and representatives from the project owner and the Environmental Committee of the Arkhangelsk region. Detailed descriptions of the site inspection are presented in chapter 4.3.

3 pits with diameters of respectively 15, 30 and 50 meters were observed. Location of the pits on the land plot is illustrated in map of Annex 5. Surface oil pollutions of the 3 pits were observed and smell of degraded oil products was registered. In the pits and their immediate surroundings, there was no vegetation. In the area surrounding the surface polluted area, plentiful vegetation was observed.

At the river bank, approximately 10 meter downstream the nearest observed surface pollution, pollution in the depth 0.5 – 3.0 m below ground level was observed. Oil film on the subsurface water flowing to the River was observed. The dispersion of oil pollution to the River occurs via subsurface water and erosion of the River bank.

Preliminary Sampling on the Polluted Site
The Environmental Committee of the Arkhangelsk Region took preliminary samples of soil and water on the polluted site in October 2008 and July 2009, respectively.

A total of 5 soil samples, 1 ground water sample and 1 river water sample have been analyzed for oil components at the licensed laboratory. Location of sample points is illustrated in Annex 7.

The results of the chemical analyses are presented in Table 17 and Table 18. The results of the soil samples are compared to the Russian standards for contaminated land. Concentrations exceeding the Russian standard are highlighted in red.

Table 17: Chemical analyses for THC, soil samples

Date	Sample point	Sample material	Sample depth	Results, mg/kg
Oct. 2008	P1	Soil	Surface	7 560
Jul. 2009	P3	Peat	Surface	243
Jul. 2009	P4	Sand	Surface	11 761
Jul. 2009	P5	Sand	Surface	9 429
Jul. 2009	P6	Peat	Surface	2 193
Russian standard				**1 000**

Table 18: Chemical analyses for THC, water samples.

Date	Sample point	Sample material	Sample depth	Results, mg/l
Jul. 2009	P1	Subsurface water	-	0.76
Jul. 2009	P2	River water	-	0.45
Russian standard				**-**

In 4 of the 5 soil samples excessive concentrations of hydrocarbons have been registered. The concentration of oil products varies from 2 193 to 11 761 mg/kg. Therefore the area has plots of high and low levels of contamination.

The presence of oil products has been registered in ground water and river water samples. Concentration of oil products in specific samples of ground and river water is 0.76 mg/l and 0.45 mg/l respectively that is above the maximum permitted level of 0.05 mg/l.

6.1.2 Dispersion Routes

Geology and hydrogeology
The topsoil layer on the polluted site consists of sandy sediments. The depth of 3 meters below the ground level corresponds to the river water level.

During the site inspection subsurface water was observed in the river bank 1.0 – 2.0 m below the ground level. Due to the observations of oil film on the subsurface water flowing to the River, the pollution is assessed to be in contact with the river water area. However, the observations do not provide basis for assessing whether the subsurface waters are associated with the ground water aquifer.

The River bank is eroding in the direction of the pollution, decreasing the distance from the pollution hot spot to the River.

Surface water recipients
The nearest surface water recipient is the Northern Dvina River, approximately 20 meters downstream the pollution hot spot.

Oil contaminants are dispersed directly to the river via subsurface waters and erosion of the river bank.

Air
Dispersion routes of air include gas emissions of oil pollution and transport of dust.

Gas emissions from the polluted site include carbon dioxide and methane from the degradation process and volatile oil components of the pollution.

Influence of climate change on the dispersion routes
Climate changes are anticipated to cause a rise in the mean annual air temperatures up to several degrees over most part of the Arctic.

Currently the erosion of the river bank towards the polluted area is assessed of posing a bigger risk of alternating the dispersion routes. In the event of incomplete or no remediation of the pollution, the future impacts of erosion and climate changes on the dispersion routes should be assessed.

6.1.3 Preliminary Environmental Risk Assessment

The preliminary environmental risk assessment is based on existing environmental data, site inspection observations and the dispersion routes.

Based on the results of the preliminary sampling and assessment of the pollution delineation, the approximate amount of oil pollution has been calculated using the formula:

$$m_{oil} = DM \cdot C_{oil} \cdot V_{pollution} \cdot \rho_{soil} \qquad (6.1.1)$$

where:

m_{oil}	Amount of oil pollution (kg)
DM	Dry matter of the soil (kg/kg)
C_{oil}	Concentration of oil in the soil (kg/kg DM)
$V_{pollution}$	Volume of polluted soil (m^3)
P_{soil}	Density of the soil (kg/m^3)

The volume of polluted soil is estimated to be 10 000 – 15 000 m^3 based on a propagation area of 5 000 – 7 000 m^2 and pollution depth of 1.5 – 3.0 meters. The dry matter of the soil is assessed as being 90% (sandy soil). The density of sandy soils is approximately 1.700 kg/m^3. The concentration of oil in the soil is in the range of 2 193 – 11 761 mg/kg DM.

Inserting these figures in 6.1.1 estimates formula, the amount of oil in the supposed polluted area is in the range of 120 – 180 tons.

Table 19 below presents the risks of occurrences caused by the pollution potentially impacting human health and the environment before, during and after remediation.

Table 19: Assessed risks of occurrences caused by the pollution related to human health and dispersion to the environment before, during and after remediation.

	Current situation		Implementation period		After implementation	
Human health						
Direct contact	**Local settlements** Located 4 km from settlement	**Workers** No workers at the site	**Local settlements** Located 4 km from settlement	**Workers** Physical work entails contact with the soil	**Local settlements** Located 4 km from settlement Pollution remediated	**Workers** No workers at the site Pollution remediated
	No - low risk	**No - low risk**	**Low risk**	**High risk**	**No - low risk**	**No - low risk**
Exposure - air emissions	**Local settlements** Located 4 km from settlement	**Workers** No workers at the site	**Local settlements** Located 4 km from settlement	**Workers** On site presence - expected exposure to emissions	**Local settlements** Located 4 km from settlement Pollution remediated	**Workers** No workers at the site Pollution remediated
	No - low risk	**No - low risk**	**Low risk**	**Medium risk**	**No - low risk**	**No - low risk**
Exposure - water	**Local settlements** Located 4 km from settlement Expected contact with river water	**Workers** No workers at the site	**Local settlements** Located 4 km from settlement Expected contact with River water	**Workers** On site presence - expected exposure to subsurface water and River water	**Local settlements** Located 4 km from settlement Pollution remediated	**Workers** No workers at the site Pollution remediated
	Medium risk	**No - low risk**	**Medium risk**	**High risk**	**No - low risk**	**No - low risk**
Exposure - particles	**Local settlements** Located 4 km from settlement	**Workers** No workers at the site	**Local settlements** Located 4 km from settlement	**Workers** On site presence - expected exposure to particles	**Local settlements** Located 4 km from settlement Pollution remediated	**Workers** No workers at the site Pollution remediated
	Low risk	**No - low risk**	**No - low risk**	**High risk**	**No - low risk**	**No - low risk**
Dispersion in the environment						
Air	**Particles** During dry conditions, risk of particle dispersion	**Emissions** Degradation of oil components Emissions of volatile components	**Particles** Implementation entails work in the sediments	**Emissions** Degradation of oil components Emissions of volatile components	**Particles** Pollution remediated	**Emissions** Pollution remediated
	Medium risk	**Medium risk**	**High risk**	**Medium risk**	**Low risk**	**Low risk**
Water	**Subsurface water** High concentrations in soil Large volume of pollution	**Dvina River** High concentrations in soil Erosion of river bank Large volume of pollution	**Subsurface water** High concentrations in soil Large volume of pollution	**Dvina River** High concentrations in soil Erosion of river bank Large volume of pollution	**Subsurface water** Pollution remediated	**Dvina River** Pollution remediated
	High risk	**High risk**	**High risk**	**High risk**	**Low risk**	**Low risk**

Current assessed environmental impact

Human health

There are no anthropogenic activities on the site and the site has low accessibility. The nearest settlement is located 5 km upper stream the polluted site.

Due to some distance to the nearest settlement, the low accessibility to the site, no anthropogenic activities on site and the composition of the pollution, it is assessed that the pollution does not pose a hazardous risk to human health of the local people.

However, due to the large amount of pollution – between 120 and 180 tons –the risk of sudden dispersion into the environment will potentially entail unacceptable impact from the pollution. So the pollution poses a potential future risk to the local settlement.

Dispersion to the environment

Dispersion via airborne particles and emissions

Dispersion of airborne particles and hazardous pollutants occurs through emissions and transport of dust/particles.

A risk of dispersion of polluted sand particles in dry periods persists. Due to low occurrence of dry periods this risk is not assessed as posing an unacceptable impact on the environment.

Emissions from the polluted site are caused by degradation processes and volatile components. Due to the location of the polluted site in the Arctic region the degradation process is assessed as having a low impact on the global environment. Due to the composition of the pollution (heavier oils) with few volatile components, emission of oil products is assessed as having limited impact on the local environment.

Dispersion via water resources

Dispersion of the pollution to the Northern Dvina River has been observed at several occasions. The dispersion occurs via subsurface water and erosion of the polluted river bank.

Due to the large amount of pollution and risk of erosion the pollution poses a potential hazardous risk to the local environment.

Implementation period – assessed environmental impact

In the implementation period the same assessed environmental impacts as in the current situation apply.

The potential environmental impacts caused by the physical works of the environmental site assessment and the remediation are presented in Table 20.

Table 20: Overview of the consequences, risks and preventive measures for environmental impact in the implementation period

Description	Consequence / impact	Affected people / environment	Probability / risk	Preventive measures
Human health				
Transport vehicles and construction machinery	Exposure to air pollution and particles	Workers	High	HSE plan
ESA and remediation works	Exposure to pollution (air, particles, water)	Workers	High	HSE plan
Dispersion to the environment				
Transport vehicles and construction machinery	Increase in air pollution and particle emissions	Local, regional and global environment	High	Assess the environmental impact Particle filters on vehicles/machines Environmentally friendly use of vehicles/machinery
ESA and remediation works	Alternating dispersion routes and increasing	Local and regional environment	High	HSE plan

	dispersion			
Accidents	Accidental change in dispersion routes causing unintentional pollution	Local environment	Low	HSE plan including emergency action plan

During the implementation period the project will negatively impact the atmosphere due to the utilization of transport and hardware needed for the ESA and remediation. The main pollutants are combustion products and greenhouse gasses. The pollution is limited to the implementation period and is expected to be outweighed by the long-term environmental gains of remediating the oil pollution on site. In order to limit pollution and particle emissions during the implementation period, it is recommended to develop a plan for minimizing emissions – a health, safety and environment plan (HSE).

During the implementation period, workers are exposed to the pollution through direct contact, particles and emissions of volatile components. Measures to limit the exposure to the pollution shall be included in the HSE plan.

During implementation there is a risk of alternating dispersion routes and hence causing unintentional dispersion of the pollution. In order to reduce this risk, environmental expert(s) shall supervise the work and prepare an emergency action plan.

After implementation

Subsequent to implementation the pollution should be remediated and no longer pose a hazardous risk to the human health and the environment.

In the event of residual pollution, the volume and location of pollution shall be precisely determined. In addition an environmental risk assessment shall be performed to determine potential risks to the local environment.

6.1.4 Environmental Benefits

The amount of pollution is in the range of 120 – 180 tons. Due to erosion and mobility of the pollution, there is a potential risk of sudden dispersion of 120 – 180 tons of oil products to the Northern Dvina River.

Remediating the pollution will entail the following environmental benefits:

- Removal of the potential hazardous risk for human health of the local people
- Removal of potential risk of unacceptable dispersion to the environment
- Removal of the potential hazardous effect on the marine environment
- Improve the ecological situation at the polluted site
- Improve the ecological situation of the Arctic marine environment, specifically contamination of the Dvina delta and White Sea.

6.2 Social Assessment

6.2.1 Stakeholder identification

The following stakeholders have been identified in the project:

- Contractors/workers involved in the project

- Local settlement
- The Arkhangelsk community
- The Administration of the Primorsky Municipal District
- The Environmental Committee of the Arkhangelsk Region

6.2.2 Social Analysis

The following social analysis is based on opinions/assessments of the project owner and the regional administration, and further on the general socio-economical situation in Arkhangelsk region and Primorsky district.

During meetings held in the framework of the PINS project, the Administration of the Primorsky Municipal District of and the Environmental Committee of the Arkhangelsk Region expressed concerns regarding the negative environmental impacts of the polluted site. Both parties expressed interest in implementing the project and improving the environmental and ecological situation in the area.

Current situation
The concerns of the stakeholders regarding the current situation on the polluted site is summarised in the Table 21 below.

Table 21: Social concerns regarding the current situation on the polluted site

Concerns	Stakeholder
Health of workers during implementation	Workers, Administration of the Primorsky Municipal District
Health of population in local settlements	Local settlements, Administration of the Primorsky Municipal District
Environmental concerns	Administration of the Primorsky Municipal District, the Agency of Natural Resources and Environment of the Arkhangelsk Region
Regulatory concerns	Administration of the Primorsky Municipal District

Implementation period
In general, the same concerns as listed in Table 22 apply for the implementation period. In the Table 22 below, more specific concerns related to the implementation work are listed.

Table 22: Social concerns regarding the implementation period

Concerns	Stakeholder
Impact from pollution	Workers
Increase in air pollution due to increase in use of vehicles and machinery	Administration of the Primorsky Municipal District, The Agency of Natural Resources and Environment of the Arkhangelsk Region

After implementation
After implementation the pollution will be remediated to a level with no unacceptable environmental impacts.

In this period concerns of the stakeholders are not expected.

6.2.3 Social Benefits of Project Implementation

The social impact assessment shows that the project implementation will entail the following social benefits, which are difficult to convert to monetary terms:

- Prevention of unacceptable dispersion of pollution into the Northern Dvina River and the Arctic marine environment
- Improving the local environmental situation
- Removal of the potential hazardous risk for human health of the local people
- Introducing remediation technologies in the Arctic Region (social-economic and nature preservation capacity building) in a long-term perspective

6.3 Stakeholder participation / involvement

Stakeholder participation in the project is essential for communicating the social benefits of the project to stakeholders. Measures aimed at public and local population awareness of this IP implementation are taken in the course of pre-investment studies.

In June 2009 information regarding PINS initial development for this investment project within NPA-Arctic project was posted on the Administration of Primorsky website and the article was also published in the regional Pravda Severa newspaper (http://www.pravdasevera.ru/?id=1051775830 of 16.06.2009).

Information about the project was published in June 2009 newsletter of Nordic Council of Ministers "Energy Efficiency in Barents and Baltic Regions" in Russian and in English.

During the meeting of the Working Group on Environment of the Barents Euro-Arctic Council (BEAC) held in Arkhangelsk in the beginning of October 2009, the Environmental Committee of the Arkhangelsk region jointly with the Consultant provided a project presentation at the subgroup meeting for the hot spots in the Barents region. In addition, NEFCO noted that the corporation pays significant attention to the issue of oil spill sites remediation in the Russian part of the Barents region and some similar projects in the Arkhangelsk and Murmansk regions were approved by NEFCO in August 2009.

Stakeholders and public were informed of the project progress and had an opportunity to review the Project Report to make their comments and corrections. On 25th December 2009 the project press release was published on the Arkhangelsk Region administration web site (http://www.dvinaland.ru/prcenter/release/10274/) and in the local newspaper "By the White Sea" (30.12.2009) and municipal newspaper "Business Thursday" (17.12.2009).

Everyone had an opportunity to learn the project details in the offices of the project Directorate – NPA-Arctic, the project owner – Arkhangelsk Region administration and the Consultant – Ramboll Barents. The opportunity was granted to ensure the project owner they could evaluate possible public and stakeholders' concern at the early stages of the project.

The consultant did not receive comments or corrections to the project report from the project owner and public.

7. PROJECT FINANCIAL VIABILITY

This chapter covers the economic justification for the implementation of the proposed measures for the land remediation from oil products in the water protection zone of the Northern Dvina River near the settlement Krasnoe of the Primorsky district. This chapter contains the results of the analyses from the previous chapters and economic justification of the proposed investment project.

7.1 Approaches of Economic Evaluation

The main goal of economic evaluation is to determine financial viability and economic efficiency of the investment project. The reasonability evaluation is based on comparison of the current situation and expected situation after project implementation.

The oil pollution of the land plot near Krasnoe settlement took place in the 1970-s. No remediation measures have been taken since then. The oil products are washed out by the surface and subsurface waters to the Northern Dvina River. The negative impact of the site on the marine environment over the decades leads to the deterioration of ecological situation in the polluted area. If this IP is not implemented a continuation of such trend can be expected.

When evaluating the project it becomes clear that there is no direct economic effect after project implementation because this territory is not utilized for economic activity and no commercial activity is provided for after the IP implementation. Other factors and effects are also considered such as environmental and social influence. So, many of the benefits cannot be evaluated in money equivalent.

7.2 Financial Status of Primorsky Municipal District

The owner of the project is the Administration of the Primorsky Municipal District. The budget of the Primorsky district was analysed to verify the financial status of the Administration of Primorsky district and its capabilities for financing the IP implementation. The regional budget is also one of the main IP financing sources apart from the local budget. This section also contains the analysis of the Arkhangelsk region budget and evaluation of possible co-financing of this project by the regional administration.

The local and regional budgets data for the last years are presented in Tables 23-26. The budgets are presented in euro and rubles.

Table 23: Primorsky Municipal District budget for 2004-2009 and as of the 1st of October 2009, thousand EUR

Item	Amount					
	2004	2005	2006	2007	2008	01.10.09
REVENUE						
Revenue, tax and non-tax	3 476	2 606	3 692	4 213	5 872	4 399
including:						
- fee for natural resources utilization	***105***	***76***	***96***	***78***	***108***	***51***
Non-repayable receipts	3 915	4 205	116	94	107	15 468
Other non-repayable receipts	49	59	116	94	107	42
TOTAL REVENUE	**7 493**	**6 986**	**4 008**	**4 598**	**5 979**	**19 915**
EXPENDITURE						
State matters	671	1 059	1 999	1 824	2 333	1 739
National security and law enforcement activities	4	60	77	99	112	66
National economy	-	119	176	203	696	121
Housing and utilities services	-	2 617	4 389	5 089	8 036	4 321
Environmental protection	***92***	***-***	***-***	***57***	***140***	***-***
Education	2 556	2 641	3 587	4 576	5 692	4 485
Culture, cinematography and mass media	265	309	453	558	761	648
Health care and sport	544	509	796	955	1 263	855
Social policy	431	149	378	531	717	434
Inter-budget transfers	-	-	-	-	-	6 854
TOTAL EXPENDITURE	**7 991**	**7 463**	**11 856**	**13 917**	**20 682**	**19 549**
surplus of income over expenditure (+), deficit (-)	- 498	- 477	+ 190	+ 172	- 14 703	+ 366

Table 24: Primorsky Municipal District budget for 2004-2009 and as of the 1st of October 2009, thousand rubles

Item	Amount					
	2004	2005	2006	2007	2008	01.10.09
REVENUE						
Revenue, tax and non-tax	152 946	114 659	162 455	185 353	258 383	193 555
including:						
- fee for natural resources utilization	***4 614***	***3 330***	***4 223***	***3 417***	***4 741***	***2 232***
Non-repayable receipts	172 243	185 033	5 088	4 148	4 690	680 854
Other non-repayable receipts	2 150	2 603	5 088	4 148	4 690	1 866
TOTAL REVENUE	**329 677**	**307 382**	**176 364**	**202 331**	**263 073**	**876 275**
EXPENDITURE						
State matters	29 563	46 596	87 961	80 247	102 636	76 526
National security and law enforcement activities	190	2 627	3 394	4 356	4 934	2 884
National economy	-	5 244	7 759	8 940	30 621	5 332
Housing and utilities services	-	115 129	193 103	223 915	353 063	190 105
Environmental protection	***4 044***	***-***	***-***	***2 527***	***6 155***	***-***
Education	112 450	116 218	157 841	201 361	290 459	197 348
Culture, cinematography and mass media	11 661	13 600	19 951	24 568	33 495	28 495
Health care and sport	23 929	22 395	35 019	42 040	55 560	37 641
Social policy	18 974	6 546	16 646	23 373	31 542	19 076
Inter-budget transfers	-	-	-	-	-	301 580
TOTAL EXPENDITURE	**351 594**	**328 355**	**521 676**	**612 326**	**910 001**	**860 152**
surplus of income over expenditure (+), deficit (-)	- 21 916	- 20 972	+ 8 347	+ 7 556	-646 930	+ 16 123

The municipal budget data were provided by the Administration of Primorsky district. The data highlighted in red do not provide a true view of the revenues and expenditures of the municipal budget.

Table 25: The Arkhangelsk region budget for 2005-2008 and as of the 1st of November 2009, million EUR

Item	Amount				
	2005	2006	2007	2008	01.11.2009
REVENUE					
Revenue, tax and non-tax	212,4	302,8	442,7	554,4	332,2
including:					
- fee for natural resources utilization	***3,98***	***17,78***	***22,44***	***13,27***	***21,75***
Non-repayable receipts	136,2	166	239,3	347,1	350,1
Other non-repayable receipts	1,5	-	-	13,6	7,9
TOTAL REVENUE	**361,7**	**468,4**	**681,9**	**913,7**	**682,4**
EXPENDITURE					
State matters	11,5	18,2	8,8	26,9	28,6
National security and law enforcement activities	22,2	29,8	34,5	47,9	33,3
National economy	42,1	48,7	126,9	36,9	96,8
Housing and utilities services	4,4	12,4	15,6	22,5	17,9
Environmental protection	***1***	***1,8***	***2***	***2,6***	***1,4***
Education	34,8	38,1	51,4	79,5	55,2
Culture, cinematography and mass media	10,5	11,9	11,1	18,6	23,3
Health care and sport	49,1	56	70,6	66,1	45,5
Social policy	61,7	74,9	87,8	134,5	131,7
Inter-budget transfers	115,2	172,5	228,7	456,1	316
TOTAL EXPENDITURE	**352,4**	**464,2**	**637,3**	**1 028,1**	**749,5**
surplus of income over expenditure (+), deficit (-)	+ 0,01	+ 4,18	+ 44,6	- 114,5	- 67,2

Table 26: The Arkhangelsk region budget for 2005-2008 and as of the 1st of November 2009, million rubles

Item	Amount				
	2005	2006	2007	2008	01.11.2009
REVENUE					
Revenue, tax and non-tax	9 344,4	13 321,4	19 476,9	24 329,2	14 618
including:					
- fee for natural resources utilization	***175,3***	***782,1***	***987,4***	***584,2***	***957***
Non-repayable receipts	5 993,1	7 302,1	10 527,7	15 274,5	15 406
Other non-repayable receipts	66,3			597,4	768
TOTAL REVENUE	**15 915,6**	**20 609,1**	**30 004,6**	**40 201,1**	**30 024**
EXPENDITURE					
State matters	504,9	800	388,4	1 185,8	1 259
National security and law enforcement activities	974,8	1 309,3	1 518,2	2 107,2	1 463
National economy	1 852,7	2 140,9	5 582,1	7 625,3	4 260
Housing and utilities services	191,5	545,8	686,4	987,9	787
Environmental protection	***44,4***	***78***	***87,7***	***114,6***	***60***
Education	1 529,3	1 677,7	2 259,6	3 498,7	2 429
Culture, cinematography and mass media	463,3	522,1	488,6	819,5	1 026
Health care and sport	2 161,3	2 465,1	3 104,6	2 909,8	2 000
Social policy	2 715	3 294,6	3 862,3	5 920,3	5 794
Inter-budget transfers	5 070,2	7 591,7	10 063	20 068,2	13 903
TOTAL EXPENDITURE	**15 507,4**	**20 425,2**	**28 041**	**45 237,3**	**32 979**
surplus of income over expenditure (+), deficit (-)	+ 0,4	+ 183,9	+ 1 963,6	- 5 036,2	- 2 956

The budget of the Arkhangelsk region is socially targeted. Over the last 4 years the Arkhangelsk region had a surplus budget, except 2008 when it was deficit-ridden. The budget deficit has also been observed during the ten months of 2009.

During the last four years the revenue part of the regional budget tended to increase by 20-45%. Tax and non-tax revenues, which make up 60-65% of the total revenue amount, have a significant influence on the revenue part of the regional budget.

For the ten months of 2009 the revenues of the regional budget were mostly dependent on the personal income tax receipts. Thus corporate profits tax, which traditionally occupied the largest share of revenues over the recent years, decreased significantly moving to the second place among own budgetary sources after personal income tax.

For the last four years the expenditures of the regional budget, as well as the revenues, had an increase trend from 20% in 2005 to 60% in 2008. The increase in the expenditure part is explained by the increase of expenses associated with the civil servants wage payment, scholarships, allowances and payments to the citizens, subject to the social support to be provided by the state authorities of the Russian Federation constituent entities, increased costs of public utilities and other tangible costs.

The regional budget deficit in 2008 amounted to 5 036 200 000 rubles. The main sources of deficit financing are the margin between the attraction and repayment of credit resources (commercial banks loans in the amount of 2 400 000 000 rubles and federal budget loans in the amount of 1 241 800 000 rubles), and alteration of fund balance on the regional budget account (1 378 100 000 rubles).

Negative economic effects caused by the global financial and economic crisis and the results of the crisis affected the budget receipts from September 2008 significantly influenced the deficiency of the own revenues in 2008

In 2009, under the crisis effects in the global economics, the regional budget was made on the basis of the first-priority expenditures subject to the estimated adjustment of the expenditure commitments.

The budget of the Primorsky district has similar tendencies typical for the regional budget. The municipal budget had a surplus in 2006-2007 and was deficit-ridden in 2008 in view of the crisis effects described above.

The environmental fees received to the municipal budget over the last five years make up from 76 000 to 108 000 EUR per year. As shown in Table 23, the Administration of the Primorsky district allocated significant amounts for environmental protection measures in 2007 and 2008, 57 000 и 140 000 EUR respectively. However, the municipal funds allocated by the administration for environmental issues solution are insignificant in comparison with the IP price, which is 1 176 000 euro (or 51 744 000 rubles).

In addition, as mentioned in item 3.2, payments for the natural resources utilization and negative impact fee received by the budget of any level cannot be considered as a possible IP co-financing source as they have a non-targeted purpose. Approval of all budget expenses including environmental expenses in the regional and municipal budget is required. Thus, it is impossible for the Administration of the Primorsky district to solve this problem connected with remediation of the existing oil pollution in the near future without external financial support.

7.3 Project Financing

7.3.1 IP Financial Analysis

Investment expenditures in terms of the project implementation and financial plan of the investment project are given in this section. Overall project cost is between 1 176 000 and 7 776 000 euro. Investment expenditures are capital costs for remediation of the land plot contamination (Table 27).

Table 27: Project Implementation Expenditures, Euro

	Expenditures	Cost
1.	**Stage 1: Environmental Assessment of the Area**	**27 040**
	Mobilization	2 290
	Contractors and subcontractors	7 950
	Chemical analyses	4 800
	Environmental specialist and project management	12 000
2.	**Stage 2: Development of Remediation Measures**	**49 000**
	Mobilization	4 000
	Contractors and subcontractors	20 000
	Chemical analyses	10 000
	Environmental specialist and project management	15 000
3.	**Stage 3: Remediation**	**1 100 000 - 7 700 000**
	TOTAL:	**1 176 000 – 7 776 000**

The total cost of the investment expenditures in terms of the investment project varies significantly. It is explained by the fact that the expenditure against Stage 3 vary significantly in terms of the work cost due to different remediation methods. The work cost against Stage 3 can be estimated more precisely only when Stages 1 and 2 are complete that will allow to choose the optimal method of the contaminated site remediation and estimate the final expenditures against Stage 3.

The minimal amount of the investment expenditures –1 176 000 euro – is further on taken as a basis in the report to make further financial calculations. It gives a possibility to the project owner, authorities and potential investors to estimate the required investment expenditures in terms of the project and plan the expenditure to implement the investment project that will have to be incurred under this project as a minimum, in advance.

In case the project cost increases the owner will have a possibility to revise the plan of financing or to develop the financial plan for Phase 3.

The plan of financing for the project under consideration in terms of the financing sources and years is given in Table 28 below. The overall cost of the project is 1 176 000 euro. It is expected that the project will be 80% financed at the cost of the international grant and 20% financed at the cost of local co-financing. The present financing plan is preliminary.

Table 28: IP Financing Plan, euro

IP Financing Source	Period of implementation				TOTAL	Share
	1st year	2nd year	3rd year	4th year		
International grant	41 200	315 600	296 000	288 000	940 800	80%
Regional and local budget	10 300	78 900	74 000	72 000	235 200	20%
Total, financing planned	**51 500**	**394 500**	**370 000**	**360 000**	**1 176 000**	**100%**

The financial plan was developed on the basis of information obtained during meetings and negotiations with the senior management of the Primorsky district administration and the Agency of Natural Resources and Environment of the Arkhangelsk region, as well as a result of calculations and estimates based on the consultant's previous experience.

The project financing plan was developed based on the following information.

- The project is not commercial, does not bring any additional income, no business is carried out in this area; besides, it is not envisaged to carry any business once the project is over.
- IP is not a typical international project that are implemented and financed within current international cooperation in the North-West Russia.
- There is no proven financial scheme of implementing such projects with the involvement of international financial organizations.
- The Agency of Natural Resources and Environment of the Arkhangelsk region suggested that the following financing scheme for this IP should be considered: 80% - international grant, 20% - local co-financing as one of potential options.

Thus it is envisaged that the financial structures of investments will consist of the international grant (80%) and local financing (20%). The overall minimal amount of investments will be 1 176 000 euro.

According to the information from the Agency of Natural Resources and Environment of the Arkhangelsk region, envisaged local funding will be allocated in the following manner. At the allocation of the financial support from the regional budget, municipal funding should amount to at least 10% of the amount allocated.

The representatives of the Agency of Natural Resources and Environment have specified that the project expenses are significant. Therefore a step-by-step IP funding scheme together with further updating of each phase cost is considered. Such an approach will allow commencing the implementation of the project at the earliest possible date as the Government of the Arkhangelsk region is very concerned about the early implementation of this IP.

IP Financial Indices

The project profitability, sensitivity analysis and economic benefit assessment were not analysed as the project does not provide for the cost reduction or additional income. No cash flow was analysed for the project either as the financial scheme suggested by the Environmental Committee of the Arkhangelsk region does not envisage any loans from international or Russian financial institutes. However,

economic benefits, such as improvement of the life quality and public health and environmental safety management justify the project implementation.

IP Financial Analysis Assessment

At present, the Arkhangelsk region Government and the Administration of the Primorsky district do not have sufficient financial resources to implement the project on their own.

The project is not merchantable as it does not provide cost reduction or additional income. No business is carried out in the contaminated area; besides, it is not envisaged to carry any business once the IP is over.

The overall amount of the minimal investments is 1 176 000 euro.

The financial scheme is not standard for the IFO. The project provides for 80% financing (940 800 000 euro) at the cost of the international grant and 20% financing at the cost of the local co-financing.

7.3.2 Planned Project Co-Financing

At present, there are no data on potential co-financing of the project. There are no funds allocated for the project financing either in the regional or municipal budgets. However, the Administration of the Primorsky district has applied to the Agency of Natural Resources and Environment with a request to allocate financing to implement this IP in 2010. Besides, the Agency of Natural Resources and Environment of the Arkhangelsk region is willing to find the funds for the project co-financing provided that there is an investor and approved project financing plan.

7.3.3 Potential Sources of Financial Support from the Stakeholders

As mentioned earlier in this chapter the project does not have any direct economic benefit. The IP owner is a municipality. Therefore the main project financing sources are municipal and regional budgets. Potential Russian financing sources can be as follows:

- Long-term target programme of the Arkhangelsk region 'Environmental Protection and Environmental Safety Management in the Arkhangelsk region for 2009 – 2011'. The programme comprises implementation of certain measures. The present IP is not included in this programme yet, it is required to consider whether it can be included for 2010-2011 that will allow providing for the IP financing for 2010 and 2011.

- Municipal budget. It is required to approve the funds for the project implementation in the municipal budget for 2010 and the years to come.

- Financing from federal sources. The Consultant conducted negotiations with the Agency of Natural Resources and Environment of Arkhangelsk Region about possible financial support from the federal budget. According to the Agency representatives at present the state support of regional projects is mainly carried out via means of the federal target programmes but the subject of this project does not meet the criteria of the existing federal target programs and federal financial support of this IP is not expected. However, Section 'Other Needs' of subprogramme 'The Arctic Development and Utilization' of the federal target

programme 'World Ocean' provides for the funds aimed at elimination of former environmental damage in the Arctic region of the Russian Federation. The Government of the Arkhangelsk region is recommended to hold a discussion with Federal Service on Ecological, Technological and Nuclear Supervision (Rostechnadzor), the state customer for this item.

- Private-state partnership. There is no future commercial application of the recultivated land and this makes impossible to consider private-state partnership for this pre-investment study.

In order to clarify the existing financial support for the IP from the relevant authorities and the project owner, as well as to identify potential IFI additional consultations have been held.

The Government of the Arkhangelsk region has confirmed its willingness to incorporate IP into a targeted program of the Arkhangelsk region Environmental Protection and Environmental Safety Management of the Arkhangelsk region for 2009 - 2011 provided that the additional funds from international financial institutions will be attracted in the amount of not less than 80% (Annex 8).

Administration of Primorsky municipal district has not confirmed the possibility of co-financing the IP from the municipal budget at this stage of project development, however, it assured of the readiness for further cooperation in promoting and implementing of the IP (Annex 9).

Consultations with IFI - International Finance Corporation (IFC), European Bank for Reconstruction and Development (EBRD), the Global Environment Facility (GEF Earth Fund), Northern Dimension Environmental Programme (NDEP), NEFCO, UNEP, the Nordic Investment Bank (NIB) - showed that the majority of institutions such as IFC, EBRD, NDEP, and NIB prefer larger projects, and this project does not refer thereto.

NEFCO has not yet commented on the possibility of their participation in this IP. Given that NEFCO focuses on infrastructure projects, including projects with small amounts of investment, the continuation of negotiations with NEFCO seems promising.

As mentioned in p. 6.3 the Consultant conducted negotiations with NEFCO. NEFCO confirmed its interest to participate in this type of projects and confirmed that projects related to the clean-up of oil spills were allocated into a separate sector. As far as the implementation of the projects under this area was started by the Administration of the Arkhangelsk region together with NEFCO only in September 2009 there is no special financial mechanism for this type of projects yet and financial decision will be made individually for every project. Project examples will be presented in p. 7.4 below.

7.4 State Support

Regional Government pays special attention to the project related to the municipal sector and aimed at the environmental protection and environmental safety management. The main activities are as follows: provision with potable water, sewage water treatment, land contamination removal, processing of solid domestic waste.

The project is initiated by the Environmental Committee of the Arkhangelsk region. The Administration of the Primorsky district where the oil polluted site is located is extremely interested in its implementation. By the proposal of the regional

Administration this IP was selected as one of the top-priority ones for the PINS development (Annex 8).

In 2008-2009 the Agency of Natural Resources and Environment has paid special attention to improvement of the situation in terms of the contaminated lands removal on the territory of the Arkhangelsk region. The problem is serious enough and is at the initial stage of resolution. It is difficult for the regional Government to resolve it independently shortly. Therefore the Government is looking for the possibility to involve external financing to implement projects related to the oil polluted lands remediation. A lot has been done for 2 years. For example, a pilot project on the environmental situation recovery is being implemented in the area of the decommissioned military site near the settlement of Pokrovskoe, Onega district with NPA-Actic support. In autumn 2009 NEFCO approved financing to implement two projects in the Arkhangelsk region, implementation of which will start in 2010. One of them is 'Remediation of Oil Pollution in the Area of Kuznetsov Brook of the Mezen River Basin in the Mezen District of the Arkhangelsk Region'. Now there is financing available for the implementation of the first stage of the project (environmental site assessment of the polluted land). The second stage of the project (liquidation of pollution) does not have financial sources yet. Financing will depend on whether this will be a demo project to apply the latest treatment technologies or the project will be an open tender to find the best price offer. The second project is 'Inventory of the Sites and Areas Polluted with Petroleum Products in Arkhangelsk region'. NEFCO is financing the pre-project work for summary of the information collection methods about existing polluted areas and existing polluted areas data-bases in the Russian part of the Barents Region. Further financing will be defined after pre-project stage completion. This IP is the 4th project that the Committee has been developing for the first two years of work in this direction.

Thus, one can firmly say that the project is supported by the regional and municipal authorities.

7.5 Legal and Other Restrictions for Russian and Foreign Investors

The project will be implemented in the territory with no restrictions of any kind. Therefore both Russian and foreign investors can be involved in co-financing of this project.

8. PROJECT IMPLEMENTATION STATUS AND ARRANGEMENTS

8.1 Present situation

The Municipal Administration of the Primorsky District and the Agency of Natural Resources and Environment of Arkhangelsk are interested in the project implementation and emphasised their interest during pre-investment studies meetings in Arkhangelsk.

8.2 Project implementation plan

The project implementation will include several stages:

- Receiving a grant
- Tender documents preparation and tender procedures
- Design documentation preparation and approval
- Contract negotiations
- Implementation
- Monitoring the project's efficiency

The project implementation schedule is presented in Table 29 with the beginning of 2010 as the starting point. If the financing plan is changed the project implementation plan will also demand corrections with fixed implementation intervals. The duration of implementation will be approximately 4 years from the start of contract negotiations until project completion.

It is necessary to consider the climate conditions of Arkhangelsk when developing the project implementation plan. It is not possible to perform remediation works in the winter period, when the ground is frozen.

This project implementation plan is very approximate and depends on possible investor because the project owner and regional Government cannot afford financing this project on their own account.

Table 29: Project implementation schedule

	Component of the project implementation	Period of implementation			
		1st year	2nd year	3rd year	4th year
1	Phase 1: ESA				
2	Phase 2: Design documentation				
3	Phase 3: Remediation				

In case the financing plan of the project is not agreed between the project owner and IFO in 2010 the implementation thereof will be postponed for a year and will commence in 2011.

8.3 Organizational measures / key-points of decision-making

Prior to the initiation of the project it is necessary to perform the following organizational measures:

- To prepare a financing plan meeting the requirements of a foreign investor and the possibilities of municipal and regional authorities.
- The Administration of Primorsky District should plan co-financing of the project from the municipal budget in 2010-2011.
- The Government of the Arkhangelsk Region should plan to co-finance the project from the regional budget.

8.4 Own Resources of the Administration District of Primorsky for Project Implementation

The Municipal Administration of the Primorsky District does not have resources for project implementation. The ESA, design work and remediation works in similar projects are performed by contracted service companies.

8.5 Project Organization Structure

The Municipal Administration of the Primorsky District is the owner of the project and possible future loan receiving party.

To enhance project implementation efficiency and to use the experience of project development in the north-west of Russia the following project organization structure is proposed (Figure 11).

The obligatory requirement for IFO-financed international projects is also an independent project manager.

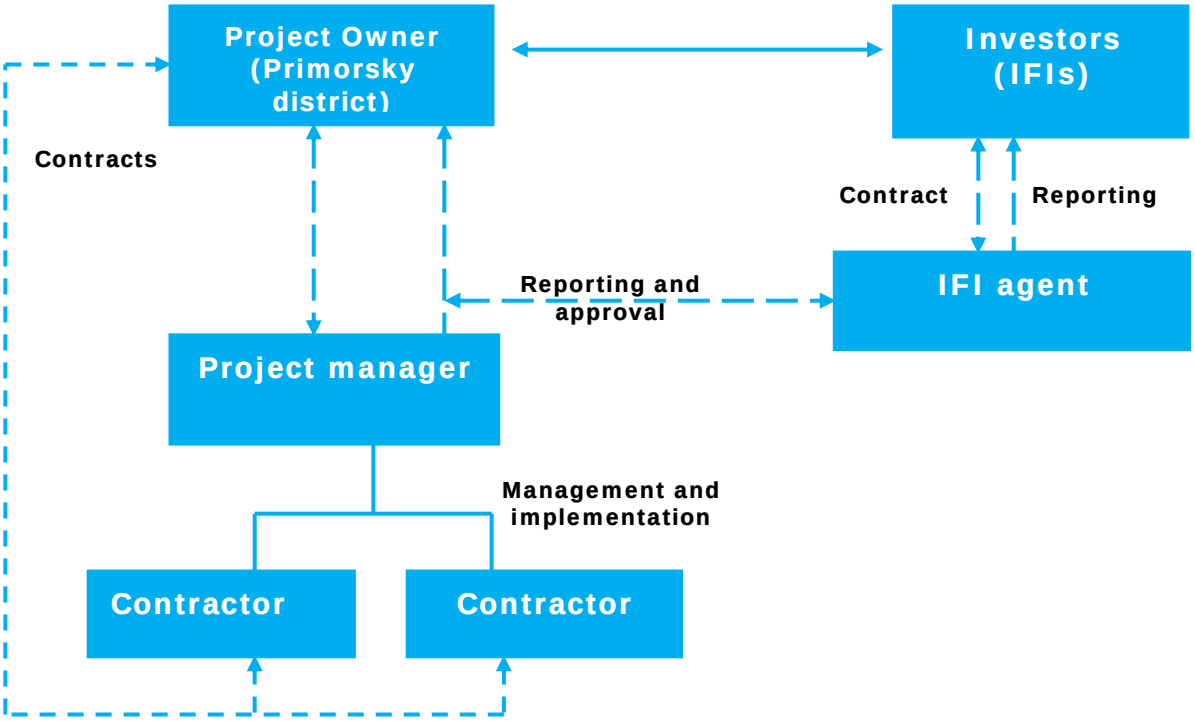

Figure 11: Example of possible project organization scheme with participation of IFI

The project organization chart can be slightly changed in due to alterations in project participating parties and similar changes.

The managing function will belong to the Project Manager whose responsibilities will include daily project progress monitoring at every project stage. Main responsibilities include:

- to coordinate and approve project activities
- to coordinate work on the project
- to insure the project reports comply with the requirements
- to organize conference meetings covering the project progress
- to prepare the documents for the project financing management
- to coordinate procurement and contractors' activities
- to approve and control project expenses
- to control contractors' activities
- to coordinate changes in the project plan

The owner of the project, The Municipal Administration District of Primorsky, is responsible for the project realization in accordance to the contracts with the investor and contractors; performs co-financing of the project, bears the financial and legal liabilities for the project.

The Agency of Natural Resources and Environment of the Arkhangelsk Region acts as a project sponsor, controls the progress of the project, co-finances the project, and bears the legal and financial liabilities in case the project owner fails to fulfil its responsibilities.

Selection of contractors is based on tender procedures. The candidates should confirm their technical, organizational and financial abilities by documents (necessary license is obligatory, company registration etc). The winner of the tender is awarded a contract with the Customer.

Tender committee is formed according to the Customer's decision and using its personnel with the approval of the municipality administration. Representative of the Project Manager has advisory vote only aiming to make an impartial assessment of the tender procedure.

During project realization the participants should follow the requirements of the Russian legislation, federal standards, industry requirements and standards, other requirements regulating investment and construction activity.

9. ASSESSMENT OF RISKS AND JUSTIFICATION OF SELECTION

This chapter contains preliminary risks assessment and selection justification. As the project is at the starting stage specific information is limited for the project. Preliminary assumptions are based on collected information, basic knowledge of the field and professional experience in similar projects.

9.1 Risks evaluation

Project evaluation includes assessments of the following investment risks:

- Technological risk
- Environmental risk
- Social risk
- Implementation and operational risk
- Financial risk
- Legislative risk
- Responsibility risk

Technological risk
The technical solution described in chapter 4 is technical viable at the polluted site near the settlement of Krasnoe. Due to the remote location and complicated accessibility, mobilisation may limit the technical possibilities and solutions.

It is recommended that consultant companies with professionally qualified environmental experts of considerable experience within environmental mapping, investigations and remediation technologies (design and implementation) are involved in the design and implementation period.

Environmental risk
Conducting an environmental site assessment and remediation of the oil pollution entails environmental risk of altering dispersion routes and causing unintentional dispersion of the oil pollution. In order to prevent and decrease impact of such operations, it is recommended that professional environmental consultants with substantial experience in conducting environmental investigations and remediation of oil pollution are involved in the project. It is also recommended that an environmental emergency action plan is undertaken prior to commencing physical work on the project.

During periods of the project in which physical work is undertaken, an increase in greenhouse gas emissions is expected. In order to reduce gas emissions, it is suggested that preventive measures are included in a health, environment and safety plan for the project.

Social risk
The project is expected to have an overall positive effect on the social situation of Primorsky. Some of the population may however feel that money allocated for this project, would be better spent on other social improvements in the municipality.

Prior to project initiation, the project owner will hold public hearings in Primorsky involving citizens of the municipality and other stakeholders in the project. The aim of the hearings is to identify potential social risks that can be taken into account early in the planning process.

Implementation and operational risk
Implementation and operational risks are connected with the remote location of the polluted site.

The limits of mobilization of equipment result in implementation and operational risks which are necessary to deal with in the planning and design process. Due to the remote location of the site, supervising remediation on a daily basis in a longer period will not be financially viable and constitutes an operational risk that needs to be dealt with in the design of the remediation (Phase 2).

In order to reduce implementation and operational risks it is recommended that professional environmental consultants undertake the planning, design and remediation process of the project. Main contractors involved in the project shall have considerable experience from similar projects.

Financial risk
The project is a non-commercial project without future prospects of financial gain. Local, regional, national and international investors should be aware of the project representing an environmental rather than a financial viability.

The financial crisis may lead to insufficient project financing and higher relative implementation costs. In addition, results of Phase 1 and 2 may lead to higher remediation costs than estimated at this stage.

To reduce the financial risk it is reasonable to identify external financing sources in terms of grants.

In order to ensure local and regional allocation of part financing it is necessary to include the project in local and regional programs with respective financing before the regional and municipal budgets are adopted.

Legislative risk
The owner of the polluted site is the municipal district of Primorsky. Local and regional administrations assess the pollution having occurred more than 20 years ago, so there are no legislative possibilities of claiming remediation responsibilities of former owners.

There are no obstacles for project implementation in the Russian legislation.

Responsibility risk
The owner of the project has been determined and will bear the full legal and financial risk in the project.

To reduce the risk of responsibility the Administration of the Arkhangelsk region must provide guarantees for project implementation.

9.2 Selection justification

The remediation of oil pollution on the site near the settlement of Krasnoe has been proposed and supported by the Administration of Municipal District of Primorsky and also by the Agency of Natural Resources and Environment of the Arkhangelsk Region. The oil pollution is considered as having a significant impact on the local and regional environment. Due to the continued leakage of oil contamination via subsurface water flow and erosion of the river bank into the Northern Dvina River, the polluted site will

continue to pose a risk of dispersing hazardous components into the Arctic marine environment.

Implementation of the IP will provide environmental site assessment of the polluted site in order to design the most appropriate remediation to levels acceptable to the environment. The polluted site should be regarded as an integrated regional approach of reducing the overall sources of pollution in the region and hence reduce the risk of potential hazardous dispersion of pollution to the Arctic marine environment. The project will provide the local and regional administrations with methods of remediating pollution in an Arctic environment, which can be adapted to other hot spots in the Region.

Remediating the oil contamination is in line with the overall purpose of the NPA-Arctic Project – to protect the Arctic marine environment. The polluted site should be regarded as a local and regional source of pollution to the Arctic marine environment, a source that is continuously contributing to a negative environmental impact. The justification of implementing the project as an investment project is hence reasonable and can be regarded as a concrete result of regional and local priorities in protecting the Arctic environment.

10. CONCLUSION

In this report work related to preparation of regional pre-investment studies for remediation of oil contaminated land in a water protected area downstream the settlement of Krasnoe in the Arkhangelsk Region has been presented.

Environmental and social aspects
The polluted site is situated in a water protected area of the Northern Dvina River, approximately 5 km downstream the settlement of Krasnoe. In the 1970s the land plot was used at storage of oil contaminated water from vessels. Constructions for storage were not made, and the oil contaminated water was pumped directly onto the land in 3 larger pits.

Oil contamination is leaking directly into the Northern Dvina River via subsurface water and erosion of the river bank. Based on preliminary environmental sampling of surface layers and observations of the polluted site, the volume of contamination is estimated at 15 000 – 20 000 m^3 containing approximately 120 – 180 tons of oil products.

The river bank is continuously eroding and the polluted land plot is expected to erode completely within a shorter period of time (20 – 50 years). Due to the continuous leakage of oil pollution to the Northern Dvina River and the total amount of oil products the contaminated site is assessed as posing a risk to the local and regional environment, including the Arctic marine environment. In addition the oil contamination poses a potential risk to the health of the populations in the local settlements.

Technical aspects
Preliminary environmental investigations have been conducted however they do not provide sufficient information for designing a site specific remediation technology. The project is hence suggested divided into 3 phases. Phase 1 is an environmental site assessment in which the quality and quantity of pollution is determined. Phase 2 is design of the remediation, in which different remediation technologies are tested. Phase 3 is the remediation of the contaminated site to environmentally acceptable levels

Financial aspects
Initial cost estimates of Phase 1 and 2 suggest a total cost of 86 thousand euro. There are great financial uncertainties in Phase 3, due to the limited information of the oil pollution. An initial cost estimate of Phase 3 suggests that the cost is in the range 1 – 7.7 million euros.

Financing the project is based on grants as the project is non-commercial. The overall amount of the minimal investments is 1 176 000 euro. The project provides for 80% financing (940 800 euro) at the cost of the international grant and 20% financing at the cost of the local co-financing.

Recommendations
Risks identified in the project are not critical and can be met by using professional and experienced companies for design, and involving stakeholders at as early a stage in the project as possible.

Implementation of the project is expected to significantly decrease the environmental strain on the local and regional environment, including the Arctic marine environment. In addition the project has capacity building aspects by introducing remediation technologies adaptable to other parts of the region. Due to the environmental and social benefits of the project and in order to overcome the financial uncertainties related to

project implementation it is suggested to continue with a full scale investment plan by support of NPA-Arctic Project.

ANNEXES:

Annex 1: Letter of Arkhangelsk Region Administration on ranked list of IP proposals
Annex 2: Map of Dvinskoy Bay of the White Sea
Annex 3: Economic Situation in the Municipal Entity in 2008
Annex 4: Map of locations of the oil polluted plot
Annex 5: Scheme of ground plot location and points of soil sampling
Annex 6: Site inspection of the project team.
Annex 7: Map of sample points
Annex 8: Letter of Arkhangelsk Region Government on financial support of IP
Annex 9: Letter of Primorsky District Administration on support of IP

Annex 1: Letter of Arkhangelsk Region Administration on ranked list of IP proposals

АДМИНИСТРАЦИЯ
АРХАНГЕЛЬСКОЙ
ОБЛАСТИ

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04.05.2009 № 06-40/23

На № _____

ООО «Рамболь Стурвик»

Н.У. Муртазалиевой

пр.Обводный канал, 13/3
163046, г.Архангельск

Уважаемая Нанда Убайдулаевна!

Администрация Архангельской области в связи с обращением ООО «Рамболь Стурвик» о ранжировании по значимости заявленных прединвестиционных проектов, планируемых к реализации на территории области, направляет запрашиваемый перечень в порядке, соответствующем уровню приоритетности их реализации с учетом установленных потенциальным инвестором критериев:

1. Ликвидация загрязнения нефтепродуктами земель водоохранной зоны реки Северная Двина бассейна Белого моря в районе населенного пункта Красное Приморского района Архангельской области;
2. Проектирование и строительство канализационных очистных сооружений в жилом районе Лесная речка г. Архангельска;
3. Проектирование и строительство водозабора с водоочистными сооружениями в поселке Поньга Онежского района Архангельской области;
4. Проектирование и строительство сетей канализации и очистных сооружений в г. Мезени Архангельской области;
5. Проектирование реконструкции системы очистки и обеззараживания сточных вод на канализационных очистных сооружениях г. Котлас.

Исполняющий обязанности заместителя главы администрации области по управлению природными ресурсами и экологии А.Ш. Давитиашвили

Коршунов Сергей Николаевич
28-85-08
Калетюк Татьяна Александровна
28-51-54

Annex 1

Translation

To: Naida Murtazalieva
OOO Ramboll Barents

From: Alexander Davitiashvili
Acting Vice-Head of the Arkhangelsk
Region Administration on Natural
Resources Management and Environment

Re: Potential investment project

Dear Mrs. Murtazalieva,

Pursuant to Ramboll Barents request regarding ranking of the suggested pre-investment projects planned for implementation in the territory of the Arkhangelsk region, Arkhangelsk Region Administration hereby sends the requested list according to priority level of implementation subject to the criteria specified by a potential investor:

Land remediation from oil products in water protection area of the Northern Dvina River of the White Sea basin near settlement Krasnoe of Primorsky district of the Arkhangelsk region.

Design and construction of wastewater treatment plants in Lesnaya Rechka district of Arkhangelsk.

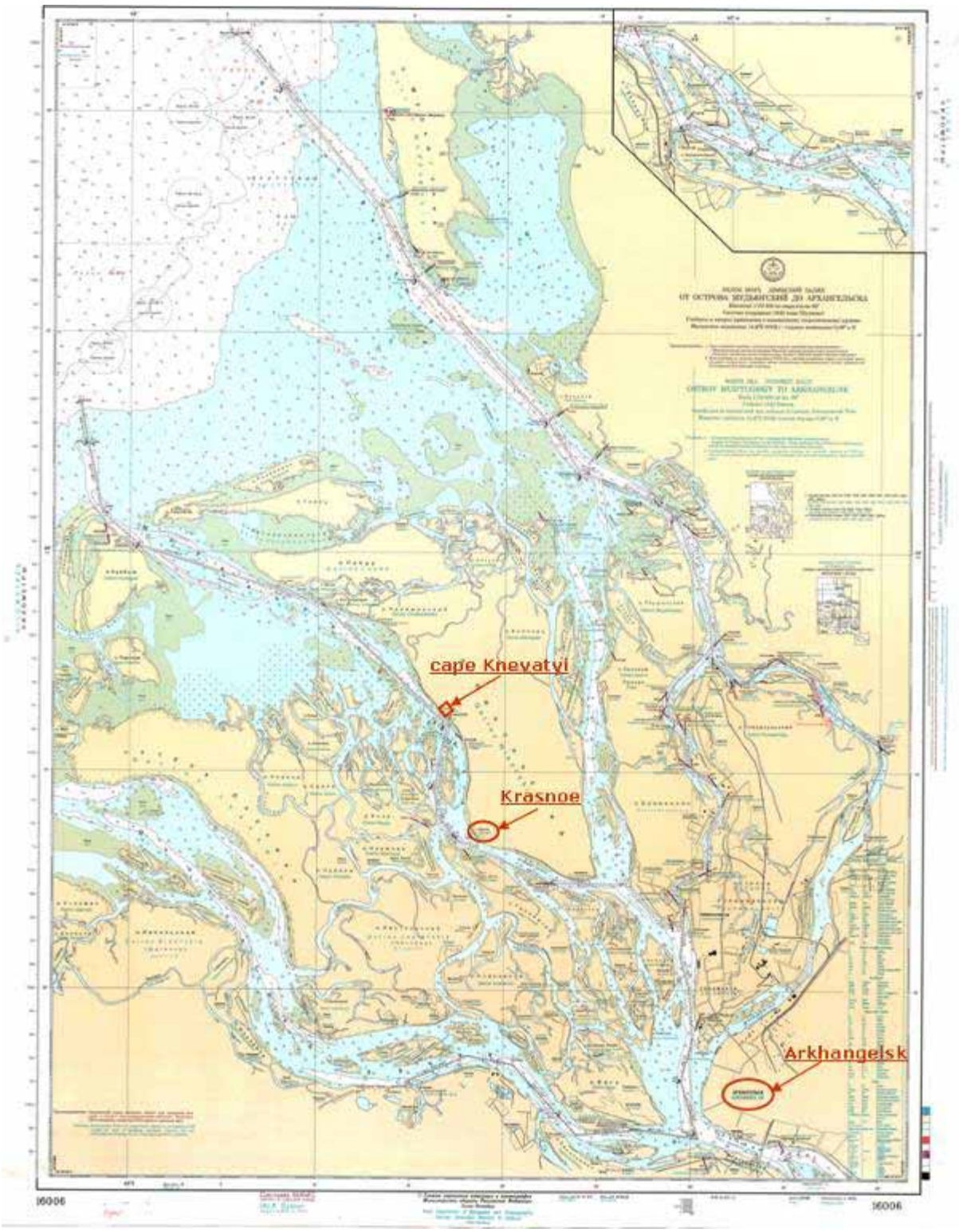
Design and construction of water intake with water treatment facilities in settlement Ponga of the Onega District of the Arkhangelsk region.

Design and construction of sewage system and wastewater treatment plants in Mezen city of the Arkhangelsk region.

Design of reconstruction of treatment and disinfection system of waste water at wastewater treatment plants in Kotlas city of the Arkhangelsk region.

Alexander Davitiashvili
Acting Deputy Head of the Arkhangelsk
Region Administration on Natural
Resources and Environment Management

Annex 2: Map of Dvinskoy Bay of the White Sea

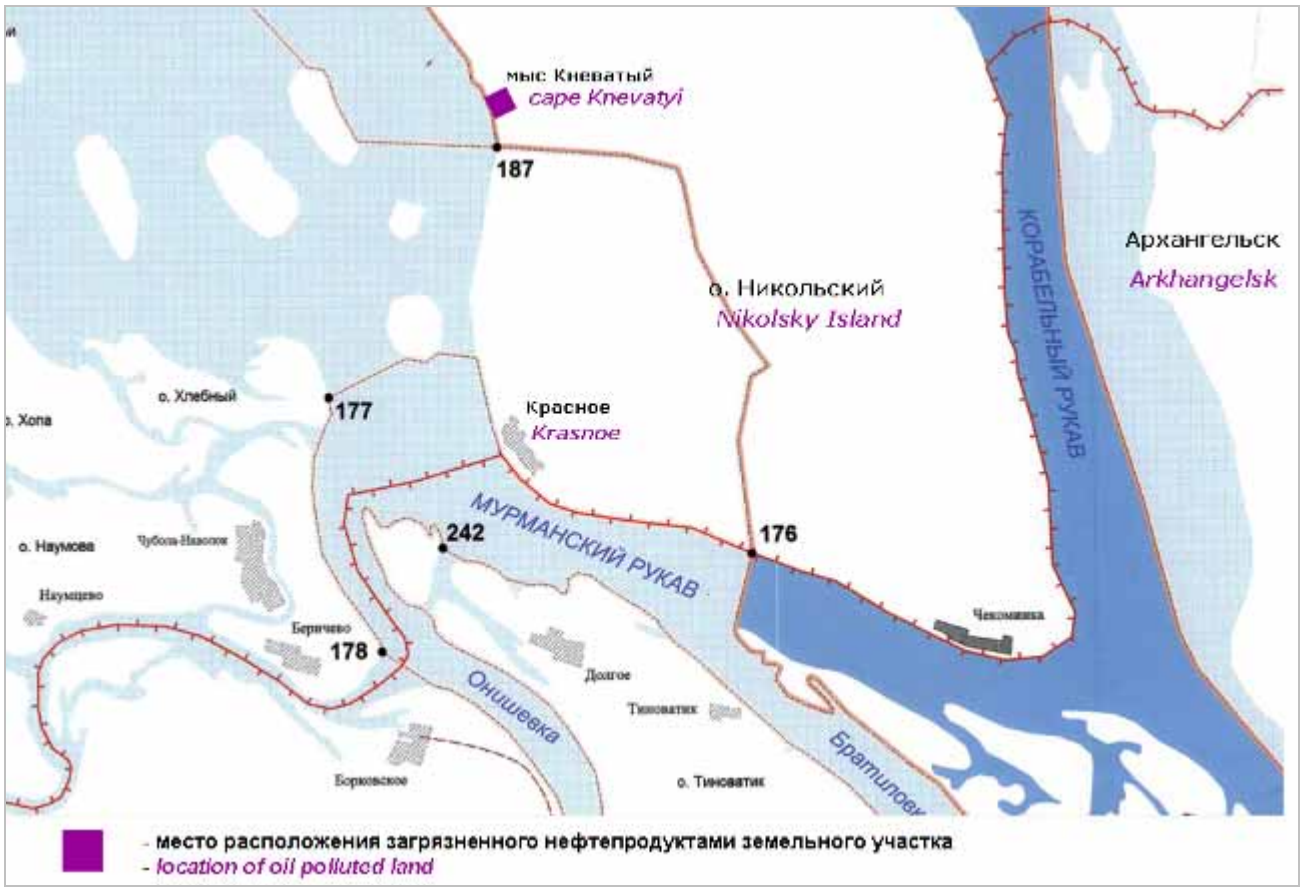


Annex 3: Economic Situation in the Municipal Entity in 2008

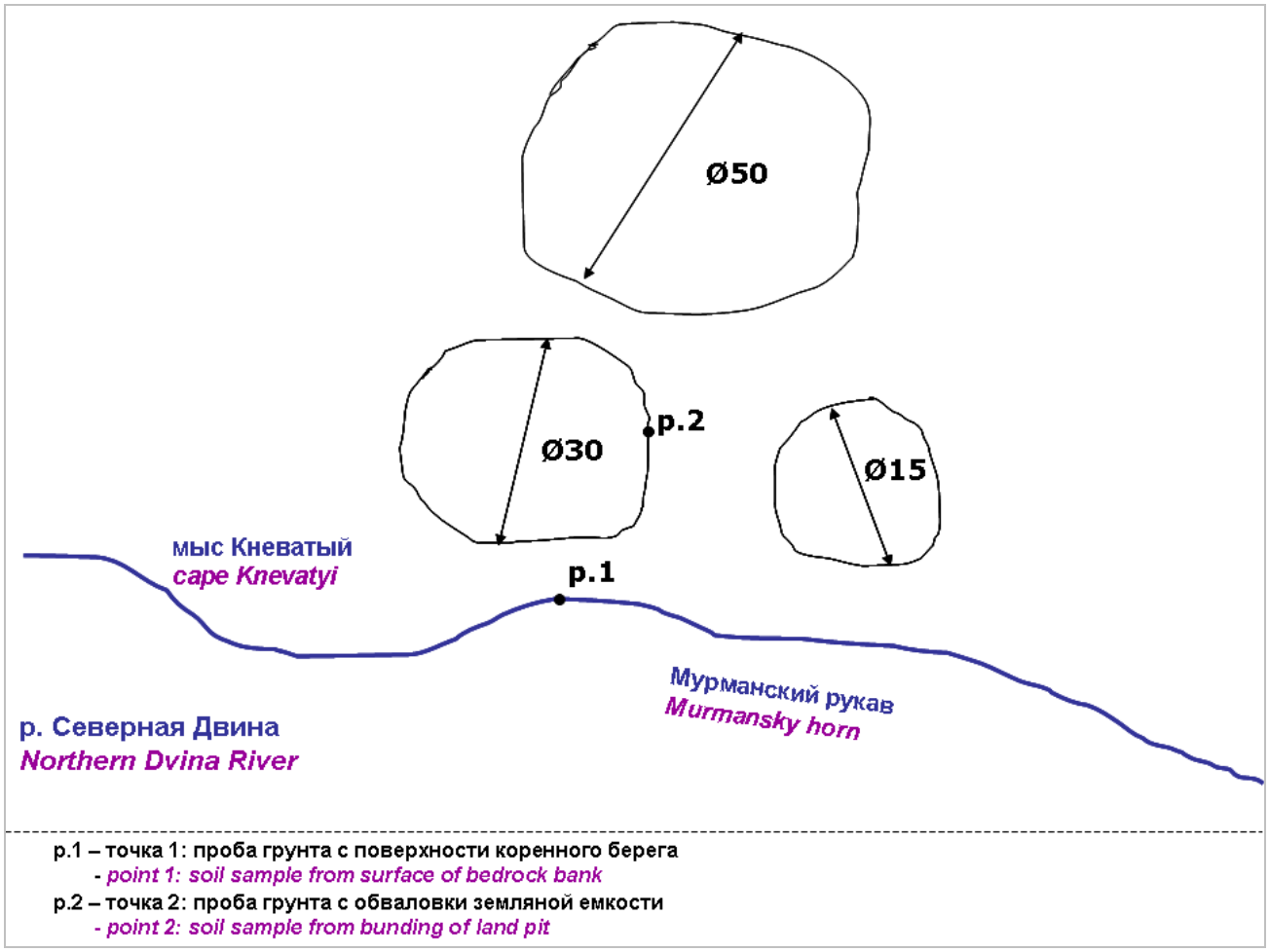
Parametres	2008	In % compared to 2007
Amount of own production shipped goods, works implemented and services rendered by own means according to type of activities by large and small enterprises*, thousand rubles		
mining	-	-
manufacturing production	166412	71,2
generation and distribution of electric power, gas, water	172055	by 1.5 time
Amount of agricultural production within farms of all categories, million rubles	920,9	89,6
Production of agricultural organizations:		
butcher stock and bird (live weight basis), tons	3788	65,7
milk (tons)	3819	86,5
egg, thousand pcs	28180	87
Shipment of products within agricultural organisations, tons		
butcher stock and bird (live weight basis), tons	3783	65,7
milk (tons)	3390	83,3
egg, thousand pcs	29613	91,1
Investments into fixed assets according to large and medium-sized organisations, million rubles	3398,4	by 1.5 times
Freight turnover, thousand tons/km	53370,4	by 1.6 times
Passenger turnover of public buses, thousand passenger/km	32610,2	87,8
Retail sales turnover, thousand rubles		
of all market outlets	5194083	121,9
of large enterprises and medium-sized business entities	4409806	123,6
Public catering turnover, thousand rubles	79010	104,9
Amount of paid services to the population of large enterprises and medium entrepreneurs, thousand rubles	251424	**
Commissioning of apartment buildings at the expenses of all funding sources *, thousand square meters of total area	14810	by 2.4 times
Average monthly gross payroll of large enterprises and medium-sized business entities ** (excluding municipal entity Rural Settlement Solovetskoe), rubles	15221,2	129,9
Average monthly gross payroll of large enterprises and medium-sized business entities *** (including municipal entity Rural Settlement Solovetskoe), rubles	16791,4	132,5
Consumer price index in the Arkhangelsk region	x	114,4
Balanced finance result of large enterprises and medium-sized business entities***, thousand rubles	2438	X

*in current prices;
** estimation of the parameter is not envisaged,
***data according to January-November 2008

Annex 4: Map of locations of the oil polluted plot



Annex 5: Scheme of ground plot location and points of soil sampling



р.1 – точка 1: проба грунта с поверхности коренного берега
- *point 1: soil sample from surface of bedrock bank*

р.2 – точка 2: проба грунта с обваловки земляной емкости
- *point 2: soil sample from bunding of land pit*

Annex 6: Site inspection of the project team.

Cape Knevatyi near the settlement of Krasnoe, 8th of June 2009

Photo 1. Settlement Krasnoe

Photo 2. Coastline side slope – pollution deepness

Photo 3. Place for location of a pipeline to discharge oily waste

Photo 4. Location of 3 ground pits

Photo 5. Ground pit, diameter 15m

Photo 6. Ground pit, diameter 30m

Photo 7. Metal drums in the pit with diameter of 30m

Photo 8. Condition of soil over the polluted area

Photo 9. Condition of bunding area of ground pits

Photo 10. Self-induced channel

Photo 11. Wash-out of oil products by ground waters in the Northern Dvina

Photo 12. Coastline side slope, contamination with oil products

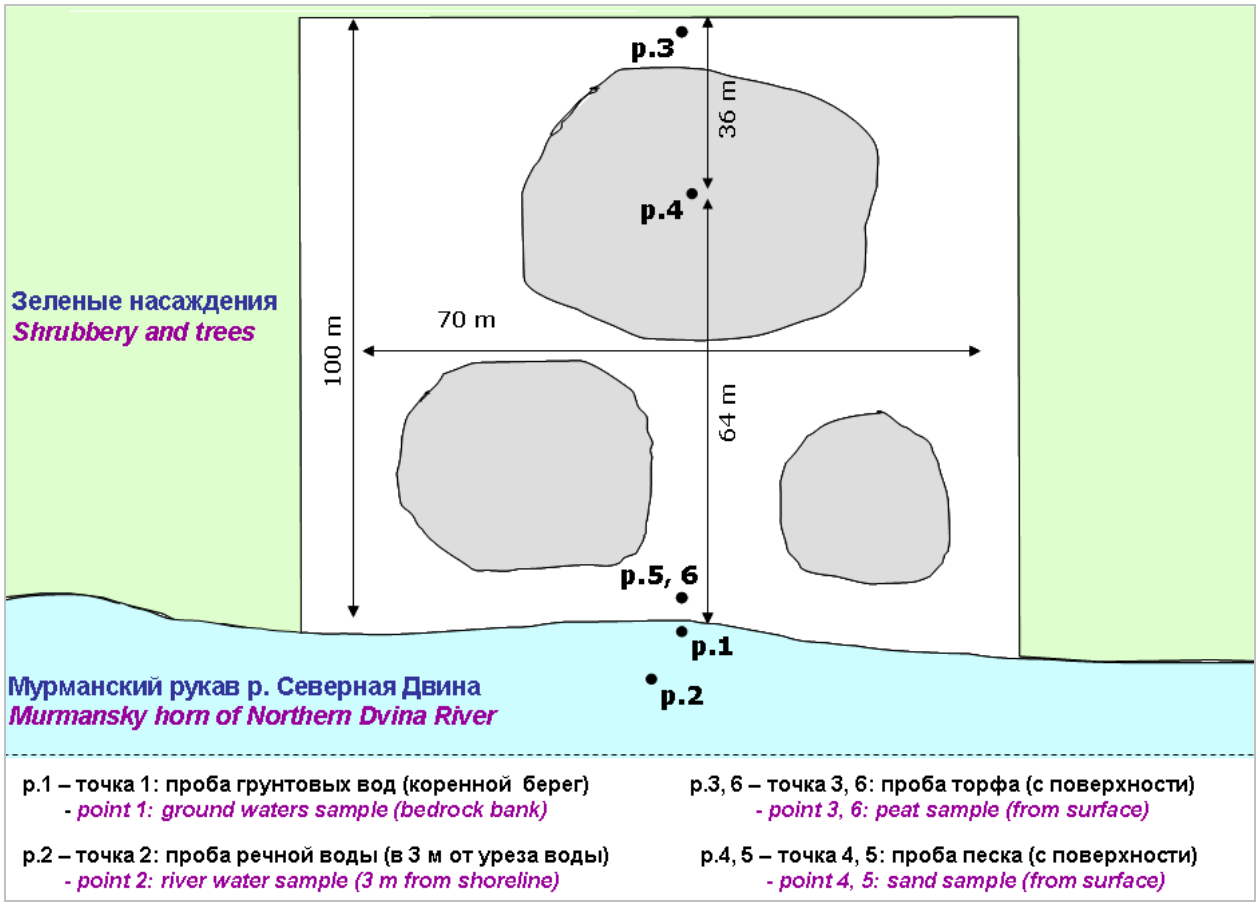
Annex 6

Photo13. State of environment on the territory of the oil polluted plot

Photo 14. Meeting with the of Municipal Unit of Primorsky District

Annex 7: Map of sample points

Taken by the Environmental Committee of the Arkhangelsk Region in July 2009.



Measurement results of pollutants*

Sample point	Unit of measure	Concentration	Maximum allowable content
p.1	mg/dm^3	0.76 ± 0.21	0.05
p.2	mg/dm^3	0.45 ± 0.13	0.05
p.3	mg/kg	243 ± 61	1 000
p.4	mg/kg	11 761 ± 2 940	1 000
p.5	mg/kg	9 429 ± 2 357	1 000
p.6	mg/kg	2 193 ± 548	1 000

* Assignable component – oil products

Annex 8: Letter of Arkhangelsk Region Government on financial support of IP

ПРАВИТЕЛЬСТВО
АРХАНГЕЛЬСКОЙ ОБЛАСТИ

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07.04.2010 № 06-412/4

На № 70 от 25.03.2010

ООО «Рамболь Баренц»

В.А. Блинову

Портовый проезд, д. 21, г. Мурманск, 183038

Уважаемый Владимир Александрович!

Правительство Архангельской области поддерживает реализацию инвестиционного проекта «Ликвидация загрязнения нефтепродуктами земель водоохранной зоны реки Северная Двина бассейна Белого моря в районе н.п. Красное Приморского района» и готово рассмотреть вопрос о включении настоящего мероприятия в целевую программу «Охрана окружающей среды и обеспечение экологической безопасности Архангельской области на 2009-2011 годы» при условии привлечения дополнительных финансовых средств международных финансовых учреждений в размере не менее 80 %.

**Заместитель Губернатора
Архангельской области
по управлению природными
ресурсами, агропромышленному
комплексу и экологии** **В.В. Шишов**

Калетник Татьяна Александровна
28-55-48

Annex 9: Letter of Primorsky District Administration on support of IP

РОССИЙСКАЯ ФЕДЕРАЦИЯ

АДМИНИСТРАЦИЯ
МУНИЦИПАЛЬНОГО ОБРАЗОВАНИЯ
"ПРИМОРСКИЙ
МУНИЦИПАЛЬНЫЙ РАЙОН"

163002 г. Архангельск,
пр. Ломоносова, 30,
тел./факс: 68-20-19
primadm@atnet.ru
http://WWW.primadm.ru

от 21 апреля 2010 № _____

на № 75 от25 марта 2010г

ООО «Рамболь Баренц»

Блинову В.А.

Администрация муниципального образования «Приморский муниципальный район» по вопросу софинансирования инвестиционного проекта «Ликвидация загрязнения нефтепродуктами земель водоохраной зоны реки Северная Двина бассейна Белого моря в районе н.п. Красное Приморского района Архангельской области» сообщает следующее, данные земельные участки, подвергнутые загрязнению, относятся к землям природоохранного назначения и не являются муниципальной собственностью, п.7 статьи 79 Бюджетного Кодекса РФ определено, что направление бюджетных инвестиций в объекты, которые не относятся к муниципальной собственности, не допускается.

В тоже время, администрация муниципального образования «Приморский муниципальный район» весьма заинтересована в продвижении и реализации данного проекта на территории Приморского района и готова далее сотрудничать в организационных мероприятиях.

С уважением,
Зам.главы местной администрации Л.В.Панова