



Tuesday, May 11, 2010

Stream A – Managing Environmental Projects

10:30 am – 11:00 am

The Port Hope Area Initiative: Application of Project Management Tools to Contaminated-Site Remediation Projects

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The sound management of contaminated-site remediation projects is key to providing value for money and demonstrating stewardship in program delivery. A comprehensive approach to project management will enhance the likelihood of realizing project objectives.

The Port Hope Area Initiative (PHAI) is a community-based program directed at the development and implementation of a safe, local, long-term management solution for historical low-level radioactive waste (LLRW) in the Port Hope, Ontario area. The PHAI involves the construction of two new waste management facilities and remediation of approximately 20 major sites and some 200 small-scale sites, comprising an estimated 1.7 million cubic metres of contaminated soil.

The strategic implementation of project management tools and processes – such as project charters, work breakdown structures and Gantt charts – is an essential part of managing the scope, risks, costs and schedules associated with this complex remediation project. This paper has two key purposes:

- (1) to share experience gained in applying project management tools to the PHAI project; and,
- (2) to promote the successful application of project management tools and processes to other federal contaminated-site remediation projects.

11:00 am – 11:30 am

Building a Bridge for the Community: The Cape Christian Remediation Project, Nunavut

Harry Flaherty¹ and Philippe Simon²¹Qikiqtaaluk Logistics Inc.²Qikiqtaaluk Environmental Inc.

Cape Christian was built in the Arctic by the U.S. Coast Guard, and operated from 1954 to 1975 as a Long Range Aid to Navigation (LORAN) site during the Cold War. This federal contaminated site was tendered for remediation in April 2007, and the work was awarded to Qikiqtaaluk Logistics (QL). The scope of this article is not to address the actual remediation work, but to discuss how QL turned a logistical challenge into a sustainable development opportunity for the nearby community, and the local environment, for years to come.

Cape Christian is located about 16 kilometres from the community of Clyde River, on the eastern coast of Baffin Island in Nunavut. Due to deteriorating conditions, routine access to the site was limited. Qikiqtaaluk Logistics decided to address this challenge by upgrading the former access road and constructing a bridge using its own funds after the community of Clyde River expressed a long-held desire for permanent, direct access to Baffin Bay. In addition, the creation and enhancement of habitats for Arctic char in the vicinity of the road quickly became an integral part of the project.

Once completed, the upgraded road and new bridge will be able to support the remediation activities scheduled for 2009-2010. Perhaps more importantly, however, the community of Clyde River will finally have its long-awaited permanent access to Baffin Bay, and the damage caused to fish habitats by uncontrolled traffic will be mitigated. These are additional sustainability considerations that Qikiqtaaluk Logistics was able to incorporate into the Cape Christian Remediation project, without any additional cost to the Crown.



TUESDAY, MAY 11, 2010

11:30 am – 12:00 pm

Remediation of Giant Mine: A Progressive Planning Approach

Martin Gavin,¹ P.Eng, and Sven Riemer,² PMP¹Indian and Northern Affairs Canada²Stratos Inc.

In 1999, mine operations at Giant Mine in Canada's Northwest Territories ceased, following 56 years of gold mining that had established the mine as the most prolific producer of gold in the Territories. When the former owner, Royal Oak Mines, was forced into receivership in 1999, Indian and Northern Affairs Canada (INAC) became actively involved in the care and maintenance of the mine, in order to protect human health and safety as well as the environment.

The roasting process used to extract some seven million ounces of gold from refractory Giant Mine ore yielded almost 237,000 tonnes of bi-product arsenic trioxide dust that was collected in a bag house. This large volume of a highly soluble and toxic form of arsenic is currently sealed in 14 underground mine workings/chambers.

On the surface, numerous potential hazards exist as well, including four separate tailings impoundments, a sludge pond, a settling pond and associated dams.

Most of the onsite buildings are in an advanced state of disrepair, and will eventually be demolished. Risks associated with a group of buildings known as the "roaster complex" are of particular concern, because these buildings are heavily contaminated with arsenic trioxide dust and loose fibrous asbestos. Around the mine site, arsenic and hydrocarbon-contaminated soils present additional risks, as do numerous pits and underground openings throughout the site.

With the assistance of technical advisors, INAC completed a remediation plan for the site. During application for a water licence, the remediation plan was referred to the MacKenzie Valley Environmental Impact Review Board (MVEIRB) for an Environmental Assessment (EA). As the EA progresses, implementation planning for the project continues, as does care and maintenance of the site.

Federal government guidance for the remediation of contaminated sites exists, but does not address many of the questions raised by a project on the scale of Giant Mine. This paper will briefly describe the existing federal contaminated sites management framework, then demonstrate the progressive approach to planning during the life cycle of a major remediation project that is contiguous from inception through closeout. The focus will be on the planning challenges involved in addressing procurement, legal and delivery issues, and the strategies developed to accommodate these. The presentation will also speak to the specific

and dynamic stages of major remediation projects such as pre-project planning, concept development, regulatory approvals, numerous implementation stages, closeout(s) and long-term monitoring and maintenance. Development of project delivery structures to accommodate each stage will be discussed.

1:30 pm – 2:00 pm

Operational Management and Site Closure of RCMP Firearms Range: Coquitlam Watershed

Holly D. Herald

Royal Canadian Mounted Police

The Royal Canadian Mounted Police (RCMP) sub-leased a 9.0-hectare parcel of land from Metro Vancouver to operate an outdoor firearms training facility (Coquitlam Range) from 1992 to 2006. The site was located within the Coquitlam Watershed, adjacent to, and upstream from, the confluence of Or Creek and the Coquitlam River. The RCMP devised and implemented an approach for ongoing site maintenance throughout operation of the Coquitlam Range, in order to manage the accumulation of spent munitions in backstop berms behind targets, and to reduce sedimentation and erosion.

In 2004, the RCMP retained an environmental consultant to develop a site closure strategy for the Coquitlam Range, which ceased operation in 2006. Site closure involved a series of environmental site investigations, and habitat and arbourist assessments. A combined physical remediation and risk assessment strategy was determined to be the most appropriate approach for addressing metals contamination in site soils and sediments associated with RCMP activities.

Physical remediation works were completed in the fall of 2007, followed by a human health and ecological risk assessment. Approximately 2,000 tonnes of soil were removed, and residual contamination was assessed for health and ecological risk. It was found that residual contamination did not pose an unacceptable risk to human or environmental health, and no further work was required. The site was successfully restored to Parkland status in 2008.

The RCMP developed alternate means for delivering required firearms training, and is currently operating a partially-enclosed and contained outdoor range with a rubberized bullet trap system that allows for capture and recycling of spent munitions. The RCMP is also planning a modern indoor firearms range facility, which will further alleviate potential environmental risks.

All presentations will be delivered in English, unless noted otherwise.



TUESDAY, MAY 11, 2010

2:00 pm – 2:30 pm

Field Sampling in Support of Environmental Risk Assessment at Abandoned Mines in the Northwest Territories

Colin R. Macdonald, Ph.D.
Northern Environmental Consulting

Ecological and human health risk assessments play a vital role in evaluating risk from exposure to metals and radionuclides at abandoned mines in northern Canada. A key component of site assessments in northern Canada is the inclusion of food items present in the traditional Aboriginal diet, such as plants, fish, waterfowl and large mammals (e.g., moose and caribou).

A program of soil and plant collection has been conducted during Phase 2 and 3 assessments at northern mine sites (e.g., Port Radium, Colomac, Silver Bear, etc.) to provide site-specific data for terrestrial pathways in support of the risk assessments. Surface soil (<10 cm) and plant terminal leaves and twigs are collected near waste rock, tailings and disturbed areas where contamination may accumulate during run-off events and dust-fall. Soils and major plant species, such as birch and willow, may reflect local contamination from waste rock and tailings. Uranium, copper, tungsten and bismuth may be found in concentrations up to 80 times background levels in soils near, but separated from, waste rock piles and tailings. Local vegetation also reflects these elevated concentrations, with some metals present at concentrations 40–60 times higher than background levels. It is predicted that the risk of biological impact on local wildlife populations from these elevated concentrations is low. This is largely because the affected area affected is small, relative to the foraging area of most wildlife, and few individuals within these populations are exposed to contaminants of concern.

These environmental sampling protocols are valuable tools in defining the extent of contamination, in identifying contaminants of concern at sites to be remediated, and in providing a basis for subsequent monitoring programs at the sites. Environmental sampling and monitoring also provides reassurance to local communities that the area affected is small and easily remediated.

2:30 pm – 3:00 pm

Performance-Based Fixed-Price Contracting – Supporting Innovation in Site Remediation: A Case Study

Tom Grimminck and Sean Salvatori
Dillon Consulting Limited

Performance-based contracts, as an alternative to traditional contracts based on time and material or unit rate, offer an option that draws on the collective knowledge of the contracting community to provide innovative and cost-effective remedial options. This paper explores the implementation and awarding of a performance-based contract for the remediation of a contaminant source area at a former manufacturing facility, which contained more than 5,000 litres of trichloroethene and its degradation products. In this case study, various elements of a performance-based contract are discussed, along with the solicitation of proposals and awarding of the contract. The paper concludes that performance-based contracts offer an effective tool for site remediation without limiting options, while also maintaining competitive pricing and scheduling. Lastly, it is concluded that performance-based contracts can be effectively applied to both public-sector and private-sector sites.