

Project Proposal

Development of technology of clean up of the area of decommissioned sites of the Russian Federation Ministry of Defense in the Arctic by the example of Alexandra Island of Franz Josef Land Archipelago from hazardous waste.

1. Project name. Development of technology of clean up of the area of decommissioned sites of the Russian Federation Ministry of Defense in the Arctic by the example of Alexandra Island of Franz Josef Land Archipelago from hazardous waste.

2. Project Category. Pilot Project.

3. Project Justification. During the implementation of the demonstration project "Environmental Remediation of the Decommissioned Military Base on Franz Josef Land Archipelago" the data was obtained on a high level of pollution with industrial waste of various kinds of the area of decommissioned sites. A special concern is given to the pollution of the area with chlororganic compounds (polychlorinated biphenyls) and heavy metals. The vigorous activity on the archipelago stopped 18 years ago, when military units were evacuated from Alexandra and Graham Bell Island in 1992, but a decision was made to abandon equipment and industrial waste at the area of the sites due to the high cost of their disposal and transportation. Taking into account the poor nature of soil (sand, sand loam and rubble-loam) and a large amount of precipitation that occurs during the year and melts during one or one and half months, it can be supposed that most of pollutant must have been washed down the Barents Sea for past time.

Nevertheless mass collection of samples conducted in 2007 showed the presence of pollutants in hazardous and extra-hazardous concentrations and the pollutants have the form of spots. It most probably is a sign of the presence of a permanent pollution source. For heavy metals, such sources can be technological equipment or its parts, spent process liquids and oils; for chlororganic pollutants – condensers and transformers of airfield equipment and air defense stations.

4. Scope of Work. Within the framework of the project the following scope of work is proposed:

Phase 1. Based on the data obtained in 2007, make identification and geodetic connection and determine the number of objects (drums, tanks, technological and electric equipment) that can be sources of pollution of the area with heavy metals and chlororganic compounds.

Phase 2. Based on the data obtained, offer state-of-the-art technology for removal or conservation of the objects, purchase necessary equipment to apply this technology in field conditions taking into account climate specificity of the area and logistics requirements.

Phase 3. Perform experimental work to remove or conserve the sources of the most hazardous pollutants or their parts taking into account the outcomes of Phase 1.

Phase 1 work will include:

- training of project participants to handle hazardous waste and obtaining of necessary certificates;

- identification of pollution sources with the use of the 2007-2008 demonstration project "Environmental Remediation of the Decommissioned Military Base on Franz Josef Land Archipelago" results;

- identification of technological equipment or its parts that are potential pollution sources;

- sampling of process liquids and their express analysis to identify the presence of hazardous concentrations of pollutants;

- identification of the presence of condensers and transformers in radar equipment that contain toxic dielectric liquids;

- geodetic connection and determination of the number of objects with the use of the global positioning system and aerial survey;

- cameral treatment and 1:1000 scale map development and plotting of the position of hazardous and other infrastructure facilities.

Phase 2 work will include:

- selection of innovative technologies to remove spent process liquids and oils containing extra-hazardous substances;

- development of the technological project for mass disposal of tanks containing extra-hazardous substances, safe removal of contents, their treatment and transportation to drop-off, storage and disposal sites;

- development of the technological project for handling waste, technological equipment and its parts containing heavy metals;

- development of the technological project and purchase of the necessary technological equipment to conserve the objects containing toxic dielectric liquids;

- development of the work program for the project Phase 3.

According to the work program the following work will be performed during Phase 3:

- removal of process liquids and oils containing extra-hazardous substances;

- disposal of tanks containing such liquids including their cleaning from liquid residuals, compaction, storage, embarkation and transportation;

- conservation of equipment containing toxic dielectric liquids;

- conservation of waste containing heavy metals;

- sampling at the work area in order to identify the presence of pollutants in soil and water to perform further monitoring of the change in concentration with time.

The work will be agreed with the appropriate services of the Russian Federation Ministry of Defense.

5. Expected Outcome

1. Development of technologies to remove spent process liquids and oils containing extra-hazardous substances – up to 500 tanks.

2. Clean up of a part of Alexandra Island from the constant sources of pollution with heavy metals and chlorine-organic compounds.

3. Conservation of electric equipment containing toxic dielectric liquids.

4. Gaining practical experience in applying technologies for clean up of past environmental damage for further replication at other decommissioned sites of the Russian Federation Ministry of Defense.

5. Development of an exploration task and detailed design for complete clean up of the of the area of decommissioned sites of the Russian Federation Ministry of Defense on Alexandra Island of Franz Josef Land Archipelago (according to Construction Norms and Regulations SNiP 11-01-95, SNiP 11-02-96 and other effective regulatory documents) on optional basis.

6. Degree of Preparedness of the Project for Implementation. Extensive experience in the organization and conduction of such works in Arctic conditions was obtained during the implementation of the demonstration project "Environmental Remediation of the Decommissioned Military Base on Franz Josef Land Archipelago" in 2007-2008.

A part of equipment purchased in 2007 to implement the above demonstration project that will be used during the implementation of this pilot project, is stored at the frontier post Nagurskaya.

The scheme of delivery and installation of equipment on Alexandra Island, transportation and disposal of scrap metal in Arkhangelsk has been preliminarily agreed upon.

The conditions of the project implementation have been preliminarily agreed with the appropriate services of the Russian Federation Ministry of Defense.

7. Interested Organizations. Arkhangelsk Region Administration, Ministry of Natural Resources and Environment of the Russian Federation, Rostekhnadzor, Rosprirodnadzor, Northern Administration of the Federal Service for Hydrometeorology and Environmental Monitoring, Rosprirodnadzor Administration for Arkhangelsk Region, Environmental Security Department of the RF Armed Forces. Frontier Service of the RF FSS. State Nature Reserve "Franz Josef Land", Roshydromet's State Oceanographic Institute, Roshydromet's SPA "Typhoon", Arctic Council (AMAP/ACAP), Council of the Barents Euro-Arctic Region, UNEP, US Environmental Protection Agency

8. Possibility of Replication. Technological solutions developed can be widely used for cleaning up contaminated Arctic areas and removing past environmental damage, first at the former Russian Federation Ministry of Defense sites due to their typical nature and widespread occurrence of this kind of pollution.

9. Project Implementation Period. July 2009 - September 2010.

10 Amounts and Sources of Funding. Total project cost 1350 thousand USD. Including - at the expense of UNEP/GEF Project "Russian Federation: Support to the National Program of Action for the Protection of the Arctic Marine Environment" funds – 500 thousand USD (of which - 340 thousand USD - GEF funds; 160 thousand USD - US Environmental Protection Agency funds); 850 thousand USD - co-funding from other sources.