REPORT OF THE POST-FINANCIAL CLOSE INDEPENDENT ENVIRONMENTAL CONSULTANT (IEC) BAKU-TBILISI-CEYHAN (BTC) PIPELINE PROJECT

THIRD SITE VISIT, OCTOBER 2004

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EXECUTIVE SUMMARY

This report presents the results of the third post-financial close field visit in Azerbaijan, Turkey and Georgia of the Independent Environmental Consultant (IEC), between October 4 – 16, 2004 to monitor compliance with BTC Project Environmental and Social (E&S) commitments. The IEC team conducted the visit as two teams; one team toured Turkey while the other visited Georgia and Azerbaijan.

During the visit, IEC had the opportunity to meet with the three BTC in-country organizations (Azerbaijan, Turkey, Georgia), BOTAŞ and the EPC Contractors, reviewing documentation and interviewing personnel in charge of implementing E&S commitments and monitoring construction activities. The IEC visited several construction sites including activities along the ROW and several Above Ground Installations (AGIs).

Organization and Staffing: The different E&S and H&S management organizations of BTC, BOTAŞ and Contractors are fully established, consistent with the fact that the level of pipeline construction is also well advanced. In Azerbaijan and Georgia the limitations of the E&S and H&S contractor organizations present at the time of the June – July IEC mission are still present. To compensate for this situation, BTC has assumed a greater role in the management of field problems and progress has been made primarily because of BTC teams' initiatives.

In Turkey, IEC has observed an improvement in Environmental and Social (E&S) management involving BTC, BOTAŞ and the EPC contractors, with the exception of Lot A. All three parties appear to have generally improved their operational relationship and to work together to resolve environmental and community relations issues. Despite this overall improved working relationship, there are observations which raise some concerns: the lack of a BTC E&S Advisor in Lot C; apparent management conflicts and lack of coordination between Construction management and E&S management in Lot A; issues related to the formalized team integration in Lot B, where the new organization charts are characterized by multiple reporting lines, a mixing between client and contractor roles and responsibilities, and also some duplication of roles which may impact effectiveness and create uncertainty in reporting and implementation responsibilities..

Management of Change: The documentation and correspondence among the involved parties dealing with some E&S related changes during Project development was reviewed during the mission. In most of the cases the reviewed documentation to the MoC was found not sufficient. IEC recommends supporting the MOC process according to the ESAP principles and requirements in terms of E&S documentation in the decision process including adequate comparative assessments of the potential impacts related to changes. Agreement between the Lender Group and BTC on what constitutes a Class III and the communications and notifications associated with change should be sought in order to improve the functioning of the process. IEC considers that in cases where the Management of Change process represents a change to Project commitments defined in the ESAP or in the ESIA, the Project should consider that such changes could be assigned as Class III.

Third Party Concrete and Aggregate Suppliers: Third party sources of supplies, in particular aggregate and cement/concrete, are still not being consistently evaluated in terms of their compliance with ESAP requirements in the cases where the Project represents a significant percentage of their production. BTC has developed a draft methodology to identify a process to evaluate whether a specific facility should be considered under the "umbrella" of the ESAP. Specifically, the Project has identified a possible approach based on three criteria: (1) Project usage greater than 50%; (2) facility not in existence prior to the Project; and (3) facility not viable as a business post-Project use. These criteria in turn form the basis for defining whether or not the Project will assume some E&S responsibility for the facility, as follows:

- Meets 0-1 criteria: Does not fulfill project criteria and will not be subject to project attention

- Meets 2 criteria: Borderline in terms of fulfilling criteria, only subject to project attention if demonstrated significant E&S impact is occurring

- Meets 3 criteria: Fulfills criteria and will be subject to project attention.

The IEC concurs that the category where three criteria are met deserves Project intervention, but believes that the structure of the first two categories can allow some significant situations to go unattended.

A problem with this approach is that three types of situations are mixed that should be treated differently. The three situations include suppliers of concrete; borrow pits used as a source of construction aggregate; and third-party borrow pits used for trench backfill or for the disposal of excess spoil. Each of these categories have defined commitments in the ESAP. The three countries have slightly different commitments, but the ESAP is clear where the Project is required to have E&S and H&S interactions with third-party suppliers. These commitments have not been followed since the issue was first raised by IEC during the February – March first field monitoring mission.

Potable water: General improvements have been observed in the management of potable water since problems were first identified in the February – March IEC mission. Improvements have been made to camp water treatment plants and WHO standards are generally being achieved for potable water. Water testing procedures have also improved and the test data are being better managed.

An exception to these observations was noted in Azerbaijan. At the time of the visit, poor water management was observed at the SPJV PSA2 construction site. This prompted a more detailed review of drinking water quality throughout the SPJV organization in Azerbaijan and unsanitary conditions were also encountered at the most of the water distribution points at SPJV camps, offices and work places. It is expected that immediate attention will have been brought by BTC and SPJV to this situation and that the problems have been solved before the issuance of this report.

Most camp water supplies in Turkey are from well water, where sustainability studies have been completed. In Georgia and Azerbaijan, most camps have discontinued the use of water wells and rely on municipal sources. Where water wells are in use, such as the Tovuz Camp in Azerbaijan, sustainability studies have been completed. Only the Akhaltsikhe Camp in Georgia still needs to complete sustainability studies.

Waste Management: This issue was identified as one of the most important environmental challenge in Georgia and Azerbaijan at the time of the June – July mission. In each country, more domestic waste had been produced than the capacity of Project incinerators which also encountered some technical-operational problems. This resulted in the need for the Project to use non-compliant municipal dump sites.

In both countries, the Project has improved waste management. Waste segregation and procedures for waste labeling and tracking have made substantial improvement. The central waste storage areas now exhibit improved management and adequate pollution prevention systems. .In Azerbaijan, the ACG Project is planning the construction of a non-hazardous landfill that could be used by the BTC Project. In actuality, the BTC Project will probably be complete before this landfill is operational, but the BTC Project in Azerbaijan is making improvements to upgrade the incinerator to manage non-hazardous waste within Project commitments, although the incinerator operations are still not fully compliant.

In Georgia, efforts are also being made to upgrade the incinerator that has been operated on a limited basis and was still not fully compliant at the time of the visit. As compensation for non-compliant waste disposal, the Project is funding the production of a conditioning improvement plan which outlines the steps that can be taken to improve the Iagludja facility in the direction of EU compliance. It is recognized that the site is owned by the municipality and full EU compliance will not be achieved, but the facility can be placed on a pathway towards EU compliance. BTC is in discussion with the Ministry of Environment regarding the nature and extent of the assistance that is reasonable for BTC to provide in order to improve the landfill. Now that the Iagludja facility has been used and will likely be needed in the future, the production

of the conditioning improvement plan and the development of a forward plan in conjunction with the MoE is considered to be an important step to achieving an alternative solution for final disposal.

An EU-compliant hazardous waste landfill has been completed by a third party operator in Azerbaijan and is expected to be available for Project use in the near future. Meanwhile in Georgia, the BP Business Unit is planning construction of an EU-compliant hazardous waste landfill at Sagarejo and the ESIA for this facility is ready for submission and public consultation. BP will select the preferred third party contractor and fund the construction. The facility will be operated by a third party contractor. The overall process is considered by the IEC to be a positive development providing an important component of the waste management infrastructure needed in Georgia.

Solid waste management practices across all Contractor operations in Turkey continue to improve and appear to be now standardized across all Project facilities, although some issues of concern were noted. In Lot A, hazardous waste over-accumulation was noted at the Hanak Camp and poor garbage collection practices were noted on the ROW in both Lot A and B.

Wastewater Treatment: In all three countries, efforts have been made to improve the performance of wastewater treatment plants (WWTPs). Although progress has been achieved, problems still remain and persistent non-compliant discharges are still occurring. The situation in each country can be summarized as follows:

Azerbaijan: The CCIC Wastewater Treatment Plants (WWTPs) at Tovuz, Yevlakh and Kurdamir camps have substantially improved performance. The Tovuz WWTP is meeting Project effluent standards and Yevlakh and Kurdamir were non-compliant for coliforms. Discharges from the Kurdamir and Yevlakh WWTPs go to non-compliant municipal sewers, a practice which should be terminated. The new field laboratory operated by BTC/CCIC indicates that there are also occasional non-compliances at all three camps with respect to phosphorous and nitrogen. It is understood that CCIC is planning to add microfiltration and UV treatment to achieve compliance with coliforms and that the Project is also reviewing the procedures at Tovuz to determine if there are any lessons learned that could be applied to improve the performance of other WWTPs. Test results from the WWTP at PSA2 indicate good performance for coliforms, BOD, COD and oil and grease, which are the main discharge parameters for a facility of this type. The plant is non-compliant for total suspended solids (TSS), as well as phosphorous, nitrogen, and sulfides. The problems with WWTPs are not nearly as severe as encountered previously and the joint effort by CCIC/SPJV and BTC to improve performance needs to be recognized.

Georgia: BTC has worked with SPJV to achieve compliance by engineering improvements to the existing equipment, adding new equipment, and

constructing reed beds for tertiary treatment. A significant improvement has been the development of a treatment system for the incinerator scrubber liquor at PSG1. In spite of this effort, full compliance has not been achieved at any of the SPJV WWTP locations with non-compliance problems still existing for phosphorous, nitrogen and ammonia at most sites and coliforms at all locations except for Marneuli Camp. The Project is considering modifying their compliance levels to reflect receptor bodies, which will require appropriate Change Management documentation. The overall status of the WWTPs in Georgia is similar to Azerbaijan. Coliforms are the main problem requiring treatment.

Turkey: Wastewater management continues to be an issue of concern for both BTC and BOTAŞ although considerable improvements have been made towards compliance with Project discharge limits. An audit of wastewater treatment plants (WWTPs) across the Project in Turkey was completed by a specialize consultant hired by BTC in July 2004 and the recommendations have resulted in some improvements. Sewage disposal continues to be a significant non-compliance problem in Lots A and C. Wastewater management appears not to be consistent across all three Lots. The Project should ensure that WWTP effluent discharges do comply with Project standard as soon as possible. The wastewater audit also recognized that the Izaydas hazardous waste treatment facility WWTP is EU compliant and recommended the installation of monitoring system.

Pollution Prevention: Improvements have been observed with respect to pollution prevention in terms of the construction and repairs to needed infrastructure (spill control systems, OWSs, etc.), as well as improvements to good housekeeping practices at several locations. Nevertheless, a few problems remain. The situation in each country can be summarized as follows:

Azerbaijan: BTC has hired an environmental engineer dedicated to work with CCIC and SPJV to improve pollution prevention systems. Most of the past problems are being eliminated and, if the problem has not yet been solved, BTC can demonstrate that plans are in place to achieve positive results. Long-term problems with respect to the housekeeping at CCIC's Kurdamir Camp, for example, are being managed.

Georgia: BTC has worked closely with SPJV to resolve problems identified with pipeline camps and work places (maintenance yards, pipe storage areas, etc.), with good results achieved. SPJV operations at the fixed facilities demonstrate mixed results. The PSG1 construction effort is being conducted with good housekeeping and the pollution prevention systems are in place and appear to be well maintained. Conversely, little improvement was encountered at PSG2. Significant improvements were noted at the PSG2 Camp, but persistent muddy conditions prevent good housekeeping practices at the PSG2 work site and the pollution prevention systems are still inadequate.

Turkey: IEC reviewed several pollution prevention registers and no significant issues were found. Dust mitigation measures appear to be sufficiently implemented, although some complaints still are received from local communities. The fuel storage areas visited during the visit were found to be generally well-managed and no significant issues were observed in terms of management of oil/water separators and spill pollution prevention measures. An issue of concern is still the management of concrete batch plant washwater at PT1 and PT3 pump stations, which is accumulated into unlined pits. The relevant analysis results indicate chromium levels up to five times of permitted discharge limits, and high pH. Since a groundwater monitoring network is not available at any fixed facility, available information is not sufficient to ensure that there is no impact. The Project is still discussing feasible options to manage this wastewater stream.

Safety: The IEC continues to acknowledge the effort made by the BTC H&S organization to achieve high safety standards during Project development. During field visits a few minor H&S issues were identified and remedied with Project safety personnel. Previously, the fragmentation and large number of work fronts was placing significant stress on the capacity of Project E&S and H&S personnel and resources, but, in Azerbaijan and Georgia, pipeline progress is consolidating the number of work fronts and these problems are not as significant as they have been in the past.

The most significant safety issue for the Project identified during the June – July IEC mission was the amount of open trench. All of the countries have had non-compliant situations develop in terms of the allowable amount of open trench. Nevertheless, the Project has made efforts to reduce the amount of open trench and protect local communities from the hazards associated with open trench through physical protective measures and community awareness programs. Azerbaijan is currently compliant with Project commitments and is improving the quality of trench protection. Georgia is compliant by virtue of a Change management process whereby the allowable amount of open trench in Spread 1 has been increased through to the beginning of December. The Project in Georgia is also improving trench protection and is aggressively pursuing community awareness programs. In Turkey, total open trench at the end of the field visit in October 2004 was reported to be 125.1 km versus approximately 102 km in July 2004. Spreads in all three Lots are generally below the maximum limit of 20 km per spread indicated by the compliance standards, as recently discussed and interpreted by BTC. Despite the increased open trench length throughout all Lots, during the field visit, IEC noted that positive actions were being taken to minimize risk for community safety and to manage open trench according to ESAP commitments, especially in Lots A and C. All three EPC contractors have shown a significant commitment in implementing responses to minimize the risk of open trench, although the approach and consistency varies from Lot to Lot. Specifically for Lot B, the lack of attention and unclear coordination to ensuring a complete response and also fully complying commitments of the BTC Open Trench Protocol were apparent, and Lot B was found to be still non-compliant with ESAP commitments.

Reinstatement: Similar to observations made during previous visits, different practices and conditions were observed across the three countries. Nevertheless, a common observation across all three countries made during the June – July IEC mission and confirmed during this trip is that top soil management, with a few exceptions, is generally good. River crossings also appear to be well reinstated where they could be observed in the three countries. Significant differences are found, however, in terms of the amount of progress that is being achieved.

Azerbaijan: Trenching and backfilling has been achieved all the way to the Georgian border and pipeline progress in Azerbaijan is more advanced than in either Georgia or Turkey. Reinstatement along the specific 12 m BTC corridor is also well advanced in Azerbaijan. Final biorestoration is being achieved in the Gobustan Desert area with the removal of the ROW road. The amount of Phase 2 interim reinstatement achieved along the ROW has reached 244 km. In most cases this interim reinstatement is effectively a final reinstatement of the 12-m BTC corridor as Phase 3 biorestoration is not required. The actual extent of additional restoration is still being reviewed. In any case, the success of the overall final reinstatement will depend on the care taken to install the SCP. In addition, care needs to be taken to reinstate within the Project Commitments the "footprints" that are associated with the pipeline, such as access roads and borrow pits..

Georgia: Mountainous conditions make reinstatement in Georgia a more challenging process than in Azerbaijan, but the Project is performing in accordance with ESAP commitments.. Interim reinstatement of the 12-m wide ROW corridor totals 67 km. The Project still has a few areas where the height of topsoil piles are non-compliant, but based on a recent technical review of topsoil management by BTC, it is understood that these high topsoil piles will not result in future technical problems. It is expected that BTC will follow an appropriate Change Management process, whereby the findings of their technical expert can be incorporated into Project requirements. Where interim reinstatement has taken place, the Project is generally performing acceptably. It is again noted that the success of the overall final reinstatement will depend on the care taken to install the SCP and care will need to be taken to reinstate within the Project Commitments the "footprints" that are associated with the pipeline, such as access roads and borrow pits, if they are not to be apart of the SCP Project. The most significant issue to ROW reinstatement in Georgia is the disposal of excess rock and subsoil. SPJV has prepared a draft *Method Statement – Spoil and Rock Disposal* to define procedures to resolve the situation. IEC does not consider this document sufficient and ready to be implemented as it provides only conceptual solutions and no detailed implementation procedures.

Turkey: The length of the ROW under construction in Turkey is extensive, stretching the E&S management capacity of the BTC, BOTAŞ and the EPC

contractor organizations to implement the mitigation of potential environmental and social impacts conjointly with the needs for ROW reinstatement. At the time of the visit, reinstatement activities were progressing well in Lot C, but very limited reinstatement progress was noted in Lots A and B. BOTAŞ, in cooperation with BTC, has prepared a well formulated Project Reinstatement Plan to provide a general guide for the three EPC contractors. However, at the time of the visit, only Lot C had developed specific follow-up plans for winterization and biorestoration.. No formalized reinstatement plans were made available to the IEC for Lots A and B during the visit.

A major issue of concern is the lack of adequate winterization measures, including temporary erosion control and drainage control measures, in both Lots A and B, taking into consideration the number of critical slopes and ESAs still to be completed, and the limited time remaining prior to the onset of the 2004-2005 winter season.

Continued delays in defining a practical implementation program for the reinstatement of the NGPL ROW in compliance with ESAP commitments, are also a critical issue that must be resolved immediately. The Project should demonstrate clear and precise action on reinstatement of the NGPL, and provide definitive timelines and specific commitments to machinery and resources.

Finally, the Project has opened a large number of new access roads and upgraded several existing access roads in all three Lots, notably in high elevation areas and within ESAs. In accordance with ESAP commitments, all temporary access roads created by the Project shall be reinstated. Although there have been good efforts in all three Lots to document and record the use of these roads, there are concerns about the need to minimize project footprints following construction, particularly relating to reinstatement of extra land acquisition and access roads. As of October 2004, the Project has yet to demonstrate a clear intention in all three Lots as to reinstatement of these roads.

Archaeology: The overall field archaeological program along the ROW in all three countries continues to be consistent with Project commitments. Construction teams have demonstrated a willingness to work with the archaeological teams to assure the protection of cultural heritage, including giving the archaeologists reasonable schedules for excavation and working within ROW width reductions or constructing route deviations to avoid important archaeological discoveries. As previously noted, the responsibility for compiling, interpreting, preserving and presenting the findings will rest with the three host governments. The BTC Project has a substantial investment into cultural heritage management and a commitment to manage this investment according to international standards. This commitment requires that the Project work with Government authorities and in some cases participate in a capacity

building role. Peer reviews have been conducted in Azerbaijan and Turkey and a similar review is recommended for Georgia. These reviews have helped define procedures to improve quality at both Project and Government levels and are a positive contribution to achieving quality. It is recognized that the Project has demonstrated important initiatives to improve the capacity of local archaeological organizations in both Georgia and Azerbaijan. A cautionary note for both Georgia and Azerbaijan is that is that care should be taken to make sure that the BTC archaeologists are not overly distracted by the upcoming SCP Project and that they are provided sufficient resources to complete their missions.

Ecological Management and Environmental Investment Programs: The implementation of the different environmental investment programs is proving to be challenging for the Project. Aspects of these programs where the Project has direct control, such as rare plant species conservation in Georgia, or ecological monitoring in both Georgia and Azerbaijan, can demonstrate progress.. Where the Project has had to interact with authorities, both in Azerbaijan and Georgia, difficulties are encountered between the two parties and progress is slowed or stalled. In Turkey, with some exceptions, particularly in Lot C, the Project has made little overall progress in reinstatement of ESAs. .The greatest concern is for Lot A and Lot B, particularly at high elevations where reinstatement will be challenging, taking into consideration the observed lack of temporary erosion control measures and the length of time topsoil has been stockpiled. Some good practices were observed (i.e., a new BTC biorestoration guide, seed collection program and seed viability tests in Lot B). In terms of EIP, six programs are underway in Turkey. A general observation for all three countries is that the planned external monitoring of the EIPs, as outlined in the ESAP is not yet defined and should start as soon as possible.

General Conclusions:

Improvements and progresses towards resolution have been seen in terms of the major problems identified during previous IEC missions. Some remain as identified above, but for the most part, they appear to be manageable. The most critical findings during this mission include:

- Management of Change process relevant to E&S aspects needs to be improved and made fully compliant with ESAP requirements and principles.

- Potable water problems are a significant health concern at SPJV facilities in Azerbaijan.

- Third party suppliers of concrete and aggregate – debate over the degree to which these facilities are covered under the ESAP "umbrella" with regards to the minimization of project footprint and reinstatement principles and objectives.

- Waste management problems have improved, but care still needs to be taken that the incinerators in Azerbaijan and Georgia function properly. In Georgia, the production of the conditioning improvement plan and the agreement between follow-up actions for the Iagludja municipal facility represent an improvement.

- WWTPs have shown improvements, but for the most part are still not compliant with ESAP commitments.

- Management of excess rock and spoil along the ROW in Georgia is an issue for which an appropriate plan has still not been sufficiently developed.

- In Turkey, although good progress is being made in reinstatement in Lot C, reinstatement progress in Lot A and B is negligible and significantly behind what was planned for 2004. The lack of sufficient resources dedicated to reinstatement in these two Lots was apparent. No formalized reinstatement plans were made available to the IEC for Lots A and B during the visit. The reinstatement of a large number of new access roads and upgraded several existing access roads in all three Lots, notably in high elevation areas and within ESAs, is a critical concern.

- A lack of winterization measures, including temporary erosion control measures on steep slopes and ESAs, in both Lots A and B in Turkey was observed. BTC and BOTAŞ should support and work with the two EPC contractors to ensure that temporary erosion control measures are put in place to protect the ROW during the winter months.

- As reported by the Community Relations staff, delayed payments for complaints, including complaints due to damage to land and crop, are a concern in terms of managing community relations, especially in Lot A in Turkey.

Overall, progress in complying with ESAP commitments in all three countries is positive, but the arrival of the 2004-2005 winter season is a critical time for the project. The peak of construction has passed, at least in Azerbaijan and Georgia, and the timeline for mechanical completion is rapidly closing. The project has committed to minimize the footprint that will remain after construction has completed. The fulfillment of this commitment in all three countries is not clear, particularly in regard to third party sources of aggregate and access management. Reinstatement progress is far behind schedule in Lots A and B in Turkey and it is doubtful that any significant further ROW reinstatement will occur in 2004. More importantly, temporary erosion measures are still not in place in many locations along the ROW in these Lots to protect topsoil and sensitive environmental resources over the winter months. Hydrotesting in Turkey has also been initiated over an incompletely reinstated ROW. In the rush towards mechanical completion and meeting the date for first oil, the project cannot overlook the importance of initiating closure and ensuring that all ESAP commitments are met during remaining construction activities in all three countries.

1 INTRODUCTION

D'Appolonia S.p.A.(D'Appolonia), located in Genoa, Italy, has been appointed as the post-financial close Independent Environmental Consultant (IEC)[1] to the Lender Groups for the Baku-Tbilisi-Ceyhan (BTC) Pipeline Project (BTC Project)[2] and the Azeri, Chirag and deepwater Gunashli (ACG) Phase I Project (Phase 1 Project)[3]. The BTC Project is currently under development and will be owned by BTC, a company formed by a consortium of the Main Export Pipeline Participants (MEPs)[4]. Construction of the BTC Project is underway in Azerbaijan, Georgia and Turkey. The Phase 1 Contract Area covers the Azeri, Chirag and Deepwater Gunashli fields and is being developed by Participating Production Sharing Agreement (PSA) Contracting Parties.[5]

The overall role of D'Appolonia within the BTC and ACG Projects is to assess and report to the Lender Group on the compliance with the environmental and social provisions contained within the respective project Environmental and Social Action Plans (ESAPs), the associated Contractor Control Plans (CCPs), and BTC/ACG Management Plans and with HSE management systems. This report summarizes the

[1] IEC Team members: Roberto Carpaneto (Team Leader), Paolo Lombardo (Team Coordinator), Miles Scott-Brown (Team Member) and William J. Johnson (Team Member).

[2] The Lender Group for the BTC Project (BTC Finance Parties) comprises the International Finance Corporation ("IFC"), the European Bank for Reconstruction and Development ("EBRD"), Compagnie Française d'Assurance pour le Commerce Extérieur ("COFACE"), Her Majesty's Secretary of State acting by the Export Credits Guarantee Department ("ECGD"), Euler Hermes Kreditversicherungs-AG ("Hermes"), Japan Bank for International Cooperation ("JBIC"), Nippon Export and Investment Insurance ("NEXI"), Overseas Private Investment Corporation ("OPIC"), Servizi Assicurativi del Commercio Estero ("SACE"), the Export-Import Bank of the United States ("US EXIM") and any other export credit agencies and commercial lenders and any other providers of debt financing or political risk insurance for the BTC Project, in their capacity as the providers of debt financing or political risk insurance for the BTC Project, including, for the avoidance of doubt, the Sponsor Senior Lenders.

[3] The Lender Group for the Phase 1 Project (Phase 1 Finance Parties) means IFC and EBRD.

[4] Also termed the "BTC Sponsors" includes Amerada Hess Corporation, BP International Limited, BP Corporation North America, Inc. ConocoPhillips, ENI International, B.V., INPEX Corporation, ITOCHU Corporation, SOCAR, Statoil ASA, TOTAL, S.A., Türkiye Petrolleri A.O. and Union Oil Company of California.

[5] The parties to the PSA at the date of the CTA, also termed the "PSA Parties" includes Amoco Caspian Sea Petroleum Limited, Amerada Hess (ACG) Limited, BP Exploration (Caspian Sea) Limited ("BP Exploration"), Devon Energy Caspian Corporation, Exxon Azerbaijan Limited, INPEX South West Caspian Sea, Limited, ITOCHU Oil Exploration ("Azerbaijan") Inc., Statoil Aspheron a.s., Turkiye Petrolleri A.O. ("TPAO") and Unocal Khazar, Ltd.

results of D'Appolonia's third field visit held between October 4 – 16, 2004 for the BTC Project.

The primary objective of D'Appolonia's with respect to the BTC Project was to verify the implementation of BTC Project commitments established in the Environmental & Social Action Plan (ESAP), final at the time of financial closure (February 2004), and supporting documents developed to assure implementation of the ESAP including Contractor Implementation Plans and Procedures (CIPPs) and associated Method Statements and Procedures. D'Appolonia's review has included the environmental and social (E&S) and health and safety (H&S) management activities of BTC, the Turkish State Petroleum Pipeline Corporation (BOTAŞ) in the case of Turkey, and the individual Engineering, Procurement and Construction (EPC) Contractors. Emphasis has been placed on evaluating compliance primarily on the reactions of the BTC/BOTAŞ and the individual Contractors to non-compliant situations based on the following:

- Random checking of individual non-compliances identified by BTC/BOTAŞ or individual Contractors and reviewing the mechanisms followed by the responsible organizations to identify, address, correct and follow up non-compliant situations, as well as the documentation demonstrating the implementation of appropriate procedures.

- In-depth review of symptomatic non-compliances, which may indicate a deficiency in the process of compliance management and identifying mechanisms and the procedures the BTC Project proposes to follow to make sure that similar situations will not occur again.

- Follow-up to non-compliant conditions identified during the previous missions, as practical. It should be noted that not all of the locations where non-compliant situations were originally encountered could be visited during this mission, so it is not always practical to close the issues previously identified, even if the Project has performed the required actions.

Most of the findings identified in this report have been based on field observations, and interactions with the individuals actually responsible for the field implementation of the ESAP.

The IEC team conducted the visit as two teams. Two members of the team toured Turkey while another two visited Georgia and Azerbaijan.

Subsequent sections of this report provide the following:

- Section 2 presents the review of the Project in Azerbaijan
- Section 3 presents the review of the Project in Georgia
- Section 4 presents the review of the Project in Turkey
- Appendix A presents the trip itinerary
- Appendix B presents lists of non-compliances with the ESAP, with relevant observations and recommendations for Azerbaijan, Georgia and Turkey, respectively.

2 AZERBAIJAN

The BTC Project in Azerbaijan includes 443 km of pipeline extending from the first pump station (PSA1) in Sangachal Terminal, to the border with Georgia. The corridor followed by the pipeline is close to the existing Western Route Export Pipeline (WREP) and is also the corridor that will be subsequently followed by the South Caucasus Pipeline (SCP), which will transport gas from the Shah Deniz field to the Georgian/Turkish border in a separate, related project. The BTC Project in Azerbaijan includes several permanent Above Ground Installations (AGIs) including an Intermediate Pigging station (IPA1) near KP 125, and a second Pump Station (PSA2) near KP 245, as well as necessary block and check valves. PSA1 at the Sangachal Terminal is visited as part of auditing of the ACG Phase 1 Project and will be visited during the next IEC mission.

The BTC Project in Azerbaijan uses two prime Contractors, Consolidated Contractors International Company (CCIC) responsible for pipeline construction and valves and Spie-Capag Petrofac Joint Venture (SPJV), responsible for the main AGIs.

In addition to the permanent facilities, the pipeline is associated with several temporary facilities, which include:

- Construction camps (for CCIC: Mugan near KP 20, discontinued; Kurdamir near KP 130, occupied; Yevlakh near KP 240, occupied; Tovuz near KP 380, occupied. For SPJV: Kurdamir for IPA1 near KP 126; PSA2 camp near KP 244.)

- Dump Yards for pipe (Umbaki near KP 0; Mugan near KP 65; Kurdamir near KP 129; Yevlakh near KP 235; Ganja on the north east edge of the town of Ganja; Agstafa next to the town of Agstafa near KP 400; Beyuk Kassik next to the Georgia border near KP 440).

This mission included visits to active construction near the Georgian border, as well as a tour of the areas of the ROW where reinstatement has already taken place. During the course of the visit, representatives of BTC, CCIC and SPJV were interviewed. SPJV facilities were also visited during this trip.

2.1 CONSTRUCTION STATUS

Current (October 2, 2004) construction progress is as follows:

- *Facilities* – The status of Pump Station PSA1 at Sangachal Terminal was not updated during this visit; the construction status of PSA2 was reported to be approximately 91% complete in terms of the main civil works associated with Phase I development and 81% in terms of Phase II development. The progress of the Intermediate Pigging station IPA1 was reported to be approximately 90%.

- *Pipeline* – Overall construction progress of the pipeline is reported to be 85.4%. The ROW has been cleared and graded, strung, and welded to the Georgian border (443 km). 393 km of trenching was completed with 391.3 km of pipe in ground and final backfilling achieved for 368.9 km. The 12-m BTC corridor has been final graded with the placement of topsoil over 243.8 km with biorestoration completed for 93.2 km. Hydrotesting has been completed in the segment from Sangachal to KP 97. Most of the river crossings have also been hydrotested.

At the time of the D'Appolonia visit, only one major river crossing had yet to be complete, the Kura West (KP 411.1), being prepared for micro tunneling. During the visit, the reinstatement of the Kyorak chai crossing at KP 276 was reviewed in the field.

2.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT ORGANIZATION AND RESOURCES

2.2.1 Resources and Organization - Observations

The following discussion summarizes information obtained regarding the environmental management organizations of BTC and CCIC. SPJV organization was not specifically reviewed during this trip. The social management organizations are outlined in Section 2.9. A general observation is that BTC has assumed many of the responsibilities for correcting non-compliant conditions and assuring environmental compliance for ongoing activities.

BTC

BTC has continued to add additional senior staff including a Senior Reinstatement Supervisor, a new Field Environment – Reinstatement Specialist, two additional archaeologists with the reassignment of one of the existing archaeologists to serve in the position of Field Environmental Supervisor (retaining overall responsibility for archaeology), and an Environmental Engineer with the latter being dedicated to the design and supervision of improvements to pollution prevention, incinerator and wastewater treatment facilities. In addition to these individuals, two Social

Coordinators and two Laboratory Technicians have been added to the BTC staff. This staffing is considered complete in terms of the BTC Project.

At the time of the June - July visit, BTC management had started a satellite office in Ganja such that senior BTC management can have an improved field presence. This office is occupied by senior BTC management from Baku headquarters on a rotating basis and the observation from this mission is that this system has improved the field presence of management from what could be achieved from Baku.

CCIC

CCIC staffing has essentially remained at the same level as observed during the June – July trip and is not adequate to undertake all of the required social and environmental activities required by the Project. This is a situation that has been recognized since before the June – July mission and to a certain degree their weaknesses in terms of staffing and resources are being covered by a closer working relationship with BTC, such that the field teams are now basically working as one team.

At the time of the June – July mission the concept of Task Forces was being initiated by CCIC in cooperation with BTC. Task Forces comprised of E&S staff together with individuals responsible for various aspect of construction have worked together to audit critical environmental aspects related to construction. The results of this concept have not been entirely successful as it has proved necessary for BTC to substantially add to their E&S staff, in particular to be able to move forward on topics such as reinstatement and biorestoration, as well as several areas under the topic of environmental engineering.

In spite of staffing limitations, CCIC has demonstrated a willingness to provide the necessary construction support to the improvements initiated by BTC.

2.2.2 Resources and Organization - Recommendations

BTC

1. BTC's efforts to improve their E&S staffing to be able to compensate for deficiencies in the CCIC organization must be recognized. The system is functioning adequately at its current staffing level. A caution is raised that the current staff should not be stressed by upcoming activities associated with the SCP Project. Some indications of this possibility have already been identified by BTC archaeologists, but care will have to be taken that the SCP Project does not interfere with the ability of any of the BTC E&S staff to fulfill their BTC responsibilities.

CCIC

2. At this point it may be too late to consider that staffing improvements within CCIC's E&S organization can be effective for the BTC Project, although there may be merit in considering staff improvements to cover the upcoming SCP activities. CCIC will need to continue to work with the BTC specialists to enact necessary E&S improvements.

2.2.3 Management of Change (MOC) - Observations

The supporting documentation and correspondence among the involved parties dealing with some E&S related changes during Project development was reviewed during the mission. Some Management of Change processes have taken place since the June – July mission:

- DR-GE-00141, Disposal of excess excavated subsoil in non-badlands areas, Change Type 2, Class Change 2 – rejected.

- DCR-EN-00013, Change to alignment of SCP at KP 378 to reduce total amount of disturbance to a Bronze Age burial site, Change Type 2, Change Class 2 – accepted. Although changes to the SCP route are not part of the IEC scope of auditing, we note that the avoidance of cultural resources is the primary option that should be followed with a pipeline and are pleased that the construction team is cooperating with the archaeologists to make sure this takes place.

- DCR-EN-00035, Change of Kura-West River Crossing Method from Open Cut to Micro-Tunneling, Change Type 2, Change Class 2 – accepted. The Project concluded also that micro-tunnel represented the best HSES option.

- DR-GE-00145, Temporary use of the Balakhany site for the disposal of domestic waste, Change Type 2, Change Class 2 – request withdrawn with the likelihood of its being rejected by BTC.

At the time of the first mission, CCIC intended to construct BTC and immediately turn around and construct the SCP from the Georgian border. This would have required that the SCP be constructed before reinstatement of the BTC Pipeline. This would have required a Change Management due to the significant change in reinstatement procedures associated with having the entire 44-m corridor stripped at one time. At the time of the June – July Mission, this change in procedure was still being planned and supporting documentation was reported to be under preparation with a completion target of October 2004. The lack of a Change Management process with associated documentation to justify non-compliant activities associated with the 44-meter reinstatement was assigned a Level I in the June – July Mission report. In actuality, the SCP Project is currently being planned to start over ~ 100 km of wetland areas where BTC has already been reinstated. As such, SCP operations

will not require a change of construction procedures for the BTC Pipeline and the previous Level I is considered closed.

In addition to the ongoing MOC processes, it is anticipated that there may be a need to initiate additional MOC procedures for issues such as emissions standards for incinerator operation, or possibly WWTP effluent discharge standards taking into account receptors. If requested, these types of MOC activities would reflect actual changes to the ESAP, as opposed to issues such as providing special protection to an archaeological site, which is consistent with the concepts of the ESAP. Accordingly, it is expected that there would be comprehensive technical support documents for these types of changes. Furthermore, the assignment of Class Change would need to be carefully assessed, as these types of changes are effectively outside the pipeline corridor and represent changes to the ESAP. In such cases, the MOC process could constitute a Planned Class III change requiring that the Lender and IEC be notified 30 days in advance of the change.

2.2.4 Management of Changes – Recommendations

1. Consistent with previous recommendations, and according to the ESAP, the supporting documents to any request of change should be developed according to Project requirements and standards and be considered satisfactory and technically sound prior to implementation.

2. IEC recommends carefully assigning the Class Change; some changes may represent changes to ESAP commitments. In such cases, the MOC process could constitute a Class III change requiring that the Lenders be notified in advance of the change.

2.3 CONSTRUCTION CAMPS, INFRASTRUCTURE AND SERVICES

The review of construction camps, infrastructure and services focuses on construction operations that potentially have an impact to surrounding infrastructure, natural resources, and community and household assets, including land, roads, and irrigation systems. In addition, the review of this topic includes camp water supplies and general aspects of camp management.

2.3.1 BTC - Observations

Third party sources of supplies, in particular aggregate and cement/concrete are still not being consistently evaluated in terms of their compliance with ESAP requirements in the cases where the Project represents a significant percentage of their production. BTC has developed a draft methodology to identify a process to evaluate whether a specific facility should be considered under the "umbrella" of the ESAP. Specifically, the Project has identified a possible approach based on three criteria:

- Project usage greater than 50%
- Facility not in existence prior to the Project
- Facility is not viable as a business post-Project use

These criteria in turn form the basis for defining whether or not the Project will assume some E&S responsibility for the facility, as follows:

- Meets 0-1 criteria: Does not fulfill project criteria and will not be subject to project attention
- Meets 2 criteria: Borderline in terms of fulfilling criteria, only subject to project attention if demonstrated significant E&S impact is occurring
- Meets 3 criteria: Fulfills criteria and will be subject to project attention.

The IEC concurs that the category where three criteria are met deserves Project intervention, but we believe that the structure of the first two categories can allow some significant situations to go unattended.

A problem with the application of this system is that basically three types of situations are mixed that should be treated differently. The three situations include suppliers of concrete; borrow pits used as a source of construction aggregate; and third-party borrow pits used for trench backfill or for the disposal of excess spoil. These situations are reviewed separately in the context of ESAP commitments in Azerbaijan.

Concrete suppliers: If a supplier of concrete provides a significant amount of its supply of concrete to the Project, it is not relevant whether or not the business will be in existence after the Project is completed or whether the business was in existence before the Project. The Project should work to prevent pollution that could be caused by the improper control of cement truck wash water, nuisance dust, an unsafe work environment because of lack of PPE, etc. The Project has already committed to the following in the CCP for Procurement and Supply: "…*The Contractor will submit to BTC Co an environmental statement giving details of the proposed sourcing and transport of the materials and the environmental impact involved, e.g., proper methods for dust control and management of concrete wash water…"*. It is noted that this commitment (which for whatever reason is not in the List of Commitments table of the same document) does not specify whether the Project is a 50% user or not.

Aggregate: In the case of borrow pits for aggregate extraction, the Project should be able to verify that the source of the aggregate is not from river dredging, regardless of whether the business has used this source in the past or will use it in the future. The Project has already committed to the following in the CCP for Procurement and

Supply: Commitment 54 – "*Contractor will endeavour to use locally sourced aggregates and will need to conduct environmental and social assessment prior to extraction".* Commitment 1002 from the Azerbaijan Commitments Register states: "*Verify that appropriate social impact assessment and consultation has been completed for any additional sites to be used by project (e.g. waste sites, aggregate sites, additional camps or pipe yards.) Review documentation of community consultation data as appropriate".*

Borrow pits used for trench backfill or spoil disposal: These third-party facilities should be treated consistent with Project commitments. The CCIC Erosion, Sediment Control and Reinstatement Plan provides considerable discussion with respect to the use of borrow pits, including: "…*When operations at the pit are complete, the pit will be reclaimed in a manner similar to all other work sites or as agreed with the landowner. Reclamation of portions no longer being used will be started as early as possible. In addition:*

- *The pit will be shaped to prevent erosion and facilitate drainage; and*
- *Overburden will be deposited in a uniform layer over the pit area".*

Also, this document states: "…*When it is necessary to develop borrow pits to support construction activities, the same environmental authorizations, standard construction techniques, and reclamation practices will be used as previously discussed…".* If a borrow pit is used for the disposal of soil or rock spoil, there are clear commitments. Specifically, Commitment 502 from the Azerbaijan Commitments Register states: "…*Reinstate all redundant spoil and waste disposal sites. These will be closed, capped and landscaped in accordance with the relevant requirements of the project Reinstatement Specification and waste management strategy…".* The CCIC Erosion, Sediment Control and Reinstatement Plan has several procedures regarding the reinstatement of spoil disposal sites, including: "*To finish and close the [disposal] site the exposed surface will be capped and bio-restoration will be carried out in accordance with the Biorestoration Plan; The capping material will include erosion matting and either surplus topsoil or a combination of subsoil, fertilizer and mulch; The [disposal] site will be designed, operated and closed so that over time the site will blend with the landscape and become, as far as practicable, imperceptible".*

One of the objectives of the Waste Management CCP is to "…*ensure that all potential subsoil disposal sites and disposal plans are subject to an environmental review and an environmental risk assessment prior to their adoption".*

2.3.2 CCIC - Observations

As noted above, CCIC has four work camps located along the pipeline route, Mugan (KP 20 - discontinued), Kurdamir (KP 130), Yevlakh (KP 240), and Tovuz (KP 380). At the time of the visit, Kurdamir Camp was occupied by approximately 160 workers, while the camps in Yevlakh and Tovuz were occupied by about 600 and

280 workers, respectively. During this mission the camps at Kurdamir, Yevlakh and Tovuz were visited with the following observations:

- *Sustainability of potable water sources*: Only the Tovuz Camp currently uses water from a well. A sustainability study for this well has been completed, by the International Company of Hydrogeology and Engineering Geology (ICHEG) and the well was found not to impact local resources. This finding was confirmed by the Artesian Wells Exploitation Department of Tovuz, who indicate that the situation would have to be reevaluated if some of the local wells are repaired and become operational again. IEC considers this issue to be closed, pending additional verification should the other local wells become operational. The other camps use municipal sources.

- *Potable water quality*: Substantial improvements were noted in verifying the acceptability of potable water used by CCIC since the previous missions. Test results for potable water indicate that the problem is achieving generally potable water. A concern remains with some discrepancies between the different laboratories used by BTC and CCIC to verify potable water quality. Several CCIC test results indicate non-compliance for sulfate, magnesium, and calcium, whereas the BTC tests for the same parameters are approximately an order of magnitude less and show that the water is compliant within WHO requirements. Also, the laboratory used by CCIC reports non-compliant results for manganese with the assumption that the WHO standard is 0.05 mg/l. The actual WHO standard for manganese is 0.5 mg/l and the results show compliance with this parameter, consistent with the results from the BTC test laboratory. In any case, the discrepancies do not appear to indicate that any of the water might represent a health hazard and both laboratories show that coliforms and e-coli bacteria are not present. Documentation was provided to the IEC to indicate that a full suite of tests has been conducted to establish the acceptability of this water in terms of WHO standards. Nevertheless, data management of the potable water data needs to be improved as considerable effort was required to retrieve and interpret the potable water test data.

- *Irrigation channels*: Irrigation channels along the pipeline ROW have posed special challenges to construction as hundreds have been crossed where it has been necessary to maintain flow for the local farmers. Based on field observations and complaints registered on the Grievance Log, CCIC appears to continue to be properly managing irrigation channel crossings, generally within BTC Project commitments. Field observations such as at a canal crossing near the Kyorak River crossing at about KP 276 confirm the care the Project is taking with respect to irrigation canal crossings.

- *Road Crossings*: Road crossings along the pipeline ROW appear to continue to be managed within BTC Project commitments.

- *Access roads to the ROW*: During the first visit, CCIC was not able to demonstrate that pre-construction surveys had been consistently conducted for new access roads or where there was a significant upgrading to an existing road. Baseline data are now being compiled in a GIS database which includes access roads. BTC has been responsible for ecological and archaeological surveys in these areas and has been able to document to that effect. The issue is considered closed.

- *General Camp Management*: Substantial improvements were observed at the CCIC camps in terms of housekeeping, in particular at the Kurdamir Camp, where a gravel surface has been placed across the camp. This camp now has conditions comparable to the good management encountered at the Yevlakh and Tovuz Camps. Significant improvements in the area of pollution prevention and waste management for all of the camps are identified in Sections 2.4 and 2.5.

2.3.3 SPJV - Observations

SPJV operates a small camp at Kurdamir for the intermediate pigging station IPA1 with a capacity of approximately 160 workers and a larger camp at PSA2 with a capacity of about 320. These camps are both temporary, as permanent facilities will be located within the respective facilities. During the visits to IPA1 and PSA2, the following was observed:

- *Potable water*: Wells are not used as water sources and sustainability studies are not an issue. Potable water used at PSA2 is tankered from the Karabakh Canal and then treated at the camp water treatment system. Water being used for drinking at PSA2 has been obtained from a local village well. SPJV indicates that this well has been repeatedly tested and found to be potable according to WHO criteria. IEC has not been provided these test data. When reviewed in the field at PSA2, the water available for workers to drink could not be easily located and when a water point was located, the water was found to be contained in a single large plastic bottle without a protective cap and a single glass was available for the construction crew to drink from. Water was visibly turbid in the water supply bottle. Even without the availability of water quality testing, this arrangement was unsanitary and inadequate for a construction crew.

  As part of an audit conducted in September 2004 by the BTC medical staff, unsanitary water containing both e-coli bacteria and fecal coliforms was encountered in the drinking water at the PSA2 water station, as would be expected based on the poor water management observed at that location by IEC. The test results also encountered either or both e-coli and fecal coliforms at a subcontractor's office at IPA1, a Yevlakh Camp kitchen tap, and a kitchen tap, a water station and an accommodation tap at Kurdamir SPJV's Camp. A water point at IPA1 also had very high (>1000/100ml) of general heterotrophic bacteria (GHB). The worst conditions were encountered at the Kurdamir Camp kitchen

and accommodation taps, where the total coliform count was very high, significantly above any acceptable value. The observations from PSA2 appear to indicate that SPJV did not react to the findings of the BTC medical staff.

Following the observations made during the site visit, IEC was provided a procedure to assure the quality of drinking water used by workers at PSA2 involving the sterilization of the water containers. Assuming that the local village well used as the water source does provide WHO compliant water, the proposed solution is to sterilize the bottles used for drinking water with a chlorine solution. If repeated testing reveals that the quality does not comply with WHO standards, chlorination of the water will be considered or an alternative source of water used. IEC, however, does not consider that this solution is sufficient. As noted above, the problem is more extensive than what was encountered at PSA2: the workforce should not have to depend on the results of additional testing to be assured that they are drinking potable water.

It was made clear at the time of the visit that the Project would immediately rectify the situation of potable water quality and it is recognized that this is an appropriate response. The CCP for Construction Camps in Azerbaijan states: "*Drinking water to be used at the camps will be monitored by the contractor to ensure compliance with the Drinking Water Guidelines specified in Appendix 2* [which are the WHO Guidelines]". Within Appendix 2 there is the note that "*…Immediate investigative action must be taken if either E. coli or total coliform bacteria are detected. The minimal action in the case of total coliform bacteria is repeat sampling; if these bacteria are detected in the repeat sample, the cause must be determined by immediate further investigation".* The first IEC audit in February – March 2004 identified that the potable water supplies provided by SPJV had not been properly tested. SPJV could not demonstrate that workers were using potable water and a Level II Non-Compliance was issued. The concern in October 2004 is that workers have had to use unsanitary potable water for a long period of time. The persisting and significant problem at the time of this mission represents a major failure of the H&S programs of both SPJV and also BTC, who should have been monitoring this contractor more carefully. *Level III Non-Compliance, CCP Infrastructure and Services, Commitment ID: 528, 628, 1130; CCPP Construction Camps, Commitment ID: 308.*

As an additional note to this situation and as noted in the June – July mission report, should the provision of bottled water for drinking be considered as a solution to the potable water problem, it will not constitute a complete solution. Drinking water, as defined by WHO, is water that is "…suitable for human consumption and for all usual domestic purposes including personal hygiene." Although the use of bottled water for drinking solves much of the concern for use of potable water, assurance needs to be provided that the water used for kitchen and personal hygiene throughout the camps meets WHO guidelines.

- *Third-Party Concrete*: Both PSA2 and IPA1 have required the acquisition of concrete. At the time of the February – March 2004 mission, information was not available to determine if the Project was a major or minor user of locally available concrete. Information provided during this mission indicates that a local concrete supplier was used for both facilities. This company at a location near Yevlakh was started to provide concrete for PSA2 and apparently 100% of its production was dedicated to the Project. The same company operating from the Kurdamir area dedicated approximately 50% of its production for IPA1. Based on the proposed criteria for intervention for third-party suppliers discussed in Section 2.3.1, these facilities are either categorized as not subject to Project attention or considered as borderline. The actual commitments are defined as noted above in the CCP for Procurement and Supply: "*The Contractor will submit to BTC Co an environmental statement giving details of the proposed sourcing and transport of the materials and the environmental impact involved, e.g., proper methods for dust control and management of concrete wash water"*. Information has not been provided to indicate that the Project has fulfilled this level of commitment. The IEC believes that the Project should be able to demonstrate that the facility has properly managed concrete wash water, controlled nuisance dust and provided its workers with minimum PPE. *Level II Non-Compliance, CCP Procurement and Supply, Commitment ID 54, 404.*

- *Third-Party Aggregate*: Both PSA2 and IPA1 have required the acquisition of aggregate. Actual quantities of these materials required have not been provided to the IEC, but the *Camp Construction, Environmental Social Management Plan*, Section 7.3.5 indicates that approximately 12,000 m^3 of soil were to have been extracted from Borrow Pit 1, located 3 km east of PSA2 and 3,000 m^3 of gravel were to have been extracted from Borrow Pit 2, located 7 km east of PSA2. During this mission, the Project has indicated that approximately 6,000 tons of aggregate were procured from a borrow pit near Yevlakh, which presumably was used at PSA2. This amount of usage represented 90% of the total usage of this borrow pit. The basic commitment as noted in Section 2.3.1 is that the Project "*…will need to conduct environmental and social assessment prior to extraction"*. The primary concern in the use of third-party aggregate sources is whether or not the extraction has been conducted in an environmentally sound manner, in particular if the source is from river dredging, which is a common, but unacceptable practice according to ESAP principles. Significant social issues could be nuisance dust, worker protection and land take. Information has not been provided to indicate that the Project has fulfilled this level of commitment. *Level II Non-Compliance, CCP Procurement and Supply, Commitment ID 54, 404.*

- *General Worksite Housekeeping*: Both of the IPA1 and PSA2 worksites appear to be clean and well managed, with the exception of the issue of potable water described above. Some comments in the areas of sewage treatment and pollution prevention are identified in Sections 2.4 and 2.5, respectively.

2.3.4 Recommendations

1. BTC should finalize a Project position for third-party suppliers of major project raw materials, in particular aggregate and concrete. The current draft Project position is not acceptable because it undercuts Project commitments that already exist for Azerbaijan.

2. Improve the data management for potable water at all levels. All organizations involved (BTC, CCIC, SPJV) should be able to readily locate the results of monitoring records and be able to identify trends and changes in the value of individual parameters such that it is possible to immediately react to potential or actual non-compliant conditions that may be encountered.

3. Potable water test results obtained by CCIC indicate non-compliance with several inorganic parameters, while the BTC results using a different laboratory show compliance. Verify the quality of laboratory test data for potable water from the different laboratories used by the Project. This should be independent third-party verification.

4. SPJV needs to review their procedures for procuring, treating and dispensing potable water for all of their facilities and take corrective action as appropriate. The first step should be to immediately discontinue using anything other than commercially obtained bottled water for drinking and kitchen use.

5. Verify that the third party sources for aggregate and concrete currently being used by SPJV are compliant with ESAP commitments. Work with the owners to improve deficiencies as appropriate.

2.4 WASTE MANAGEMENT

2.4.1 Non-Hazardous and Hazardous Waste – Observations

CCIC has contracted AMSCO for waste management. Both hazardous and non-hazardous wastes from the entire Project in Azerbaijan are collected by AMSCO and brought to Kurdamir Camp Central Waste Accumulation Area (CWAA). AMSCO also transports recyclable and some hazardous waste that could not be incinerated to their own waste management facility (Temirmash Waste Storage Area) located in Baku. Non-incinerable hazardous waste is currently stored at the CWAA or at the Temirmash facility until the newly constructed Sumqayit Hazardous Waste Landfill, designed to be compliant with EU regulations, becomes available to the Project in Azerbaijan. Construction of this facility is completed and is expected to be available in the near future to BTC after some additional improvements identified by the BP Group Azerbaijan Business Unit (AZBU) are complete.

At the time of the June – July mission, several deficiencies were encountered in terms of the waste management program in Azerbaijan:

- The incinerator in Kurdamir was not being operated properly. The facility was not achieving a desirable level of combustion and ash and scrubber liquor were not properly managed. A Level II non-compliance was assigned to incinerator operations.

- Significant improvements were needed in terms of labeling and tracking of waste streams. The fate of at least one hazardous waste stream could not be determined and a Level II non-compliance was assigned to overall waste management.

- The non-compliant Balkhany dump site was used for disposal of domestic waste and untested incinerator ash, for which a Level III non-compliance was issued.

The situation encountered during this mission represents significant improvement over what was previously observed, although non-compliant conditions still exist in certain areas.

Incinerator:

With respect to the incinerator, BTC initiated a sampling and analysis program during the week commencing July 26, 2004. The main difficulty with the incinerator appears to be high particulates emissions. The Project emissions standards for particulates are considered by the Project to be restrictive and it may not be practical for this incinerator to ever achieve compliance with particulates. At the time of the survey, high lead and antimony were also encountered in the emissions. A Self Stop Work Notice was imposed on the incinerator until the lead and antimony could be cleaned out of the system. The origin of these metals was determined to be X-ray tape and this waste stream has been eliminated from the incinerator. The incinerator is currently used to burn domestic waste and the only hazardous component is the waste oil used as fuel. The incinerator Continuous Emissions Monitoring (CEM) system does not properly function and BTC has commissioned the design and fabrication of modifications to the incinerator to enhance the reliability of the monitoring equipment. In addition, BTC is reviewing the critical spare parts inventory to help make sure that the incinerator down time is minimal.

The incinerator was observed to be operational at the time of the IEC visit and the quality of ash was observed to be substantially improved from previous visits. The presence of metal, in particular welding rods, suggests that improved waste segregation could benefit incinerator operations. Fallout from the incinerator was observed to fall as small droplets in the area where the workers had activity. It is assumed that this liquid has the same fundamental composition as the scrubber liquor. Site personnel did not known if this condensate fallout represents any health hazard.

Pollution prevention measures in the area of the incinerator have improved, as discussed in Section 2.5 and a plan has been established to treat the hazardous scrubber liquor, which is being stored. The overall situation is still non-compliant

because of particulates, as well as the insufficient monitoring and it will be necessary to finalize a solution for the scrubber liquor. *Level II Non-Compliance for emissions, CCP Waste Management Plan, Commitment ID: 244, 245, 246, 1051, 1110.* It is anticipated that this non-compliance can be rescinded by the time of the next mission, but it may be necessary to initiate a Change Management process for particulates if subsequent testing confirms that the ESAP standard is unachievable. As noted in Section 2.1, if a Change Management process is initiated, it will represent a change to an ESAP commitment and the technical justification for the change should be clearly defined in the supporting documentation, including a proper assessment of the expected short-term and long-term impacts on occupational health (the camp workers and the incinerator operators), public health and environmental receptors.

Waste management procedures:

Improvements were noted in the area of waste segregation, labeling and tracking of the different waste streams. Improved waste segregation was observed at camp kitchens, but the segregation could still be improved with an aggressive campaign to completely segregate organic waste from paper, plastic and other potentially recyclable items directly within the kitchens. Labeling of waste was found to be improved, but a few inadequate labels were observed, particularly at the AMSCO Temirmash facility in Baku. It is recognized that problems observed at the Temirmash facility are probably the result of past practices that are being corrected. The most significant improvement is that waste is now being tracked and all waste is accounted for. Improvements can be made with respect to the means by which waste quantities are estimated, but it is recognized that AMSCO is now using waste manifest transfer forms and that the waste can be tracked. The overall condition of the Temirmash facility was found to be acceptable in that the area is well ventilated and covered and the waste streams are segregated. The facility appears to be small for the amount of waste it contains, as waste skips and barrels of used oil are stacked in several tiers. None of these conditions represent non-compliances, but there is still room for improvement to achieve better practices.

Waste disposal:

Some unauthorized waste disposal at the Balakhany dump site took place shortly after the last IEC mission, which provoked a Corrective Action Request by BTC issued to CCIC and it is understood that additional waste has not been sent to Balakhany. In co-ordination with ACG the BTC Project is preparing to issue tender documents for the construction of a non-hazardous waste landfill that will be compliant with EU standards. The ACG Project will be the primary beneficiary of this new landfill and it is not likely that it will be completed before it can be used by the BTC Project. The go-forward plan for BTC is to continue to use the incinerator and to completely discontinue the use of non-compliant local disposal sites. As long as this process continues, the Level III non-compliance from the June – July mission

can be considered to be rescinded. Efforts will need to be taken to assure compliance of the incinerator.

At the time of the visit, the ROW was observed to be clean with no significant accumulation of waste, but this is an issue that has been previously identified by environmental monitors.

2.4.2 Non-Hazardous and Hazardous Waste - Recommendations

BTC

1. Workers operating the incinerator at Kurdamir are exposed to condensation fallout from the stack. The Project health specialists need to confirm if this situation represents a health hazard and if these workers should be provided with additional PPE.

2. Ensure that modifications to the incinerator Continuous Emissions Monitoring (CEM) system be put in place as soon as practical and start regular stack emission testing according to the ESAP. Ensure that sufficient spare parts are available to help make sure that the incinerator down time is minimal.

3. Continue to improve waste segregation, with emphasis on kitchens. If organic waste can be kept separate from inorganic materials, it may be possible to consider other possibilities, such as composting, and improve the possibility for recycling.

4. Evaluate if the Temirmash facility in Baku is properly sized to manage the storage of hazardous waste until the Sumqayit EU compliant hazardous waste facility is available for use.

5. Although much improvement was noted, some additional effort is needed to make sure that all waste containers have proper labels. As a minimum, the container labels should include: details of producer and contact details; what the waste is (description, hazardous components); how much there is (weight, volume, concentration); type of containment, and the number and size of containers; and the time and date of transfer to the CWAA.

6. Continue to maintain vigilance with respect to the collection of waste along the ROW. This is the area with greatest public visibility most likely to give rise to external complaints.

2.4.3 Wastewater Management - Observations

BTC

The situation with respect to wastewater treatment has improved since the June - July IEC mission. The addition of surge tanks has improved performance and the Environmental Engineer hired by BTC to support the Contractors has proved effective.

CCIC

The CCIC Wastewater Treatment Plants (WWTPs) at Tovuz, Yevlakh and Kurdamir camps have substantially improved performance. September effluent test results provided by CCIC indicate that discharge from the Tovuz WWTP met Project effluent standards. The effluent discharges from Yevlakh and Kurdamir were non-compliant only for coliforms. Discharges from the Kurdamir and Yevlakh WWTPs go to municipal sewers. The new field laboratory operated by BTC/CCIC indicates that there are also occasional non-compliances at all three camps with respect to phosphorous and nitrogen. It is understood that CCIC is considering addition of micro-filtration and UV treatment to achieve compliance with coliforms and that the Project is also reviewing the procedures at Tovuz to determine if there are any lessons learned that could be applied to improve the performance of the other WWTPs.

Non-compliant conditions are still present at Kurdamir and Yevlakh and the use of a municipal WWTP is not appropriate. Nevertheless, the capability to improve effluent monitoring with a field lab has improved WWTP operations. The problem is not nearly as severe as encountered previously and the joint effort by CCIC and BTC needs to be recognized. The overall situation is considered a Level I, with the expectation that full ESAP compliance will have been achieved by the next IEC visit. (*Level I Non-Compliance, CCP Waste Management Plan, Commitment ID: 553).*

Hydrotesting has been initiated within the main BTC pipeline in the segment from Sangachal to KP 97 and at several river crossings. The hydrotest water in the main pipeline has been stored in the pipeline for multiple tests and this hydrotest water has yet to be discharged. Hydrotest water quality records were not available during the visit and, according to BTC, results were ready to come at any time.

The hydrotest water from river crossings was not tested, but BTC has assumed that the hydrotest water to be clean because no additives were used. The used water was discharged to land following filtration through straw bales to remove sedimentation and rust. According to the Plan (Hydrostatic Test Water Management Plan – Doc. N. BTC001-B110-EV-PLN-00009-E-C01) the water should have been tested prior to extraction "*to confirm its quality"* and field exit water analysis "*..will* – also - *be conducted at discharge/transfer location to determine iron levels*". Required water

quality analysis parameters are listed in Table 5.6 of the Hydrostatic Test Water Management Plan. *(Level II Non-Compliance, CCIC Hydrostatic Test Water Management Plan – Section 5).*

SPJV

Test results from the WWTP at PSA2 were available from SPJV for August 2004 only. Additional monitoring from the BTC field lab was also available for samples taken in October. This treatment plant has good performance for coliforms, BOD, COD and oil and grease, which are the main discharge parameters for a facility of this type. The plant is non-compliant for total suspended solids (TSS), as well as phosphorous, nitrogen, and sulfides. The overall situation is also considered a Level I, with the expectation that full ESAP compliance will have been achieved by the next IEC visit as it is anticipated that the loadings will have decreased as construction approaches completion (*Level I Non-Compliance, CCP Waste Management Plan, Commitment ID: 553).*

Hydrotest water has been produced and released from PSA2. The details of this testing and discharge procedures were not provided to the IEC, but test results obtained by the BTC field lab indicate that this water was within effluent discharge parameters for the parameters tested (pH, residual Cl, TSS, total N, total P, total Fe, Cu and CrVI).

2.4.4 Wastewater Management – Recommendations

BTC

6. BTC should continue the leadership role it has assumed since the February – March mission in terms of helping the Contractors to continue to work towards achieving compliant wastewater discharges and to maintain control of the procedures being followed by the Contractors for the monitoring of effluents.

7. The means by which the SPJV PSA1 and CCIC Tovuz plant achieves low coliforms is worth investigation by BTC to see if there are any different procedures that could be applied to the CCIC WWTPs at Kurdamir and Yevlakh. Conversely, assess if there are procedures being followed by CCIC that could be applied by SPJV to reduce the problem with TSS.

8. The procedures and the test results of the water used during hydrotests should be consistently maintained and managed according to plans. IEC understands that hydrotest activities have just started and recommends that the E&S organization maintain sufficient auditable records of hydrotest water quality results (pre and post tests) and final disposal options.

CCIC

9. Work to achieve effluent disinfection and control coliform concentrations in the discharges from Kurdamir and Yevlakh camps.

10. Eliminate discharges to a municipal sewer system.

SPJV

11. Consider the use of a small reed bed as a cost-effective means to achieve effluent compliance through tertiary treatment. BTC/SPJV efforts in Georgia could provide a model for this.

2.5 POLLUTION PREVENTION

2.5.1 Observations

The Project has adopted a pollution prevention plan aimed at systematically identifying potential impacts from construction activities and implementing avoidance and mitigation measures to minimize the likelihood, extent or duration of their occurrence, and any associated adverse effects. The mitigation measures include: spill prevention and management; management of existing contaminated areas, if any found during construction; groundwater protection; surface water protection; ecological receptor protection; air quality protection and dust mitigation; noise control; soil erosion control and topsoil protection.

Various provisions apply directly to the protection of surface and ground waters, including: permanent fuel and chemical storage, hazardous material storage, vehicle maintenance facilities, wastewater discharges, controlling run-off, and disposal of trench water and groundwater.

Pollution prevention along the ROW consists primarily of erosion and sediment control measures and general good housekeeping and waste management. This subject is reviewed in Section 2.6. As blasting is not a part of pipeline construction in Azerbaijan, vibration monitoring is not of particular concern.

BTC

BTC has added an Environmental Engineer to work with the two Contractors in a new initiative to "get it done" with the topic of pollution prevention. Relatively detailed plans and specifications have been provided to IEC defining actions that have taken place and are scheduled to take place to rectify problems identified by IEC during the past two missions. During this mission it was possible to review the progress of these plans in the field with visits to the Tovuz and Kurdamir Camps.

BTC is in the process of implementing a Hydrogeological Monitoring Program to comply with the relevant commitments (identify groundwater abstraction points in close proximity to the pipeline and develop a hydrogeological program for the Karayazi aquifer along the ROW). This is to provide a baseline prior to line fill and is one of the additional studies required under the ESAP. BTC reports that a sampling program has been started in the Karayazi area and also in the area between Yevlakh and the Georgian border involving sampling from nine wells and 40 artesian and sub-artesian flows. The sampling has been conducted consistent with the program, with the most recent sampling having taken place from 29th September to 2nd October (conducted on a monthly basis).

CCIC

Maintenance of irrigation drainage and stream flow and erosion and sediment controls throughout the ROW construction are discussed in Section 2.6.

Housekeeping at the Kurdamir Camp has greatly improved with the grading of the site and the laying of a gravel surface across the camp. OWS systems have been repaired or are in the process of being replaced or installed at appropriate location. Containment systems around fuel storage areas, vehicle fueling areas, vehicle washing areas and waste handling areas have been repaired or repairs are underway. Based on the progress demonstrated, the Level II non-compliance issued in the June – July report is considered rescinded.

A cautionary note is given with respect to the containment system used for the radioactive source used for NDT of pipeline welds (Kurdamir Camp). The containment area was unlocked and the area is located where flooding frequently takes place. Soil settlement due to water infiltration could be observed at the edge of the metal containment. It is not known if a source was in use at the time of the visit, but CCIC should make sure that this area is secure and that there is no risk of water entering the storage area.

Noise monitoring continues to be conducted periodically at some construction sites (mainly camps). The monitoring procedures are well established, but some measurements, such at the edge of Kurdamir Camp show non-compliances with respect to allowable nighttime noise levels (*Level I Non-Compliance, CCP Pollution Prevention Plan, Commitment ID: 1101, 1102).*

SPJV

Housekeeping at the PSA2 and IPA1 sites was observed to be good. The PSA2 Camp was not specifically toured, but could be observed from outside the fence to have good housekeeping practices. Where observed, waste storage areas were observed to be well managed with appropriate containment. A caution is raised with respect to the procedures being followed for vehicle fueling at both PSA2 and IPA1. At these locations, a plastic liner covered with protective sand is being used to

contain casual spills that commonly take place during fueling. This procedure may be effective, but will end up as a problem of disposal of contaminated soil.

2.5.2 Recommendations

1. Complete the upgrades to the various system components associated with pollution prevention.

2. CCIC needs to identify solutions to reduce noise levels at the locations where persistent non-compliances have been identified or consider compensating the affected parties for the nuisance.

3. CCIC needs to verify the adequacy of the radioactive source storage area at Kurdamir Camp.

2.6 ROW MANAGEMENT

2.6.1 Observations

During the June – July mission, one of the most significant findings for which a Level III non-compliance was assigned was for open trench management. The Project has made considerable effort to rectify this situation. The IEC was provided with detailed information on the status of open trench that could be verified in the field. Although there were some discrepancies with reported information, due primarily to the difficulty of keeping up-to-date records where construction is active, the Project was able to verify that they are appropriately tracking the amount of open trench. Information current for the week ending October 9, 2004 was that 13.75 km of trench was "open" within the categories defined by the Project as follows:

- Trench excavated with no pipe installed;

- Trench excavated, pipe installed, void space greater than 1 m (observed in the field to mean backfilled to the top of the pipe and the level of backfill is within 1 m of the ground surface).

Tie-in bell holes with excavations less than 36 m in length with access ramps or ladders are not classified as trench, although it is understood that they are accorded the same degree of community protection. Trenches flooded with >30 cm of water are identified within the different categories. At the time of the reporting for the week ending October 9 there was 1,665 meters of trench with more than 30 cm of water. The IEC considers that the classification system used by the Project is acceptable and appropriate. The Project has worked to make sure that the back end of the construction has been able to catch up with the front end such that the Project is currently in compliance with its commitment to restrict the amount of open trench to less than 15 km.

The most important aspect of trench management is not whether the Project fulfills its commitment to restrict the amount of open trench to less than 15 km, but rather the degree to which the local communities are informed and protected and to which extent the Project is able to manage properly the risks associated with the open trenches. The IEC has been provided with sufficient meeting minutes and safety information to demonstrate that the Project has given considerable attention to this issue since the June – July mission. In the field, protective measures were generally good, but some exceptions were observed. Some trenches were lacking protection (e.g. KP 115+570) and in other areas the degree of protection varied from solid fences to strips of ribbon, even for trenches close to one another next to the same village, such as near KP 428. It is emphasized that these findings were not typical. The overall Project response to the open trench non-compliance can be considered satisfactory and the IEC considers that the Project is effectively compliant with their commitments in this area.

As noted in Section 2.2, BTC has continued to add senior staff to focus on reinstatement. The amount of Phase 2 interim reinstatement achieved along the ROW has reached 244 km. In much of this area, the interim reinstatement represents what is effectively final. The 92.3 km of Phase 3 bio-restoration along the 12m ROW through the Gobustan Desert Area has not advanced since the June – July mission due to seasonality, except that at this point in time the access road along the ROW is being reinstated. CCIC and BTC need to arrive at an agreement if there are any other areas where Phase 3 biorestoration is required. Where observed in the field, reinstatement along the ROW and at river crossings appears to be properly executed. The success of the overall final reinstatement will depend on the care taken to install the SCP. In addition, care needs to be taken to reinstate within the Project Commitments the "footprints" that are associated with the pipeline, such as access roads and borrow pits, if they are not to be a part of the SCP Project.

2.6.2 Recommendations

1. The Project needs to continue to place emphasis on protecting communities from the hazard of open trench whether the length of trench is compliant or not. Verify that the protection measures are appropriate and maintained.

2. Care should be taken to make sure that temporary ROW reinstatements for the SCP do not have the potential for damaging the final reinstatement over the BTC pipeline and of the entire 44 m corridor.

3. CCIC environmental staff should be involved in the decision process to maintain access roads and should develop a tracking system that allows for the systematic monitoring of their status, maintenance and reinstatement, as needed. This same comment can be applied to borrow pits associated with pipeline construction.

2.7 ECOLOGICAL MANAGEMENT

2.7.1 Observations

The ecological programs being implemented by the Project are nearing completion from the standpoint that all of the topsoil stripping has been completed for the pipeline. Work that remains is to continue to verify the status of translocated species and to make sure that surveys continue for endangered species that could be impacted by continuing construction. In particular, ecological surveys continue to be undertaken for spur-thighed tortoises (*Testudo graeca*) and European marsh turtles (*Emys orbicularis*), which continue to be collected and relocated in appropriate habitats distant from the pipeline in accordance with the Project requirements. This work is beginning to be focused on upcoming SCP construction. Specifically, BTC will carry out the SCP zoological pre-clearance survey and the initial surveys are planned to be undertaken in October at KP 112-117 and KP 292-293. The monitoring of translocated red-listed irises (*Iris Acutiloba*) in the Mardakan Arboretum continues to be carried out.

BTC is supporting CCIC in the implementation of ecological commitments.

2.7.2 Recommendation

1. It is recommended that all of the required information, including ecological survey and evaluation, collected during pre-construction surveys be consolidated in a single pre-construction baseline survey document (previous recommendation).

2.8 CULTURAL HERITAGE MANAGEMENT

2.8.1 Observations

Cultural heritage management is predominantly the responsibility of BTC. The governing procedures are defined in the ESAP, Appendix D as *Archaeological Late Finds Protocol*. Each Contractor has also developed *Cultural Heritage Protection Procedures* that define their obligations to report chance finds to BTC. Prior to construction, the ROW was surveyed and more than 150 potentially significant archaeological sites were identified, of which only four were found not practical to avoid. Excavations at all four of these sites are now complete (Phase III complete) and ongoing work is associated with chance finds (Phase IV).

Field archaeology is conducted by the Azerbaijan Institute of Archaeology (AIA) with supervision provided by international experts under contract to BTC. Work has included monitoring of topsoil stripping and excavation work, as well as excavation of the sites identified prior to construction and chance finds. CCIC has identified several chance finds consistent with their obligations and have stopped work on several occasions. Examples of this were observed at KP 241 and KP 237, where

large ceramic containers buried more than 0.5 m below the ground surface were intersected by trenching activities. The discovery at KP 237 had been encountered only a few hours before the IEC visit and an AIA archaeologist had already stopped additional excavation and controlled the site.

The overall general observation is that the Project continues to demonstrate respect for cultural heritage management. At the time of the IEC visit, excavations were being conducted at two locations:

- KP 438+400 – Village site with pottery dating to the transition period between the Neolithic and the Bronze Age (~ 3,000 – 3,500 BP). This site was originally classified as a Level II (insignificant), but proving to be more important.

- KP 398+800– Bronze Age cemetery at Hasan Su.

Several pending excavations still remain as a result of chance finds, including the two discovered at the time of the IEC visit at KP 237 and KP 241.

As noted in Section 2.2.1, BTC has added two additional expatriate archaeologists as Heritage Officers with the reassignment of one of the existing archaeologists to serve in the position of Field Environmental Supervisor. Staffing appears to be sufficient for the BTC Project. In the past there has been some difficulty in defining precise work scopes for the Azerbaijan Institute of Archaeology (AIA). During September, BTC and the AIA visited archaeological sites along the ROW to agree scope of work at key excavation sites. This effort has resulted in the preparation of an Archaeological Plan drafted with the AIA quantifying the scope of additional archaeological excavations. This is an active document still being negotiated.

One of the previous recommendations by the IEC was for BTC to undertake a peer review of their archaeological program. This was conducted by Oxford Archaeology in June 2004 and presented in a report to BTC dated October 8, 2004. This report documents the generally good performance of BTC in implementing the Cultural Heritage program. Suggestions for improvement relate mainly to defining consistent and sufficiently detailed protocols for excavation of each site and making sure that there is the appropriate follow-up in terms of interpreting, curating and reporting the finds. Oxford Archaeology notes that the BTC Project represents "*…possibly the largest and most detailed archaeological investigation ever carried out in Azerbaijan"*.

One of the main recommendations made by Oxford Archaeology is for BTC to continue in a capacity-building role with the AIA. This is being partly achieved with the ongoing curation training program, which will help them manage the substantial artifact collection obtained from the Project archaeological excavations. Monitoring of Goranboy Museum construction, sponsored by BTC, is still ongoing.

2.8.2 Recommendations

1. BTC will need to ensure that they maintain adequate archaeological resources to cover both the BTC and SCP requirements.

2. BTC is encouraged to continue to work with AIA to enhance the overall quality of the classification, analysis, interpretation, and curation of the archaeological materials that have been collected for the Project. Oxford Archaeology has outlined a number of specific areas where BTC could contribute in the fields of osteoarchaeology and artifact conservation.

3. A requirement of any archaeological survey is that the entire project be delivered for a final publication. Oxford Archaeology recommends that the position of Project Archaeologist be expanded to facilitate the publication of the findings to international best practice. BTC should consider this concept.

2.9 COMMUNITY LIAISON

Community Liaison Management and public relations processes are responsible for communicating BTC Project information to the general public and the community in areas along the pipeline route, as well as receive and transmit community information to the BTC Project. The overall objective for the community liaison and community relations teams is to build a positive, non-dependent relationship between the BTC Project and the local communities. Specific responsibilities for community liaison include, but are not limited to:

- Providing communities affected by the Project with regular information on the progress of work and the implications for these communities.

- Informing the BTC Project of any community related issues that may impact on construction.

- Monitoring implementation of mitigation measures and the impact of construction via direct monitoring and feedback.

- Managing disputes between the BTC Project and communities.

- Assisting with the implementation of community safety, health and investment programs.

- Recruiting workers from affected communities.

Community liaison is managed by a team of dedicated Community Liaison Officers (CLOs) who report to both BTC and the Contractors.

2.9.1 Observations

Interviews with the social teams concentrated primarily on the degree to which communities were being informed as to the nature of pipeline construction and, in particular, the dangers of living near open trenches. IEC is satisfied that the CLOs have made appropriate efforts to inform the communities.

It is again noted that community or individual grievances in Azerbaijan are generally limited in number with SPJV receiving few, if any. The main community complaints are received by CCIC and BTC and continue to be related to compensation from BTC, irrigation issues, damage to property and employment. Based on available records and evaluations, CCIC performance is adequate based on a generally quick response time for grievance management.

2.10 HEALTH AND SAFETY

2.10.1 Observations

BTC

The BTC organization continues to place emphasis on properly managing the safety performance of the different parties involved during the Project development. A comprehensive Health and Safety (H&S) Management system is in place and dedicated H&S Plans and Manuals have been developed. The activities performed by the H&S team are extensive and include the significant components of the most advanced safety management systems (training, monitoring, auditing, risk analysis, safety data collection and reporting, etc.). An extensive analysis of safety data and statistics is performed including incident analysis and evaluation of immediate and root causes. Results of these analyses are shared with the field staff to improve Project performance.

CCIC/SPJV

The closing of the length of open trench and the strengthening of the community safety program represents an important step forward for CCIC. Also improvements made with respect to camp housekeeping, especially at Kurdamir Camp, represent a significant improvement from the standpoint of creating a safer environment.

During the course of the IEC visit a few specific safety issues were identified, including the storage of flammable gas at the Kurdamir CWAA, short pipe segments improperly left in unbalanced conditions along the ROW, spent fire extinguisher at a fire station, and improper use of a ladder at IPA1. These infractions were noted in the field with Project management and it is anticipated that these situations have already been rectified by the time of the publication of this report.

2.10.2 Recommendations

1. As noted in the discussion of open trench in Section 2.6, some improvements could still be made in a few locations along the pipeline where there is open trench. As previously recommended, CCIC should increase the number and the quality of fences and appropriate warning signs to be deployed along the ROW at critical locations, to discourage third parties from the use of the ROW and continue to warn about the hazards of the working sites.

2. As noted in Section 2.3.1, it is IEC opinion that the third-party aggregate and concrete source audits should include health and safety related aspects, in addition to the environmental and social aspects. Both BTC and SPJV should look to influence that safety standards normally applied by the Project are adopted for significant third-party sources, eventually providing additional resources, training opportunities for workers, and appropriate PPE. Specifically, the Project should evaluate and intervene as appropriate with the suppliers of concrete and aggregate for PSA2 and IPA1, where the Project now knows that they supply the majority of their products to the BTC Project.

2.11 ENVIRONMENTAL INVESTMENT PROGRAMME

During the mission, the IEC was briefly updated on the status of the Environmental Investment Programme (EIP) in Azerbaijan. No detailed review has been conducted on the seven priority themes identified in the ESAP and the EIP has been reviewed on the basis of information provided by BTC.

The background of the EIP program is presented briefly in the June – July trip report. The program is broken into Phase I and Phase II projects. The Phase I projects have been the subject of discussions the Ministry of Ecology and Natural Resources (MENR) of Azerbaijan such that the overall effort can be achieved as a partnership achieve the EIP goals. At this point in time the overall progress has been minimal.

Improved progress can be reported for the EIP Phase II (community driven small grants programme), which has just started to be implemented under the Community Investment Program (CIP). The Small Contracts Committee (SCC) under the CIP has approved a $750.000 budget for the EIP Phase II.

No external monitoring of the EIP is ongoing as per ESAP. The IEC recommends to implement it as soon as possible.

3 GEORGIA

The BTC Project in Georgia encompasses 249 km of pipeline extending from Azerbaijan-Georgia border in the Gardabani District and finishing in the Akhaltsikhe District at the Turkish border. The corridor followed by the pipeline is close to the existing Western Route Export Pipeline (WREP) for a short distance from the Georgia – Azerbaijan border until the BTC pipeline deviates towards Turkey at KP 19. The BTC pipeline also shares the same corridor with the SCP pipeline, which is a subsequent separate related project that has begun construction and will transport gas from the Shah Deniz field to the Georgian/Turkish border. The BTC Project includes several permanent Above Ground Installations (AGIs) including two pump stations, PSG1 located at KP 4 and PSG2 located at KP 88 with associated temporary construction work camps (Jandara at PSG1 and Tetritskaro at PSG2), as well as necessary block and check valves.

In addition to the permanent facilities, the pipeline is associated with several temporary facilities, which include:

- Temporary construction camps (Marneuli at KP 53; Tsalka at KP 111; Akhaltsikhe at KP 222; all of which are occupied.

- Temporary pipe yards for pipe (Gatchiani; Marneuli; Tetritskaro; Tsalka 2; Andeziti and Akhaltsikhe).

During this third mission the visit was conducted intermittently along the entire ROW.

3.1 CONSTRUCTION STATUS

The BTC Project uses a single EPC Contractor, Spie-Capag Petrofac Joint Venture (SPJV), for both pipeline and AGI construction. Pipeline construction for a second spread is being conducted by Punj Lloyd Ltd (PL) as a subcontractor to SPJV. Spread 2 covers KP 196 to KP249. Current (October 4, 2004) construction progress is as follows:

- *Facilities* – Pump Station PSG1 is reported to have an overall completion of 79.8%; PSG2 is reported to be at a 77.1% overall completion.

- *Pipeline* – ROW clearing and grading, 248.8 km (complete); pipe stringing, 248.8 km (complete); trenching, 207.6 km; pipe in ground, 194.4 km; backfilled, 184.1 km; interim reinstatement of the 12-m wide ROW corridor (total 67 km). Overall construction of the valve station program is 67.9%.

In the Borjomi Special Section from KP 176 to KP 196 pipeline construction from clearing and grading through trenching operations is complete and the lowering of

pipe is essentially complete with gaps remaining at KP 192 and KP 194. The first phase of backfilling is complete from KP 176 to KP 190, while the second phase is complete from KP 176 to KP 192. Four mainline valves have been constructed and the trenchless crossings in the area of the Kodiana Pass are underway.

Georgia has several river crossings (Mtkvari (Kura) East at KP 29; Algeti River at KP 53; Gheti River at KP 75; Beiutchai River at KP 116; Gumbati River at KP 137; Ktsia River at KP 139; Chil Chil River at KP 174; Borjomula River at KP 182; Kumiska River at KP 184; Oshora River at KP 186; Sakirula River at KP 199; Mtkvari (Kura) West at KP 225; Potskhovi 1 at KP 240; and Potskhovi 2 at KP 245).

All crossings are complete except the Algeti river crossings and where horizontal directional drilling (HDD) is being undertaken at the Mtkvari (Kura) East River crossing near Rustavi (KP 29) and the Mtkvari (Kura) West River crossing at KP 225, which has not yet commenced and will be open cut during the 3Q of 2004 and the 1Q of 2005.

3.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT ORGANIZATION AND RESOURCES

3.2.1 Resources and Organization - Observations

BTC

A general observation is that BTC has assumed many of the responsibilities for correcting non-compliant conditions and assuring environmental compliance for ongoing activities. This is reflected by increased staffing of the BTC in-country organization in response to deficiencies in SPJV capabilities. Since the June – July mission BTC has provided support to SPJV with the addition of an Incinerator Commissioning Engineer and support from BTC's STP/Incinerator expert team (composed of two expatriate process engineers and a chemist). BTC has also re-organized their team and their Field Environmental Supervisor's role has been broadened to actively assist SPJV on biorestoration. BTC also hired a consultant to audit topsoil management and may hire more consultants, as necessary, to reinforce the biorestoration effort.

BTC has also provided additional support to their Heritage Management group with the addition of an archaeologist and an Architectural Historian to develop statement of work and cost proposals for the study and conservation of three significant architectural properties located near the project area (Atskuri Castle, Tadzrizi Monastery and Sakire Fortress). It is recognized that the environmental staff includes senior personnel with previous experience with similar large pipeline construction projects. Adequate staffing and resources appear to be sufficient to manage the second spread.

One observation with respect to the BTC field staff is its organization. It was noted that several diverse functions report to the Spread manager, including Quality Assurance, Health and Safety, and Cultural Heritage. Although this system may work in practice, it is much more common that these types of functions work in parallel with the Spread Manager. The goal of the QA Manager, for example, is to assure quality, whereas the Spread Manager may wish to emphasize speed and efficiency.

SPJV

SPJV staffing has essentially remained at the same level as observed during the June – July trip and is not adequate to undertake all of the required social and environmental activities required by the Project. This is a situation that has been recognized since before the June – July mission and to a certain degree their weaknesses in terms of staffing and resources are being covered by a closer working relationship with BTC, such that the field teams are now basically working as one team.

3.2.2 Resources and Organization - Recommendations

BTC

3. BTC's efforts to improve their E&S staffing to be able to compensate for deficiencies in the SPJV organization must be recognized. The system is functioning adequately at its current staffing level. A caution is raised that care will have to be taken that the SCP Project does not interfere with the ability of any of the BTC E&S staff to fulfill their BTC responsibilities.

4. BTC should reevaluate the appropriateness of having functions such as Health and Safety, Quality Assurance and Cultural Heritage report to the Spread Manager.

5. At this point it may be too late to consider that staffing improvements within SPJV's E&S organization can be effective for the BTC Project, although there may be merit in considering staff improvements to cover the upcoming SCP activities. SPJV will need to continue to work with the BTC specialists to enact necessary E&S improvements.

3.2.3 Management of Change - Observations

The supporting documentation and correspondence among the involved parties dealing with some E&S related changes during Project development was reviewed during the mission. Several Management of Change processes considered to be Class I have taken place since the June – July mission involving minor reroutes, including avoidance of archaeological sites. The IEC concurs that these minor reroutes can be considered to be Class I changes. More significant Management of

Change processes are considered those that involve a change to an ESAP commitment. In such cases it is anticipated that these types of change may be classified as Class II or III and that documentation for the change will be provided to a degree similar to what was developed for defining the original commitment.

The most relevant ESAP requirements dealing with MOC are summarized:

- *"MOC procedure at least include…identify the potential of E&S implications, assess the potential impacts, …ensure that the process is transparent and auditable";*

- *"Example of the E&S actions that may occur and fall under the MOC process include additional environmental and social assessment to determine the impact of the change,…supported where necessary by other appropriate teams."*

During the visit IEC reviewed the following MOC relevant to E&S aspects of the project development:

- AGT002-2004-PM-DCN-00035, Class II – change to allow 15 km of open trench per spread, for a total maximum allowable of 30 km in Georgia.

- AGT002-2004-PM-DCN-00035 Rev U-02 – change to allow for a further increase of open trench in Spread 1 from 15 to 25 km for the months of October, November and beginning of December. This change is reported to have been required by the need to complete construction in high altitude areas before the winter period.

- AGT002-2004-PM-DCN-00043, Class II – change the ROW configuration to allow SPJV to open the full 44-m width of the ROW for both BTC and SCP projects.

- AGT002-2004-PM-DCN-00030, Change Type 4, Class I, Increase of Pipeline ROW width at some undulating sectors through Borjomi/Bakuriani Section KP 176 to KP 196 (excluding the Kodiana Pass KP 190.91 to KP 193.14, which is subject to a separate change notice, AGT002-2004-PM-DCN-00017 rev 2)

- AGT002-2004-PM-DCN-00032, Change Type 4, Class I - cancel requirement to make baseline of bird and reptile species as there is already enough information collected during the ESIA development phase. This request is pending.

The Change Management process for the open trench issue is provided in Section 3.6. The only observation in this section is that the changes were late and after the fact, and that limited or no supporting documentation was available to demonstrate the participation of the E&S team in the decision process.

The change regarding the final reinstatement of a 12m corridor for BTC, at several locations along the pipeline ROW, only after the construction of the parallel SCP

pipeline has been identified as an issue to be addressed since the February – March 2004 IEC mission. As this is the type of change that represents different construction procedures from those identified in the ESIA, it is expected that the E&S documentation and analyses to support this decision would be conducted at the same level as the original construction procedures were defined.

The interaction between the BTC and SCP construction activities along the entire pipeline portion in Georgia has been extensively discussed and evaluated during the ESIA phase of the Project development. Project commitments can be summarized in the following major points (as presented in the ESIA):

- At any one time the maximum disturbed width construction corridor should be 32 meters;
- At no one point should the 32 meters ROW ever be disturbed;
- The standard ROW for the construction of each pipeline (i.e., BTC and SCP) should be 32 meters.

The new construction sequence follows specifications in a 44 meter construction corridor with a 32 m ROW:

- Strip full 44 BTC / SCP corridor;
- Build BTC in 32 m ROW;
- Temporary reinstatement including erosion control between construction of BTC and SCP;
- 12 m permanent reinstatement onto BTC, and 32 m ROW for SCP construction;
- Final reinstatement of the 32 m SCP ROW in addition to the permanent reinstated 12 m onto BTC: total of 44 m permanent reinstated corridor.

In addition, the Project is committed to complete reinstatement of the ROW if the SCP is delayed by more than a year following the BTC construction phase.

The construction sequences and the time constrains, as described in the ESIA, were the results of an extensive technical and environmental evaluation with the aim at minimizing the impacts and maximizing mitigation during the construction of the two pipelines. Environmental, timing, ecological and social aspects, as well as constructability aspects were considered during the decision process presented in the ESIA. According to the information provided by BTC during the visit, evidence of a similar level of assessment for the proposed change to support its approval has not been developed. The Change Management document itself provides justification as a summary "dot" list and refers to the acceptability of this procedure from the

standpoint of only the top soil management issue with reference to the results of a draft audit report, under preparation, which was not provided to the IEC.

Similar comments apply to the change related to the ROW width in the Borjomi area. The definition of the original width of the corridor was evaluated in detail during the ESIA and the ESAP development phase. The increase of the width, which may be necessary, should be equally justified and assessed by E&S department according to the ESAP requirements previously described. The MOC appears, according to available data, information and documents provided by the in-country team during the visit, to be not sufficiently supported by any specific E&S analysis and to be driven mainly by construction needs.

The same comment as above can be made with respect to the change related to the bird and reptile survey that has been cancelled based on the consideration that sufficient data were collected during the ESIA phase. The data and the information collected during the ESIA phase were those, which defined the need for preconstruction survey as required in the ESIA. If these data and information are now considered sufficient, this new evaluation should be supported by a scientific evaluation comparable with the one that defined the need for these surveys. In addition, the IEC considers that it is not appropriate that the MOC has been initiated after construction has started and the survey as a pre-construction tool is no longer feasible.

3.2.4 Management of Change – Recommendations

1. IEC recommends supporting the MOC process according to the ESAP principles and requirements in terms of supporting E&S documentation in the decision process.

2. The IEC continues to recommend that the Project complement the current Change Management documentation with an adequate comparative assessment of the potential impacts related to changes in construction procedures associated with the construction of the SCP and to define an environmental, social and safety management plan relevant to the new construction strategy.

3. In cases where the Management of Change process represents a change to Project commitments defined in the ESAP or in the ESIA, consider that such changes could be assigned as Class III with a requirement for Lender Group notification prior to the change.

3.3 CONSTRUCTION CAMPS, INFRASTRUCTURE AND SERVICES

The review of construction camps, infrastructure and services focuses on construction operations that potentially have an impact to surrounding infrastructure, natural resources, and community and household assets, including land, roads,

borrow pits and irrigation systems. In addition, the review of this topic includes camp water supplies and general aspects of camp management.

3.3.1 Observations

BTC

Third party sources of supplies, in particular aggregate and cement/concrete are still not being consistently evaluated in terms of their compliance with ESAP requirements in the cases where the Project represents a significant percentage of their production. The Project Core Management Team (CMT) has identified a process to identify which third-party suppliers as already discussed in Section 2.3.1 for Azerbaijan.

A problem with the application of the proposed system is that basically three types of situations are mixed that should be treated differently. The three situations include suppliers of concrete; borrow pits used as a source of construction aggregate; and third-party borrow pits used for trench backfill or for the disposal of excess spoil. These situations are reviewed separately in the context of ESAP commitments in Georgia.

<u>*Concrete suppliers*</u>: If a supplier of concrete provides a significant amount of its supply of concrete to the Project, it is not relevant whether or not the business will be in existence after the Project is completed or whether the business was in existence before the Project. The Project should work to prevent pollution that could be caused by the improper control of cement truck wash water, nuisance dust, an unsafe work environment because of lack of PPE, etc The Project has already committed to the following in the CCP for Procurement and Supply: *"…The Contractor will submit to BTC Co an environmental statement giving details of the proposed sourcing and transport of the materials and the environmental impact involved, e.g., proper methods for dust control and management of concrete wash water…"*. It is noted that this commitment (which for whatever reason is not in the List of Commitments table of the same document) does not specify whether the Project is a 50% user or not.

<u>*Aggregate*</u>*:* In the case of borrow pits for aggregate extraction, the Project should be able to verify that the source of the aggregate is not from river dredging, regardless of whether the business has used this source in the past or will use it in the future. The Project has already committed to the following in the CCP for Procurement and Supply: "*…Sand, Stone and Aggregates: The need to buy these materials shall be minimised by crushing rock excavated from the work site. The balance of materials shall only be procured from sources that have been approved by BTC Co. The contractor will submit to BTC Co. an environmental statement giving details of the proposed sourcing and transport of the materials and the environmental impact involved"*. Commitment Z3 (N17) - Contractor Control Plan - Procurement & Supply – Georgia states: "*Extraction of Aggregates – surplus rock and subsoil from*

right-of-way may be used as construction material for other project needs; and additional aggregate should be sourced if possible from local aggregate extraction sources, ESA required prior to extraction". Contractor Control Plan, Infrastructure & Services – Georgia, page 12, with respect to aggregates: "…*Completion of full environmental and social permitting procedures prior to extraction"*. Again, Project commitments already in place do not specify whether the Project uses more than 50% of an aggregate source.

Borrow pits used for trench backfill or spoil disposal: These third-party facilities should be treated consistent with Project commitments. Commitment N34 (add) (P35) Contractor Control Plan, Infrastructure & Services – Georgia states: "*The contractor shall cooperate with BTC Co. to ensure all proposed sources of construction material, e.g., borrow pits, are compatible with the ESIA-Draft for Disclosure"*. The Contractor Control Plan, Reinstatement – Georgia states with respect to waste rock and disposal sites (standard procedures – practice is prohibited in sensitive areas): "*The waste material shall be compacted; the surface shall be landscaped to resemble local conditions and shall not extend more than 3 m in height above the natural contour; the slopes of the surface shall not exceed 60°. The site shall be covered with soil and an erosion mat and planted with either seeds or shrubs using native species"*. Commitment I50 part I (J11) - Contractor Control Plan, Reinstatement – Georgia states: "*Disposal sites for waste soil and rock: Potential disposal sites shall be identified and assessed by CONTRACTOR and a Waste Soil and Rock Disposal report submitted to COMPANY for approval. The report will contain technical and environmental assessments on all the sites considered and propose, with justification, those to be used. CONTRACTOR shall plan, develop, operate and re-instate those sites"*.

SPJV

As noted above, SPJV has three operating work camps along the pipeline ROW (Marneuli, Tsalka, and Akhaltsikhe), as well as two that serve the pump stations (Jandara Camp at PSG1 and Tetritskaro Camp at PSG2). The two pump station temporary construction camps have a maximum capacity of approximately 450 workers, each, while the temporary pipeline camps have various combined workforces of up to about 750. During this mission the camps at Tsalka, Tetritskaro at PSG2, and Akhaltsikhe were visited as well as PSG2, PSG1 and the Akhaltsikhe Mechanical Yard and the Bakuriani Pipe and Maintenance Yard with the following observations:

- *Water supplies*: Camp water supplies are being managed to assure compliance with Project commitments. Test records provided for PSG1 and PSG2 indicate that water quality meets WHO standards. A problem with water quality identified by SPJV is an elevated sulfate concentration in the well water at the Akhaltsikhe Camp. SPJV is evaluating different solutions for removing sulfates at this location. It is not anticipated that excess sulfate will create a health problem unless large quantities are consumed and the primary use of this water is

for sanitary use; water regularly used for drinking in Georgia, Borjomi bottled water, also has a high sulfate concentration. Water for drinking and kitchen used is provided from bottled water. Some difficulties with water treatment from Bakuriani municipal water have also been encountered, although the problems are not considered to be significant for sanitary use. An issue still remaining with all camps using well water is sustainability, which is still pending. SPJV has not hired a hydrogeologist for conducting the required sustainability studies and the IEC was informed that BTC would provide a hydrogeologist for this effort (*Level II Non-Compliance, CCP Infrastructure and Services, Commitment ID: N13 (P27))*. The non-compliance is assigned a Level II, because this is a non-compliance that was identified during the previous two IEC missions. However, it is unlikely that an actual problem exists.

- *Project footprint*: The Project footprint is essentially complete in terms of land take and the issue remaining is reinstatement. In the case of new borrow pits, quarries, or rock/spoil disposal sites the expectation is that reinstatement will be completed by the Project. Where third-party sources are used, and where the Project has significant impact on production, the expectation consistent with the ESAP is that reinstatement will take place such that the borrow pit is at least no worse than when first used, unless the owner documents that reinstatement is not desired. It is recognized that the *Contractor Control Plan, Reinstatement – Georgia* is not specific for existing borrow pit restoration, although this is clearly compatible with ESAP principles. Nevertheless, Commitment I16 in this Plan states: "*The contractor shall reinstate third-party land in accordance with any pre-entry agreement. If there is no pre-entry agreement, the contractor shall fully reinstate any land disturbance caused by construction or associated activities. ……. The above principle includes, but is not limited to third party pipelines, irrigation systems, cables and services, railways and roads*. Borrow pits are a form of "associated activity" and the IEC believes that it is reasonable to include borrow pits within this commitment, also taking into account that the Project in Georgia has an overall commitment to *Improve on Current Best Industry Practice*. Where borrow pits are used for the disposal of spoil, the Commitments are clearer with respect to reinstatement. The Jandari and Lemshveniera borrow pits near PSG1 have been or are being used by SPJV for the disposal of spoil and these borrow pits will need to be reinstated. At PSG2 there is a large stockpile of surplus spoil amounting to ~ 120,000 m^3. The Project is considering different options for final disposal, including removal to borrow pits. As noted in Section 3.3.1, the *Contractor Control Plan, Reinstatement – Georgia* allows for in situ disposal unless the site is in a sensitive area or where disposal is otherwise prohibited. As noted above, the requirements are clearly spelled out: "*…The waste material shall be compacted; the surface shall be landscaped to resemble local conditions and shall not extend more than 3 m in height above the natural contour; the slopes of the surface shall not exceed 60°. The site shall be covered with soil and an erosion mat and planted with either seeds or shrubs using native species"*. The ESAP does permit the use of borrow

pits for the disposal of spoil. It is recognized that in some cases reinstatement of infrastructure, including camps, assess roads, borrow pits, etc. will not take place until completion of the SCP Project. For the purpose of the BTC Project it is expected that closure plans will be prepared.

- *Unauthorized disposal of spoil from PSG2* in a borrow pit about 4 km from PSG2 was also reported to the IEC. The rationale for this disposal remains unclear to the IEC as the PSG2 spoil pile noted above is much closer to PSG2 than the borrow pit, but in any case this unauthorized activity has been a contentious issue between SPJV and BTC, to the point that BTC has issued a "Stop Work Notice" to SPJV. This borrow pit is reported to be within the Tetritskaro Sensitive Forest Area, which would make it a severe non-compliance with respect to ESAP commitments. A specific non-compliance is not called for in this report as it is an issue already identified by BTC and corrective actions requested.

- *Irrigation channels*: Irrigation channels are a significant issue along portions of the pipeline ROW. Where observed by IEC, construction activities have taken place with good protection of irrigation channels and pipes. Nevertheless, damage to irrigation channels is a common grievance. Based on the SPJV Grievance Log, many complaints appear to be associated with Spread 2 and it is not clear the degree to which these grievances are resolved. BTC has also noted a concern as to whether the Spread 2 irrigation channel grievances are being properly handled.

- *Third-Party Concrete*: Both PSG1 and PSG2 have required the acquisition of large quantities of concrete. The actual commitments are defined as noted above in the CCP for Procurement and Supply: "*The Contractor will submit to BTC Co an environmental statement giving details of the proposed sourcing and transport of the materials and the environmental impact involved, e.g., proper methods for dust control and management of concrete wash water"*. Information has not been provided to indicate that the Project has fulfilled this level of commitment. The IEC believes that the Project should be able to demonstrate that the facility has properly managed concrete wash water, controlled nuisance dust and provided its workers with minimum PPE. *Level II Non-Compliance, CCP Procurement and Supply, Commitment ID N34-P35.*

- *Third-Party Aggregate*: Both PSG1 and PSG2 have required the acquisition of large quantities of aggregate. The primary concern in the use of third-party aggregate sources is whether or not the extraction has been conducted in an environmentally sound manner, in particular if the source is from river dredging, which is a common, but unacceptable practice. Significant social issues could be nuisance dust, worker protection and land take. Information has not been provided to indicate that the Project has fulfilled this level of commitment. *Level II Non-Compliance, CCP Procurement and Supply, Commitment ID N34-P35;* Z3 (N17).

- *Road Crossings*: Road crossings along the pipeline ROW appears to have been managed within BTC Project commitments.

- *Access roads to the ROW*: Access roads appear to have been managed within BTC Project commitments.

- *General Camp Management*: Housekeeping problems due primarily to mud continue to be observed at PSG2, which would have benefited by establishing a working surface before the beginning of construction. This situation has not favored the effectiveness of pollution control systems, as discussed in Section 3.5. Improvements were observed at the Bakuriani Maintenance Area from what was observed previously. The Akhaltsikhe Mechanical Yard also exhibits acceptable housekeeping. The camps at Tsalka and Akhaltsikhe were again found to be clean and well-managed.

3.3.2 Recommendations

1. As noted for Azerbaijan, BTC should finalize a Project position for third-party suppliers of major project raw materials, in particular aggregate and concrete. The current draft CMT Project position is not acceptable because it undercuts Project commitments that already exist for Georgia.

2. Verify that the third party sources for aggregate and concrete currently being used by SPJV are compliant with ESAP commitments. Work with the owners to improve deficiencies as appropriate.

3. Borrow pits will need to be reinstated consistent with ESAP commitments and principles. If borrow pits are to be used for the SCP Project, the BTC should be responsible for preparing closure plans. Similarly, the Project will need to properly manage the large amount of waste rock and soil accumulating at PSG2. The ESAP permits in situ reinstatement. If an alternative option is considered, the Project should evaluate all potential environmental impacts in the decision, including nuisance dust, emissions and community safety from the large number of trucks that would be required.

4. SPJV needs to complete water sustainability studies as needed (previous recommendation and related to the Level II non-compliance indicated above).

5. BTC ecologists should evaluate if the unauthorized disposal of waste rock and soil from PSG2 at a borrow pit by SPJV represents a significant impact to the Tetritskaro Sensitive Forest Area. This ecological evaluation should be accounted for in developing appropriate mitigation for this unauthorized disposal.

6. BTC/SPJV should make sure that grievances associated with damage to irrigation systems are properly managed, with special attention to Spread 2.

3.4 WASTE MANAGEMENT

3.4.1 Non-Hazardous and Hazardous Waste – Observations

The Project has taken several initiatives to improve waste management. Waste segregation in the camps was found to be much improved since the last June – July mission. Where visited in the field, the kitchens have developed improved segregation procedures used within the kitchens to minimize the contact of organic materials with the other non-putrescible waste streams. SPJV reports that the amount of "mixed waste" being processed has been substantially reduced because of improved waste segregation in the kitchens. Additional improvement has been observed with respect to the labeling and tracking of the separate waste streams. The physical aspects of waste containment in terms of appropriate bunding, protection from rainwater, and improved segregation during storage are also in an improved condition from what was observed during the June – July IEC mission. These improvements are offset by continued difficulties with the final disposal of waste.

The incinerator operated by SPJV at the Central Waste Accumulation Area (CWAA) at the Jandara Camp at PSG1 was not being operated at the time of the IEC visit pending system upgrades and installation of the data logging and reporting system. Its probable startup appears to be in late October or November. The Project is considering adding a second incinerator as a waste disposal solution if this incinerator will not be operational, but a problem with this solution appears to be difficult procurement within a useful timeframe (it could be available during the second quarter 2005). Meanwhile the existing incinerator at PSG1, when in operation, is envisioned to be used for non-hazardous waste only rather than for non-hazardous and some hazardous waste which was the original plan. However the project has a pending solution for hazardous waste (see last paragraph in this section) One significant improvement to the incinerator has been the construction of a treatment system for the hazardous scrubber liquor. The backlog of this wastewater has now been treated and accumulated sludge is being stored in drums. Based on past observations of this incinerator, as well as the similar incinerator in Azerbaijan, the Project may wish to consider further restricting the input of the incinerator to non-organic non-hazardous waste. The high moisture content of the organic waste has not helped the incinerator to burn efficiently and if there is a good segregation of food waste in the kitchens, it may be practical to consider composting as a solution to the organic waste stream. The operation of the Project incinerator with improper emissions control is still a non-compliance (*Level II Non-Compliance, CCP Waste Management Plan, Commitment ID: J34, Part I and J36* Although this is a repeat Level II non-compliance, it is not categorized as a Level III because IEC recognizes that BTC has taken the lead to make sure that the incinerator will eventually be able to provide a compliant solution for the disposal of non-hazardous waste.

The failure of the incinerator system to manage non-hazardous waste resulted in the recent disposal of approximately 190 tons of "mixed waste" (i.e. domestic/municipal waste that is non-hazardous, non-reusable/recyclable such as plastics, paper,

aluminum etc., that has been contaminated with minor quantities of food) at the non-compliant Iagludja municipal dump site, which is owned and operated by the government. Prior to the use of municipal dump, the Project had utilized a non-compliant third-party incinerator operated near Rustavi, referred to as the Sarini incinerator, for which a Level II non-compliance was assigned during the June – July trip mission. It is understood that this facility has not been used since the last IEC mission and this Level II is considered rescinded.

At the time of the June – July IEC mission, the Project had not yet used a municipal dump for the disposal of waste and a non-compliance was not identified. Now that this facility has been used, it does represent a significant failure of the waste management program in Georgia. Because the incinerator is still not functional, non-hazardous waste continues to accumulate and it is likely that the Iagludja facility will need to be used again.

As offset for this non-compliance, the Project proposes to fund the production of a conditioning improvement plan, which outlines the steps that can be taken to improve the Iagludja facility in the direction of EU compliance. It is recognized that full EU compliance will not be achieved, but the facility can be placed in a pathway towards EU compliance. The IEC notes that the proposed conditioning improvement plan (still under development) represents the potential for identification of measures which will result in true improvement to the Iagludja site, if it is managed through a comprehensive MOC process. It is understood that BTC is in discussion with the Ministry of Environment regarding the nature and extent of the assistance that is reasonable to provide in order to improve the landfill.

Based on the IEC visit to this facility, IEC recommends that several improvements would need to take place. These may include:

- As the Iagludja site is in a valley, water entering the waste area from upstream should to be collected and piped past the waste to a downstream point, to avoid contaminating surface water.

- The clayey soils at the Iagludja site offer a natural containment for leachate that currently appears at the toe of the waste. This leachate should be collected and managed. This management could take the form of treatment with a reed bed, or could also involve recirculation to promote the decomposition of the waste.

- BTC should work with the municipality to improve operating procedures: elimination of open burning, management of scavengers and access control, use of daily soil cover at the working face, improve security, improvement to the entry gate and fencing and establishment of waste acceptance procedures, etc.

BTC may wish to consider using an NGO specializing in waste management to provide the day-to-day support that the municipality will need to be able to achieve and maintain appropriate operations and, in particular, be able to manage the social

problems of those individuals who currently depend on sorting through waste for their livelihood.

The observation that IEC has at this point in time is that the proposed approach for waste management by the Project is late in terms of its implementation. The conditioning of a municipal dump site is still in the planning stage and should be managed properly according to the MOC – ESAP requirements.

The actuality is that a non-compliant facility has been used without having planned in advance to condition the facility towards EU compliance. As such, it is a serious breach in ESAP commitments and the IEC assigned a Level III to a similar situation in Azerbaijan during the June – July mission. In the case of Georgia, the preparation of a conditioning improvement plan is considered to be a positive step. Accordingly, the non compliance is assigned a Level II (*Level II Non-Compliance, CCP Waste Management Plan, Commitment ID: J1, J16, J18 (N15)*. For this non-compliance to be reduced or eliminated, the Project will need to properly develop the conditioning improvement plan and manage the issue according to a comprehensive MOC. Based on the observations made by the IEC and within the experience base of our team members, it is expected that the conditioning of this facility can be achieved within what can be reasonably provided by BTC.

Hazardous waste is being properly stored mainly at PSG1 CWAA until BP finalizes the construction of a hazardous waste landfill. During the mission the IEC was briefed by a representative of AZBU, who is responsible for the development of this facility. A site has been selected at Sagarejo, Georgia and the ESIA for this facility is complete for submission and public consultation. BP will select the preferred third party and fund the construction. The facility will be operated by a third party. The overall process is considered by the IEC to be a positive development to provide an important piece of waste management infrastructure needed in Georgia, although based on the information provided during the meeting the authorization process may require several months to be completed.

3.4.2 Non-Hazardous and Hazardous Waste - Recommendations

1. BTC should continue to work with SPJV to define a solution to the accumulation of unsanitary "mixed waste" at the CWAA. Now that the Iagludja facility has been used and will likely be needed in the future, the preparation of a conditioning plan for the facility is considered to be an important positive step to achieving a solution for final disposal.

2. Complete the improvements to the existing incinerator and work to solve as much of waste disposal problems as practical with the existing system.

3. Consider composting as an option to manage organic kitchen waste. This solution will require an aggressive segregation of this waste stream in the kitchens. If properly managed, composting could reduce the health hazards of

accumulating "mixed waste" and possibly allow for an improvement in the operation of the incinerator.

3.4.3 Wastewater Management - Observations

The Project has dedicated considerable resources to sewage treatment and can demonstrate substantial improvement in terms of effluent quality at all locations. A significant improvement has been the development of a treatment system for the incinerator scrubber liquor at PSG1. In spite of this effort, full compliance has not been achieved at any of the SPJV WWTP locations. Furthermore, the Marneuli, Tsalka, and Akhaltsikhe camps all discharge to presumably non-compliant municipal sewers. As previously noted by the IEC, the use of municipal facilities that are known not operating at required standards represents a non-compliant condition and is not acceptable practice. Based on September test results, the overall situation is not as critical as in the past, but none of the WWTPs have achieved compliance with phosphorous.

The Marneuli Camp WWTP is closest to compliance with the only other parameter slightly out of compliance from September testing being lead (0.19 mg/l vs. the standard of 0.1 mg/l). The biggest problem with effluent discharges at all of the WWTPs except Marneuli is coliforms. The Project standard is 400 counts/100 ml and the results for Tsalka VOR 1 and VOR 2, PSG1, PSG2 office, and PSG2 camp exceed 2,400 counts/100 ml. The previously compliant Akhaltsikhe WWTP is slightly better with coliforms, but is still non-compliant based on September test results of 680 counts/100 ml. Nitrogen and ammonia are other parameters where most facilities exhibit non-compliant conditions.

Based on the substantial efforts made by BTC to work with SPJV to achieve compliance by engineering improvements to existing equipment, adding new equipment, and constructing reed beds for tertiary treatment, no non-compliance was assigned during the June – July IEC mission. At this point in time, however, the system needs to be assessed in terms of performance. . *Level I Non-Compliance, CCP Waste Management Plan, Commitment ID: J16, J20 (S7).*

It is understood the BTC is considering initiating a change management process that will change effluent standards to reflect receptor quality. EU standards allow for consideration of receptor, but the Georgian Ministry of the Environment (MoE) has required only the most stringent standards. Compliance with MoE standards is based on the assumption that the receptor is a high quality stream, which is not the case if the discharge is over land, for example. The type of change could be justified for some parameters such as phosphorous and nitrogen, but may not be applicable for others. In any case, this type of MOC process will reflect an actual material change to an ESAP commitment and it is expected that there will be comprehensive technical support documents for these types of change.

An additional issue identified by BTC during the last few months has been the lack of field toilets along the ROW. The IEC did not assess whether the number observed was sufficient or not, but notes that communities have complained about workers using unauthorized latrines.

3.4.4 Wastewater Management – Recommendations

1. Consider additional control systems for the control of coliforms. For example, microfiltration and UV treatment are being considered in Azerbaijan for sewage effluent of similar quality to what is being produced in Georgia.

2. Ensure that a proper MOC process is applied in case effluent standards from WWTPs are proposed to be changed.

3. Verify sufficiency of field toilets and remediate problems as appropriate.

3.5 POLLUTION PREVENTION

3.5.1 Observations

The Project has adopted a pollution prevention plan aimed at systematically identifying potential impacts from construction activities and implementing avoidance and mitigation measures to minimize the likelihood, extent or duration of their occurrence, and any associated adverse effects. The mitigation measures include: spill prevention and management; management of existing contaminated areas, if any found during construction; groundwater protection; surface water protection; ecological receptor protection; air quality protection and dust mitigation; noise control; soil erosion control and topsoil protection.

Various provisions apply directly to the protection of surface and ground waters, including: permanent fuel and chemical storage, hazardous material storage, vehicle maintenance facilities, wastewater discharges, controlling run-off, and disposal of trench water and groundwater.

BTC continues to prepare specific documentation in response to the 13 requirements for further work indicated by the Georgian government for the Environmental and Social Impact Assessment approval. The current status of these 13 requirements for further work is reported by BTC to be the same as reported in their latest Quarterly Report and is not repeated here. One of the requirements for further work relates to the prevention of oil spills due to third party interference. The IEC did observe the field implementation of physical pipeline protection measures and notes that they are extraordinary when compared to conventional pipeline construction.

SPJV

Significant improvements have been observed at most of the SPJV facilities, but some problems still remain with respect to the physical environment of areas where spills or contaminated water could be present, primarily at fueling areas, vehicle washing sites, and some of the waste accumulation sites. These problems are camp-specific, as camp and workplace conditions are variable. A general overview with a few example situations are identified on the basis of locations visited:

PSG2: No significant improvements were observed at this location from what was observed during the June – July mission. In the vehicle washing area the bunding was broken and, although an OWS was present, wash water did not drain to the OWS, but spilled to the ground. The waste accumulation area still lacks appropriate bunding. Bunding in the maintenance area is still not effective and the OWS damaged by a truck collision has not been repaired. Pollution prevention systems are not helped by the muddy conditions encountered at this site.

PSG2 Camp: Significant improvements were encountered in terms of the pollution prevention systems present at this location. The fueling area now has containment and drainage goes to an OWS. This OWS may be undersized, however and will require frequent maintenance. The spill kit at this location was deficient.

PSG1: Good housekeeping practices were observed at this facility and pollution prevention systems in place and functioning. The CWAA was well managed and the new containment and treatment system for the incinerator scrubber liquor represents an important step forward in terms of preventing pollution from this hazardous liquid.

Tsalka Camp: Significant effort has been placed in improving containment systems and verifying that OWS systems are appropriately managed. An issue identified during the visit was the potential noise from generators and WWTP located at site boundaries and odors from the sewage treatment plant both affecting a local residence. SPJV personnel were not able to determine if the residence was actually occupied, although the IEC was subsequently informed that it is occupied, and the SPJV monitors could not demonstrate when and where they had obtained compliant noise monitoring results. It appears likely that non-compliant conditions are present with nighttime noise levels.

Akhaltsikhe Camp: No problems were identified. The fueling area was properly bunded and the OWS was clean. The waste segregation area was also well constructed and clean.

Akhaltsikhe Mechanical Yard: No significant problems were identified, except for the safety risk posed by the deteriorated sand bags used to "secure"

concrete coated pipe. At the time of the visit, a recommendation was made to verify the adequacy of pipe support systems and make improvements as required.

Bakuriani Pipe Yard and Maintenance Area: Containment systems in the fueling, wash and waste management areas are now complete and are generally well done. The most significant issue at this area during the June – July was the disposal of wastewater from a cement batch plant into an unlined pit with no treatment, containment and/or monitoring being conducted. This pit has been closed and the batch plant relocated for the SCP Project and a lined, chambered wash water collection area has been established. The Level II non-compliance for this activity is rescinded.

The only non-compliant situation was encountered at PSG2. Although it is recognized that the problems observed there do not represent a high critical hazard, it is the third time that the same problems have been observed. For this reason the non-compliance is assigned a Level II (*Level II Non-Compliance, CCP Pollution Prevention Plan, Commitment ID: H42)*.

As noted above, it is understood that noise monitoring is conducted routinely at and around the camps. Noise monitoring results were not reviewed during this IEC mission and the only potential noise situation is that associated with the operation of the WWTP at Tsalka Camp, as noted above.

At the time of the visit, there had been sufficient rain such that dust control was not an issue. The SPJV Grievance Log suggests that dust control has been adequately managed.

Vehicle air emission is monitored through periodic inspections. Problems continue to be encountered, in particular with non-compliant VOC values. The IEC has not raised a non-compliance for this issue as it has been recognized by the Project and actions taken.

Vibration monitoring continues to be conducted at blast sites and tests have been conducted to evaluate the potential for vibration damage from heavily loaded trucks and construction equipment. A large number of grievances have been filed with SPJV with respect to vibration damage, primarily from the movement of heavy machinery. Documentation was provided to the IEC to indicate that claims were dismissed on the basis of vibration tests within affected areas. It is noted that in some cases testing had to be repeated (due to loss of test results from the vibration monitoring machine) and that the evaluation process took place only after several months, but the Project did react in a proper manner to evaluate the claims.

3.5.2 Recommendations

1. Complete the program of upgrading pollution prevention systems, with particular attention to PSG2.

2. Conduct a complete evaluation of noise levels at the Tsalka WWTP and determine if there is any non-compliance. If a non-compliant situation is encountered, expected to be with nighttime noise levels, remediate the situation. This remediation could consist of a noise barrier, relocation of the WWTP and nearby generator, or compensate the affected household(s) as appropriate. Consider also if odors are not a nuisance to the affected individuals.

3. Conduct additional emissions testing and maintenance, as required, to achieve compliance for vehicle emissions (repeat recommendation).

3.6 ROW MANAGEMENT

3.6.1 Observations

The amount of open trench was identified as a significant issue during the June – July IEC mission. During the field visit the IEC was not provided with detailed information on the status of open trench (Open Trench Register) that could be verified in the field, so the numbers reported in this report have not been field verified by the IEC. The Open Trench Register was available to IEC only at the end of the visit in Georgia. Nevertheless, it is expected that the Project is appropriately tracking the amount of open trench. The definition of what constitutes an "open trench" is interpreted by the IEC to be reasonable and is the same as used for Azerbaijan and is not repeated here.

Information current as of September 8 indicated that 25.37 km of trench was "open" (20.5 km in Spread 1 and 4.87 km in Spread 2). As that time the commitment was for only a maximum of 15 km to be open across both spreads, so at that time the Project was non-compliant. On September 14 the Project approved Change Management AGT002-2004-PM-DCN-00035 noted in Section 3.2.3, which allowed for a total of 10 km per spread and another 10 km for tie-ins, crossings, weld repairs, etc. This effectively allowed for a total of 30 km of total open trench in Georgia. Information current as of October 9, 2004 was that 25.05 km of trench was "open" (19.46 km in Spread 1 and 5.58 in Spread 2), which still represented a non-compliant situation, even allowing for the two spreads with the September 14 change. On October 10, compliance was achieved with Change Management AGT002-2004-PM-DCN-00035 Rev U-02, which allows that Spread 1 can have 25 km of open trench for the months of October, November and the beginning of December.

Although the Project has been generally non-compliant with Project commitments from the standpoint of the length of open trench since the June – July IEC mission,

IEC acknowledges that the Project has undertaken efforts to make the open trench safe.

The most important aspect of trench management is not whether the Project fulfills its commitment to restrict the amount of open trench to the specified lengths, but rather the degree to which the local communities are informed and protected and in general the degree to which community and worker safety is guaranteed. The IEC has been provided with sufficient meeting minutes and safety information to demonstrate that the Project has given considerable attention to this issue since the June – July mission. In the field, protective measures were generally good, but some exceptions were observed. The contractor in Spread 2 has consistently used high quality wooden fencing at critical locations. SPJV in Spread 1 has not been as consistent. Inadequate ribbon markers were observed in the portion of Spread 1 closest to Spread 2 and in some instances the fencing was missing or only protected two or three sides of a trench. Nevertheless, this deficiency had been recognized by BTC and high-quality colored plastic fencing was in the process of being installed working westward from the Azeri border, as this area is more populated than the high ground in Spread 1

According to our observations in the field, the overall Project response to the protection of the open trench non-compliance has been satisfactory and the IEC considers that the Project is effectively compliant with their commitments in this area. Nevertheless, the overall lack of compliance with trench length commitments since the last IEC mission must be noted and formally represented a non-compliant condition in the field *(Level II Non-Compliance - CCP Reinstatement Plan, Commitment ID: 1104; CCP Community Safety, Commitment ID: Q8)*.

The SCP is being strung along much of the ROW and is being installed at the major crossings. Interim reinstatement is restricted to a 12 m width of the BTC corridor and final reinstatement across the entire ROW (about 44 minus 12 meters, equal to about 32 meters) will be undertaken only after completion of the SCP pipeline. Interim reinstatement of the 12-m wide ROW corridor totals 67 km. Where observed, this reinstatement has been generally successful. The overall success of the reinstatement, however, will not be determined until the SCP is complete.

As previously noted during the February – March mission, it was observed during the visit that topsoil management is generally adequate, although there were apparent differences along ROW sections in terms of topsoil stockpile slope and compaction and segregation from subsoil. During this visit, stockpiles not compliant with the technical specifications stated in the SPJV Reinstatement Plan were observed, where topsoil and subsoil were partially mixed or where piles of topsoil exceeded the 2-m height limit. Since the last IEC mission, a BTC soil specialist has reviewed the overall topsoil management with the conclusion that the higher topsoil piles do not represent any technical difficulties. This evaluation was not provided to the IEC as it is still considered to be in draft form. At the time of the IEC visit, this study had not been used as a basis for a Change Management process that would allow for different

topsoil management practices. The previously assigned non-compliance still stands. (*Level I Non-Compliance, CCP Reinstatement Plan, Commitment ID: 139, 142).*

The project is making use of the Bakuriani Alpine Botanic Garden to aid in the reinstatement of floral species of interest (rare and otherwise) along those portions of the ROW where the relevant species were directly impacted by ROW clearance, as per the Project Rare Floral Species Management Programme. The IEC was provided a detailed explanation of the scope of this project and the results being obtained to date. The work is being conducted within ESAP commitments and questions raised by the IEC in the previous report around adequacy of sizing have been explained. In addition to BTC's cultivation of rare floral species, SPJV is also committed to replanting native trees. A nursery near Bakuriani was visited where three species of pine trees were being cultivated. The numbers of trees being planted are expected to exceed ESAP commitments, but a limited number of species are treated. The means by which the biorestoration will take place is still being negotiated between BTC and SPJV via the finalization of the Biorestoration Specifications Plan – Pipeline. It is expected that procedures will be finalized in the near future.

The most challenging aspect of ROW management in Georgia continues to be the removal of excess rock blasted from both the BTC and SCP trenches. The rock cannot be reinstated in the trenches unless it is processed by a rock crusher. Although rock crushers are being operated to their full capacity, it is not practical to prepare enough crushed rock to make a significant contribution to backfilling operations. As a result, large amounts of rock are piled along the ROW and more will accumulate when the SCP trench is opened up. Borrow pits are being used to supply the aggregate needed for backfilling. The problem of excess rock, found along most of the pipeline route, represents a problem that may significantly delay restoration. SPJV has prepared a draft Method Statement – Spoil and Rock Disposal to define procedures to resolve the situation. IEC does not consider this document sufficient and ready to be implemented as it provides only conceptual solutions and does not specify sufficiently and in detail actions and measures to be implemented. Possible borrow pit disposal sites have been identified, but those which will actually be used and the procedures that will be followed for their reinstatement have not been identified. ESAP commitments for the disposal of spoil in borrow pits are outlined in Section 3.3.1.

River crossings except for Kura East, West and Algeti are now complete. In terms of construction impact mitigation, good interim erosion measures have observed at several of the crossings traversed during the mission. Reinstatement over the BTC portion of the ROW at the crossings observed has been well done.

3.6.2 Recommendations

1. The Project with BTC and SPJV working together needs to continue to reduce the linear extent of pipeline construction. In particular, the amount of open

trench must be carefully, promptly, continuously and jointly verified, monitored, controlled, managed and minimized by BTC and SPJV construction and environmental teams (repeat recommendation).

2. Topsoil management is likely to change on the basis of the technical review recently conducted. If changes to ESAP commitments are anticipated, detailed technical justification will need to be provided as part of the Change Management process.

3. The problem of excess rock, found along much of the pipeline route, represents a problem that may significantly delay restoration. The Method Statement plan for the disposal of the excess rock currently in draft form needs to be finalized according to ESAP principles.

4. The number of tree species in the SPJV nurseries should be reviewed in the context of whether they are sufficiently representative of the native species they intend to merge with. This should be a component of finalizing the Biorestoration Specifications Plan.

3.7 BORJOMI AREA

3.7.1 Observations

The Borjomi Work Region extends from about KP 176 to KP 196. This area is one of the most significant parts of Georgia in terms of environmental, economic, cultural and aesthetic considerations. The area is part of the catchment of Borjomi Mineral Water, which is one of the most significant private developments in Georgia. Communities in this area are hopeful that tourism will be redeveloped and are concerned that the Project will adversely impact the landscape and their prospects for tourism.

The Project has committed to strictly following best practices with multiple lines of protection and redundancy in design and operations to achieve as close to "zero risk" of an oil spill or leak as practical. As noted in Section 3.5.1, the IEC did observe the field implementation of physical pipeline protection measures, which are extraordinary when compared to conventional pipeline construction.

The entire Borjomi area was visited during this mission. Pipeline stringing was 100% complete at the time of the visit and installation of the pipeline was nearly complete. Appropriate procedures were found with respect to the critical areas requiring special consideration including topsoil preservation, protection of water crossings, slope protection, erosion and sediment control systems, and recontouring to original topography where appropriate. At the time of the visit, SPJV was making efforts to complete pipeline installation and establish erosion and sediment controls to last the winter.

3.7.2 Recommendations

1. Similar to the previous recommendation for an *ad-hoc* maintenance crew, SPJV should focus their winterization efforts on the establishment and maintenance of erosion and sediment control systems to make sure that there are no system failures in this special area.

3.8 ECOLOGICAL MANAGEMENT

3.8.1 Observations

The ecological programs, specifically the Biodiversity Monitoring Programme and Rare Floral Species Programme, being implemented by the Project have been reviewed on the basis of information and reports provided by BTC, as well as a visit to the Bakuriani Alpine Botanic Garden.

Final restoration involving biorestoration with rare plants and the planting of indigenous trees will not be undertaken until completion of the SCP. A 10-12 m wide corridor over the BTC pipeline is currently being restored with 67 km of interim restoration reported to be complete at the time of the visit. This interim reinstatement is effectively final in the areas where additional planting is not required. As described in Section 3.6.1, the Rare Floral Species Programme is working within Project commitments and the overall program will enhance knowledge of the means required to conserve these rare species.

Pre-and post-construction ecological surveys continue to be completed in accordance with the Project requirements. Both floral and faunal studies have been conducted since the February – March mission).

Under the Biodiversity Monitoring Programme, permanent plots have been established to monitor impacts of the BTC pipeline on floral biodiversity off the ROW, with no significant impacts to report. The field phase of floral monitoring was completed by the end of September 2004. At the time of the IEC mission data collected during the field studies was being processed and an annual report was being prepared. Fewer control plots than anticipated could be established primarily because of the absence of floristically and phytosociologically habitats similar to the permanent plots which were selected for monitoring at specified distances from the ROW edges.

The faunal component of the Biodiversity Monitoring Programme has progressed with the following activities:

1. *Baseline study of habitats of the common otter (Lutra lutra) along the BTC corridor*: river/channel crossings and lakes and ponds potentially appropriate for common otter have been inspected up to 200-300 m from the pipeline corridor. Evidence of otter habitation has been encountered at several locations between

KP 157 and KP 245 with conclusion that pipeline operations do not affect otter habitats.

2. *Count of turtles at the Mariin channel crossing and control plot*: Transect counts of European marsh turtle and Caspian terrapin have been conducted at different times. Count results and comparison of the study and control plots have showed no impact of the BTC construction works on the turtle density.

3. *Monitoring of habitats of Syrian spadefoot toad at KP 11 & 40 and two control plots*: Spawning of Syrian spadefoot toads has been recorded with inconclusive results, as the density of spadefoot tadpoles in a pond near KP 40 was markedly lower than in the last year, and spawning was not successful in one out of the two breeding ponds in this area.

4. *Migratory bird counts at Tsalka (KP 110, 124, 125, 128; control plots - Bareti Lake and Tsalka reservoir) and Narianis Veli (KP 157-161, 165-167; control plot - wetland on Tabatskuri Lake)*: Individuals and groups of nearly 20 water bird species recorded and counted (ducks, herons, waders, cormorants, gulls, grebes, coots, harriers etc.) at the study sites. No signs of any significant impact of the BTC project on the migratory water bird aggregations were recorded.

5. *Count of nesting herons on the island in Mtkvari, 400 m south of Mtkvari east crossing, KP 29*: At least 14 nesting pairs of little egret, 18 nesting pairs of night herons and 37 nesting pairs of cattle egrets have been counted, as well as many more non-nesting individuals (over 200 adult birds). It does not appear that construction has had a negative effect on the nesting activity of the herons, but additional monitoring is recommended.

6. *Nesting bird counts at Tsalka (KP 110, 124, 125, 128, control plots - Bareti Lake and Tsalka reservoir) and Narianis Veli (KP 157-161, 165-167; control plot - wetland on Tabatskuri lake)*: 32 species of nesting water birds were recorded in the vicinity of the pipeline. Most numerous of which were crested grebes (up to 30 pairs, mostly at Bareti lake, partly - at Imera lake); coots and Armenian gulls. However, the densities of the most of species were low (usually several pairs). No substantial differences were recorded between the water bodies under potential impact and control plots, but additional monitoring is again recommended.

7. *Count of snake-eyed lizard at Lake Kumisi, KP 42-43*: A proper transect count of the lizards failed due to very low density at both study and control plots, in comparison with the previous years. Monitoring needs to be continued as the current year count results reflect yearly weather differences rather than other impacts (including BTC project).

8. *Corncrake count at Tsalka (KP 110, 124, 125, 128; control plots - Bareti Lake and Tsalka reservoir) and Narianis Veli (KP 157-161, 165-167; control plot -*

wetland on Tabatskuri Lake): No corncrake calls were recorded in study sites and control plots before the second half of June. Calls of only two males were recorded at Narianis Veli.

9. *Count of nesting cranes at Narianis Veli (KP 157-161, 165-167)*: One displaying pair of grey crane was recorded, although the nest is located outside the area adjacent to the pipeline.

10. *Grouse leking in Tavkvetili (KP 153-156), Bakuriani (KP 178-186), and control plot (Zekari pass)*: The grouses or their derivates (feces, feathers) were recorded or collected from both study sites and the control plot.

11. *Baseline study of forest bats*: 13 species of bats have been recorded in the pipeline area, three of which are protected. Fieldwork is complete and a report is being prepared.

12. *Baseline study of Brandt's hamster*: Fieldwork is ongoing; report preparation is in progress.

13. *Monitoring of aquatic habitats*: Fieldwork has been completed and data processing is ongoing; report preparation is in progress.

The above information was provided by BTC in the interim Faunal Monitoring progress report by BTC. The IEC has not conducted a field review of the above activities. The annual report on outcomes of the Biodiversity Monitoring Programme and the Rare Floral Species Monitoring Programme is due in October 2004 and will be reviewed by IEC in their next audit.

3.9 CULTURAL HERITAGE MANAGEMENT

Cultural heritage management is predominantly the responsibility of BTC. The governing procedures are defined in the ESAP, Appendix D as *Archaeological Late Finds Protocol*. The definition of significance and actual excavation of sites is the responsibility of the Centre for Archaeological Studies (CAS), the Georgian government's cultural properties review and compliance agency, as specified in the *Georgian Law on Cultural Protection*. SPJV is responsible for reporting chance finds and stopping work until the BTC Cultural Heritage Field Team (CHFT) can evaluate the situation in association with CAS and provide appropriate guidance.

Cultural heritage was an important factor in defining the current ROW as part of the EIA process and numerous reroutes resulted from consideration of archaeology and historic monuments. The result of the Phase I studies identified about 45 potential archaeological sites within or near the pipeline ROW. Of these sites, 15 were identified as requiring more detailed Phase II investigations. Of these sites, eight were identified as being of high priority at locations where it was not practical to reroute the pipeline and Phase III excavations were undertaken. These investigations

are now complete and Phase III reporting is complete. BTC has recently taken on additional staff to assist CAS in bringing field work, laboratory studies, and technical reporting more in line with the best practices and standards accepted by the international scientific community.

The delivery phase heritage database currently includes 260 entries. They are summarized as follows.

Category	Count
Significant sites/features requiring intensive salvage/data recovery excavations	40
Significant or potentially significant sites/features avoided via reroute/ROW reconfiguration/special construction techniques	12
Sites/features of limited significance that have been the subject of limited excavations and/or detailed documentation (includes seven features associated with CHPD Phase III work and 11 features associated with CAS Phase II and Phase III work)	30
Sites/features evaluated through excavations as not significant or non-cultural	27
Possible sites determined via CAS site visits to not warrant excavations in advance of construction activities/trenching	12
Possible sites determined to be non-cultural/not significant via construction monitoring	24
Potentially significant archaeological sites/features identified during Look Ahead surveys for project areas exterior to ROW and permanent facilities (five are previously excavated burial mounds)	77
Potentially significant sites/features immediately adjacent to project areas and viewed as at risk (some have been damaged by construction, specifically with respect to Access Road improvement)	36
Modern cemetery	1
Outstanding consultation	1
Total	**260**

In total, large-scale salvage excavations have been undertaken at eleven settlement sites and nine cemeteries or clusters of burial mounds during the construction phase of the project. Sites range in date from the Neolithic Period to the Medieval Period. Reroutes have largely avoided settlement or structural remains associated with the Medieval period, although per CAS and CHPD request an extensive reroute involving the purchase of additional land was undertaken at KP 194 (Kodiana Pass) to avoid the remains of a Bronze Age/Cyclopean settlement.

Current activity has related to the management of late finds. The BTC Cultural Heritage Field Team conducts "look ahead" surveys and monitors clearing, soil stripping, grading, trenching and other construction activities. They are also

responsible for writing daily and weekly reports, identifying non-compliances, updating databases and coordinating with CAS and BTC and SPJV management.

3.9.1 Observations

As previously reported, the overall field archaeological program along the ROW and associated access roads, additional land acquisitions and AGIs appears to be consistent with Project commitments. Since the June – July IEC mission, project has financed excavations at eleven ROW/AGI locations. Work has been as follows:

- Evaluation of possible burial mound at the PSG2 permanent helipad location;
- Evaluations and salvage excavations of stone feature/burials located between KP 107 and KP 110+500 in advance of BTC reinstatement and SCP ROW preparation;
- Evaluation and data recovery at KP 136+300 settlement remains in advance of SCP work (primarily trenching);
- Evaluation/data recovery for structural feature along BTC trench line at KP 179;
- Salvage excavations for burial mound partially compromised by ROW preparation at KP 193;
- Feature evaluation at several locations between KP 200 and 201 in advance of ROW preparation and BTC trenching;
- Data recovery excavations BTC trench line at KP 204 (settlement remains);
- Salvage/data recovery excavations at the remains of two Medieval Period wineries in advance of BTC trenching KP 211 to 212+700;
- Salvage excavations post BTC trenching KP 241 (multicomponent settlement with burials).

In addition to fieldwork, several special projects are planned that focus on capacity building for CAS as well as heritage team personnel. Recently BTC provided CAS with a standardized outline for technical reporting. Different Heads of Expedition have drafted reports for both sides to review and discuss what is feasible at this stage with Georgian archaeology and technology. Handheld GPS units have been procured and distributed to all Heritage team members and training has included practical applications of the GPS in the field as well as increasing the information provided in daily reports, such as referencing photos and descriptions with GPS coordinates. CAS expeditions are supplied with coordinates for reference on excavation maps. Winter projects for the CHFT include developing posters for public information of archaeological works funded by the project, literature review for crosschecking CAS

reports, and working with CAS to develop interdisciplinary approaches in laboratory analyses.

As noted in Section 3.2.1, BTC has provided new support to their Heritage Management group with the addition of an archaeologist. A consulting Architectural Historian was also brought in temporarily to assist in developing statements of work and cost proposals for the study and conservation of three significant architectural properties located near the project area (Atskuri Castle, Tadzrizi Monastery and Sakire Fortress.

CAS is not the only Georgian government agency with jurisdiction for cultural heritage. The other government agency is the Ministry of Culture, Department for Protection of Monuments in Georgia (Monuments Department). This regulatory body has recommended additional site protection measures including conservation and restoration work for properties and reroutes on portions of the ROW. One such location is the Atskuri castle. The Project has rescinded a proposal based on work changes such that it will not be necessary to drive by the castle. A proposal for mitigation at the Tadzrizi Monument presentation has been drafted for review and will be submitted to the Monuments Department.

A new task for the CHFT has been assessing anthrax risk as part of the Protocol for Late Finds of Anthrax Contamination when bones are found during construction activities.

3.9.2 Recommendations

1. As noted both previous mission reports, BTC will need to take care, together with CAS, that the analysis and reporting are consistent with international standards. The efforts being made by BTC to enhance the capacity of CAS are appropriate measures being taken and need to be continued.

2. A peer review of the overall archaeological program including the work being done by CAS is recommended to identify if there are practical ways to enhance the quality of the overall results of the work being done. Such a process has proved useful in Azerbaijan and is expected to have positive benefits in Georgia as well. The peer review should include a review of the Phase III reporting to identify if there are any additional steps that could be taken to improve their quality.

3. The Project should continue to work with the Monuments Department on the issues identified by that organization. The peer review might also be a mechanism to meditate between the Monuments Department and BTC.

4. BTC needs to make sure that the CHFT has sufficient resources to fulfill their responsibilities, both in terms of budget and field resources.

3.10 COMMUNITY LIAISON

The Community Liaison Teams of BTC and the JV are responsible for communicating BTC Project information to the general public and, specifically, the community in areas along the pipeline route, as well as receive and transmit community information to the BTC Project. The overall objective for the community liaison is to build a positive, non-dependent relationship between the BTC Project and the local communities. Specific responsibilities for community liaison include, but are not limited to:

- Providing communities affected by the Project with regular information on the progress of work and the implications for these communities.
- Informing the BTC Project of any community related issues that may impact on construction.
- Monitoring implementation of mitigation measures and the impact of construction via direct monitoring and feedback.
- Managing disputes between the BTC Project and communities.
- Assisting with the implementation of community safety, health and investment programs.
- Recruiting workers from affected communities.

The BTC social programs are managed by a Social Programs Manager supported by two field social coordinators, one for each Spread, who in turn are supported by seven CLOs. SPJV employs a Community Relations Manager, a Community Relations Coordinator, a Sociologist who in turn are supported by six CLOs with several assistants. The Punj Lloyd (PL) E&S organization is integrated within SPJV for Spread 2.

3.10.1 Observations

The environment for community liaisons in Georgia continues to be difficult. Although the IEC was not involved in any incidents this mission, road and ROW blockages have persisted in western Georgia. In spite of these difficulties, CLOs appear to be performing well in that there is generally a timely resolution of grievances. An important observation made during this mission is that the CLOs have been able to demonstrate a strong community safety program with emphasis in particular on ROW safety.

An additional finding, also noted by the SRAP in July, is that there is room for improvement in the means by which grievances are logged and tracked. It was not easy for the BTC Field Social Coordinator to be able to confirm closure on a couple of grievances compiled by SPJV and passed to PL. This does not mean that there is

reason to believe that grievances have not been attended, but that the databases among different organizations can make it difficult to track specific grievance actions.

3.10.2 Recommendations

1. Review and improve the database management system for grievances being compiled by BTC, SPJV and PL.

3.11 HEALTH AND SAFETY

3.11.1 Observations

BTC

There is an extensive effort made by BTC organization to properly manage the safety performance of the different parties involved during the Project development. A comprehensive Health and Safety (H&S) Management system is in place. As noted during our previous missions, the IEC believes that it is extremely important that Managers and Supervisors be recognized for efforts made to provide a safe working environment.

At this point in time worker safety is generally well managed, although some few minor observations related to worker safety are provided that indicate some improvements could still be made and that needs to focus on specific aspects relevant to the field implementation of required safety standards.

Access control to the ROW is a typical concern in any pipeline construction. Dedicated community safety awareness campaigns, as previously mentioned, have been performed across the communities affected by the pipeline construction and it is recognized that SPJV has adequately adopted the use of warning signs and has adequately alerted third parties about the hazards of the working sites along the ROW. Although SPJV discourages the use of the ROW by non-Project-related vehicles, a few cases were observed.

Many of the grievances received by the CLOs relate to the impacts of truck traffic within villages. The issues are road deterioration, dust, and general safety.

3.11.2 Recommendations

1. As noted during IEC previous visits, most of the aggregate and concrete used for the construction of the pump stations is purchased from local pre-existing enterprises. As already recommended in Section 3.3.2, verify that the third party sources for aggregate and concrete currently being used by SPJV comply with Project H&S standards. Work with the owners to improve deficiencies as appropriate. As previously recommended, the Project, through BTC and SPJV,

should encourage local enterprises to adopt Project safety standards, eventually providing additional resources, training opportunities for workers, and appropriate PPE.

2. Ensure that communities are aware of the hazards of entering the ROW and are protected from the hazards along the ROW including the open trenches. The use of guards in critical areas was envisaged, but none have been observed in the field, and the in-country team did not provide information to indicate that watchmen are being used at all.

3.12 ENVIRONMENTAL INVESTMENT PROGRAMME

During the mission, the IEC asked for a brief update on the status of the Environmental Investment Programme (EIP) in Georgia. No detailed review has been conducted on the priority themes identified in the ESAP. Similar to the ecological management plan being implemented by the Project, the EIP has been reviewed on the basis of information and reports provided by BTC, although field visits to the Rare Floral Species program did occur, as noted above.

Based on an information update provided by BTC, the following status can be reported:

No	EIP	Title of Project	Status of Project Implementation
1	Rare Faunal Species Conservation Management	Caucasian Black Grouse Research, Monitoring and Conservation Management in Georgia	On schedule
2	Rare Faunal Species Conservation Management	Brown Bear Conservation in Georgia	On schedule
3	Public Awareness and Environmental Education	Management of Small Grants for NGO Capacity Building along the BTC/SCP Pipeline Routes	On schedule - initiated
4	Borjomi-Kharagauli National Park Support Zone	Enhancement of Environmental Education in Schools	Initiated; activities to begin in 4Q 2004
5	Borjomi-Kharagauli National Park Support Zone	Environmentally Sound Livestock farming	Initiated, activities to begin in 4Q 2004
6	Sustainable Forest Management Pilot Project	To be defined with the help of forestry consultant (INDUFOR, Finland) currently developing refined ToR/RFP	Implementation not started but planning on-going
7	Ktsia-Tabatskuri Managed Reserve Management Planning		Implementation not started; awaiting response from MoE

As noted in the above table, progress for the main components of the EIP has been minimal also because of difficulties among the parties in reaching agreements to proceed.

BTC confirmed that external monitoring is still planned, consistent with the Project Environmental Investment Plan (PEIP), Appendix D of the ESAP, but no dates have been given. The IEC recommends that the committed external monitoring is started as soon as possible.

4 TURKEY

The BTC Project in Turkey encompasses 1,076 km of pipeline extending from the Georgia - Turkey border in the Posof District (Turkgozu border gate) to the marine terminal being constructed at Ceyhan on the Mediterranean Sea. From the Georgian border, the pipeline ROW crosses the provinces of Ardahan, Kars, Erzurum, Erzincan, Gumushane, Sivas, Kayseri, Kahramanmaras, Osmaniye and Adana, terminating at Ceyhan. The BTC Project runs approximately parallel to the recently completed (2001) East Anatolian Natural Gas Pipeline (NGPL) for about 30% of its length (approximately 330 km), between the cities of Erzurum and Sivas (Lot B). The planned Botas Gas Pipeline is parallel to the BTC pipeline at the Georgian border, but diverges until it terminates in Horasan.

The BTC Project in Turkey is broken down into three Lots from the Georgian border to Ceyhan: Lot A (278.0 km), Lot B (465.4 km) and Lot C (332.8 km). Each Lot effectively operates as a separate construction project with the following characteristics:

Lot A: KP 0 – 278

Contractor: TEPE – Nacap JV (TPN)
Spreads: 3, plus one mini-spread
Block valves: 15
Major crossings: 3 rivers, 6 roads, 3 railways
Camps: 3, main at Kars at KP 115, 2 spread camps at Hanak and Koprukoy.

Lot B: KP 278 – 744

Contractor: Gunsyil-Haustadt & Timmerman-Max Streicher-Alarko JV (STA)
Spreads: 3
Block valves: 24
Major crossings: 9 rivers, 13 roads, 3 railways
Camps: 1 main (Kova at KP 527 in Spread 1), 4 spread camps (Iliça and Çardikaya in Spread 1; Koyunkaya and Sivritepe in Spread 2)

Lot C: KP 744 – 1076

Contractor: Punj Lloyd - Limak JV (PLL)
Spreads: 2 + 34" spread
Block valves: 13
Major crossings: 10 rivers, 6 roads, 1 railway
Camps: 1 main (Azizli at KP 1037), 3 spread camps (Andirin, Yesilkent, Orensehir)

Pump Stations

Contractor: TEPE
Pump station PT1 at KP 21.3 and pigging station IPT2 at KP 108 and PT2 at KP 278
Pump station PT3 at KP 442 and PT4 at KP 744
Pump station and IPT1 at KP 944

The BTC pipeline terminates at the Ceyhan Marine Terminal (CMT), which includes 2.6 km long jetty and offshore loading facility, seven one-million barrel storage tanks, a central control building, housing compounds and administration, and a fiscal metering system (Contractor TEKFEN).

The focus of the October 2004 visit was concentrated on the pipeline ROW of Lots A, B and C in Turkey. As a result, less emphasis was placed on visiting fixed facilities compared to past missions. A detailed itinerary of the visit is provided in Appendix A.

4.1 CONSTRUCTION STATUS

Work continues on the construction of the pipeline and fixed facilities in order to conclude as much as possible before the onset of winter. As of October 14, 2004, the following information was provided to IEC by the Project.

- **Facilities**

  Pump Stations: overall 41.3% completed. Detailed data was only provided for the PT3 site where a complete walk-around was conducted. Mechanical completion scheduled for January 2005; commissioning scheduled for May 2005. As of the October, completion was as follows: Civil – 57%, Mechanical – 29%, Electrical – 23%, Scada – 1%. 400 employees total.

  CMT: Onshore – 85.6% completed. Site management – 92.5%, Engineering – 80.4%, Procurement – 90%, Material Supply – 90%, Construction 73%. Five of seven tanks hydrotested.

  Offshore – 86.5% completed. Site management – 93%, Engineering – 86%, Procurement – 87%, Material Supply – 93%, Construction 76%.

Pipeline[6]

Lot A - clearing and grading – 278 km (100%), stringing – 275 km (98.9%), welding – 266 km (95.7)%, trenching – 171 km (61.5%), lowering – 142 km (51.1%), backfilling – 115.8 km (41.6%), reinstatement – 0.78 km (0.003%). Total open trench – 54.9 km (Spread 1 – 10.0 km, Spread 2 – 12.0 km, Spread 3 – 19.6 km, Mini-spread – 13.3 km).

Lot B - clearing and grading – 465.4 km (100%), stringing – 465.4 km (100%), welding – 454 km (98%), trenching – 397 km (85%), lowering – 356 km (76%), backfilling – 342 km (73%), reinstatement – 3 km (0.006%). Total open trench – 54.7 km (Spread 1 – 20.1 km, Spread 2 – 19.4 km, Spread 3 – 15.2 km).

Lot C - clearing and grading – 333 km (100%), stringing – 333 km (100%), welding – 332 km (99%), trenching – 328 km (98%), lowering – 326 km (98%), backfilling – 312 km (94%), reinstatement – 162.8 km (49%). Total open trench – 15.5 km (Spread 1 – 6.2 km, Spread 2 – 9.3 km, Mini-spread – 0 km).

Total reinstatement and open trench in Turkey as of 14 October 2004 – 166.1 km (15.5%) and 125.1 km (11.6%), respectively.

4.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT ORGANIZATION AND RESOURCES

4.2.1 Resources and Organization – Observations

In Turkey, a turnkey contract was signed between BTC and BOTAŞ who subsequently awarded EPC contractors the construction work in each of the three Lots, the Pump Stations, and at Ceyhan Marine Terminal. BTC maintains an assurance role over both BOTAŞ and the five EPC contractors.

Since the time of the March 2004 and continuing through the July 2004 monitoring visit, IEC has observed an improvement in Environmental and Social (E&S) management between BTC, BOTAŞ and the EPC contractors. All three parties appear to have generally improved their operational relationship and to work together to resolve environmental and community relations issues. However, despite this overall improved working relationship, a number of management differences still exist between the three Lots as described in the following sections.

[6] Total ROW: 1,076.15 km. Actual figures provided by BTC Co. and calculated as of 14 October 2004 cut-off using the daily reports which are not verified by BTC Co.

BTC

The BTC License to Operate (LTO) organization has changed slightly since the June-July 2004 visit. The expatriate Environmental and Social Advisor for Lot C, who was involved in reinstatement and biorestoration issues, has resigned and, consequently, this has weakened the BTC assurance role in the Lot, particularly in ROW reinstatement and ecological management. A Turkish national has filled the previous vacancy of one LTO Assurance Advisor in Lot B. As noted since March 2004, the BTC assurance organization, through their programs of auditing, inspection and monitoring, continues to focus on formal compliance of documents and activities completed by BOTAŞ, supplemented by field monitoring of the commitments by the LTO Advisors.

BOTAŞ

A significant change has occurred to the BOTAŞ E&S management team since the July 2004 visit. The BOTAŞ Environmental Manager has left the Project and has been replaced by an expatriate who is Acting Environmental Manager. The Acting Environmental Manager was hired on by BOTAŞ in August 2004 as Reinstatement Coordinator. He is covering both positions to date.

BOTAŞ site teams are fully in place. Five Environmental Supervisors (one for each Lot, one for the Pump Stations and one for CMT) report to the Site Managers. The Environmental Supervisors are supported by a Lead Environmental Monitor and an adequate number of Environmental Monitors are present in each Lot and fixed facility. It is noted that additional reinstatement expertise in the field has been gained since July 2004, especially in Lot B, where both a new Lead Environmental Monitor and a Reinstatement Expert have been hired to assist the integrated reinstatement team (see below). A Turkish consultant firm, CINAR, continues to provide third party monitoring and technical support in environmental management and ecological issues.

TEPE – Facilities

The vacant Environmental Manager position for TEPE has been filled through the promotion of the Deputy Environmental Manager. There are five Environmental Engineers, one for each of the pump stations and IPT1, and four Environmental Inspectors. There is no Environmental Inspector at PT4.

The organization of Community Relations (CR) personnel has changed by the recruitment of new CLOs for IPT1, PT4 and PT3. Despite this turnover in CLOs since July 2004, the Community Liaison Manager remains and consistency in management of CR personnel continues.

IEC noted the continued good working relationship between BOTAŞ and TEPE E&S personnel at the pump stations. Despite the presence of junior personnel in the TEPE

organization, the team is dedicated and continues to provide consistent results in E&S management. E&S team members have gained significant experience from the Project.

TEPE-NACAP (TPN) – Lot A

During the visit, a persisting weakness in management coordination and overall communication between the TPN construction team and E&S personnel was reported and observed. This is not only apparent within each of the TPN and BOTAŞ organizations, but also among the three parties, BTC, BOTAŞ and TPN. It is IEC's opinion that this situation is critical and causing problems for environmental and social compliance with Project commitments and delays in reinstatement activities.

The BTC LTO organization is unchanged since July 2004, as well as the BOTAŞ E&S organization. BOTAŞ has one lead environmental monitor and two environmental monitors for Lot A advised by two environmental staff of CINAR.

The most significant change in the TPN organization is the addition of three Project Coordinators (one in charge of H&S, security and environmental teams; one in charge of personnel, camp management, CR and permitting; one in charge of engineering, project control, contracting and procurement), reporting to the Deputy Project Directors. Both the Environmental Manager and the Community Liaison Manager, as well as the H&S Manager, are now reporting to a Project Coordinator. In the light of the sufficient expertise of the E&S team, and particularly the good performance of the CR team, the IEC questions the benefit of adding the additional layer of management, formed by the Project Coordinators, that could impact the effectiveness and timely response of TPN management to E&S issues.

The Community Relations team continues unchanged at the functional level where six CLOs are responsible for the Lot. The TPN CR Department has three vehicles, only two of which are four-wheel drive. BOTAŞ has two vehicles dedicated for CR use.

TPN reported that the Environmental department remains unchanged since the July 2004 visit. There has been a recent addition of two reinstatement engineers to the Construction Department who will be in charge of reinstatement issues and reporting directly to the four Spread Bosses. The IEC understands that communication and interaction between the reinstatement engineers in the construction department and the environmental department and between the spread bosses and the environmental department is limited.

Despite a commitment made by TPN to implement four Emergency Response Teams (ERTs) and announced to the IEC at the time of the July 2004 visit, there has been no action taken in this regard and therefore there are no ERTs on the ground in Lot A.

STA – Lot B

The STA E&S (and H&S) organizations have changed significantly since the June-July 2004 visit and now have a fully integrated organizational structure with BOTAŞ. This is significant in that the various management functions of environment, community relations, health and safety and reinstatement are now combined between STA and BOTAŞ personnel reporting through a STA H&S and Community Liaison coordinator and a STA Completion Works manager directly to the STA Project manager and BOTAŞ site manager.

In addition to the STA JV, there is another BOTAŞ contractor (FERNAS) who is currently working in Lot B. FERNAS has its own environmental, health and safety (EHS) organization, including one EHS manager, 10 HS inspectors and four environmental inspectors who report directly to the EHS manager. FERNAS do not have any CR personnel and report any CR issues directly to the STA/BOTAŞ CR department for action. Although the FERNAS EHS organization is adopting the procedures developed by the STA JV, their EHS manager directly reports to the BOTAŞ environmental manager and H&S manager.

STA/BOTAŞ reported a total of 40 environmental personnel that are divided between an Environmental Department and a dedicated Reinstatement Team. Some individuals work in both departments.

A positive finding is the establishment of a dedicated reinstatement team and also the hiring of some reinstatement experts. In Spread 1 and 2, there is a plan for a total of five ROW reinstatement crews, one dedicated river crossing crew and 2 crews for pipe storage area (PSA) reinstatement, all reporting to a recently appointed reinstatement field supervisor of BOTAŞ who reports to three STA/BOTAŞ reinstatement and planning/design supervisors. The STA/BOTAŞ reinstatement team is managed by the STA Completion Works manager, who reports to the STA Project manager and liaises with the BOTAŞ environmental manager to report to the BOTAŞ site manager. In addition there are three representatives of CINAR to advise on environmental and reinstatement matters.

The STA/BOTAŞ CR department has one Community Liaison manager and 6 CR staff. They report to the STA H&S and Community Liaison coordinator who reports to the BOTAŞ site manager.

The IEC observes that, although integration of EPC Contractor and BOTAŞ teams is seen as a positive step, the organization charts presented to IEC are characterized by multiple reporting lines, a mixing between employer (BOTAŞ) and contractor roles and responsibilities, and also some duplication of roles which may impact effectiveness and create uncertainty, both internally and externally, in terms of reporting and implementation responsibilities, as well as actual availability of

resources. The IEC were informed by the BTC Project that integration will not compromise BOTAŞ' contractual position.

PLL – Lot C

Since the time of the July 2004 visit, the PLL Environmental Manager has resigned and has been replaced. PLL reported that Environmental Department has one Environmental Manager, three Environmental Incharge officers, two environmental engineers, and about 20 staff. PLL also has a dedicated reinstatement expert who joined the project in September, and a biorestoration expert. PLL also reported at the time of the visit that there were eight reinstatement foremen who are coordinating reinstatement efforts at 13 working locations in Lot C.

As already indicated, the BTC LTO organization has lost its expatriate E&S Advisor, who has not been replaced. There are no changes in the BOTAŞ environmental organization in Lot C. The BOTAŞ Lead Environmental Monitor continues to coordinate reinstatement efforts in Lot C.

PLL reported that one Community Liaison Officer has left in Lot C and will be replaced shortly. The BOTAŞ CR organization in Lot C remains the same.

There appears to be a high degree of cooperation and team approach to problem solving in Lot C, with an adequate staff and a clear allocation of roles and responsibilities.

TEKFEN – Coastal Marine Terminal (CMT)

As already pointed out during the IEC visit in March 2004, both BOTAŞ and TEKFEN organizations appear to be adequately staffed and organized. There are no changes in the BTC, BOTAŞ and EPC Contractor E&S management organizations and resources. During the interviews and from the review of documentation, adequate control and monitoring of activities at the terminal were apparent.

4.2.2 Resources and Organization – Recommendations

1. The Project should take immediate action with TPN management to promptly resolve management conflicts in Lot A.

2. As indicated by the Lot A environmental staff, a number of functions could be realized by the ERTs including cleanup and garbage collection on the ROW, installation of temporary erosion control measures, maintenance of fencing etc.. These functions are critical due to the pending winter season and the speed of construction. It is recommended that TPN fulfill this commitment and implement the ERTs (or similar crews) as planned. It is also recommended that the ERTs operate under the direct responsibility of the TPN environmental manager.

3. It is recommended that communication and interaction between the reinstatement engineers and the environment department in Lot A is formalized and strengthened in order for reinstatement to be effective.

4. The current TPN organizational structure should be assessed in light of the new Project Coordinator positions, and ensure that a direct reporting line between E&S management and the Project Director is maintained with respect to EIA and ESAP commitment implementation. BTC and BOTAS also need to take immediate action with respect to TPN construction management lines of communication with E&S staff.

5. BTC should evaluate and ensure that roles and responsibilities are clearly defined and maintained among BTC, BOTAŞ and the EPC Contractors with respect to signoff of EIA and ESAP commitments and final reinstatement responsibilities, particularly in consideration of the allocation of roles and responsibilities in Lots B and C. Although the situation differs between these two Lots, in actual fact BOTAŞ has taken some of the EPC Contractor responsibilities in both cases and, there appears to be a potential conflict in implementation, supervision and sign-off functions. This comment is particularly directed to the signoff of reinstatement commitments.

6. BTC should consider optimizing the use of the two remaining reinstatement specialists, currently based in Lot A and B, to assist in providing assurance in the installation of erosion control measures for winterization and completion of reinstatement in Lot C. Alternatively another E&S Advisor should be hired for Lot C to fulfill the assurance role of BTC in this matter.

4.2.3 Non-Conformance Records (NCR) Register

The latest NCR Register was provided by the Project during the visit. The following is a summary of the total number of NCRs issued by BOTAŞ and BTC (for the entire construction period to date) and remaining open NCRs.

Facility	Total NCR	Open NCR
Lot A	69	14
Lot B	162	27
Lot C	51	0
PT1	18	0
PT2	28	1

Facility	Total NCR	Open NCR
PT3	17	1
PT4	41	1
IPT1	4	2
CMT	11	1

Lots A and B continue to have the highest number of open NCRs, but they have significantly decreased since the June-July visit, decreasing from 23 and 37 respectively.

There have been no NCRs issued by BTC for construction activities at PT2, PT3, IPT1 and the CMT.

4.3 CONSTRUCTION CAMPS, INFRASTRUCTURE AND SERVICES

The review of construction camps, infrastructure and services focuses on construction operations that potentially have an impact to surrounding infrastructure, natural resources, and community and household assets, including land, roads, and irrigation systems. In addition, the review of this topic includes camp potable water supplies and general aspects of camp management. Visits were made to several construction camps of the pipeline, pump station and CMT contractors. A site visit to PT1 had been planned but could not be completed due to poor weather conditions and a safety "stand down" in Lot A.

4.3.1 Construction Camps - Observations

Visits to the following visits of facilities and construction camps in Turkey were made during the October mission:

- Ceyhan Marine Terminal (CMT)
- Orensehir Camp (PLL – Lot C)
- PT3 and PT3 Camp (TEPE)
- Cadirkaya Camp (STA – Lot B)
- Hanak Camp (TEPE/NACAP – Lot A)

The following observations have been made from the visits to these camps:

- *Water supplies*: Potable water testing results were requested from all the camps. In Turkey potable water is required to be treated to comply with WHO Guidelines and Turkish Standard TS266 *Water Intended for Human Consumption*. It was again noted that water quality testing is still done inconsistently by the different Contractors and not always for the same parameters. The frequency of sampling was also found to be still inconsistent throughout the camps. Additionally, there are still no indications of sample protocols and laboratory analytical procedures and QA/QC procedures in the data provided.

  As discussed in the IEC report for the June-July 2004 mission, BOTAŞ has commissioned a comprehensive assessment of potable water baseline quality before and after treatment. The assessment was conducted by an environmental consultant and a draft report was made available to IEC. Although results are still in draft, the consultant has made significant observations, including some concerns in terms of pH, coliforms and arsenic concentrations, and recommendations in terms of sampling and monitoring. Micropollutants, such as pesticides and organics, were not found, but BOTAŞ reported that the results obtained for hydrocarbons were still to be obtained due to lack of suitable analytical laboratories in Turkey.

  Although the baseline study performed is an important step towards compliance verification and proper management of potable water supply, the inconsistency in testing procedures as reported previously in March 2004 and in June-July 2004 appear to be a persisting data management issue, largely due to poor QA/QC control and limited procedures developed by the Project, including BTC, the various EPC Contractors and BOTAŞ *(Level II Non-Compliance, BOTAŞ Environmental and Social Management Plans, Commitment ID: CH9E3, CH4E41*).

- *Camp housekeeping:* Camps in Lots A, B and C, at the pump stations and at CMT are completed. Housekeeping of the camps visited appears to be sufficient. The IEC has observed continuous improvement in environmental performance at camps, especially in Lot B where several non-compliant situations were observed during the March 2004 visit. Adequate standards for living quarters have been observed in all camps visited.

4.3.2 Construction Camps - Recommendations

1. The issue of consistent potable water quality sampling procedures and reporting across the three Lots and pump stations in Turkey identified during the IEC visits in March and in June-July 2004 remains to be resolved. Based on the on going baseline assessment of potable water quality, BOTAŞ should work with the five EPC contractors to develop established and consistent potable water parameters, sampling protocols, including sampling frequencies, analytical procedures and parameters to be measured. This should also include the identification of certified testing laboratories and an independent third-party evaluation to assess if they are reliable.

4.3.3 Aggregate Management - Observations

Turkey is the only country where BTC/BOTAŞ have developed a specific CCP for aggregates. During the July 2004 visit, aggregate management was identified as a significant environmental and social concern for the Project in Turkey and a Level II non-compliance was issued for inconsistent evaluation of the aggregate source locations. IEC recognizes that the Project has a significant and legitimate need for the extraction of aggregate material; however IEC stresses that this use should follow proper procedures for environmental and social assessment and consider reinstatement needs prior to aggregate extraction. During the visit, IEC observed that aggregate use in Turkey still remains an environmental and social concern that if not fully addressed at this time could pose a risk in terms of increased Project footprints and non-compliance with EIA and ESAP commitments following the termination of construction activities. Third party sources of supplies, in particular aggregate and cement/concrete are still not being consistently evaluated in terms of their compliance with ESAP requirements in the cases where the Project represents a significant percentage of their production.

As already discussed for Azerbaijan and Georgia, BTC has developed a draft methodology to identify a process to evaluate whether a specific facility should be considered under the "umbrella" of the ESAP. Specifically, the Project has identified a possible approach based on three criteria:

- Project usage greater than 50%
- Facility not in existence prior to the Project
- Facility is not viable as a business post-Project use

As discussed, these criteria in turn form the basis for defining whether or not the Project will assume some E&S responsibility for the facility, as follows:

- Meets 0-1 criteria: Does not fulfill project criteria and will not be subject to project attention

- Meets 2 criteria: Borderline in terms of fulfilling criteria, only subject to project attention if demonstrated significant E&S impact is occurring

- Meets 3 criteria: Fulfills criteria and will be subject to project attention.

As already discussed, the IEC concurs that the category where three criteria are met deserves Project intervention, but believes that the structure of the first two categories can allow some significant situations to go unattended.

The most significant difficulty with the application of this system is that three types of situations are mixed that should be treated differently. The three situations include suppliers of concrete; borrow pits used as a source of construction aggregate; and third-party borrow pits used for trench backfill or for the disposal of excess spoil.

The overall picture of aggregate management is still unclear in terms of pre-construction assessment and operation management concerning environmental protection, safety and community relations, and reinstatement commitments. A *Level II Non-Compliance (CCP Aggregate Management, Commitment ID: APC10E1 CHI7E6)* is raised once again to BTC and BOTAŞ for inadequate aggregate management assessment, monitoring and mitigation in Turkey.

CMT

During the March 2004 visit, IEC observed that the third-party facilities (aggregate sources) used by TEKFEN to produce the significant amount of aggregate needed for the CMT construction were reportedly evaluated in terms of potential environmental and social effects impacts and to adherence to basic and applicable environmental commitments. However an environmental due diligence audit, performed for the third-party basalt quarry, identified that a post-quarry reinstatement plan was not available.

During the visit, CMT staff again reaffirmed that all aggregates used by the Project come from licensed sources that have undergone proper environmental and social assessment. However, a consistent and thorough assessment of the CMT sources according to an acceptable management strategy is still not available (*Level I Non-Compliance, CCP Aggregate Management, Commitment ID: APC10E1 CH17E6).*

Lot A

Aggregate management remains a critical, unattended non-compliance issue for the Project in Lot A, following the assignment of a Level II non-compliance by IEC in July 2004 over the significant number and unregulated use of borrow pits. During the October visit, IEC was informed that borrow pits have been opened in Lot A without proper evaluation of environmental and social impacts and without full consideration of reinstatement needs. This situation was raised by the BOTAŞ and TPN environmental team, but it appears to persist and the Project has not provided

evidence in the field that adequate procedures have been implemented (*repeated Level II Non-Compliance, CCP Aggregate Management, Commitment ID: APC10E1 CH17E6).*

Examples of this lack of procedures were reported. For example, the use of a borrow pit near Kayinli village (approximately KP 8) that did not receive prior environmental and social assessment, was reported to the IEC. IEC was informed that the borrow pit is an old forestry pit which was used by the Project for one week for padding and road material and that the environmental team was able to stop its use. Although not in the Project ESA 1, the pit is located in the Posof Wildlife Protection Area.

Lot B

STA/BOTAŞ staff reported that only existing quarries are used for aggregates and that there is no use of small borrow pits. IEC reviewed the quarry register for STA/BOTAŞ and found that all quarry pits used by the project are existing quarries with the exception of the following four quarries with a status "not available". These are the Yenikoy Elementary School in Spread 1 (reported use of 5498 m^3), the Saglik Quarry in Spread 3 (reported use of 11,600 m^3), the Zara Honey and Beekeeping Factory (reported use of 9850 m^3) and the Zara Industrial Zone (reported use of 40,000 m^3) in Spread 2.

Lot B staff reported the use of five sites for disposal of inert material and that preliminary environmental and social assessments have been done on these sites. All sites are existing disposal sites and operated by local municipalities. A surplus disposal register was reviewed which indicated eight potential sites, four of which were in use and another awaiting approval.

A consistent and thorough environmental and social assessment of the Lot B aggregate sources according to an acceptable management strategy is still not available (*Level I Non-Compliance, CCP Aggregate Management, Commitment ID: APC10E1 CH17E6).*

Lot C

The borrow pit register provided by Lot C provided information on 25 sites, 4 of which were pre-existing. With the exception of two locations (KP 753+218 and KP 765+700) permits are in place. Lot C staff indicated that all new borrow pits opened by the Project will be reinstated.

As for the other Lots, a consistent and thorough environmental and social assessment of the Lot C aggregate sources according to an acceptable management strategy is still not available (*Level I Non-Compliance, CCP Aggregate Management, Commitment ID: APC10E1 CH17E6).*

Pump Stations

Each Pump Station has a borrow pit register which includes information on borrow/aggregate sources used by the Project. TEPE is the only EPC Contractor that was found to implement the criteria defined in the draft aggregate management strategy discussed above.

As discussed in the June-July 2004 report, a gravel plant, operated by DSI, was in operation at the Posof River crossing where Lot A pipeline construction was subject to a seasonal constraint, and it was reported in the field to be a possible supplier of aggregate for construction of PT1. During the visit, the IEC observed that TEPE is still actively using this gravel quarry to supply aggregate to PT1. TEPE equipment was found to operate in the extraction site. The reported Project use of this quarry is 28% of total utilization or 18,000 tonnes. While the Project claims that an environmental and social assessment was completed for this quarry and it is an existing site, the IEC considers questionable to actively extract gravel from an area that has been classified as environmentally sensitive and that was subject to seasonal constraints. However, the Project has informed IEC that a deviation was granted at the Posof river crossing following a full evaluation of the sensitivity, and that construction activities in this area are now not subject to seasonal constraints. The Project has also confirmed that TEPE will reinstate all new borrow pits opened by the project in line with Project commitments and requirements.

4.3.4 Recommendations

1. As noted for Azerbaijan and Georgia, BTC should finalize a Project position for third-party suppliers of major project raw materials, in particular aggregate and concrete. The current draft BTC Core Management Team position throughout the Project is not acceptable because it undercuts Project commitments that already exist for Turkey.

2. Aggregate management remains a significant environmental and social concern for the project in Turkey. The current situation is contrary to Project commitments to minimize environmental footprint. BOTAŞ and BTC should consistently and comprehensively clarify for which aggregate extraction sites the Project is the main user and finalize a common and appropriate strategy on how to deal with this issue, taking into consideration the comments made above. This issue requires a coordinated and urgent approach to aggregate management between BTC, BOTAŞ, EPC contractors (pipeline, pump stations and CMT) and local communities and an acceptable, consistent management strategy for use of 'outside the gate' facilities, including reinstatement.

3. Aggregate management remains a critical non-compliance issue for the Project in Lot A where borrow pits have been opened without proper assessment and consideration of reinstatement needs. BTC and BOTAŞ need to immediately address this issue, using proper management procedures and tools and ensuring that the E&S teams are involved in the Construction decision making process at all levels.

4.4 WASTE MANAGEMENT

4.4.1 Non-Hazardous and Hazardous Waste – Observations

Solids waste management practices across all Contractor operations in Turkey continue to improve and appear to be now standardized across all Project facilities. Waste is routinely collected in Central Waste Accumulation Areas (CWAA) and segregated into recyclable and non-recyclable components. Non-recyclable domestic and hazardous wastes are shipped to Izaydas.

While waste management and pollution prevention were not a focus of the October 2004 visit, the following comments pertain to the various facilities visited.

TEKFEN (CMT)

The CWAA was found to be clean and well organized. MSDS were available on site and personnel made good use of PPE. Waste was well segregated and organized. All non-recyclable domestic waste is shipped to Izaydas as there are no local municipal landfills that meet project standards. A waste register was found to be kept on site and waste disposal manifests were made available to the IEC.

Excess soil has been reportedly disposed of through backfilling within the BOTAŞ Terminal boundary. Since June 2004, significant amounts of excess concrete from the batching plant have been disposed of at the Kurtkulagi municipal dump site near the village of Narlik. Only after use by the Project had started, BOTAŞ and the EPC Contractor conducted an audit of the dump site on September 18, 2004. Even if other parties do reportedly use the municipal dump site for inert waste disposal and a permit to use the site for inert waste disposal was given to TEKFEN (April 2004), it is not possible, based on available documentation, to ascertain that site characteristics and disposal practices are consistent with the ESAP commitments *(Level I Non-Compliance, CCP Waste Management, Commitment ID: C12E57).*

TEPE (PT3)

As noted during the previous site visit, the CWAA at PT3 was found to be clean, well organized and well operated. Staff continued to show good use of PPE; MSDS were present on site; and the facility was well signed. Limited amounts of stored waste were present at the time of the visit.

Based on record review, it appears that waste streams are adequately tracked and waste registers are properly and consistently maintained in all the TEPE facilities.

As already pointed out in the June-July 2004 report, during the field visit to PT3 the IEC observed the continuing use of two inert material disposal sites at PT3. Although it was stated in the July 2004 visit that the Lot B EPC Contractor (STA) might use this material for pipeline construction, no agreement has yet been reached on this potential reuse between STA and TEPE. The two inert material disposal sites at PT3 are adequately managed, according to BTC, in terms of pre-construction survey and implementation of erosion and sediment control measures; however they are a concern because they are large quantities of excess subsoil located in an Environmentally Sensitive Area (ESA) 19 and their visual impact is significant (*Level II Non-Compliance, CCP Ecological Management, Commitment ID: S692; CH15E27*). There are specific commitments in the Ecological Management Plan Turkey for PT3 to limit habitat disturbance, specifically:

- Commitment S692 states that for PT3: "*The standard ESA measures will be adopted, however, and habitat disturbance will be limited to the area within the PT3 site and the pipeline construction corridor*"; and

- Commitment CH15E27 that states: *"Extra care will be taken at the PT3 site to ensure the area affected by construction activities is minimized where practicable and the location of laydown and staging areas will be determined in consultation with expert ecologists to avoid sensitive species as far as practicable*".

An environmental and social assessment was performed in the second half of 2003 for the site known as DS-4, approximately 2.5 km north west of PT3. The site was formerly used as a quarry. The assessment concluded that DS-4 was an acceptable option for the permanent displacement of 70,000 m^3 of excess subsoil. Reinstatement of the site, using topsoil from PT3 site, is planned to provide adequate landscaping. BOTAŞ and TEPE environmental staff confirmed that a landscaping plan is under preparation for the sites.

TEPE-NACAP (Lot A)

The CWAA at the Hanak Camp was found to be well organized, and waste sufficiently segregated, but over-accumulated waste was noted on site, including hazardous waste such as contaminated soil and contaminated metal waste, medical waste, and photographic fixer *(Level I Non-Compliance, CCP Waste Management, Commitment ID: APC3E48)*.

BOTAŞ environmental staff reported that site waste management, particularly collection, along the ROW is a concern in Lot A. A NCR was raised on 29 September 2004 for poor management of garbage on the ROW in Spread 2 and in the Mini-Spread. IEC also noted garbage along the ROW in the Sarikamis forest area at KP 171 *(Level I Non-Compliance, CCP Waste Management, Commitment ID:*

CH4E74; APC3E42). At the present time, there is no assigned waste collection team along the ROW and garbage pickup is assigned to each work crew.

Waste registers appear to be properly maintained by Lot A personnel.

STA (Lot B)

The CWAA at the Cardikaya Camp was found to be clean, well signed and organized. Good segregation of waste was noted and MSDS were present. Good storage of hazardous waste was observed. Recyclable waste at the Cardikaya Camp are noted as going to a third party recycling agent, Eraykud, food wastes go to a local pig farm and mixed waste is shipped to Izaydas. All hazardous waste goes to Izaydas for disposal.

The waste register was reviewed for Lot B and found to be well organized. The register is separated into hazardous and non-hazardous waste.

During the visit, housekeeping of the ROW, particularly where backfilling has recently concluded and in Spread 1, was found to have worsened. Garbage was noted along the ROW far from any working crews *(Level I Non-Compliance, CCP Waste Management, Commitment ID: CH4E74; APC3E42)*.

PLL (Lot C)

The CWAA at Orensehir Camp was clean and well organized. Mixed waste and hazardous waste go to Izaydas. There were no MSDS present at the CWAA and staff indicated that they were kept in the office. The drains to the sump in the CWAA were full of sediment and the sump was full of water. Staff indicated that the contents of the sump are pumped out to the sewage sump and then transported to the Kayseri WWTP. Segregation of waste outside of the CWAA was poor. Although waste containers were labeled for their supposed contents, segregation was not routinely noted and waste was mixed *(Level I Non-Compliance, CCP Waste Management, Commitment ID: APC3E46)*.

The waste register was reviewed for Lot C and found to be updated.

4.4.2 Non-Hazardous and Hazardous Waste - Recommendations

1. The CWAAs at all facilities should be reviewed to ensure that MSDS are available for all hazardous waste present. BTC and BOTAŞ should review training records, to ensure that personnel are aware of the dangers of working with hazardous waste.

2. It is recommended that TPN more frequently remove the waste from CWAAs, especially at Hanak Camp where storage capacity is limited.

3. TPN and STA should take immediate steps to remove garbage from the ROW in a timely manner consistent with Project commitments. Both contractors should consider a dedicated waste management crew (or an ERT) to ensure that garbage is properly disposed of and does not cause littering of the ROW.

4. Housekeeping at the Orensehir camp should be improved to ensure that waste segregation at source is maintained, prior to doing so at the CWAA. A specific review of housekeeping practices throughout all camps in the three lots should be conducted by BTC/BOTAŞ.

5. TEPE should develop reinstatement and landscaping plans for the excess subsoil disposal sites, particularly important for the PT3 sites.

6. As per CCP Waste Management commitments, TEKFEN should determine and adequately document that use of off-site waste disposal facilities is sustainable and will not compromise capacity and conflict with other users.

7. BTC and BOTAŞ should ensure that an ecological assessment is done and that reinstatement of the disturbed area for excess subsoil disposal at PT3 will be done in accordance with Project commitments for ESAs. A reinstatement plan needs to be developed for the inert material disposal sites recognizing the sensitivity of ESA 19 and ensuring compliance with specific commitments made in both the Ecological Management and Reinstatement Plans for Turkey.

8. BTC and BOTAŞ should ensure and suitably document that inert material disposal sites, including, but not limited to, the PT3 excess subsoil disposal sites and the CMT excess concrete dump site, are adequately managed and mitigation measure needs are consistently assessed and measures taken, as needed, to adhere to the footprint minimization principle adopted by the Project.

4.4.3 Wastewater Management - Observations

Wastewater management continues to be an issue of concern for both BTC and BOTAŞ although considerable improvements have been made towards compliance with Project discharge limits. In July 2004 an audit of wastewater treatment plants (WWTPs) across the Project in Turkey was conducted as a follow up to the one performed in March, by a specialist consultant hired by BTC and the recommendations have resulted in some improvements. The audit also included the wastewater treatment plant at the Izaydas waste disposal facility. The plant was deemed to be in compliance with EU standards (Urban Wastewater Treatment Directive - UWWTD); however an adequate monitoring regime was recommended to be put in place.

At the time of the visit, the following observations were noted.

TEKFEN (CMT)

The sewage treatment capacity for the onshore CMT construction site has been upgraded since the IEC visit in March 2004. An additional 800 people equivalent activated sludge unit was put in place, bringing the total treatment capacity to 1,600 people equivalent, as well as a chlorination tank to increase contact time. The treated effluent appears to comply with Project specifications and is discharged to a dry stream within the BOTAŞ site boundaries. Problems have been reportedly encountered with coliform levels but increasing chlorine contact time via a recently installed tank has solved them.

A 300 people equivalent activated sludge unit provides sewage treatment for the offshore CMT construction site. The treated effluent is reported to comply with Project specifications and is discharged into the sea.

TEPE (Pump Stations)

The 750 people equivalent capacity WWTP at PT3 was visited by the IEC and, since early September, it is reported to be compliant with Project specifications. Treated discharge goes to an infiltration field located outside of the PT3 fence. However, treated sewage has often been trucked to the Kayseri municipal WWTP in the last months and sewage sludge goes to the Erzincan WWTP for disposal. The WWTPs at PT2 and PT4 are reported to be generally in compliance with Project standards. Evaluation of data for PT2 indicates that there are fluctuations in the effluent quality, with some exceedances of Project specifications for BOD, oil and grease, coliforms. The treated sewage is therefore reported to be trucked to Erzincan municipal WWTP. PT4 effluent quality records are also showing some exceedances and fluctuating results, particularly in terms of Total Suspended Solids (TSS), BOD and oil and grease. Since September 2004, however, there is a positive trend in effluent quality and treated sewage is discharge to an infiltration system on site. Sewage from IPT1 is trucked to Kayseri and treated wastewater from PT1 is going to Erzincan WWTP because of non-compliant conditions. TEPE environmental personnel, in cooperation with BOTAŞ and BTC, are also working on an evaluation of a disposal option for wastewater to the topsoil piles at PT1.

The wastewater registers compiled by TEPE appear to be consistent, updated and well organized.

TEPE-NACAP (Lot A)

Both the Kars WWTP and the Hanak WWTP are reported to be still non-compliant with Project standards.

The most recent analytical results available for Kars WWTP effluents still exceed Project specifications for BOD, COD, oil and grease, and chlorine. TSS, pH and total coliforms are reported to have met the standards. According to the wastewater

register, sewage from the Köprükoy Camp is trucked to the Kars WWTP for disposal. This practice would also put Köprükoy Camp into non-compliance. Treated effluent from the Kars Camp is discharged into the municipal sewage network, which is not connected to a Project compliant municipal WWTP.

The WWTP at the Hanak Camp WWTP does not meet Project standards for BOD, COD, oil and grease and chlorine. The WWTP is a two unit 500 people equivalent capacity RBCs that are connected in series. There are currently 570 persons in the camp. Treated sewage is discharged onto the ground surface through perforated pipe that exits the facility fence, but is within camp boundaries. Staff indicated that there is a problem with high groundwater table at Hanak Camp, that causes flooding in springtime and is problematic for installation of a septic field. The Project's wastewater audit also indicated problems with high pH from excessive use of detergents. The Hanak WWTP also lacks sufficient heaters to keep suitable temperature conditions for the WWTP functioning in the winter months.

The current situation for Lot A is evaluated to be a sustained *Level II Non-Compliance (CCP Pollution Prevention, Commitment ID: APC4E39)*. An immediate action by the Project is required to bring the WWTPs into compliance.

STA (Lot B)

The WWTP discharges at the four camps in Lot B (Kova, Koyunkaya, Ilica and Cardikaya) are reported to be in compliance with Project standards, although the parameters tested are only four (BOD, SS, chlorine and total coliforms) and no data are available for regulated parameters, including pH, COD, and oil and grease. Since early September 2004, it is reported that trucking of treated sewage to Erzincan municipal WWTP has been discontinued and that treated effluents are currently discharged into the selected disposal point at all camps, with the exception of sewage from the Sivritepe Camp that is being temporarily trucked to the Sivas Municipal WWTP for disposal while the camp WWTP is commissioned.

The wastewater register was examined and confirms that all plants are currently in compliance for the limited parameters tested. Problems were encountered with high coliform levels at Kova and Cardikaya camps in August but have since been resolved.

The WWTP at the Cardikaya Camp was visited. It is a well maintained facility, including a 700 people equivalent capacity activated sludge unit for 400 people in camp. Treated sewage goes to an infiltration tank that has been fenced since the July 2004 visit.

PLL (Lot C)

A stop work order was issued by BOTAŞ, in agreement with BTC, in July 2004 on all WWTPs in Lot C due to non-compliance with Project discharge standards. An

action plan has been developed and is being implemented; however, the treated effluent tests are still not compliant with Project specifications, particularly in terms of total coliforms from Azizli and Andirin WWTPs; BOD, coliforms and TSS from Yesilkent and Orensehir WWTPs. PLL has recently hired an experienced WWTP operator to assist in achieving compliance with project standards. All sewage from Lot C is currently being transported to the Adana (from Azizli and Andirin camps) or Kayseri municipal WWTPs (from Yesilkent and Oresenhir camps) for disposal.

This problem may intensify in the winter months as all of the WWTPs in Lot C are not enclosed.

BTC has reported that a project with the Middle East Technical University was commissioned to look at drip irrigation of treated sewage over stored topsoil piles as a possible disposal option.

4.4.4 Wastewater Management – Recommendations

1. Sewage disposal continues to be a significant non-compliance problem in Lots A and C. Wastewater management appears not to be consistent across all three Lots. The Project should ensure that WWTP effluent discharges do comply with Project standard as soon as possible. The Project should place a stop order on all further discharge of WWTPs in Lot A, until compliance is achieved in line with Project standards.

2. A suitable design is required for sewage discharge at the Hanak Camp and should be implemented as soon as possible. If in use through the winter months, the Project must come up with a compliant solution or truck the sewage to a suitable municipal facility.

3. The heating systems should be significantly improved immediately for both Lot A Hanak and Kars WWTPs to ensure proper operation of the WWTPs in the winter months.

4. Verification is needed to ensure that consistent and sufficient sewage quality monitoring is performed by the different EPC Contractors. Particularly, it is recommended that compliance verification is performed against a consistent list of parameters throughout all the Lots. For instance, Lot B considers the WWTPs in compliance, but only a limited number of parameters are tested. This has been a persistent problem across the Project in Turkey.

5. BTC should conduct a follow-up of the consultant wastewater audit report to ensure that the report's recommendations are put into effect and to provide a systematic assessment of their effectiveness and treatment improvements by the EPC Contractors.

4.5 POLLUTION PREVENTION

4.5.1 Observations

The Project has adopted a pollution prevention plan aimed at systematically identifying potential impacts from construction activities and implementing avoidance and mitigation measures to minimize the likelihood, extent or duration of their occurrence, and any associated adverse effects. The mitigation measures include: spill prevention and management; management of existing contaminated sites; groundwater protection; surface water protection; ecological receptor protection; air quality protection and dust mitigation; noise control; soil erosion control and topsoil protection.

Various provisions apply directly to the protection of surface and ground waters, including permanent fuel and chemical storage, hazardous materials storage, vehicle maintenance facilities, wastewater discharges, run-off controls, and disposal of trench water and groundwater.

During the visit, less emphasis was placed on reviewing compliance of fixed facilities in regard to pollution prevention. However, the air emission and noise monitoring registers were consistently reviewed and no significant issues were found. Dust mitigation measures appear to be sufficiently implemented, although some complaints have been received from communities. The fuel storage areas visited during the visit were found to be generally well-managed and no significant issues were observed in terms of management of oil/water separators and spill pollution prevention measures.

The following main concerns are raised and apply to those facilities visited.

TEPE (PT3)

An issue of concern raised during the June-July 2004 visit is the management of concrete batch plant washwater at pump stations. Particularly, a large concrete wastewater pit is present at PT3 batch plant site. The pit is unlined. Analytical results available show high pH (above 11) and chromium (total, not specified in analysis) concentration of 1 mg/l. A similar pit is present at PT1 but could not be visited in October.

After having discarded potential options of treating this wastewater stream or reusing it for dust control on roads, BOTAŞ and TEPE environmental personnel informed IEC that there are plans to ship the wastewater from both PT3 and PT1 concrete batch plant to the Kayseri municipal WWTP. Izaydas has also accepted the wastewater for disposal, but the Kayseri WWTP is preferred due to lower transport costs.

IEC also reviewed the sample analysis data for cement batch water from PT1 and observed the following: pH 11.84, chromium (total, not specified in analysis) concentration of 2.49 mg/l.

Since PT3 and PT1 pits are unlined and a groundwater monitoring network is not available at any fixed facility, available information is not sufficient to ensure that there is no impact from this wastewater stream. In addition, no actions have been taken since July 2004 mission *(Level II Non-Compliance, CCP Pollution Prevention, Commitment ID: CH12E20).*

It is noted that the Project discharge standard for chromium is 0.5 mg/l, and that the Kayseri WWTP is a biological treatment, which discharges into the Karasu River. The Environmental and Social Assessment Report of handling and transport of concrete mixer washing water to Kayseri WWTP provided by TEPE and BOTAŞ does not address the potential heavy metal contamination and does not discuss the potential impact on effective plant treatment due to the high pH washwater. This is particularly important since it has been reported that:

- The WWTP is relatively new biological treatment system, operating since August 2003. The plant construction was financed by the German KfW.

- The sludge cake produced is planned to use for agricultural purposes.

TEKFEN (CMT)

Water for dust control at the CMT is from a spring licensed for water withdrawal from DSI. The practice of using concrete batch plant washwater for dust control was reportedly discontinued in September 2004. Concrete washwater is recycled and periodically discharged into a lined evaporation pond (HDPE liner) located within the site boundaries.

Seawater analyses are regularly performed monthly and, although results do not appear to show significant impacts from construction activities, a comprehensive evaluation is not available.

Sediment quality testing was performed in July 2004 and a draft report was made available. Samples from 12 locations were analyzed for several parameters of concern; such as total petroleum hydrocarbon (TPH), trace metals, benthic survey, carbonate and organic contents, water column turbidity and particle size distribution. The draft report concluded that there is no significant present contamination in the vicinity of Coastal Marine Terminal construction site, with a potential exception in terms of increasing tin concentrations. The draft report also indicated that, with respect to 2002 and 2003 results, there appears to be a slight increase in trace metals.

As per commitments, air quality continues to be monitored at the CMT every 6 weeks by CINAR. Samples are analyzed for suspended particulate matters with

aerodynamic diameters less than 10 micrometers (µm) (PM10), benzene, toluene, ethylbenzene and xylenes (BTEX), nitrogen oxides and sulfur dioxide.

4.5.2 Recommendations

1. The current analyses of concrete batch plant water at PT1 and PT3 indicate that total chromium levels exceed project standards by up to five times. IEC has concerns that these levels, as well as the high pH values, may be a hazard to the operation of the newly commissioned Kayseri municipal wastewater plant that is a biological treatment system. The Project should seek advice from a wastewater engineer to determine if the concrete batch plant water from these two pump stations can be effectively and safely disposed of to a municipal WWTP that uses a biological treatment process. If not, the water should be disposed of at Izaydas.

2. Pits to store potentially hazardous wastewater streams, such as the concrete batch plant washwater, should be lined throughout the Project.

3. BTC should assess the potential increasing trace metal concentrations detected in CMT marine sediments to quantitatively rule out any potential environmental impacts and risks generated by the construction activities.

4. BTC should develop a comprehensive assessment of the CMT air quality monitoring results to discuss baseline conditions and highlight potential effects due to the construction phase.

5. BTC should develop a comprehensive assessment of the seawater quality monitoring results to discuss baseline conditions and highlight potential effects due to the construction phase.

6. BTC should consider the installation of a groundwater monitoring network at each permanent facility (pump stations and CMT) to collect baseline data and to monitor groundwater conditions during the operation phase.

4.6 ROW MANAGEMENT, EROSION CONTROL AND REINSTATEMENT

4.6.1 Erosion Control and Reinstatement - Observations

Reinstatement Planning

As observed previously in both the March and June-July 2004 reports, the length of the ROW under construction in Turkey is extensive, stretching the E&S management capacity of the BTC, BOTAŞ and the EPC contractor organizations to manage the mitigation of potential environmental and social impacts conjointly with the needs for ROW reinstatement. At the time of the visit, reinstatement activities were progressing well in Lot C, but very limited reinstatement progress was noted in Lots

A and B, both Phase 1 and 2. It is noted that definitions of reinstatement phases have been recently given by BTC in the second quarterly report for 2004:

- Phase 1 reinstatement: initial reinstatement (including sub-soil reinstatement, final grading to contour, erosion control)
- Phase 2 reinstatement: intermediate reinstatement (including topsoil spreading)
- Phase 3 reinstatement: final reinstatement (including biorestoration, e.g., planting and direct seeding).

It is highlighted that the BTC quarterly report states that topsoil spreading "*acts as the sign-off that allows hydrotesting to commence*".

In accordance with the Contractor Control Plan Reinstatement – Turkey, each EPC contractor is responsible to provide specific reinstatement plans for each Lot and fixed facility encompassing the following responsibilities (Commitment APC2E7):

"The contractor will be responsible for:

- *Implementation of all reinstatement works in accordance with the requirements of this Plan, contractors project specific plans and procedures, commitments stated in the EIA and to the satisfaction of on-site BOTAŞ Environmental Inspectors;*
- *The provision of an experienced project manager supported by project personnel who can demonstrate full knowledge of reinstatement and the contents of this Reinstatement Plan;*
- *Further development of this Reinstatement Plan as it pertains to the contractor's scope of work;*
- *Development and implementation of site-specific method statements;*
- *Development and implementation of site-specific method statements for the reinstatement of all Special Areas;*
- *Performance of all appropriate pre-construction surveys to facilitate the development of site-specific reinstatement method statements for all Special Areas;*
- *Consultation with local experts, specialist organizations and government authorities in order to ensure the reinstatement works are appropriate to the local, site-specific conditions;*

- *Consultation (in association with BOTAŞ) with each landowner regarding specific reinstatement requirements and fulfillment of these requirements to the satisfaction of the landowner;*

- *Ensuring compliance of contractor appointed sub-contractors; and*

- *All training needs of contractor Staff in relation to this Reinstatement Plan."*

The Project provided IEC with the Project Reinstatement Plan (BOT-PLN-ENM-GEN-021 Rev 1) that was prepared by BOTAŞ as a general guide for the three EPC contractors. The plan was developed following a Biorestoration Workshop held between July 23-30 for BTC, BOTAŞ and EPC contractors, and from information derived from field visits by the BOTAŞ reinstatement expert in August 2004.

The BOTAŞ plan provides general guidelines for reinstatement including:

- Relationship with construction sequencing

- Manpower and equipment needs

- Critical reinstatement priorities

- Winterization and Spring 2005 reinstatement

- NGPL reinstatement

- Biorestoration

- Outlines for reinstatement programs in each Lot

Of importance to this review of reinstatement in Turkey, the BOTAŞ Plan also identifies specific commitments for activities that must take place before reinstatement:

- *"Completion of outstanding tie-ins within the section*

- *Completion of all backfill within the section*

- *Pearson Survey and rectification of any coating defects*

- *Surplus material removal and clean up, including any NGPL material on BTC ROW*

- *Profiling of subsoil (e.g. on side slopes) and engineered slope stabilization*

- *Completion of all installation works (including special trench measures) at the fault crossings and other special crossings (major rivers, aquifers etc)*

- *Pigging and testing of the FOC conduit*

- *Installation of splice boxes*

- *Installation of the permanent CP system*

- *Accurate topographical restoration is required, including side slopes. Any deviation from this will require the initiation of the management of change process on a case by case basis. Depth of pipe below re-profiled ground level will be checked and corrected where this is in doubt."*

Furthermore, the Plan commits to the following:

- *"No running track should be left after reinstatement of topsoil.*

- *Any operations that may have to be conducted after topsoil reinstatement are point-specific. These operations should not normally involve heavy plant.*

- *Alternative lateral access will usually be possible.*

- *In many areas where the topsoil is dry and stony, occasional and essential access across the 'topsoil' will be less harmful than maintaining an access track that will be at risk of misuse.*

- *Subsequent to natural settlement, the temporary crown over the trench line shall be further compacted by tracking. Any remaining suitable surplus material shall be spread over the whole ROW, taking into account the requirements for topsoil reinstatement.*

- *A sign-off procedure is required to document the acceptance of reinstatement by BTC & BOTAŞ.*

- *Hydrotesting activities must be performed after 'engineered reinstatement' such that the heavy equipment used to reinstate the ROW does not compromise the validity of the hydrotest. However, under certain circumstances and on a case-by-case basis, hydrotesting may be performed prior to reinstatement work, provided that such work:*

    - *Is accompanied by a special "hot work permit" or "permit to work" and performed accordingly;*

- *Is strictly supervised to ensure permit compliance and protection of the pipeline and restored ROW; and*

- *Is undertaken using low ground pressure equipment and light vehicles.*

- *If the above conditions are not met, then the relevant section of the pipeline may be subject to additional hydrotesting requirements. Additionally, any breakdown in the permit system, that may reasonably be deemed to present a risk to the integrity of the tested pipeline, will require retesting and a new gauging/calliper survey".*

BOTAŞ general plan for reinstatement in Turkey is well formulated and outlines key commitments that EPC contractors must follow in the development of specific reinstatement plans for each Lot. Both BTC and BOTAŞ stated that reinstatement over hydrotested pipe is still to be considered the exception rather than the norm and that hydrotesting procedures shall be performed after engineered reinstatement as per the requirements of the BOTAŞ General Reinstatement Plan.

At the time of the visit, only Lot C had submitted official and specific follow-up plans for winterization and biorestoration, and an adequate reinstatement and biorestoration march chart providing detailed planning in terms of time schedule and construction data.

Although reinstatement has started, Lot B has only developed a spreadsheet of reinstatement and winterization activities but has not developed a formal specific plan incorporating personnel and machinery needs and realistic completion dates *(Level II Non-Compliance - CCP Reinstatement, Commitment ID: APC2E1, APC2E7).*

Although reinstatement has started, IEC received no reinstatement plan from Lot A during the visit *(Level II Non-Compliance - CCP Reinstatement, Commitment ID: APC2E1, APC2E7).*

In a position paper prepared in October 2004 on ESA management (see Section 4.7), BTC indicated that it is not realistic to aim for the completion of the reinstatement and biorestoration activities at all backfilled areas before the end of the 2004 window of opportunity. Therefore, BTC has confirmed that priority shall be given to those areas identified as critical, through the following criteria:

- River/stream crossings and wetlands that shall be restored immediately following construction.

- The areas that were first topsoil-stripped during 2003 shall also be restored as a priority to minimize degradation and loss of topsoil.

- Steep and side slopes shall be reinstated in order to prevent loss of topsoil during wintertime.

- ESAs.

- Community sensitivities (such as areas requiring cropping or irrigation).

- Scheduled hydrotesting (taking into account the sequencing requirements).

Reinstatement Progress

The following is a summary of reinstatement and ROW management activities by Lot as noted during the visit.

Lot A

IEC observed some examples of good construction practices relating to environmental protection particularly in the Mini-spread such as the use of a cable lift system for the steep slope at KP 3 + 500, and the narrowing of the ROW to 17-18 m and good deployment of trench breakers at KP 10 (ESA 1). Also at the Sarikamis Forest (ESA 8; KP 170-171) a very limited amount of trees were cut during clearing and grading and they will be replaced through an offset program.

As of 14 October 2004, the Project reported that only 780 m of ROW as being reinstated in Lot A. Although no formalized reinstatement plan was available at the time of the visit, Lot A staff reported that there is one reinstatement team currently working and a 84 km completion target was envisaged before Winter 2004. It appears that this target cannot be achieved, taking into consideration the limited crews and equipment available, as well as likely weather constraints of the coming winter.

The reinstatement team was observed in the field at KP 276 and had started work the day before (October 11). Reinstatement was being completed over a stretch of pipeline that had been already hydrotested, therefore requiring a 'hot work permit' or 'Permit to work' and restricting machinery weight to a 'recommended' 25-ton limit, as per the BOTAŞ Project Reinstatement Plan. During the visit, the BTC LTO manager for Turkey, accompanying the IEC, stopped the work because one of the machines was rated at a 34-ton limit, without supporting information that the machinery was acceptable for the ground conditions at that time and location. Lot A BTC delivery team therefore issued a stop work order. The IEC was later provided the Permit to Work, which was a "Cold Work Permit" as BOTAŞ construction department considers this appropriate, as a 'Permit to Work' as per BOTAŞ Project Reinstatement Plan, because the pipeline does not yet contain hydrocarbons. The IEC observes that, despite the recent development of a common reinstatement strategy formulated in the 'Project Reinstatement Plan', which was reportedly reviewed and endorsed at all levels in BTC, BOTAŞ and EPC Contractors, the

assurance, monitoring, and implementation mechanisms have failed at the very first occasion. This is an important concern in terms of actual commitment of the Construction departments to consistently implement the relevant and applicable reinstatement commitments. It also raises the question as to whether the Project will consistently comply with the agreed to commitments of the Project Reinstatement Plan in all cases.

Little evidence was noted in the field of the installation of adequate temporary erosion control measures in Lot A, particularly on steep slopes in the Posof area (e.g., KP 3.5, KP 10.5, KP 16). Limited evidence of slope breakers were noted in the rolling terrain visited from KP 253 to KP 240. A lack of temporary flume pipes for drainage control was also noted. The lack of adequate winterization measures, in terms of installation of temporary erosion control measures and drainage control measures, is a critical observation at this point in time, taking into consideration the number of critical slopes in Lot A and the limited time prior to the onset of the 2004-2005 winter season. A Level II non-compliance is assigned due to the observed failure to properly implement these measures (*Level II Non-Compliance, CCP Reinstatement Plan, Commitment ID: 151, APC2E26, APC2E28, APC2E29, APC2E65).*

Lot B

At the Project kickoff meeting in Lot B (9 October 2004), Lot B BOTAŞ site manager commented that three high elevation sections were being prioritized for reinstatement and that five reinstatement crews were in place. Although the relevant wording of the Project Reinstatement Plan is unclear (scheduled reinstatement for 2004: 31.184 km ESAs, 8.322 km slopes and 69 km total other ROW), the Project has informed IEC that Lot B has committed to reinstate 69 km for 2004, including the reinstatement of ESAs 12, 13, 19, 20, 24 to 29, 31, 33, 34, 51, as well as 13 PSAs. In addition, one other crew is specifically dedicated to river crossings. As part of the presentation given to IEC during the visit in Lot B, prepared by Lot B reinstatement team for the IEC visit, different 2004 reinstatement targets before winter season were presented: 165.2 km total ROW reinstated; reinstatement of ESAs 12, 13, 19, 20, 23, 24 and 25; and reinstatement of 21 PSAs.

However, at the time of the visit, very limited reinstatement progress has been made in Lot B. As of 14 October 2004, only 3.2 km of ROW reinstatement has in fact been reported by BTC.

It is noted that there are other discrepancies in the data provided by BTC and by BOTAŞ. BOTAŞ has reported in the presentation for Lot B to IEC that, at the time of the visit, "topsoil return" totaled 4.5 km, of which approximately 4 km in the ESAs. BOTAŞ indicated that ROW recontouring had reached 106 km. Another report showed different data for recontouring, top soil spreading and "re-vegetation". This reinforces previous comments made in this report of the need to standardize the use of reinstatement terms.

Notwithstanding the lack of significant progress, IEC made some significant positive observations on reinstatement issues in Lot B:

- STA/BOTAŞ team has fulfilled the commitment to reinstate ESA 13 according to the schedule provided to the IEC during the June-July 2004 visit and relevant documentation developed to mitigate the construction impacts found during the March 2004 visit. ESA 13 reinstatement was completed at the time of the visit. Biorestoration was also implemented and 13 kg of native seed had been sown. However, the IEC has observed in the field that, at the ESA 13 in the vicinity of the public road crossing, the NGPL that parallels the BTC ROW within 10 m was not restored as the BTC Project assessed that there are no known site specific reputation issues and integrity issues remaining in this area. The Project has reported that reinstatement of NGPL areas has been achieved at ESA 13 in the overlap areas in line with the ESAP requirements.

- Four reinstatement crews are working in Lot B under the direction of a BOTAŞ field supervisor. Dedicated equipment is available, even if there is the need to devote additional machineries to the reinstatement crews to meet the stated targets.

- Some good example of Phase 1 reinstatement was noted, including initial restoration of drainage flows (e.g. KP 568).

- Phase 2 reinstatement was on going at the time of the visit in some agricultural land (e.g., at KP 279).

- Some pipe storage areas (PSAs) have been reinstated to agricultural land (e.g., PSA1, PSA16).

Despite this evidence, a number of concerns exist regarding erosion control, top soil management and reinstatement in Lot B:

- As already stated, there is no formalized specific plan for reinstatement in Lot B as per CCP commitments.

- There is a lack of winterization measures, including temporary erosion control measures on steep slopes, although there is a target for winterization of ROW and access roads for sections from KP 574 to 744 and from KP 345 to 485. Very little evidence of the implementation of winterization measures was noted in the field where construction activities are still ongoing (e.g. steep slopes at KP 449, 456 and 458, ESA 33, 20 and 19 slopes, KP 624, 602, 565 steep slopes). A Level II non-compliance is assigned due to the failure to implement these measures (*Level II Non-Compliance, CCP Reinstatement Plan, Commitment ID: 151, APC2E26, APC2E28, APC2E29, APC2E65).*

- Fragile topsoil has been stored for long periods and subsoil contamination is visible along portions of the ROW, particularly at high elevation locations in Spread 1.

- With the exception of ESA 13, no significant reinstatement progress was observed in high elevation ESAs (e.g., ESA 19 and 20) (*Level II Non-Compliance, CCP Reinstatement Plan, Commitment ID: APC2E26).*

- Although the Rev. A of a document prepared by BOTAŞ on May/July 2004 survey of the NGPL corridor and adjacent areas was made available, the Project has no further definition of reinstatement of the NGPL, which is an important ESAP commitment.

Lot C

Progress in reinstatement in Lot C is good with 162 km reinstated (Phase 2) as of 14 October 2004. PLL has a dedicated reinstatement contractor. A reinstatement specialist was recently hired by PLL in mid-September 2004 and is currently working out of Yesilkent Camp. The BOTAŞ reinstatement specialist in Lot C continues to direct and supervise the reinstatement activities of PLL.

PLL informed IEC that crews were working at 13 locations along the ROW between KP 871 and 1007. These crews are supervised by a PLL foreman and have access to dedicated machinery including excavators, loaders, dozers and tractors.

IEC observed a high standard of quality of reinstatement practices at a several sites in Lot C, including:

- Ceyhan River crossing (KP 1037). The river crossing was completed in March 2004. Rip rap and bank stabilization measures were completed in September 2004.

- Manual placement of permanent slope breakers (rock) was noted in a slope at KP 1024, including the installation of jute mats for erosion control.

- The installation of rock retaining walls for steep slopes was observed at KP 993 where topsoil amounts are limited.

- Special reinstatement procedures were implemented at steep slopes in ESA 46 (KP 979) including the construction of buried retaining walls and the installation of hand dug slope breakers. Since topsoil collected from the Area of Important Plants (AIP) was limited at this location, it is being stored with special precautions and it will be selectively spread in small pockets. Endemic seed has been collected and will be used in biorestoration efforts.

- Placement of permanent slope breakers and silt fences at a 21 degree slope at KP 979 was observed.

- The use of tractors for final reinstatement (Phase 2) in agricultural land located at KP 870 was noted.

The Project provided a winterization plan for Lot C (PLL-PLN-ENS-PLC-029) with an accompanying Reinstatement and Biorestoration March chart. The Plan outlines the specific measures that PLL will take this winter to protect sensitive areas from erosion. The plan and accompanying March chart clearly indicates resources, machinery and timing of these events in the winter months, as needed.

Reinstatement of the NGPL

As indicated above, BOTAŞ provided IEC with a copy of the results of the May/July 2004 survey of the NGPL ROW where it parallels the BTC ROW in Lot B (BOT-REP-ENM-GEN-023). The document describes in detail the results of the survey in regard to amount of rock/shale present, bank stabilization and river crossing rehabilitation needs, slope breakers and permanent erosion control measures, landscaping requirements etc., including detailed estimates of materials and manpower requirements. The document however does not include any details on scheduling and identification of responsibilities of BOTAŞ, BTC and the EPC contractor.

A Level II non-compliance for in-action on the NGPL was raised in July 2004 due to a persistent and unjustified uncertainty and controversy over reinstatement of the NGPL. As stated previously, reinstatement of the NGPL is a precise Project commitment, clearly specified on the CCP Reinstatement Plan as follows: "*It is a BTC Project requirement that the BTC Pipeline will not inherit reputation and soil erosion problems caused by poor reinstatement of the NGP. In order to achieve this, a two-phased approach to reinstatement in the vicinity of the NGP will be adopted. The first phase will involve the NGP construction contractor undertaking remedial reinstatement measures prior to BTC construction to resolve existing problems related to poor reinstatement of the NGP. The second phase will require the BTC Project construction contractor to undertake any additional mitigation measures necessary to ensure the integrity of the BTC corridor in areas impacted, or potentially impacted, by the presence and/or proximity of the NGP Pipeline. This second phase will require the BTC construction contractor to implement reinstatement measures across the two parallel (i.e., NGP and BTC) corridors in areas as defined in this Section (e.g., hill slopes, river crossings, etc.*" Continued delays in defining a practical implementation program for the reinstatement of the NGP ROW are not in compliance with ESAP commitments and a repeated Level II non-compliance is assigned (*Level II Non-Compliance, CCP Reinstatement Turkey, Commitment ID: CH15E5, APC2E15, APC2E16, APC2E17, APC2E18).*

CMT

A landscape plan for the CMT has recently been submitted to BOTAŞ for review.

4.6.2 Erosion Control and Reinstatement - Recommendations

1. IEC notes that good progress is being made in reinstatement in Lot C and that reinstatement activities are being initiated in Lots A and B. However progress in these two Lots is significantly behind what was planned for 2004. It is very likely that no further substantial progress will be made towards reinstatement this year. No formalized reinstatement plans were made available to the IEC for Lots A and B during the visit. There is an immediate need for the Project to complete adequate and specific reinstatement plans for Lot A and B including realistic mobilization of resources and equipment and completion schedules. It is important that the criteria indicated by BTC for prioritization of reinstatement are fully included in the planning and sufficient documentation is developed by the parties to ensure that these criteria are met.

2. BTC, BOTAŞ and EPC Contractors should conform, in their reporting, to the definitions of reinstatement phases, as provided in the ESAP or as amended in the most recent BTC quarterly report. Inconsistent definitions in reporting were generally observed and this may impact proper monitoring and evaluation of actual reinstatement progress.

3. IEC noted the failure of TPN and BOTAŞ to adequately implement proper protection measures for reinstatement activities over hydrotested pipe in accordance with commitments of the BOTAŞ Project Reinstatement Plan. The BTC delivery team issued a stop work order, triggered by an observation of the BTC LTO manager for Turkey during the IEC visit. Because of the importance of maintaining pipeline integrity and implementing adequate reinstatement according to ESAP commitments, IEC urges all three parties to devise auditable measures that will avoid further failures in the implementation, supervision and assurance roles in future.

4. Reinstatement in high elevation ESAs should be a priority and start as soon as possible.

5. As has been mentioned in previous IEC reports, the Project needs to have timely action on the reinstatement of the NGPL. Given the current limited reinstatement progress for completing back end activities in Lot B, it is also doubtful that the contractor has the capacity to undertake additional reinstatement works on the NGPL with adequate resources and in a reasonable time frame. There is a critical need for the Project to demonstrate clear and precise action on reinstatement of the NGPL, including definitive timelines and specific commitments to machinery and resources as part of the overall

integrated Lot B Reinstatement and Biorestoration Plan. The IEC intends to follow up on this issue during the next visit.

6. There is a critical and urgent need to implement winterization measures for areas of the ROW subject to erosion in Lot A and B. BTC and BOTAŞ should continue to support and work with the EPC contractors in these Lots to ensure that temporary erosion control measures are put in place to protect the ROW during the winter months. An auditable punch list of measures to be implemented should be consistently developed throughout the Lots by BTC and BOTAŞ reinstatement specialists.

4.6.3 River Crossings - Observations

IEC noted a number of instances during the visit where good examples of river crossing stabilization and reinstatement were noted in Lot C:

- At the Ceyhan River crossing (KP 1037) rip rap was installed and banks appear to be properly stabilized.

- At the Zamanti River crossing (ESA 36 – KP 796-797), IEC observed that the river crossing had been completed across the entire flood plain since the July 2004 visit and had been properly reinstated. The area had been seeded with commercial seeds and also with seeds that were collected from the Zamanti area. Gabions were installed for bank stabilization. The only concern at this location is the steep slope south of the river crossing. The slope still showed a large cut and the pipe was found to have been lowered. Erosion control measures were still to be placed in the trench at the time of the visit. The Project informed the IEC that the relevant SARMS was approved and backfilling should be completed before the winter season.

Outside of Lot C, reinstatement of river crossings has not been completed to the same standard, although it is understood that construction activities have recently concluded. Specifically for Lot A:

- All major river crossings, but one, have been completed.

- At the Hasankale River crossing (KP 260), no bank stabilization measures had been implemented and there were no silt fences installed at the time of the visit. A bulldozer operating at the riverbank was observed causing turbidity impact in the river water *(Level I Non-Compliance, CCP Pollution Prevention, Commitment ID: CH12E19, APC2E64).*

- At the Posof River crossing (KP 15 + 600), flume pipes were still in place at the river crossing to allow for a temporary bridge that is planned to be used to

transport machineries needed to construct the pipeline at a steep slope located in the vicinity at KP 16.

Specifically for Lot B:

- Two out of eight major river crossings were reported to have been completed at the time of the visit.

- At the Kurasu River (KP 411.5), the crossing was completed in September 2004, but bank stabilization measures had yet to be installed.

The CCP Reinstatement Plan – Turkey (Commitment ID: CH4E12) states that "*Erosion and scour protection measures will be installed, where necessary, to protect river banks, river channel walls and river beds at river crossings. Protection of river banks from erosion will be achieved via application of vegetative cover (re-vegetation), gabion mattresses and gabion boxes, riprap, or concrete walls. The choice among these alternatives will depend on site-specific requirements and availability of the materials".* Given the critical need to stabilize recently constructed river crossings prior to the winter season, a *Level II Non-Compliance* is assigned for a failure of the Project to timely implement adequate bank stabilization, erosion and scour protection measures at river crossings visited in Lots A and B *(CCP Reinstatement Plan – Turkey Commitment ID: CH4E12).*

4.6.4 River Crossings - Recommendations

1. Appropriate measures to minimize water quality impacts at river crossing under construction (i.e., silt fences, operational control of heavy machinery, monitoring, etc.) should be implemented and maintained throughout the construction period.

2. The banks of all river crossings in the Project should be stabilized as soon as possible, and proper winterization measures to minimize erosion and damage to riparian areas should be implemented as needed, especially in Lot A and B.

3. Temporary bridges and structures, such as flume pipes, at river crossings should be removed before the winter season to avoid risk of damaging downstream locations.

4.6.5 Open Trench - Observations

During the visit, and as a follow up of the Level III Non-Compliance raised in the June-July 2004 report, IEC focused on reviewing compliance in the field with procedures established in the BTC Turkey - Open Trench Compliance Standards dated 25 September 2004 and communicated to BOTAŞ.

In response to the recent open trench incident in Lot C and the open trench concerns raised by IEC and Lender Group, BTC has developed an action plan and further specified its position in a letter to the Lender Group, dated 12 September 2004. In the letter BTC indicated that:

- *"The Turkey ESIA contains a commitment to not more than 20 kilometers of open trench per spread, and out of the nine spreads in Turkey (and one mini-spread), only one spread, Spread 2 in Lot B, does not meet this requirement.*

- *The amount of open trench on Spread 2 in Lot B has been considerably reduced over the last three weeks (by 12.7 km), although is still outside of the 20 kilometers per spread commitment (at 28.8 km)*

- *BOTAŞ has committed to achieving the 20 kilometer per spread commitment on Spread 2 in Lot B by mid-October 2004".*

BTC also stated that "*the length of open trench will start to reduce rapidly through Q4 2004, as these technical issues are resolved and additional resources directed on backend activities*."

BTC also indicated in its letter that:

- a coating issue impacting ROW backend activities, and therefore preventing reduction of the open trench length, was being actively managed in Lot B.

- Emphasis was focusing towards backend activities, including a requirement to complete construction in high altitude areas before the winter period in order to minimize potential environmental and safety impacts.

- Additional third party supply for padding material had been sourced.

- Lowered pipe in trench was increasing and indicative that backfilling activities were to commence imminently.

- BOTAŞ was continuing to source additional equipment for lowering, backfilling, and tie-in sections.

- Actions have been taken, including an Open Trench Community Safety Standard issued to BOTAŞ and Contractors; fencing of open trenches; specific teams assigned to fence and signage implementation and maintenance; work instructions and a checklist being developed by BOTAŞ H&S management in liaison with Community Relations; staff and resource deficiency identified and addressed in Lot B; community safety programs repeated and strengthened.

The Project provided IEC with data on the amount of open trench in Turkey as of 14 October 2004, indicating that open trench has actually increased 25% since the time of the July 2004 visit (102 km to a total of 125.1 km in October 2004). Specifically in each Lot the length of open trench at the end of the October visit was as follows:

- Lot A – 54.9 km
- Lot B – 54.7 km
- Lot C – 15.5 km

Despite the increased length throughout all Lots, during the field visit, IEC noted that positive actions were being taken to minimize risk for community safety and to manage open trench according to ESAP commitments, especially in Lots A and C. Although the three EPC contractors have shown a significant commitment in implementing responses to minimize the risk of open trench, the approach and consistency varies from Lot to Lot. A summary of observations regarding open trench follows.

Lot A

IEC noted a positive response in Lot A to minimizing the risk of open trench. Appropriate open trench fencing was in place at all locations visited where potential third parties may be present, and at some communities, such as Kayinli, fencing was extended to include the entire ROW for long distances. The length of open trench in Spread 3 (19.6 km) and the Mini-spread (13.3 km) remains significant, although below the limit of maximum 20 km per spread indicated by the interpretation of the compliance standards recently issued by BTC.

In Lot A an Open Trench Register is maintained by the H&S department. A generic risk assessment is available for activities associated with trenching. The register contains the following information – Spread, KP, location, excavation type, water (Y/N), barricading (Y/N), wire fencing (Y/N), community within 500 m (Y/N), remarks/action plan/action taken. There is no specific risk assessment made for every location included in the register. The Open Trench Register was reported to be distributed to all spreads (spread bosses) and management on a weekly basis.

The CR department reportedly receives the Open Trench Register from H&S department and is responsible for verifying that fencing is installed, recruiting watchmen and implementing community safety programs. The CR department also maintains a separate risk assessment table for villages that assigns a risk level depending on distance from the trenching activity. There is no indication that the H&S department uses this information.

The CR department indicated that they have currently hired 55 watchmen and 20 flagmen. TPN and BOTAŞ also indicated that there is a problem with fencing being frequently stolen and to be replaced.

Lot B

The amount of open trench remains high in Lot B, particularly in Spread 1 (20.1 km) and Spread 2 (19.4 km). As already mentioned, in a letter to the Lender Group dated 12 September 2004, the BTC CEO indicated that BOTAŞ had committed to achieving the 20 kilometer per spread commitment on Spread 2 in Lot B by mid-October 2004. At the October closeout meeting in Ankara, the Project informed IEC that the 15 October 2004 commitment to ensure the length of open trench in Spread 2 of Lot B is less than 20 km has been met (19.4 km).

In the field, IEC noted that the response to the installation of fencing in Lot B was variable. For instance, at KP 472, good examples of fencing were noted, but one km later, IEC observed areas of open trench without fencing near to an access road to a community - Bogazdere (within 1 km). In other locations, several areas of open trench were noted with insufficient fencing (e.g. one side only). Near the Karasu River crossing at KP 409, a long stretch of flooded open trench, estimated to be about 500 m in length, was observed without any fencing and within 500 m to a major public road. Lot B personnel ascribed these differences due to problems in the acquisition of sufficient fencing material.

The situation for Open Trench Management in Lot B is not clear in terms of responsibility for risk assessment and management action. IEC reviewed the STA Work Method Statement, Open Trench Standards (STA-WMS-CON-PLB-559 Rev. C). The document provides general guidance for approaches and responsibilities for open trench management, but does not discuss specific risk assessment procedures. In Lot B, the H&S Department is responsible for preparation of an Open Trench Inspection Report that contains the following information – KP, description, water present, length of open trench and action items. No specific risk assessment information is indicated in the Open Trench Inspection Report. The H&S and Construction Department give directions to a fencing subcontractor for the installation of fencing materials.

The CR department makes weekly visits to the ROW to inspect open trench and maintains a separate open trench report to the H&S register containing the following information – KP, location, approximate distance to settlement, risk rating (High, Low), height, length, stand, backfill status and remarks. There is no indication of how the risk level is assigned and if the H&S department is involved in review of the CR open trench report. The CR department is also responsible for the hiring of watchmen as STA employees and also for undertaking community safety awareness programs.

Despite the comment by STA/BOTAŞ personnel that a site-specific risk assessment is made for every tie-in point, IEC could find no evidence that this is done. The key register maintained by the H&S department does not contain any site-specific risk assessment or control actions to minimize risk in a format similar to what is done in Lot C.

Based on field observations, the effort of Lot B to implement fencing and other risk minimization measures to manage open trench, particularly considering the amount of open trench in the Lot, is significant. It is also noted that construction personnel were found to be committed in reducing the amount of open trench through increased attention to backfilling activities. There are remarkable efforts to manage this critical issue compared with the situation found in the field during the June-July 2004 visit, and these efforts cannot be underestimated. However, the lack of attention and unclear coordination to ensuring a complete response and also fully complying commitments of the BTC Open Trench Protocol are apparent, and Lot B was found to be still non-compliant with ESAP commitments *(Level II Non-Compliance, CCP Community Safety, Commitment ID: APC8S74).*

Lot C

In Lot C, IEC observed a serious commitment of PLL, BOTAŞ and BTC to the implementation of management measures to minimize risks regarding open trench. This included developing an open trench register, section specific open trench risk assessments, and establishment of maintenance crews.

The PLL H&S Department is taking the lead role in the response to open trench and the open trench register is reportedly updated daily. Inspections are made daily and five crews are dedicated to installing and maintaining fencing. Standing water is removed from trenches and a 24-hour guard is installed if water cannot be removed. The CR department appears to work closely with the H&S department to hire watchmen from local communities where necessary. A total of 12 watchmen are currently employed and reportedly have received training from the H&S department.

IEC reviewed the Open Excavations Status Report (Open Trench Register) for Lot C and observed that it contains the following information:

- KP and location
- Excavation type
- Water present (Y/N)
- Barricading or Fencing present (Y/N)
- If within 500 m of community (Y/N)

- Action Plan and action taken

A site-specific risk categorization of open excavations is also provided, which fully comply with the criteria set in the BTC compliance standards. In addition to the Open Excavations Status Report, a generic risk assessment and section-specific risk assessment for trenching are available. The generic risk assessment assesses activity (e.g. trench excavation), hazard, risk rating, control measures, residual risk, responsibility and lessons learned. The site-specific risk assessment involves the same type of assessment by KP location.

Lot C is considered to be fully compliant with the BTC compliance standards for open trench.

4.6.6 Open Trench - Recommendations

1. A consistent approach to risk minimization standards (fencing, signage, watchmen, dewatering, etc.) should be implemented at all locations in Lot B, in accordance with the BTC Compliance Standards. Lot B also needs to increase coordination and communication between the H&S, CR and construction departments.

2. Given the importance of this issue and the need to fully ensure community safety standards across the Project, BTC should provide evidence that a formal mechanism is followed to ensure a consistent response to the open trench issue across all three Lots.

3. Lot C is the only Lot where a specific risk assessment has been developed for specific locations. Since the length of open trench in Turkey has increased 25% since July 2004, and still remains a major community safety concern, BTC should take a lead role in developing standard procedures for specific risk assessment of individual locations, based on Lot C procedures. This approach should be adopted in Lots A and B.

4. Lot C appears to be the only Lot where the CR department is working in conjunction with the H&S department. In Lots A and B, the CR departments have developed separate risk assessment registers. BTC and BOTAŞ should ensure that only one open trench register is used and that the CR departments in Lots A and B integrate their information into the open trench register of the H&S department.

5. The Open Trench Registers should be updated and distributed daily and that daily meetings are held to discuss open trench issues between H&S, construction and CR. The roles and responsibilities of each department should be clearly defined.

4.6.7 Access Roads - Observations

The Project has opened a large number of new access roads and upgraded several existing access roads in all three Lots (approximately 900), notably in high elevation areas and within ESAs. In accordance with ESAP commitments, all temporary access roads created by the Project shall be reinstated unless otherwise agreed with the local community, but subject to ecological sensitivity.

There have been good efforts in all three Lots to document and record the use of these roads. In previous reports, IEC has raised concerns about the need to minimize project footprints following construction, particularly relating to reinstatement of extra land acquisition and access roads. As of October 2004, the Project has yet to demonstrate a clear intention in all three Lots as to reinstatement of these roads. The CCP Reinstatement Turkey establishes clear commitments for reinstatement of access roads (Commitment ID: 2) including the following:

- *"Temporary roads will be removed when no longer needed and will be reinstated. All damage to existing roads will also be reinstated.*

- *Any additional routes will be selected to avoid ecologically sensitive areas, and to minimize erosion.*

- *The contractor will liaise with the appropriate regulatory authorities to gain approval to use, and regularly inspect, the road infrastructure.*

- *Culverts will be installed as necessary where access roads cross water courses.*

- *Temporary access roads will be kept free from deposits to prevent silt, oil or other materials from entering drains or watercourses.*

- *The contractor will remove all temporary roads or road enlargements, except where local communities or landowners request that a new road be left in place. BOTAŞ will advise the contractor regarding the views of regulators, environmental considerations and the concerns of stakeholders for those roads that are to be left in place."*

The CCP clearly identifies that BOTAŞ should take a key role in defining the final use of all temporary roads or improved roads and subsequently advise the EPC contractor if it is necessary to remove and reinstate the road.

In Lot C, the Access Road Register indicates there are a total of 180 access roads used by the Project (84 in the 34 inch section and 96 in the 43 inch section). The Access Road Register includes a column for reinstatement but contains no information at the present time. According to Lot C personnel, the reinstatement of access roads will be considered on a case by case basis. The plan is to reinstate access roads but as of the present time, no specific plan has yet been developed.

According to the Access Road Register for Lot B, there are a total of 370 access roads used by the Project in Lot B. In Spread 1 there are 175 access roads (22 new), in Spread 2 there are175 access roads (16 new), and in Spread 3 there are a total of 20 access roads (4 new). The Access Road Register does include a column on reinstatement for each road, but there is no information indicated in all three Spreads.

The Access Road Register for Lot A contains 474 access road entries but does not contain any indication as to whether the road is newly created or existed prior to the Project. Similarly there is no information in the Register on reinstatement needs for each access road.

During the visit, IEC noted a number of locations where access road issues exist for the Project and where an access management and reinstatement plan is urgently needed to comply with the footprint minimization principle adhered to by BTC in the EIA and ESAP. The following examples support these observations:

- In ESA 20 (KP 451-463, Lot B), possibly unnecessary new access roads were observed, and the situation regarding whether the access road is new or not is not clear, as is the status for reinstatement. The register indicates that some parts of the access roads in this area are newly constructed. However, it appears that environmental issues were not considered during the decision making process to open a new road.

- In the Posof Wildlife Protection Area, an existing access road (reportedly, used previously by Forestry) was improved by the Project to allow heavy equipment to reach the ROW (ESA 1, Lot A). IEC was informed that the Construction and CR departments were discussing informal agreements with local communities to leave in place these upgraded roads without consultation with environment and ecological experts.

4.6.8 Access Roads - Recommendations

1. BTC and BOTAŞ should develop Access Management Plans for all three Lots that clearly define the final use of all access roads used by the project, with a special focus on temporary roads and road enlargements. Areas such as ESAs and special management areas, such as Posof, require extra care and proper expertise to balance community needs against ecological protection. A detailed survey by ecological and community relations experts is strongly recommended to provide inputs to BTC and BOTAŞ, before defining the final fate of the access roads. In keeping with the spirit of minimizing the Project footprint, the Project should adequately document the decision making process for each access road and give priority to reinstating access roads over providing for community usage, especially in environmentally sensitive areas.

2. The Project should make certain that Access Road Registers are standardized and contain the same information. The number of access roads is not clearly indicated in the registers made available for Lots A and B.

3. The Access Road Registers in all three Lots should be updated and modified to include final commitments to reinstatement or community usage.

4.6.9 Hydrotesting - Observations

Hydrotesting has started in Lot A, Lot C and the CMT. At the time of the visit, hydrotesting was about to begin in Lot B and pigging and gauging operations were conducted in a section. The ESAP requires that BTC provides to the IEC and the Lenders Group specific hydrotest procedures for each Lot consistent with the General Hydrotest Plan, 20 days in advance of hydrotesting, for review and comment and for the IEC to issue the hydrotest confirmation. Hydrotest activities can commence without hydrotest confirmation but in case of non-compliance this will constitute an Event of Default for the Lenders.

IEC initially received a copy of the PLL Environmental Plan for Hydrostatic Testing – 34" section (PLL-PLN-ENS-PLC-030 Rev E) in early August. In accordance with the ESAP, IEC sent comments back to BTC within fifteen days of receipt of the initial document. No further comments or response from BTC were received. During the visit, IEC received a revised version of the document, Rev 1 dated 21 September 2004, incorporating some comments, and was informed that hydrotesting of five sections of the 34" section had been completed (45 km in total). In accordance with ESAP conditions, IEC did not issue the hydrotest confirmation to proceed. The Environmental Plan for Hydrostatic Testing – 42" section Rev 0 was not available to the IEC at the time of the visit.

In Lot A, IEC was informed that hydrotesting had been conducted in a pipeline section of 15 km from KP 278 to KP 263 during the first week of August. At the time of the visit, IEC had not received an Environmental Plan for Hydrostatic Testing in Lot A and no documents were provided during the visit. The fact that hydrotesting has begun without the timely submission of documents by BTC is a breach of negotiated terms of ESAP commitments and is a serious formal non-compliance for the Project. IEC does not believe it appropriate to assign a level according to the ESAP classification, since it is not practical to apply the ESAP definitions.

In Lot B, IEC was informed that hydrotest preparations were ongoing in two sections (3 and 17) and that hydrotesting was imminent. At the beginning of the October visit, IEC was provided with a copy of the Environmental Plan for Hydrostatic Testing in Lot B (STA-PLN-ENM-PLB-029 Rev E, dated 11 September. BTC final comments were made on 25 September).

At the CMT, IEC received a copy of the Environmental Management Plan for Hydrostatic Testing of the Crude Oil Tanks, GRE Pipes and Loading Line at the

CMT (TKN-PLN-ENM-TRG-137 Rev. 0, dated 15 September 2004), which is a further revision of the amended document TKN-PLN-ENM-TRG-137 Rev. E received by IEC in July 2004 after IEC comments on the previous version (Rev. D) dated June 2004. Hydrostatic testing has been completed at five of seven tanks at the CMT.

4.6.10 Hydrotesting - Recommendations

1. BTC should ensure that BOTAŞ and EPC Contractors are fully aware of the commitment of the ESAP to provide adequate specific hydrotest plans in timely manner to allow the review period as per ESAP.

2. Documentation provided by BTC should be in its final form and include all tables and appendices. Supplied documentation should also include formal correspondence clearly establishing the time constraints for all parties.

3. Complete documentation on actual water use, discharge locations, hydrotest water testing should be compiled by BTC/BOTAŞ for each hydrotest section to document compliance with the hydrotest plans and ESAP commitments. It is recommended that BTC/BOTAŞ develop a reporting format to ensure that consistent information and data are collected and compiled in the field for each Lot.

4.7 ECOLOGICAL MANAGEMENT

4.7.1 Observations

A total of 55 Ecologically Sensitive Areas (ESAs) have been identified in Turkey from the EIA studies. ESAs were identified in two phases, which included a habitat survey in the 500 meter corridor. There are 12 ESAs in Lot A, 24 ESAs in Lot B and 19 ESAs in Lot C. As part of the pre-construction survey, detailed vegetation mapping studies were undertaken in the 28-meter ROW. Based on these additional detailed studies, Special Area Reinstatement Method Statements (SARMS) were developed by BOTAŞ and the EPC Contractors for each ESA, and Areas of Important Plants (AIPs) were identified.

With the exception of Lot C, IEC notes that the Project has made little overall progress in reinstatement of ESAs. The March 2004 and June-July 2004 reports highlighted that the CCP Ecological Management Plan recommends that special measures to minimize potential adverse effects on species of ecological interest are to be formalized into working method statements, including the Special Area Reinstatement Method Statements (SARMS), applicable to ESAs, 60 days prior to construction commencing. The ESA SARMS are now available, but most of the ESAs in Turkey still await reinstatement and it is apparent that the ESA SARMS schedules are generally unrealistic.

As noted earlier in the report, the greatest concern is for Lot A and Lot B, particularly at high elevations where reinstatement will be challenging, taking into consideration the observed lack of temporary erosion control measures and the length of time topsoil has been stockpiled.

The following specific observations were also made:

- A positive finding is that, after the "Handbook of Threatened and Endemic Plant Species of BTC Pipeline, Turkey Section" aimed at implementation of the ecological commitments at the ESAs, BTC has finalized a Biorestoration Guide (September 2004), distributed among parties. The aim of this publication is to provide consistent guidance to the Contractors on soil and vegetation management practices to assist in the re-establishment of a vegetative cover. The guide is well organized and develops good practice guidelines, biorestoration recommendations for specific habitat and phytogeographic region pairs, as well as providing a biorestoration planning guide aimed at preparing contact specific biorestoration plans.

- In Lot C three ESAs have been reinstated and a good deployment of erosion control measures was generally observed. As already indicated in June-July 2004 report, topsoil is well stored and segregated, especially in all the Areas of Important Plants (AIPs).

- At the time of the visit, efforts were underway in ESA 46 (Lot C) to reinstate the area, including several steep slopes, prior to the winter season. Retaining walls have been installed to ensure slope stability and slope breakers have been installed.

- Reinstatement and biorestoration are completed in ESA 36 (Zamanti River), Lot C.

- Excellent native seed collection practices were noted in Lot B in Sivas, Koyunkaya, Kova and Cadrikaya storage depots. Native seed will be available next spring for biorestoration. In addition, seed viability tests are conducted both along the ROW (natural conditions) and in a controlled plot in Koyunkaya Camp and at ESA 32, by STA ecologists.

- No further progress beyond July 2004 situation was noted in reinstatement of the ESAs in Lot B, with the exception of ESA 13, as discussed above. The IEC visited ESA 25 and ESA 19 where no progress was apparent since the July 2004 visit.

- In ESA 20 (Lot B), poor topsoil segregation practices were noted and subsoil contamination outside the ROW was evident. As already pointed out, a

significant amount of access roads were opened in the ESA including the creation of large embankments and cuts, where reinstatement will be difficult.

- The June-July 2004 report indicated that STA (Lot B) had decided to reduce the ROW from 28 meters to 22 meters in the AIPs of the ESAs to minimize impact, in addition to consistently implementing an important plant translocation program. However, during the visit, IEC was informed that, due to a different construction department decision, the 22 m target for ROW width for several ESAs, keeping a 6 m corridor untouched by construction, could not be maintained and a 28 m ROW was cleared. No impact on any translocated areas was reported. Although a document on October 2004 project status on ESA management provided by BTC to IEC reports that narrowing of the ROW was achieved in two ESAs, IEC was subsequently informed that, according to STA, narrowing of the ROW was done in ESA 12, 19, 20, 21, 27, 29, 31 and 34.

- No ESAs have been reinstated in Lot A to date.

- As already pointed out, some examples of good construction practices were observed relating to environmental protection particularly in the mini-spread in Lot A, such as the partial narrowing of the ROW to 17-18 m and good deployment of trench breakers at KP 10 (ESA 1). In ESA 8 (KP 171, Sarikamis Forest), IEC noted a good use of route avoidance to minimize tree loss, but offset replanting has yet to be initiated.

BTC Turkey provided to the IEC with a document on October 2004 project status for the ESA management. The document comments on the commitment for "*construction planning to achieve a 21-day period from the time when a Special Area is entered to the completion of reinstatement (to a level specified in the BOTAŞ approved Special Area Reinstatement Method Statement) unless otherwise approved by BOTAŞ.*" (Appendix C2, Section 21.1 of the EIA)".

BTC stressed that the primary focus of reinstatement prioritization is still on the Special Areas defined in the EIA Reinstatement Plan (Appendix C2 Section 21), as described in Project Reinstatement Plan Rev 1 for the planned 2004 reinstatement of these areas. BTC has recognized that in certain circumstances the temporal constraint (nominally 21 day period unless otherwise agreed) may have a hiatus period where no construction activity occurs due to unforeseen conditions, seasonal constraints or other circumstances.

BTC has committed that in such circumstances these hiatus periods would be agreed in advance, unless due to unforeseen conditions, and managed though application of access control and monitoring procedures. BTC has also confirmed that, as a minimum, where there are seasonal constraints, maintenance along sections of the constructed ROW is to be maintained through a least disturbance approach; vehicular access and the use of machinery is to be prohibited to minimize impacts from

maintenance activity; maintenance activity is to include restoration of damage caused to temporary erosion control measures through storm events or human/animal interference. BTC has informed the IEC that this approach has already been implemented in areas including ESA 1 in Posof and ESA 36 at the Zamanti River crossing.

The BTC document also discusses measures taken to manage construction impacts along the ESAs throughout the Lots and has indicated the following:

- Lot A: construction is going on in all ESAs. Reinstatement for three ESAs scheduled for October and November.

- Lot B: reinstatement in two ESAs (subsequently modified to three ESAs and specifically ESA 13, 26, 51) completed, biorestoration of these ESAs done in September 2004; the reinstatement of 12 ESAs scheduled to be completed by November 15, 2004.

- Lot C: reinstatement of 3 ESAs completed. The reinstatement of 12 ESAs scheduled to be completed by November 10, 2004.

Although BTC has provided a summary of ESA construction progress, the management of ESA construction is still considered not satisfactory in terms of reinstatement planning and execution *(repeated Level II Non-Compliance, CCP Ecological Management Plan, Commitments ID: CH6E40, APC1E103)*.

IEC observed that no significant progress has been made in the field with the offset program, although BTC is attempting to develop a practical approach through the implementation of the biorestoration initiatives and the Environmental Investment Program (EIP) project, namely the "Important Plant Areas Project" (Section 4.11). No additional information was provided to IEC about the status of the offset program.

4.7.2 Recommendations

1. There is a need for BTC to undertake a thorough revision of the SARMS to ensure that management of current conditions in each ESA considers the unique ecological conditions of each area and to assess the impacts of delayed reinstatement and biorestoration.

2. Monitoring of reinstatement success in ESAs following mechanical completion must be carefully planned and implemented by BTC and BOTAŞ. As recommended both in the March and July reports, BTC and BOTAŞ should continue to focus on implementation of commitments in the ESAs and systematically monitor and ensure that the spirit of the EIA studies is fully applied in these areas, as well as in other sensitive locations (e.g., river

crossings). IEC again recommends the development of a Turkey Project-wide monitoring plan for ESAs.

3. BTC and BOTAŞ should consider strengthening their respective field staff with additional experienced environmental and ecological specialists to monitor ecological commitment implementation (i.e., special topsoil management, plant translocation, seed collection, etc.), also taking into account the current delays in reinstatement activities and the need to have adequate resources to meet the Project commitments for biorestoration.

4. The offset program should be fully defined by BTC and BOTAŞ as soon as possible.

5. The Project should disseminate the results of the seed collection and seed viability program conducted in Lot B to the other Lots.

4.8 CULTURAL HERITAGE MANAGEMENT

Cultural heritage management is predominantly the responsibility of BOTAŞ. The governing procedures are defined in the ESAP, Appendix E as a *Procedure, Cultural Heritage Management Plan*. This document provides the basic procedures for all phases of the cultural heritage management process, including archaeological late finds protocols. The construction contractors also have responsibilities for archaeological monitoring during pre-construction survey work and have developed their own Cultural Heritage Management Procedures. BOTAŞ has its own archaeological staff, but field work has been placed primarily with the Archaeological Environment Properties Research Centre at Gazi University. All excavations are managed by the Archaeological Work Teams in association with the Ministry of Culture and Tourism, Directorate of Monuments and Museums (Museums Directorate), who has legal responsibility for excavation.

BTC has assumed a position of quality assurance with respect to archaeology. BTC is assisted by the British Institute of Archaeology at Ankara (BIA) a UK based charitable NGO for assessments of field activities. The services of Oxford Archaeology, the largest independent archaeological practice in the U.K., have also been contracted for additional review services.

Prior to construction, the ROW was surveyed following Phase I and II procedures and 179 potentially significant archaeological sites were identified within a 2-km corridor. After pipeline reroutes approximately 12 were selected for Phase III excavations. The Project informed the IEC that currently, there are 344 sites entered into the Project Gazetteer, a database developed by BOTAŞ/Gazi University with the assistance of BIAA.

Current cultural heritage activities have related to the management of late finds. Field archaeologists actively monitored topsoil stripping and excavation work.

When late finds were encountered, topsoil stripping/excavation were stopped until the representative Museum Directorate had evaluated the significance of the find.

4.8.1 Observations

21 chance finds were identified in Lot C during preconstruction survey, archaeological surveys prior to construction and during construction, and 8 reroutes were made.

No further action regarding backfilling of the Roman Bath Site at KP 945 has been made, and discussions are still ongoing with Museum Directorate authorities for temporary backfilling.

Four salvage excavations have been completed in Lot C and a fifth is underway. A chance find was encountered at KP 758 consisting of a possible Iron Age stone wall. The Sivas Museum Directorate was contacted to see if a salvage excavation would be permitted.

During the visit, the Tasmasor archaeological site was visited (KP 298, Lot B). Geophysical surveys of the site including magnetometry, needed to continue construction on site, were reportedly reviewed by BIA and considered to be adequate. The major component of the salvage excavation (236 medieval graves) have been completed at the site and limited to the ROW. Construction has been completed on site. BTC has informed the Turkish authorities that they are willing to invest in more evaluations outside of the ROW, but the Government had reportedly declined the request citing insufficient resources for supervision.

IEC also visited a location at KP 463 where two minor reroutes had been done.

10 chance finds are reported for Lot A. IEC did not have an opportunity to visit archaeological sites at KP 138 and KP 36 in Lot A, but the Project informed IEC that BTC has two NCRs open regarding insufficient protection of the sites. KP 138 is a series of walls that date between the Iron and Medieval ages and the NCR relates to a failure to properly install bog mats to protect the site from damage during construction. The archaeological site at KP 36 has been left exposed since its excavation in the summer of 2003.

4.8.2 Recommendations

1. The Project should ensure efforts are made to improve the coordination with Protection Boards of the Ministry of Culture, in order to preserve the significant sites excavated from deterioration and vandalism.

2. All parties should continue to ensure that appropriate and timely communications are provided by BOTAŞ to BTC after any decision is given by the Protection Boards of the Ministry of Culture.

3. In accordance with the recommendations of the BTC NCR at KP 138 archaeological site, TPN should immediately install bog mats on the running track and surrounding areas of the site to protect the properties that were not relocated.

4.9 COMMUNITY LIAISON

Community Liaison Management and community relations processes are responsible for communicating BTC Project information to the general public and communities along the pipeline route, as well as receive and transmit community information to the BTC Project. The overall objective for the community liaison and community relations teams is to build a positive, non-dependent relationship between the Project and local communities. Specific responsibilities for community liaison include, but are not limited to:

- Providing communities affected by the Project with regular information on the progress of work and the implications for these communities.
- Informing the BTC Project of any community related issues that may impact on construction.
- Monitoring implementation of mitigation measures and the impact of construction via direct monitoring and feedback.
- Resolving grievances and managing disputes between the BTC Project and communities.
- Assisting with the implementation of community safety, health and investment programs, particularly in response to the recent concerns over open trench.
- Conducting community training programs in important issues such as transportation safety and third party access and safety along the pipeline ROW.
- Recruiting workers from affected communities.

4.9.1 Observations

Community liaison is undertaken by a team of Community Relations (CR) Supervisors from BOTAŞ and the five EPC contractors. BOTAŞ provides two Lead Community Relations Supervisors (CRS) per Lot, one Supervisor in charge of both environmental and social issues for all stations, one monitor in charge of both environmental and social issues for PT1 & PT2 and one for PT3, PT4 & IPT1, and one CRS for CMT. BTC complies with its assurance role, providing two LTO officers per Lot that cooperate with BOTAŞ and Contractor staff on both

environmental and social issues. The LTO officers are also in charge of pump stations and CMT, based on their location along the ROW.

Overall the response of CR teams to community concerns is adequate across all Lots, pump stations and at the CMT. Although complaints relating to construction are decreasing, IEC observes that a shift in focus is now expected to dealing with issues relating to project closure.

IEC observed and discussed with the Project that issues exist regarding public road damage resulting from Project construction activities (e.g. Lot C, road from Andirin to Yesilkent; Lot B and PT3: the road to PT3 from Cayirli).

The following comments relate to the specific areas and Contractors visited.

Pump Stations (TEPE)

The TEPE Community Liaison Manager is supported by Community Liaison Officers for each of the five TEPE stations. Although there has been a high turnover of CLOs, the Community Liaison Manager is ensuring continuity. The TEPE CR personnel are well organized and dedicated. TEPE has made a significant effort to go beyond the five km radius in terms of Project-affected communities identified in the EIA, especially at PT3. A good community outreach effort has been achieved and few open complaints are in place. There were a total of 122 recorded complaints, of which 5 were open more than 30 days, 11 open in total at the time of the visit. Two thirds of issues are payment related.

The TEPE CR staff was found to be aware of open trench issues. The TEPE CR staff is primarily focused on traffic safety; particularly it is noted that, of the 36 community meetings held in September, more than half were for community safety.

With the aim at proactively improving traffic safety, the CR team has implemented a program to donate reflector systems to be adopted by farmers on local tractors to improve their visibility. At PT2 and PT3, special care has been taken to minimize potential community safety impacts during the sugar beet harvest. It was also reported that there are plans for October 2004 to update traffic safety training in communities with a focus on first graders. The Project reported that during the months of July and August, heavy equipment to be supplied to PT3 was routed along the ROW to bypass the village of Balikli.

Lot A (TEPE-NACAP)

TEPE/NACAP (TPN) has 6 CLOs. CR staff continues to report a shortage of vehicles for TPN as there are only 2 4wd vehicles available for the three spreads. An additional 2wd vehicle is available but cannot access the ROW. However, it is noted that BOTAŞ CR team has 2 vehicles.

At the time of the visit, the number of open complaints was significant (40), and 24 of them for more than a month. Eighty percent of the open complaints are due to damage to land and crop and 20 percent from subcontractors (mostly payment related). The CR team indicated that delayed payments are the most significant issue in terms of managing community relations in Lot A according to commitments, particularly taking into account the amounts to be paid are fairly small, totaling approximately 50 Billion Turkish Lira (US$ 30,000). These delays were reported to be most significant between KP 110 and 155. CR staff also cited problems at KP 132-154 relating to access and changes to drainage due to welded pipe which has not been lowered.

Delays in payment of accepted complaints are an important community impact and need to be resolved. It may also impact on the ability of the Lot A CR team to effectively do their job.

Lot B (STA)

With the reorganization following the integration of STA and BOTAŞ in Lot B, IEC observes that the CR department appears to be weaker than it was previously. The STA CR manager has recently resigned and was not replaced. The integrated team is now managed by the BOTAŞ CR Supervisor. There are only 6 persons now dedicated to CR (8 in July 2004), which appear to be insufficient taking into consideration the length of Lot B and the need to maintain an adequate community relations program throughout the construction phase and the planned NGPL reinstatement.

A total of 366 complaints have been received in Lot B. At the time of the visit, there were 18 open complaints pending, most of which relating to damage to crop, infrastructure and land.

Community safety meetings have been held in 126 villages and involved 3,000 people. A total of 1,309 school children have trained at 26 different locations relating to risks and preventative measures for construction and Project traffic.

Lot C (PLL)

The PLL CR team is unchanged since June-July 2004 visit, with the exception of one PLL CLO who has left as of the end of September and should be replaced soon. The BOTAŞ CR organization remains unchanged. At the time of the visit, there have been a total of 139 complaints in Lot C. All were reported to be closed. In general it is indicated that complaints are decreasing and most relate to dust on access roads. PLL is reportedly responding by watering the roads.

There have been a total of 642 meetings in Lot C in 119 villages. The majority of meetings relate to general feedback (179), traffic awareness and community safety

(134) and construction information (120). Twenty special meetings have been held for women. Lot C is meeting their KPIs for employment.

During the field visit, encroachment of a new house (KP 971) onto the newly constructed pipeline ROW was noted in Lot C in the Andirin section. This is a safety issue to be assessed.

CMT (TEKFEN)

TEKFEN has a CR manager and one CLO at the terminal and there have been no changes in organization. BOTAŞ has one CR supervisor. CR activities appear to be well managed. At the time of the visit, there was only one open complaint related to employment.

As already indicated in the March 2004 report, TEKFEN does not meet the KPI for local employment, because the four local affected villages cannot provide the number of unskilled workers required.

4.9.2 Recommendations

1. The Project should ensure that sufficient CR resources are available to complete their tasks and be able to follow issues relevant to social closure and compensation for outstanding damages following mechanical completion.

2. BTC and BOTAŞ should work together with TPN to immediately resolve all outstanding payment issues in Lot A.

3. CR staff in Lot A also report a continued problem in mobility and access to vehicles. The Project should review this issue with TPN to ensure that CR personnel have sufficient transportation resources.

4. Given the length of Lot B and the importance of CR during the last stages of construction, particularly relating to reinstatement sign-off, NGPL reinstatement and social closure, the CR staff in Lot B is considered insufficient by IEC. The Project should review the capacity of the BOTAŞ /STA CR department in Lot B to implement, supervise and ensure compliance with social commitments.

5. The encroachment of houses onto the newly constructed pipeline ROW should be monitored and evaluated across the Project.

6. The Project needs to consistently evaluate damages to infrastructure (roads) resulting from project traffic and develop a consistent policy for compensation and rehabilitation throughout all Lots and fixed facility locations/access. A priority should be given to safety considerations when repairing roads at the close of construction.

4.10 HEALTH AND SAFETY

4.10.1 Observations

During the October visit, IEC focused on safety issues relating to open trench which are discussed previously in Section 4.6. The following additional observations are made relating to the Project H&S organization in Turkey.

BTC

BTC H&S organization includes one H&S advisor per each Lot and one H&S advisor devoted to each of the four main Above Ground Installations (AGIs; the three pump stations and the CMT). Two BTC H&S coaches help BOTAŞ and the EPC contractors.

BOTAŞ

Based on the latest organization charts provided by BOTAŞ, there are a total of 57 staff in the H&S department distributed as follows - 6 in Ankara including the H&S Coordinator, 9 in Lot A, 7 in Lot B, 5 in Lot C, 6 at the CMT, 15 at all AGIs and 1 at the Iskenderun Stockyard.

CMT

BOTAŞ H&S organization has 2 engineers, 2 experts, 2 technicians that work together 24 hours a day in shifts. TEKFEN has 19 H&S staff and TEKFEN subcontractors also have their own H&S personnel. BTC has one H&S advisor on site.

Safety audits, including subcontractors, are done frequently, every 2 weeks focusing on themes – e.g. vehicles, permit to work, transportation, etc..

Pump Stations (PT3)

At PT3, TEPE has one H&S Engineer and 8 H&S inspectors (one of which is a H&S trainer). According to BTC, H&S staff training has recently improved at PT3. BTC indicated that there is still a problem of bringing the training level of TEPE H&S inspectors to international standards, but that training is ongoing. BTC appears to be strongly involved in H&S skill improvement for EPC Contractor personnel.

The BOTAŞ H&S Engineer at PT3 was leaving the project at the time of the visit, but BOTAŞ has indicated that a replacement was already identified through the assignment of H&S Engineer from Lot C. The H&S engineer at PT4 has also changed.

Both BOTAŞ and TEPE reported that periodic safety audits at PT3 were not recently conducted by headquarters. Internal safety inspections and reviews are conducted on a weekly and monthly basis.

During the site visits, IEC observed that there was no fence in place around the PT3 and PT1 sites.

Lot A

TPN have one H&S manager, a H&S Engineer, 16 H&S inspectors, doctors (5), nurses (6), paramedics (2) and ambulance drivers (3).

It was reported that mobility to the field has increased and that there are now 6 dedicated vehicles available to H&S personnel.

BOTAŞ has six field based H&S personnel and one Lead H&S Engineer. In addition, there are 2 road safety officers. BTC has one H&S assurance officer present.

It was reported that over 90% of TPN H&S inspectors have advanced first aid training.

Lot B

As discussed for the environmental and social staff, the H&S organization has also been integrated between BOTAŞ and STA. There are now a total of 87 individuals in the H&S team of which 33 are safety inspectors. Mobility of the H&S team has been improved. There are a total of 14 vehicles for the H&S inspectors and a pool system is in place at each camp.

In addition to BOTAŞ/STA H&S personnel, FERNAS, a BOTAŞ contractor, has one EH&S manager and 8 H&S inspectors in Lot B.

Lot B H&S personnel reported that provision of hot food and supply of proper winter PPE are being addressed in Lot B. Both issues were a significant concern and a health and safety non-conformance during the past winter season. The BOTAŞ/STA team stated that for all construction personnel winter gear and PPE should arrive at the end of October. However, provisions will also be made to halt work during adverse climatic conditions.

The H&S Department provided first aid training matrix. A total of 89 staff have received advanced first aid training in Lot B. There have been zero fatalities in Lot B, six recordable injuries in 2003 and 41 recordable injuries in 2004. Road traffic accidents have increased from 12 in 2003 to 33 in 2004.

Lot C

IEC was informed that PLL has 1 H&S Manager, 4 H&S coordinators and 22 safety inspectors in Lot C. There is a lesser number of safety inspectors than in July 2004 but the workforce has also dropped. BOTAŞ has one H&S Engineer, 2 H&S Experts and 1 Lead Expert. The BOTAŞ Lead H&S Engineer left the Project at the end of September and had not been replaced at the time of the visit.

Mobility is reportedly no longer an issue for the H&S department and dedicated vehicles are available at each camp.

New employees at camps are trained in basic first aid. There are 100 basic first aid trainers in Lot B. Each camp has an ambulance (4 in total), which is deployed daily depending on location and activity.

4.10.2 Recommendations

1. Mobility of H&S staff in the three Lots has reportedly improved since the time of the last IEC visit. The Project should ensure that mobility of H&S personnel is maintained to the end of the Project, concomitant with the size of the work force and number of work fronts.

2. External safety audits at pump stations by both TEPE and BOTAŞ appear to have not been conducted even though both organizations have committed to doing so. The Project should review the need for external safety audits at the Pump Stations. BOTAŞ and TEPE should fulfill their commitments for completing these audits.

3. A BOTAŞ Lead H&S Engineer should be put in place in Lot C.

4. While there is good use of PPE across the Project, there are still instances where full use of PPE is not implemented. The Project should review the use of job-specific PPE, including hearing protection in locations where needed, and make sure that staff have access to and are trained in use of this PPE.

5. BTC and BOTAŞ should ensure that radios are provided to all H&S inspectors working in remote locations where active construction work is ongoing.

6. BTC and BOTAŞ should ensure that the commitment in Lot B to provide proper winter PPE and hot food and drink in the coming months is timely implemented. This review should be extended across the Project in Turkey where needed this winter.

7. There is no fence currently around PT3 and PT1 although a commitment is in place to install one. Although guards are in place, the Project should promptly implement fencing at all fixed facilities to avoid intrusion of third parties and to minimize community safety risks.

4.11 ENVIRONMENTAL INVESTMENT PROGRAMME

During the mission, the IEC was briefly updated on the status of the Environmental Investment Programme (EIP) in Turkey, however, at the request of the Project, IEC did not undertake a detailed independent review of the BTC EIP as planned. This section is based on information and reports provided by BTC only, and does not constitute an independent evaluation of the program status and results.

At the time of the visit, IEC was informed that seven projects of the EIP are underway (Important Bird Areas, Caucasian Black Grouse, Mediterranean Monk Seal, Important Plant Areas, Sea Turtles, Lesser Caucasus Forest Gap Analysis and Small Investments Fund, formerly the Small Grants Programme) with a total committed budget of US$ 1,550,000. A second Request for Proposals (RFP) was announced on 10 May 2004. Three themes have been identified: forest habitat enhancement, wetlands management and public awareness and community involvement. A total of 45 proposals were received and 11 were shortlisted. Two were selected as preferred candidates and one was put on hold until a more detailed scope of work is received.

Problems have been reported with the implementing partners in respect to adequate management and administrative issues.

BTC confirmed that an external monitoring by national and international NGOs is still planned, as per Project Environmental Investment Plan (PEIP), Appendix D of ESAP, but no dates have yet been confirmed. Two layers of monitoring are planned: one for program implementation and one for technical implementation for each project. The IEC recommends that the committed external monitoring is started as soon as possible.

Appendix A
Trip Summary- 3d IEC Mission by D'Appolonia for the BTC Pipeline Project – October 2004

For this mission, two members of the team toured Turkey while another two visited Georgia and Azerbaijan. The trip summaries of the two groups are presented separately.

Georgia and Azerbaijan Team

October 4 – Georgia. One team member arrives in Tbilisi early morning; in the morning attends meeting with BTC Georgia organization and in the afternoon attends meeting with SPJV E&S staff.

October 5 – Georgia. The day was spent driving from Tbilisi to Akhaltsikhe Camp and from there visiting the Akhaltsikhe Mechanical Yard and beginning a tour of the ROW from the Turkish border to as far as KP 215 with a stop at Area 80 being constructed for the SCP Project. The Borjomi Information Center was visited at the end of the day.

October 6 – Georgia. The tour of the ROW continued from KP 215 to KP 176, which included the Borjomi segment of the ROW. Stops off of the ROW were made at the Bakuriani Rare Plant Area and the Bakuriani Pipe and Maintenance Yard.

October 7 – Georgia. The ROW tour continued from KP 176 to KP 91 with a stop at Tsalka Camp and then returned to Tbilisi. The second team member arrived in the afternoon.

October 8 – Georgia. In the morning the Ministry of the Environment was visited, but a meeting never took place. This meeting was rescheduled for the evening. In the afternoon, PSG2 and the PSG2 Camp were visited. The evening meeting with the Minister was cancelled as the Minister had other unexpected commitments.

October 9 – Georgia. PSG1 was visited accompanied by spot checks of the ROW between KP 0 and KP 11. The Iagludja municipal dump site was then visited and then the team returned to Tbilisi. The Georgia closeout meeting was held that afternoon.

October 10 – Georgia. Day spent by the team for the review and analysis of BTC documentation.

October 11 – Azerbaijan. In the morning travel by road to Georgia. Meet with Azerbaijan E&S staff on the Azeri side of the border and then tour the ROW from KP 412 to approximately KP 440. It was not practical to make observations closer to the border on that day because of security restrictions due to official pipeline completion ceremonies taking place between the Georgian and Azeri Governments.

The Tovuz Camp was then visited and orientation meetings held there with the BTC/CCIC E&S teams.

October 12 – Azerbaijan. Toured the ROW from KP 289 to approximately KP 219 with stops to tour PSA2 and the PSA2 Camp.

October 13 – Azerbaijan. Visited Kurdamir Camp and attended briefings on waste management and incinerator operations and then toured the camp. Following the camp tour the team reviewed reinstatement from about KP 122 to KP 115 and then traveled to Baku.

October 14 – Azerbaijan. Attended briefings by ACG regarding plans for a new non-hazardous waste incinerator in Azerbaijan, a briefing by AZBU for the status of development of a hazardous waste landfill in Georgia, and a briefing by the CMT regarding third-party suppliers.

October 15 – Azerbaijan. Close-out meeting with BTC Azerbaijan E&S and H&S staff.

October 16 – Azerbaijan. Team members from Turkey arrive in Baku in the early morning. Final overall close-out meeting/teleconference with the BTC staff from the three countries and BOTAŞ.

October 17 - Team departs Azerbaijan.

Turkey Team

October 3 - Arrive Ankara.

October 4 – Meetings with BTC and BOTAŞ in Ankara. Fly to Adana in the afternoon. Stay in Adana.

October 5 – Ceyhan Marine Terminal visit and wrap-up meeting. Stay in Azizli Camp.

October 6 – Lot C – Travel along the ROW in Lot C, visit Ceyhan River Crossing, 34" Construction areas, including agricultural Reinstatement; KP1024; KP1027; steep slopes at KP 993; ESA 46. Stay in Andirin Camp.

October 7 – Lot C interviews in Andirin Camp. Travel along ROW, visit Cocak fault crossing, stop at Yesilkent camp, steep slope at KP945; see reinstatement at KP 870. Stay in Kayseri.

October 8 – Travel along ROW to Zamanti River Crossing, walkover at Orensehir Camp. Wrap-up meeting for Lot C. Travel to PT4, follow ROW in Lot B Spread 2, visit ESA 34 and 33. See Seed collection in Sivas. Stay in Sivas.

October 9 – Travel along ROW in the karst zone of Lot B, visit seed collection in Koyunkaya camp, travel along ROW, reinstatement at KP 568, visit ESA 25, travel to Kova Camp for Lot B kickoff meeting. Stay in Erzincan.

October 10 – Travel along high elevation areas of Lot B Spread 1, archaeological reroute at KP 464, steep slopes at KP 456 and 458, visit ESA 19 and 20, drive to PT3 for kickoff meeting for TEPE pump stations. Site visit to PT3 and interviews. Stay in PT3 camp.

October 11 –Travel from PT3 along Lot B ROW through villages of Cayirli, Balikli and Yasil Yaka. Visit Aksu River crossing. Visit Karasu River crossing. Conduct site visit at Cardikaya Camp, hold wrap-up meeting for Lot B. Visit ESA 13. Stay in Erzerum.

October 12 – Visit Tasmasor archaeological site and reinstatement at KP 279 (Lot B). Stop at PT2 and visit reinstatement at KP 276 (Lot A). Visit Hasenkale River crossing. Drive along Lot A ROW to KP 245, down to KP 185 and KP 171 – Sarkamis Forest. Drive to Kars camp for kickoff meeting for Lot A.

October 13 – Finish kickoff meeting at Lot A. Drive to Posof area and return along ROW, visit Posof River Crossing. Wrap-up meeting for Pump stations at PT1. Site visit at Hanak Camp, Lot A. Stay at Hanak Camp.

October 14 – Drive to Kars camp, wrap-up meeting for Lot A. Fly from Kars to Ankara.

October 15 – IEC closeout meeting for BTC Turkey and BOTAŞ in Ankara. Fly to Baku.

October 16 – Participate in the Cross-country closeout meeting for the BTC Core Management Team in Baku.

October 17 – Depart Baku.

Appendix B
Table B-1 : Non-Compliances with ESAP – Azerbaijan

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
2.3.3	The first IEC audit in February – March 2004 identified that the potable water supplies provided by SPJV had not been properly tested. SPJV could not demonstrate that workers were using potable water and a Level II Non-Compliance was issued. The concern in October 2004 is that workers have had to use unsanitary potable water for a long period of time. That the problem could have become so widespread at the time of this mission represents a major failure of the H&S programs of both SPJV and also BTC, who should have been monitoring this contractor more carefully.	CCP Infrastructure and Services, Commitment ID: 528, 628, 1130; CCPP Construction Camps, Commitment ID: 308.	III	Improve the data management for potable water at all levels. All organizations involved (BTC, CCIC, SPJV) should be able to readily locate the results of monitoring records and be able to identify trends and changes in the value of individual parameters such that it is possible to immediately react to potential or actual non-compliant conditions that may be encountered. SPJV needs to review their procedures for procuring, treating and dispensing potable water for all of their facilities and take corrective action as appropriate. The first step should be to immediately discontinue using anything other than commercially obtained bottled water for drinking and kitchen use.
2.3.3	Third Party Concrete: "*The Contractor will submit to BTC Co an environmental statement giving details of the proposed sourcing and transport of the materials and the environmental impact involved, e.g., proper methods for dust control and management of concrete wash water*". Information has not been provided to indicate	CCP Procurement and Supply, Commitment ID 54, 404	II	BTC should finalize a Project position for third-party suppliers of major project raw materials, in particular aggregate and concrete. The current draft Project position is not acceptable because it undercuts Project commitments that already exist for Azerbaijan Verify that the third party sources for concrete

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	that the Project has fulfilled this level of commitment.			currently being used by SPJV are compliant with ESAP commitments. Work with the owners to improve deficiencies as appropriate.
2.3.3	Third Party Aggregate: both PSA2 and IPA1 have required the acquisition of aggregate. During this mission, the Project has indicated that approximately 6,000 tons of aggregate were procured from a borrow pit near Yevlakh. This amount of usage represented 90% of the total usage of this borrow pit. The basic commitment as noted in Section 2.3.1 is that the Project "…*will need to conduct environmental and social assessment prior to extraction"*. The primary concern in the use of third-party aggregate sources is whether or not the extraction has been conducted in an environmentally sound manner, in particular if the source is from river dredging, which is a common, but unacceptable practice according to ESAP principles. Information has not been provided to indicate that the Project has fulfilled this level of commitment.	CCP Procurement and Supply, Commitment ID 54, 404	II	BTC should finalize a Project position for third-party suppliers of major project raw materials, in particular aggregate and concrete. The current draft Project position is not acceptable because it undercuts Project commitments that already exist for Azerbaijan. Verify that the third party sources for aggregate currently being used by SPJV are compliant with ESAP commitments. Work with the owners to improve deficiencies as appropriate
2.4.1	Pollution prevention measures in the area of the incinerator have improved, however the overall situation is still non-compliant because of particulates, as well as monitoring and it will be necessary to finalize a solution for the scrubber liquor.	CCP Waste Management Plan, Commitment ID: 244, 245, 246, 1051, 1110	II	Workers operating the incinerator at Kurdamir are exposed to condensation fallout from the stack. The Project health specialists need to confirm if this situation represents a health hazard and if these workers should be provided with additional PPE. Ensure that the new Continuous Emissions Monitoring (CEM) system be put in place as soon as practical and start regular stack

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
				emission testing according to ESAP
2.4.3	The hydrotest water from river crossings was not tested, but BTC has assumed that the hydrotest water to be clean because no additives were used. The used water was discharged to land following filtration through straw bales to remove sedimentation and rust	Hydrostatic Test Water Management Plan – Doc. N. BTC001-B110-EV-PLN-00009-E-C01 – (Section 5)	II	The procedures and the test results of the water used during hydrotests should be consistently maintained and managed according to plans. IEC understands that hydrotest activities have just started and recommends that the E&S organization maintain sufficient auditable records of hydrotest water quality results (pre and post tests) and final disposal options
2.4.3	The CCIC Wastewater Treatment Plants (WWTPs) at Tovuz, Yevlakh and Kurdamir camps have substantially improved performance. September effluent test results provided by CCIC indicate that discharge from the Tovuz WWTP met Project effluent standards. The effluent discharges from Yevlakh and Kurdamir were non-compliant only for coliforms. Discharges from the Kurdamir and Yevlakh WWTPs go to municipal sewers. Non-compliant conditions are still present at Kurdamir and Yevlakh and the use of a municipal WWTP is not appropriate. Nevertheless, the capability to improve effluent monitoring with a field lab has improved WWTP operations. The problem is not nearly as severe as encountered previously and the joint effort by CCIC and BTC needs to be recognized. The expectation is that full ESAP compliance will	CCP Waste Management Plan, Commitment ID: 553	I	

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	have been achieved by the next IEC visit.			
2.4.3	SPJV - Test results from the WWTP at PSA2 were available from SPJV only for August 2004. Additional monitoring from the BTC field lab was also available for samples taken in October. This treatment plant has good performance for coliforms, BOD, COD and oil and grease, which are the main discharge parameters for a facility of this type. The plant is non-compliant for total suspended solids (TSS), as well as phosphorous, nitrogen, and sulfides.	CCP Waste Management Plan, Commitment ID: 553	I	
2.5.1	CCIC - Noise monitoring continues to be conducted periodically at some construction sites (mainly camps). The monitoring procedures are well established, but some measurements, such at the edge of Kurdamir Camp show small non-compliances with respect to allowable nighttime noise levels	CCP Pollution Prevention Plan, Commitment ID: 1101, 1102	I	CCIC needs to identify solutions to reduce noise levels at the locations where persistent non-compliances have been identified or consider compensating the affected parties for the nuisance

Appendix B
Table B-2: Non-Compliances with ESAP – Georgia

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
3.3.1	Sustainability studies. SPJV has not hired a hydrogeologist for conducting required water well sustainability studies and the IEC was informed that BTC would provide a hydrogeologist for this effort.	CCP Infrastructure and Services, Commitment ID: N13 (P27)	II	The non-compliance is assigned a Level II, although it is unlikely that an actual problem exists, because this is a non-compliance that was identified during the previous two IEC missions.
3.3.1	*Third Party Concrete* - Both PSG1 and PSG2 have required the acquisition of concrete. The actual commitments are defined as noted above in the CCP for Procurement and Supply: *The Contractor will submit to BTC Co an environmental statement giving details of the proposed sourcing and transport of the materials and the environmental impact involved, e.g., proper methods for dust control and management of concrete wash water.* Information has not been provided to indicate that the Project has fulfilled this level of commitment.	CCP Procurement and Supply, Commitment ID N34-P35	II	BTC should finalize a Project position for third-party suppliers of major project raw materials, in particular aggregate and concrete. The current draft Project position is not acceptable because it undercuts Project commitments that already exist for Georgia. Verify that the third party sources for concrete currently being used by SPJV are compliant with ESAP commitments. Work with the owners to improve deficiencies as appropriate
3.3.1	*Third-Party Aggregate*: Both PSG1 and PSG2 have required the acquisition of aggregate. The primary concern in the use of third-party aggregate sources is whether or not the extraction has been conducted in an environmentally sound manner, in particular if the source is from river dredging, which is a common, but unacceptable practice. Significant social issues could be nuisance dust, worker protection and land take. Information has not been provided to indicate	CCP Procurement and Supply, Commitment ID N34-P35; Z3 (N17)	II	BTC should finalize a Project position for third-party suppliers of major project raw materials, in particular aggregate and concrete. The current draft Project position is not acceptable because it undercuts Project commitments that already exist for Georgia. Verify that the third party sources for aggregate currently being used by SPJV are compliant with ESAP commitments. Work with the owners to improve deficiencies as

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	that the Project has fulfilled this level of commitment.			appropriate
3.4.1	The incinerator operated by SPJV at the Central Waste Accumulation Area (CWAA) at the Jandara Camp at PSG-1 was not being operated at the time of the IEC visit pending system upgrades and installation of the data logging and reporting system. Although steps are being taken to improve incinerator operations, the continuing operation of the Project incinerator with improper emissions control is still a non-compliance.	CCP Waste Management Plan, Commitment ID: J34, Part I and J36	II	Although this is a repeat Level II non-compliance, it is not categorized as a Level III because BTC has taken the lead to make sure that the incinerator will eventually be able to provide a compliant solution for the disposal of non-hazardous waste.
3.4.1	A non-compliant waste disposal site has been used without having planned in advance to condition the facility towards EU compliance.	CCP Waste Management Plan, Commitment ID: J1, J16, J18 (N15)	II	IEC assigned a Level III to a similar situation in Azerbaijan during the June – July mission. In the case of Georgia, the proposed conditioning plan is considered to be a positive step. For this non-compliance to be reduced or eliminated, the Project will need to clearly demonstrate that significant improvements are being made at the Iagludja municipal disposal site. Based on the observations made by the IEC and within the experience base of our team members, it is expected that the conditioning of this facility can be achieved within what can be reasonably provided by BTC.
3.4.1	The Project has dedicated considerable resources to sewage treatment and can demonstrate substantial improvement in terms of effluent quality at all locations. A significant improvement has been the development of a treatment system for the incinerator scrubber liquor at PSG1. In spite	CCP Waste Management Plan, Commitment ID: J16, J20 (S7)	I	

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	of this effort, full compliance has not been achieved at any of the SPJV WWTP locations and the system needs to be assessed in terms of performance. Non-compliant coliforms are the greatest concern.			
3.5.1	Significant non-compliance was encountered with respect to the pollution prevention systems at PSG2.	CCP Pollution Prevention Plan, Commitment ID: H42	II	Although it is recognized that the problems observed there do not represent a high critical hazard, it is the third time that the same problems have been observed.
3.6.1	The overall Project response to the protection of the open trench non-compliance has been satisfactory and the IEC considers that the Project is effectively compliant with their commitments in this area. Nevertheless, the overall lack of compliance with trench length commitments since the last IEC mission must be noted.	CCP Reinstatement Plan, Commitment ID: 1104; CCP Community Safety, Commitment ID: Q8	II	
3.6.1	Stockpiles not compliant with the technical specifications stated in the SPJV Reinstatement Plan were observed, where topsoil and subsoil were partially mixed or where piles of topsoil exceeded the 2-m height limit. A BTC reinstatement specialist has reviewed the overall topsoil management with the conclusion that the higher topsoil piles do not represent any technical issues. This evaluation was not provided to the IEC as it is still considered to be in draft. At the time of the IEC visit, this study had not been used as a basis for a Change Management process that would allow for different topsoil management practices. The previously assigned non-compliance still stands.	CCP Reinstatement Plan, Commitment ID: 139, 142)	I	

Appendix B
Table B-3: Non-Compliances with ESAP – Turkey

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
4.3.1	Although the potable water baseline study performed is an important step towards compliance verification and proper management of potable water supply, the inconsistency in testing procedures as reported previously in March 2004 and June-July 2004 appear to be a persisting data management issue, largely due to poor QA/QC control and limited procedures developed by the Project, including BTC, the various EPC Contractors and BOTAŞ	BOTAŞ Environmental and Social Management Plans, Commitment ID: CH9E3, CH4E41	II	Based on the on going baseline assessment of potable water quality, BOTAŞ should work with the five EPC contractors to develop established and consistent potable water parameters, sampling protocols and analytical procedures. This should also include the identification of certified testing laboratories and an independent third-party evaluation to assess if they are reliable. .
4.3.3	Aggregate management remains a significant environmental and social concern for the project in Turkey. The current situation is contrary to Project commitments to minimize environmental footprint. The overall picture of aggregate management is still unclear in terms of pre-construction assessment and operation management concerning environmental protection, safety and community relations, and reinstatement commitments. A non-compliance is raised to BTC and BOTAŞ for inadequate aggregate management assessment, monitoring and mitigation in Turkey	CCP Aggregate Management, Commitment ID: APC10E1 CHI7E6	II	BOTAŞ and BTC should consistently and comprehensively clarify for which aggregate extraction sites the Project is the main user and finalize a common and appropriate strategy on how to deal with this issue, taking into consideration the comments made above. This issue requires a coordinated and urgent approach to aggregate management between BTC, BOTAŞ, EPC contractors (pipeline, pump stations and CMT) and local communities and an acceptable, consistent management strategy for use of 'outside the gate' facilities, including reinstatement.
4.3.3	A consistent and thorough assessment of the CMT sources according to an acceptable management strategy is still not available	CCP Aggregate Management, Commitment ID: APC10E1 CH17E6	I	This issue requires a coordinated and urgent approach to aggregate management between BTC, BOTAŞ, EPC contractor and local

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
				communities and an acceptable, consistent management strategy for use of 'outside the gate' facilities, including reinstatement.
4.3.3	Aggregate management remains a critical, unattended non-compliance issue for the Project in Lot A, following the assignment of a Level II Non-compliance by IEC in July 2004 over the significant number and unregulated use of borrow pits. During the visit, IEC was informed that borrow pits have been opened in Lot A without proper evaluation of environmental and social impacts and without full consideration of reinstatement needs. This situation was raised by the BOTAŞ and TPN environmental team, but it appears to persist and the Project has not provided evidence in the field that mitigative procedures have been implemented	CCP Aggregate Management, Commitment ID: APC10E1 CH17E6	II (repeat)	BTC and BOTAŞ need to immediately address this issue, using proper management procedures and tools and ensuring that the E&S teams are involved in the Construction decision making process at all levels.
4.3.3	A consistent and thorough assessment of the Lot B aggregate sources according to an acceptable management strategy is still not available	CCP Aggregate Management, Commitment ID: APC10E1 CH17E6	I	This issue requires a coordinated and urgent approach to aggregate management between BTC, BOTAŞ, EPC contractor and local communities and an acceptable, consistent management strategy for use of 'outside the gate' facilities, including reinstatement.
4.3.3	A consistent and thorough assessment of the Lot C aggregate sources according to an acceptable management strategy is still not available	CCP Aggregate Management, Commitment ID: APC10E1 CH17E6	I	This issue requires a coordinated and urgent approach to aggregate management between BTC, BOTAŞ, EPC contractor and local communities and an acceptable, consistent management strategy for use of 'outside the gate' facilities, including reinstatement.

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
4.4.1	Since June 2004, significant amounts of excess concrete from the batching plant have been disposed of at the Kurtkulagi municipal dump site near the village of Narlik. Only after use by the Project had started, BOTAŞ and the EPC Contractor conducted an audit of the dump site on September 18, 2004. Even if other parties do reportedly use the municipal dump site for inert waste disposal and a permit to use for site for inert waste disposal was given to TEKFEN (April 2004), it is not practical, based on available documentation, to ascertain that site characteristics and disposal practices are consistent with the ESAP commitments	CCP Waste Management, Commitment ID: C12E57	I	As per CCP Waste Management commitments, TEKFEN should determine and adequately document that use of off-site waste disposal facilities is sustainable and will not compromise capacity and conflict with other users.
4.4.1	Over-accumulated waste was noted at the CWAA of Hanak Camp, including hazardous waste such as contaminated soil and contaminated metal waste, medical waste, and photographic fixer	CCP Waste Management, Commitment ID: APC3E48	I	TPN should more frequently remove the waste from CWAAs, especially at Hanak Camp where storage capacity is limited, to the Izaydas waste disposal site
4.4.1	Garbage was noted along the ROW in the Sarikamis forest area at KP 171 (ESA 8)	CCP Waste Management, Commitment ID: CH4E74; APC3E42	I	TPN should take immediate steps to remove garbage from the ROW in a timely manner consistent with Project commitments. The contractor should consider a dedicated waste management crew to ensure that garbage is properly disposed of and does not cause littering of the ROW
4.4.1	Garbage was noted along the ROW in Lot B far from any working crews	CCP Waste Management, Commitment ID: CH4E74; APC3E42	I	STA should take immediate steps to remove garbage from the ROW in a timely manner consistent with Project commitments. The contractor should consider a dedicated waste management crew to ensure that garbage is properly disposed of and does not cause

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
				littering of the ROW
4.4.1	Segregation of waste outside of the Orensehir Camp CWAA in Lot C was poor. Although waste containers were labeled for their supposed contents, segregation was not routinely noted and waste was mixed	CCP Waste Management, Commitment ID: APC3E46	I	Housekeeping at the Orensehir camp should be improved to ensure that waste segregation at source is maintained, prior to doing so at the CWAA. A specific review of housekeeping practices throughout all camps in the three lots should be conducted by BTC/BOTAŞ
4.4.1	The two inert material disposal sites at PT3 are a concern because they are large quantities of excess subsoil located in an Environmentally Sensitive Area (ESA) 19 and their visual impact is significant	CCP Ecological Management, Commitment ID: S692; CH15E27	II	TEPE should develop reinstatement and landscaping plans for the excess subsoil disposal sites, particularly important for the PT3 sites. BTC and BOTAŞ should ensure that an ecological assessment is done and that reinstatement of the disturbed area for excess subsoil disposal at PT3 will be done in accordance with Project commitments for ESAs. A reinstatement plan needs to be developed for the inert material disposal sites recognizing the sensitivity of ESA 19 and ensuring compliance with specific commitments made in both the Ecological Management and Reinstatement Plans for Turkey. BTC and BOTAŞ should ensure and suitably document that inert material disposal sites, including, but not limited to, the PT3 excess subsoil disposal sites and the CMT excess concrete dump site, are adequately managed and mitigation measure needs are consistently assessed and measures taken,

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
				as needed, to adhere to the footprint minimization principle adopted by the Project.
4.4.3	Both the Kars WWTP and the Hanak WWTP in Lot A are reported to be still non-compliant with Project standards.	CCP Pollution Prevention, Commitment ID: APC4E39	II (repeat)	An immediate action by the Project is required to bring the WWTP's into compliance. The Project should place a stop order on all further discharge of WWTPs in Lot A, until compliance is achieved in line with Project standards. A suitable design is required for sewage discharge at the Hanak Camp and should be implemented as soon as possible. If in use through the winter months, the Project must come up with a compliant solution or truck the sewage to a suitable municipal facility. The heating systems should be significantly improved immediately for both Lot A Hanak and Kars WWTPs to ensure proper operation of the WWTPs in the winter months.
4.5.1	A large concrete wastewater pit is present at PT3 batch plant site. The pit is unlined. Analytical results available show high pH (above 11) and chromium (total, not specified in analysis) concentration of 1 mg/l. Sample analysis data for cement batch water from PT1 show: pH 11.84, chromium (total, not specified in analysis) concentration of 2.49 mg/l. Since PT3 and PT1 pits are unlined and a groundwater monitoring network is not available at any fixed facility, available information is not sufficient to ensure that	CCP Pollution Prevention, Commitment ID: CH12E20	II (repeat)	The current analyses of cement batch plant water at PT1 and PT3 indicate that total chromium levels exceed project standards by up to five times. The Project should seek advice from a wastewater engineer to determine if the cement batch plant water from these two pump stations can be effectively and safely disposed of to a municipal WWTP, as proposed by the Contractor. If not, the water should be disposed of at Izaydas. Pits to store potentially hazardous wastewater

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	there is no impact from this wastewater stream. In addition, no actions have been taken since July 2004 mission			streams, such as the concrete batch plant washwater, should be lined throughout the Project.
4.6.1	Although reinstatement has started, Lot B has only developed a spreadsheet of reinstatement and winterization activities but has not developed a formal specific plan incorporating personnel and machinery needs and realistic completion dates	CCP Reinstatement, Commitment ID: APC2E1, APC2E7	II	There is an urgent need for the Project to complete and adequate specific reinstatement plans for Lot B including realistic mobilization of resources and equipment and completion schedules. It is important that the criteria indicated by BTC for prioritization of reinstatement are fully included in the planning and sufficient documentation is developed by the parties to ensure that these criteria are met
4.6.1	Although reinstatement has started, IEC received no reinstatement plan from Lot A during the visit	CCP Reinstatement, Commitment ID: APC2E1, APC2E7	II	There is an urgent need for the Project to complete and adequate specific reinstatement plans for Lot B including realistic mobilization of resources and equipment and completion schedules. It is important that the criteria indicated by BTC for prioritization of reinstatement are fully included in the planning and sufficient documentation is developed by the parties to ensure that these criteria are met
4.6.1	Little evidence was noted in the field of the installation of adequate temporary erosion control measures in Lot A, particularly on steep slopes in the Posof area (e.g., KP 3.5, KP 10.5, KP 16), but also in the rolling terrain visited from KP 253 to KP 240. A lack of temporary flume pipes for drainage control was also noted. The lack of adequate winterization measures, in terms of installation of temporary erosion control	CCP Reinstatement Plan, Commitment ID: 151, APC2E26, APC2E28, APC2E29, APC2E65	II	There is a critical and urgent need to implement winterization measures for areas of the ROW subject to erosion in Lot A. BTC and BOTAŞ should support and work with the EPC contractor to ensure that temporary erosion control measures are put in place to protect the ROW during the winter months. An auditable punch list of measures to be implemented should be consistently developed throughout the Lots by BTC and

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	measures and drainage control measures, is a critical observation at this point in time, taking into consideration the number of critical slopes in Lot A and the limited time prior to the onset of the 2004-2005 winter season. A non-compliance is assigned due to the observed failure to properly implement these measures			BOTAŞ reinstatement specialists.
4.6.1	In Lot B there is a lack of winterization measures, including temporary erosion control measures on steep slopes, although there is a target for winterization of ROW and access roads for sections from KP 574 to 744 and from KP 345 to 485. Very little evidence of the implementation of winterization measures was noted in the field where construction activities are still ongoing (e.g. steep slopes at KP 449, 456 and 458, ESA 33, 20 and 19 slopes, KP 624, 602, 565 steep slopes). A non-compliance is assigned due to the failure to implement these measures	CCP Reinstatement Plan, Commitment ID: 151, APC2E26, APC2E28, APC2E29, APC2E65)	II	There is a critical and urgent need to implement winterization measures for areas of the ROW subject to erosion in Lot B. BTC and BOTAŞ should support and work with the EPC contractor to ensure that temporary erosion control measures are put in place to protect the ROW during the winter months. An auditable punch list of measures to be implemented should be consistently developed throughout the Lots by BTC and BOTAŞ reinstatement specialists.
4.6.1	No significant reinstatement progress was observed in high elevation ESAs in Lot B (e.g., ESA 19 and 20)	CCP Reinstatement Plan, Commitment ID: APC2E26	II	Reinstatement in high elevation ESAs should be a priority for all parties and start as soon as possible
4.6.1	A Level II non-compliance for in-action on the NGPL was raised in July 2004 due to a persistent and unjustified uncertainty and controversy over reinstatement of the NGPL. Continued delays in defining a practical implementation program for the reinstatement of the NGP ROW are not in compliance with ESAP commitments	CCP Reinstatement Turkey, Commitment ID: CH15E5, APC2E15, APC2E16, APC2E17, APC2E18	II	The Project needs to have timely action on the reinstatement of the NGPL. There is a critical need for the Project to demonstrate clear and precise action on reinstatement of the NGPL, including definitive timelines and specific commitments to machinery and resources
4.6.3	At the Hasenkale River crossing (KP 260, Lot	CCP Pollution Prevention, Commitment ID:	I	Appropriate measures to minimize water

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	A), no bank stabilization measures had been implemented and there were no silt fences installed at the time of the visit. A bulldozer operating at the riverbank was observed causing turbidity impact in the river water	CH12E19, APC2E64		quality impacts at river crossing under construction (i.e., silt fences, operational control of heavy machinery, monitoring, etc.) should be implemented and maintained throughout the construction period
4.6.3	Adequate bank stabilization, erosion and scour protection measures at river crossings visited in Lots A and B were not implemented	CCP Reinstatement Plan – Turkey Commitment ID: CH4E12	II	The banks of all river crossings in the Project should be stabilized as soon as possible, and proper winterization measures to minimize erosion and damage to riparian areas should be implemented as needed, especially in Lot A and B. Temporary bridges and structures, such as flume pipes, at river crossings should be removed before the winter season to avoid risk of damaging downstream locations.
4.6.5	Despite a significant improvement observed, the lack of attention and unclear coordination to ensuring a complete response and also fully complying commitments of the BTC Open Trench Protocol are apparent in Lot B, which was found to be still non-compliant with ESAP commitments	CCP Community Safety, Commitment ID: APC8S74	II	A consistent approach to risk minimization standards (fencing, signage, watchmen, dewatering, etc.) should be implemented at all locations in Lot B, in accordance with the BTC Compliance Standards. Lot B also needs to increase coordination and communication between the H&S, CR and construction departments.
4.6.9	In Lot A, IEC was informed that hydrotesting had been initiated for a hydrotest section of 15 km from KP 278 to KP 263 during the first week of August. IEC never has been provided with an Environmental Plan for Hydrostatic Testing in Lot A and no documents were provided during the visit. The fact that hydrotesting has begun without the timely submission of documents by BTC is a breach of negotiated terms of ESAP	Environmental and Social Action Plan, Section 6.4.3	--	BTC should ensure that BOTAŞ and EPC Contractors are fully aware of the commitment of the ESAP to provide adequate specific hydrotest plans in timely manner to allow the review period as per ESAP. Documentation provided by BTC should be in its final form and include all tables and appendices. Supplied documentation should also include formal correspondence clearly

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
	commitments and is a serious formal non-compliance for the Project.			establishing the time constraints for all parties. Complete documentation on actual water use, discharge locations, hydrotest water testing should be compiled by BTC/BOTAŞ for each hydrotest section to document compliance with the hydrotest plans and ESAP commitments. It is recommended that BTC/BOTAŞ develop a reporting format to ensure that consistent information and data are collected and compiled in the field for each Lot.
4.7.1	Although BTC has provided a summary of ESA construction progress, the management of ESA construction is still considered not satisfactory in terms of adequate planning and scheduling	CCP Ecological Management, Commitments ID: CH6E40, APC1E103)	II (repeat)	BTC should undertake a thorough revision of the SARMS to ensure that management of current conditions in each ESA considers the unique ecological conditions of each area and to assess the impacts of delayed closure. Monitoring of reinstatement success in ESAs following mechanical completion must be carefully planned and implemented by BTC and BOTAŞ. BTC and BOTAŞ should continue to focus on implementation of commitments in the ESAs and systematically monitor and ensure that the spirit of the EIA studies is fully applied in these areas, as well as in other sensitive locations (e.g., river crossings). The development of a Turkey Project-wide monitoring plan for ESAs is recommended. BTC and BOTAŞ should consider

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
				strengthening their respective field staff with additional experienced environmental and ecological specialists to monitor ecological commitment implementation (i.e., special topsoil management, plant translocation, seed collection, etc.), also taking into account the current delays in reinstatement activities and the need to have adequate resources to meet the Project commitments for biorestoration.