TIERRA GROUP INTERNATIONAL, LTD.

Julio E. Juarez, CIP

Professional Geological Engineer

Education

MS, Geological Engineer, San Agustin National University, 1999

Registrations/Certifications

Registered Professional Engineer, Perú (CIP 99599)
American Concrete Institute (ACI) Certification
Colorado Nuclear Gauge Densimeter Certification
TRI-Corp Certification in Liner Integrity Surveys

Experience Summary

Mr. Juarez is a Peruvian registered geological engineer with more than 15 years of experience providing geotechnical, geological, and geo-environmental services to the international mining industry. Project experience includes, engineering project management, design project management, construction control quality assurance management, operation management, decommissioning and closure and engineering design of tailings dams and impoundments projects, water and sediment storage dams, waste rock dumps, heap leach pads, mining process plants, foundations and landfills. Julio's versatility and broad experience base includes managing projects ranging from large international mine development and reclamation projects involving multiple multi-national and multi-discipline firms.

Project Experience

Tailings and Waste Dump Facilities

PRESA DE JALES 05 TAILINGS STORAGE FACILITY DESIGN | ARANZAZU MINE, MÉXICO

Project Manager overseeing the local Peruvian team of engineers, consultants, and contractors to develop the design of a tailings storage facility (TSF) for the Aranzazú mine in Mexico. The Aranzazú TSF was designed with a compacted tailings starter dam and upstream raises to a final altitude of approximately 50 meters (m).

CANCHA 04 TAILINGS DAM CLOSURE PLAN DESIGN | MINA ARCATA, PERÚ

Project Manager in charge of leading the engineering team, consultants, and contractors to develop the design and engineering details for reviewing and designing the closure remediation plan for the old Cancha 04 tailings dam, scope of work included to carry out the geotechnical investigation campaign and detailed engineering report.

CHINCHAN NORTH DRY TAILINGS STORAGE FACILITY DESIGN | LIMA, PERÚ

Engineering Manager overseeing a geotechnical investigation and engineering design of a dry TSF for a 900-ton per day (tpd) underground polimethalic mine. The design included a 20-m high structural fill berm for containment, underdrain and overdrain systems, and a geomembrane lined storage area for dry tailings.

VIRGEN DEL ROSARIO TAILINGS STORAGE FACILITY DESIGN | HUARAZ, PERÚ

Project Manager supervising the detailed engineering design of the Virgen del Rosario Tailings Dam. Scope of work included the site selection, geotechnical investigation, engineering design, and permitting of the TSF with a capacity for 100,000 tons.

TUCUSH TAILINGS DAM RAISE DESIGN | HUARAZ, PERÚ

Engineering Manager overseeing the geotechnical investigation campaign and the engineering design for the raise of a 30-m high rockfill tailings dam for a 990-tpd underground polimethalic mine. A challenging aspect of this design was the construction sequencing of the rockfill dam that would allow building a geogrid reinforced earth system buttress at the toe of the dam while operating the tailings dam and maintaining the safety of the dam. For property limitations, toe of the dam could not be horizontally extended. (2012 to Present)

CHINCHAN SOUTH DRY TAILINGS STORAGE FACILITY DESIGN | LIMA, PERÚ

Project Manager for a geotechnical investigation, alternatives site selection, and engineering design and permitting of a dry TSF for an 800-tpd underground polimethalic mine. Participation as an engineering consultant included several meetings with local state agencies to support client on project approval.

MINA PETAQUILLA, TINAS 1, 2, 3 Y 4 TAILINGS STORAGE DAMS DESIGN | PANAMA

Engineering Manager in charge for the geotechnical investigation, engineering design, and construction of four structural fill tailings dams. The design included: construction of earth dams around a large area to provide enough tailings storage capacity, an impoundment geomembrane lined area, underdrain systems for the underground water, and overdrain systems to manage the runoff water. The design and construction work was performed in phases. Other work tasks included foundation studies for design, geotechnical investigation campaign for a waste dump design, and road design.

EL LIMON MINE, SANTA ROSA TAILINGS DAM EXPANSION | NICARAGUA

Field geotechnical leader in charge for the geotechnical investigation and construction of two 3-m tailings dam crest rises. A unique design utilizing geogrid reinforced earth. This design allowed the crest to be raised at a near vertical upstream slope reducing the downstream rockfill volume by 40% over a conventional downstream raise; significantly reducing the time and cost for construction.

MINA PETAQUILLA WASTE DUMP DESIGN | PANAMA

Engineering Manager supervising the geotechnical investigation and engineering design of a waste dump at the Petaquilla Mine. The waste dump was designed to store up to 400,000 cubic meters (m^3) of mine waste.

FALCONBRIDGE NICKEL MINE GEOTECHNICAL RISK EVALUATION | DOMINICAN REPUBLIC

Field Geotechnical Engineer leading a site-wide geotechnical risk assessment for a 40-year old operating nickel mine. The risk assessment included a large geotechnical investigation campaign of geotechnical drilling, test pits, and geotechnical field tests to evaluate 10 massive waste rock dumps and six sediment control dams located across a 40-kilometer (km) long mine property.

PIERINA WASTE DUMP GEOTECHNICAL INSTRUMENTATION | HUARAZ, PERÚ

Project Manager overseeing the geotechnical instrumentation at the Waste Dump 4 at the Pierina Mine. Project consisted on the drilling and installation of vibrant wire piezometers and inclinometers and managing in-house personnel and subcontractors to accomplish the drilling of 800 m and installation of six piezometers and six inclinometers.

EL MOCHITO MINE, AMERICAN PACIFIC HONDURAS | LAS VEGAS, HONDURAS

Construction Quality Assurance (CQA) Manager responsible for the implementation of the Quality Control/Quality Assurance (QC/QA) program for the construction of the “La Soledad” Tailings Dam. Work included supervision of the QC team inspecting access road construction, grading, placement of underdrains, and placement of over 350,000 m^3 of structural fill, tailings material, and soil liner fill for the dam construction. Supervision of the concrete QA team during the decant structure construction and geotechnical support to the mine staff.

LA COLORADA MINE, PAN AMERICAN SILVER | DURANGO, MÉXICO

Resident Engineer responsible for implementing the CQA program for the raise of Tailings Dam No 6, Phase 3. Work included the supervision of an external soils lab and liner contractor, in addition to the inspection of construction activities from mobilization to demobilization, earthworks, dam raising construction, access roads construction, and geotextile, geocomposite and geomembrane installation.

CERRO VERDE SOCIETY MINE, PHELPS DODGE CORPORATION | AREQUIPA, PERÚ

Position developed as an intern in the geology and mines departments, experience with geology mapping, ore control, digitalization, minerals microscopic interpretation, and geological software (MEDSYSTEM, MINE SIGHT, and GEMCOM).

Process Plant Design

CORIPUNO PROCESS PLANT EXPANSION DESIGN | PUNO, PERÚ

Project Manager supervising the team of engineers and contractors to develop the detailed engineering design for the expansion of the Coripuno process plant from 1700 to 3500 tpd at the Coripuno Mine. Design included geotechnical investigations, civil and structural design, mechanical design, instrumentation, piping design, electrical and electromechanical design, etc.

UNTUCA PROCESS PLANT DESIGN | LIMA, PERÚ

Project Manager overseeing the team of engineers and contractors to develop the detailed engineering design for the Untuca process for processing 3500 tpd. Design included geotechnical investigations, civil and structural design, mechanical design, instrumentation, piping design, electrical and electromechanical design, etc.

Heap Leach Pad Experience

CORIHUARMI MINE, MINERA IRL | PERÚ

Engineering Manager overseeing the engineering team on the revision and audit of the Corihuarmi Leach Pad (Phase 4B) expansion. Work included a detailed review of the engineering design for improving the Phase 4B pad performance.

VELADERO MINE, MINERA ARGENTINA GOLD S.A. | SAN JUAN, ARGENTINA

CQA Resident Engineer I for a gold heap leach project located in the Argentinean Andes. Work included CQA supervision of the construction of more than 600 m of underdrain system, earthworks activities, geosynthetic installation of more than 250,000 m^2, observed construction on the access and haul road, monitoring lining of the PLS and storm ponds, and general assistance with other geotechnical work.

BELLAVISTA MINE, GLENCAIRN CORPORATION | MIRAMAR, COSTA RICA

Project Manager and Resident Engineer on the construction of the Phase 3 heap leach pad and Geotechnical Engineer responsible of monitoring and supervising the geotechnical study of a landslide affecting some of the mine structures. Additional responsibilities included the supervision of the geotechnical drilling, inclinometer and TDR installation, and engineering support for the mine staff.

LAGUNAS NORTE MINE, BARRICK | HUARAZ, PERÚ

CQA Resident Engineer during for the construction of Cells 4 and 5 at the Lagunas Norte leach pad. Responsible for the CQA team of engineers monitoring the earthworks, piping installation, and geomembrane installation.

Geo-Enviromental Projects

SAN RAFAEL MINE, COMPANIA MINERA MINSUR S.A.

Project Manager in charge of leading the project team in development of the engineering design for improving the existing clean and contaminated surficial Water Management Plan at the San Rafael Mine. Project included managing the field campaign and design team on the design of diversion channels, ponds, and hydrological and hydraulics analysis to improve the Water Management Plan for separating clean and contaminated superficial waters.

BELLAVISTA MINE, GLENCAIRN CORPORATION | MIRAMAR, COSTA RICA

On-site Geotechnical Engineer during the monitoring and evaluation of a landslide affecting a leach pad and a waste dump. A large and quick geotechnical instrumentation campaign was performed with the installation of inclinometers, piezometers, survey control prisms, extensometers, etc. Responsibilities included managing the daily collection and processing of the instrumentation data.

CORICANCHA MINE, ARURI HILL SLIDE | PERÚ

Project Manager responsible for geotechnical and geological analysis of potential hazards associated with rockfall and debris flow impacting the milling areas of the Coricancha Mine. Project included the geotechnical investigation and characterization and a design of three large vertical concrete defection walls to deflect the rockfall and prevent damaging mill structures.

Civil Infrastructure Projects

PALO VERDE NUCLEAR GENERATING STATION, ARIZONA PUBLIC SERVICE | ARIZONA

Member of the CQA engineering team for the construction of a 45-acre water containment pond. Project included supervision of grading activities, berms construction, and geosynthetics installation.

TOWER LANDFILL, BFI | COLORADO

CQA Manager on the Cell 2 construction including supervision of the QA team inspecting the placement of underdrains, grading activities, and over 100,000 m^3 of structural fill/under-liner.

HOME DEPOT DISTRIBUTION CENTER | COMMERCE CITY, COLORADO

Geotechnical field engineer performing auger drilling for foundation investigation, SPT testing, and permeability testing.

LAGUNAS NORTE MINE, MBM | TRUJILLO, PERÚ

Responsible of implementing, coordinating, and supervising the Geoelectric leak location program on the geomembrane installed on Phase 3A of the leach pad. The water lance method was utilized and 115,000 m^2 of geomembrane was inspected.

BENA, KELLER CANYON PACHECO PASS AND NEWBY ISLAND LANDFILLS, CALIFORNIA

Engineer responsible of implementing, supervising the leak location programs using the water lance and dipole methods, and surveying more than 40 acres of installed geomembranes.

FORWARD LANDFILL | SAN JOAQUIN CITY, CALIFORNIA

Lead Engineer performing the geoelectric leak location survey on the soil covered geomembrane installed on Cell 3. The Dipole method was utilized and 3.5 hectares were surveyed.

AMADOR LANDFILL | AMADOR COUNTY, CALIFORNIA

CQA Manager responsible of the CQA program for the closure plan, activities included coordination with soils and liner contractors and monitoring construction activities for the compliance with the landfill closure plan.

PALO VERDE NUCLEAR GENERATING STATION, ARIZONA PUBLIC SERVICE | ARIZONA

Member of the CQA engineering team for the construction of a 45-acre water containment lined pond. Project included supervision of earthwork and grading activities, structural fill berm construction, and geomembrane installation.

TOWER LANDFILL, BF | COLORADO

CQA Manager on the Cell 2 construction, work included supervision of the QA team inspecting the placement of underdrains, grading activities, and over 100,000 m^3 of structural fill/under-liner.

HOME DEPOT DISTRIBUTION CENTER | COMMERCE CITY, COLORADO

Geotechnical Field Engineer performing auger drilling for foundation investigation, SPT testing, and permeability testing.

96TH AVENUE INDUSTRIAL PARK PROJECT | COMMERCE CITY, COLORADO

Foundation investigation performed for GCC, (Grupo Cementos Chihuahua) and supervision in concrete testing, compaction testing, and control of earthwork progress. Participation in the project as Junior Engineer during all phases of construction.

MATARANI HARBOR REHABILITATION | TISUR, AREQUIPA, PERÚ

Resident Engineer during subsoil investigation, data reduction, and design of an adequate method for the treatment of settled structures, and managing and supervising all the works developed.

TORATA RIVER FLOOD CONTROL PROJECT, AREA 30 DAM AND INLET, (SOUTHERN PERÚ COOPER CORPORATION MINE) | CUAJONE, PERÚ

Field Engineer at the construction of impermeabilization Curtain, based in grouting injections, along 0.5 km of plinth, rock bolts installation, chains and water drainages for slope stability, installation of rock anchors, and grouting design.

Publications / Presentations

Juarez, J.E. Application of Geoelectric Leak Location Surveys in Mine Sites; selected paper for 2007 Mining Convention.

Juarez, J.E. Analysis and Interpretation of the Cement Grouting Results Performed on the Impermeabilization Curtain at the Torata River Dam; Geological Engineer Thesis, 2003.

Employment History

CURRENT EMPLOYER	**TIERRA GROUP INTERNATIONAL S.A.C.**
POSITION	General Manager
YEARS	2014 to Present
EMPLOYER	**GRAMSA S.A.C.**
POSITION	Partner / Engineering Manager
YEARS	2008 to 2014
EMPLOYER	**VECTOR COLORADO, LLC / VECTOR ENGINEERING LTD.**
POSITION	CQA and CQC Manager
YEARS	2004 to 2008
EMPLOYER	**CONTOUR CONSULTING ENGINEERING LLC**
POSITION	Project Engineer
YEARS	2003 to 2004
EMPLOYER	**GEOTECNICA S.A.C.**
POSITION	Resident/Field Engineer
YEARS	2002 to 2003
EMPLOYER	**CERRO VERDE MINING SOCIETY**
POSITION	Internship
YEARS	2001

Language Proficiency

Spanish:	Native
English:	Fluent (spoken, written)