EXECUTIVE SUMMARY

Cleanup Action Plan for the Former Tac-Sea Motel
17024 International Boulevard
SeaTac, Washington

This cleanup action plan (CAP) outlines proposed methods for cleanup of a property (site) at 17024 International Boulevard in SeaTac, Washington. AGI Technologies (AGI) performed this CAP on behalf of the property owner, Linda Lee, and the site lessee/developer Gateway Investment LLC (Gateway). This CAP was prepared as a part of a routine consent decree. A remedial investigation (RI) and feasibility study (FS) were prepared prior to preparation of the CAP. The RI investigated the nature, source, and extent of contamination. The FS evaluated remedial alternatives. The purpose of the CAP is to summarize the RI and FS, and identify and describe the selected alternative for site remediation.

SITE DESCRIPTION AND HISTORY

The site is located in the City of SeaTac Washington, northeast of the intersection of International Boulevard and S. 171st Street. The site address is currently identified as 17024 International Boulevard. In the past, even numbered addresses between 17014 and 17056 have been identified with the site. In addition, a former house located on a portion of the site (Lot 9) was addressed as 17041 29th Avenue South. The site vicinity is commercial, primarily service oriented to SeaTac International Airport which is west/southwest of the site. The majority of businesses in the area include hotels, service stations, and restaurants. An older residential development lies east of the site.

The site currently is developed with a pay parking lot that opened in December 1998. The parking lot replaced a 13,000-square-foot single story structure that had been most recently occupied by a motel (Tac-Sea Motel) and food mart. A Phase 1 Environmental Assessment (EA) conducted for the site determined that the motel building was constructed originally as a strip mall in 1953. Two dry cleaners and a printer successively occupied one of the units, apparently between 1953 and the early 1980s, after which the building was converted to a motel. The common dry cleaning solvent, tetrachloroethene (PCE) was identified as a potential contaminant of concern. During subsequent soil and groundwater investigations conducted as a part of the RI, PCE was identified in site soil and groundwater.

SITE CHARACTERIZATION

Subsurface sediments encountered during the RI consisted of approximately 35 to 60 feet of glacial till. The till is sandy in nature and typically contains fluvial deposits between 25 and 45 feet below ground surface (bgs). Advance Outwash sand underlies the till. Groundwater was encountered between approximately 56 and 80 feet bgs and exists under water table conditions. The groundwater flow direction is west to southwesterly. Based on particle size analysis, the aquifer hydraulic conductivity is estimated to range from 4×10^{-2} to 6×10^{-2} centimeters per second. The horizontal groundwater gradient was estimated at 4.5 to 11.6 feet per mile. Linear horizontal groundwater velocity was estimated at 117 to 455 feet per year.

PCE was detected in site subsurface soils underneath and around the front of the former dry cleaners' unit. Detected concentrations range from 0.016 to 0.65 milligrams per kilogram. PCE concentrations

progressively decline after 25 feet bgs, but PCE was still detected at a depth of 65 feet bgs (0.013 mg/kg). Given the location of former concrete sewer lines and septic system with respect to contaminant concentrations, the apparent point of release was the septic sewer system that served the site.
PCE is present in groundwater at onsite and offsite well locations. Onsite, detected PCE concentrations range from 83 to 350 micrograms per liter (µg/L). Detected PCE concentrations in offsite wells south of the site range from 6 to 13 µg/L. Trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and chloroform were also detected in onsite wells, but at concentrations lower than cleanup levels. TCE and cis-1,2-DCE are likely degradation products of PCE.

1,1,1-Trichloroethane (1,1,1-TCA) was also detected in one soil sample and, during one sampling event, in one groundwater sample. 1,1,1-TCA was only detected in groundwater in the furthest upgradient well and in soil at an offsite well. Based on the locations and low concentrations detected, 1,1,1-TCA appears to be a minor contaminant in the general site area and is not related to historical onsite activities.

CLEANUP LEVELS

The Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 of the Washington Administrative Code (WAC) provides three approaches for determining cleanup standards: Methods A, B, and C. Method A industrial and Method C cleanup levels are not acceptable for this site because it is not characterized as industrial. Method A was used to establish cleanup levels at this site because the circumstances of site contamination fit the criteria for using this method. The site is relatively simple in that there is one primary contaminant of concern, PCE, for which a Method A cleanup level has been established.

Comparison of PCE concentrations in site soils to MTCA based cleanup levels shows that only the one sample that contained 0.65 mg/kg PCE exceeded the Method A cleanup level of 0.5 mg/kg. PCE exceeds the Method A cleanup level in onsite and offsite wells. The Method A cleanup level corresponds with federal drinking water standards. No drinking water wells likely to be impacted by off site migration of PCE from the site were identified. Therefore, this site does not present an immediate threat to human health and the environment.

REMEDIAL ALTERNATIVES AND PROPOSED ACTION

Various remedial technologies and process options were initially screened for potential implementation at this site. Several process options were eliminated during the initial screening based on engineering and scientific judgment. Some of the process options for soils that were eliminated during the initial screening included soil washing, landfill disposal, chemical oxidation, solidification/stabilization, and hydrolysis. Some of the process options for groundwater that were eliminated during initial screening included slurry walls, biocurtains, chemical oxidation, aerobic biological degradation, and UV oxidation. Process options not eliminated during the initial screening were further evaluated during a secondary screening. Secondary screening of soil remediation alternatives included: a no action alternative, grading/surface-water controls, capping, excavation, treatment of excavated soil by thermal desorption and aeration, and *in situ* soil treatment by soil-vapor extraction.. Excavation with subsequent thermal treatment of soils was removed from consideration because investigations conducted after building demolition concluded that even near source areas, soils contain low concentrations of contaminants of concern. Secondary screening of groundwater remediation alternatives included: groundwater monitoring, source control actions, groundwater extraction in conjunction with various treatment and disposal methods, *in situ* anaerobic biological degradation, and *in situ* physical removal by air sparging and vapor extraction.

No single remedial process option will address all contamination issues at this site. Typically, several process options are combined to provide a comprehensive cleanup program. Based on this, complementary process options that were not eliminated during the secondary screening were combined into three remedial alternatives as outlined below.

Alternative 1 - Institutional Controls

- Surface-Water Controls
- Capping
- Groundwater Monitoring

Alternative 2 – In Situ Chemical/Biological Groundwater Treatment

- Surface-Water Controls
- Capping
- Groundwater Monitoring
- Enhanced Biological Degradation of PCE in Groundwater

Alternative 3 – In Situ Physical Soil and Groundwater Treatment

- Surface-Water Controls
- Capping
- Groundwater Monitoring
- Soil Vapor Extraction
- Air Sparging

These three alternatives were subjected to a detailed analysis. All three alternatives provide protection from direct contact with soil or groundwater by incorporation of an asphalt cap for short-term and long-term development plans. Contaminated soil and groundwater that exceeds Method A cleanup levels are not actually remediated by the actions in Alternative 1. Comprehensive protection of human health and the environment is provided by Alternatives 2 and 3. The restoration time varies greatly among the alternatives. Because active cleanup is not performed under Alternative 1, cleanup will only occur as a result of natural processes and attenuation and would likely require more than 30 years. The time frame to complete cleanup for Alternative 2 will depend on numerous variables including the effectiveness of source control and amendment delivery, microbial lag time, and aquifer characteristics. We estimate onsite groundwater cleanup could be completed within 5 to 10 years by Alternative 2. Alternative 3 would require 5 to 7 years before cleanup levels are achieved onsite. All the alternatives would require at least 2 years of groundwater monitoring beyond completion of treatment activities.

Over the short term, Alternative 1 would have less direct impact than Alternatives 2 and 3 because fewer cleanup actions would be performed. However, the long-term effectiveness of Alternative 1 is poor because active cleanup would not be performed. Long-term effectiveness of Alternatives 2 and 3 generally are similar, although Alternative 3 will further reduce the potential for residual PCE in soils to continue to impact groundwater as compared to Alternative 2.

Alternatives 1 and 3 can be readily implemented with available equipment, materials, and contractors. Alternative 2 can be readily implemented, but would require bench-scale testing to develop the proper amendment formulation and delivery method. The cost of Alternative 1 is less than for Alternatives 2 or 3 because active remediation is not performed. Estimated costs for Alternatives 2 and 3 are similar.

Based on this analysis, Alternative 1 was eliminated because remediation will not occur within a reasonable time frame (i.e., greater than 30 years). Alternative 2 was eliminated based on uncertainties regarding effective implementation of an anaerobic *in situ* biodegradation process. Treatment studies would be required prior to full-scale implementation. Alternative 3 was selected as the recommended alternative. This alternative provides an effective long-term solution. Methods used in Alternative 3 are readily implemented and proven and could be implemented within a relatively short period.