Agenda Item: CEP 8b
Presented by: Korea (ROK)
Original: English
Submitted: 17/04/2013

Mitigation measures of environmental impacts caused by Jang Bogo construction during 2012/13 season

Mitigation measures of environmental impacts caused by Jang Bogo construction during 2012/2013 season

1. Introduction

The Republic of Korea circulated draft Comprehensive Environmental Evaluation (CEE) prepared by Korea Polar Research Institute (KOPRI) and presented to the CEP at ATCM XXXIV in Buenos Aires, 2011. The CEP XIV had concluded that the draft CEE met the requirements of the Article 3 Annex 1 to the Protocol on Environmental Protection to Antarctic Treaty and recommended it to ATCM for endorsement. Final CEE was prepared incorporating all the valuable suggestions received from the Parties and submitted to the ATCM XXXV and CEP XV (IP-23).

In order to reduce the environmental impacts caused by construction activity, KOPRI implemented proposed mitigation measures suggested in the final CEE (http://eng.kopri.re.kr/home/contents/images/contents/e_5310000/Final_CEE_Jang_Bogo_ROK.pdf).

2. Before construction

2.1 Education and training

Before departure, all construction members participated in environmental education programmed by KOPRI. The education includes introduction of natural environment in Terra Nova Bay, measures for the reduction in risk of transfer of non-native species and oil spill prevention and contingency plan.

Figure 1: Environmental education for all construction members in Korea and exercise at the site for contingency

2.2 Prevent introduction of non-native species

Non-native species (NNS) may be introduced through construction equipment or other materials associated with personnel imports to the Antarctic. Non-native soil imports may also transfer NNS such as seeds and propagule. In order to prevent the introduction of NNS possibly transferred by personnel, equipment or supplies, NNS Manual annexed to the Resolution 6-ATCM XXXIV was followed. Items such as riprap for foundation and the tracks and wheels of vehicles cleaned before loading. All packing materials such as timber, and containers were thoroughly sanitized and fumigated before using.

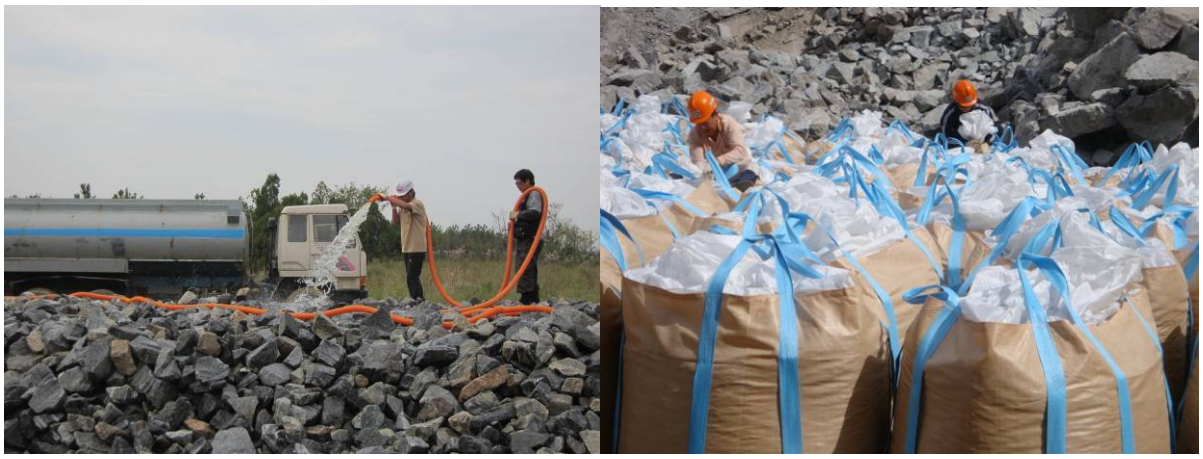

Figure 2: Cleaning and packing the riprap for pier foundation

Figure 3: Cleaning a tracked vehicle and sanitizing supplies before packing and shipping.

Figure 4: Sanitizing container and fumigating timber before packing of supplies

2.3 Effort to reduce waste in the Antarctic

The modular construction helps to reduce substantial quantities of construction waste. In order to further reduce waste in the Antarctic, packing materials were removed from the supplies before loading as far as possible.

Figure 5: Modules for the main building and precast concrete foundations waiting for shipment

3. During construction in 2012/13

3.1 Mitigating anthropogenic disturbance on fauna

The colony of south polar skua located in the eastern hill of the Gondwana Station was not directly disturbed due to the construction activity. To avoid disturbance to the colony, unnecessary visiting by either construction workers or other personnel was strictly controlled and restricted. Low altitude flying of helicopters over the colony was also strictly prohibited. Two ornithologists monitored the colony for some period to observe impact.

Figure 6: A signpost and barrier notifying restricted area to conserve south polar skua colony

3.2 Waste management

Waste produced during the construction period was managed according to ‘Jang Bogo Station Waste Management Manual’. Construction and domestic wastes were collected separately for recycling and reuse if possible. Waste storage was carefully cared in order to prevent wind dispersal and scavenging by skua. Ten 20ft and three 40ft containers with wastes including reusable materials and five 20 ton liquid tanks filled with oil contaminated water were removed from the site by the cargo ship. IC-SBR system was installed and operated for wastewater treatment during the construction period.

Figure 7: IC-SBR waste water treatment system and waste separation bins

4. Responses to fuel spill accident

The fuel supply tank installed at the construction camp was connected to a supply hose with two valves. A generator engineer turned off the only second valve and forgot turning off the first valve after refuelling a service tank for generator. Then he left the hose hanging on the service tank and the hose dropped down due to the strong wind. Dropping hose hit the second valve which leads to fuel spill about 1,100 ℓ on 20 February 2013. Spilled fuel flowed over inclined snow ground then flowed a few meters into an artificial pond.

Immediately after detecting fuel spill, all necessary measure was taken properly according to 'Jang Bogo Station Fuel Spill Contingency Plan'. 200 ℓ of fuel was recovered and absorbing mats and five 20 ton tank filled with contaminated water were taken out from the site. About 60 tons of contaminated soil and snow kept in 20ft containers were left at the site. The containers will be transferred to Korea after the second phase of construction in 2014.

The valve of fuel supplying hose will be changed with a rotary valve which is secure from outside shock. The training course related with oil spill prevention and emergency response will be strengthened. The damaged area will be monitored by KOPRI's environmental monitoring team every year. The oil spill report was uploaded on AINMR at COMNAP website according to Annex of Resolution 6 (ATCM XXII).

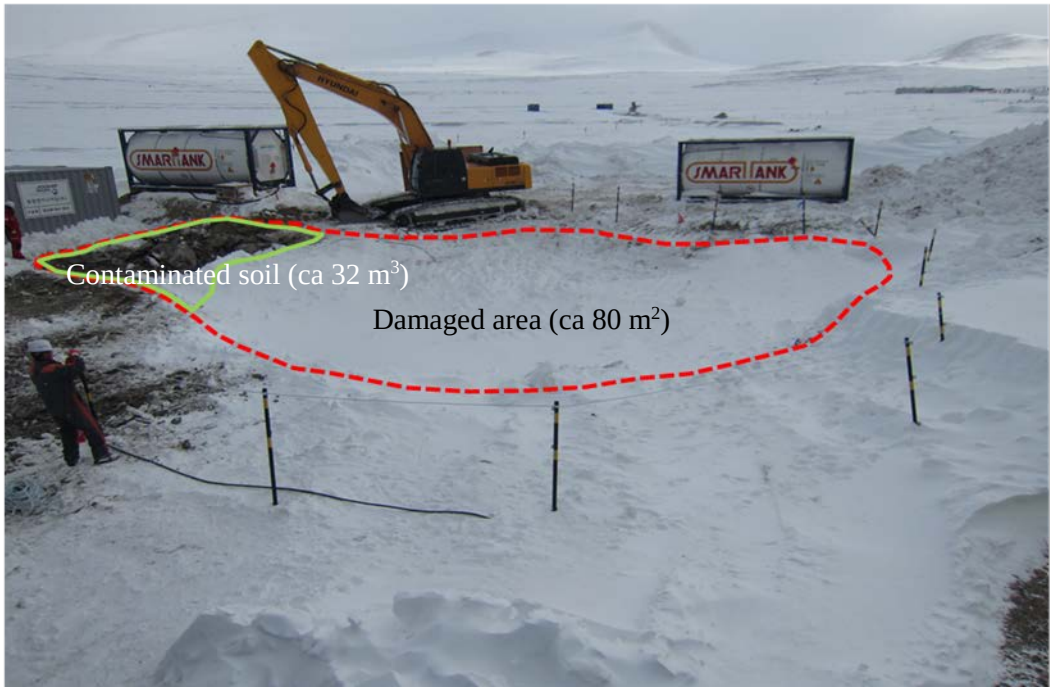

Figure 9: Damaged area with fence and about 32 m^3 of contaminated soil was removed.