CQA Training Week

Accredited Geosynthetics Laboratories
Accreditation Designation # GAI-LAP-95-01

AASHTO R18



LINER INTEGRITY SURVEYS/ASSESSMENTS (LISA)
Mon.-Tues., April 29-30, 2013

CONSTRUCTION QA/QC for GEOSYNTHETIC INSTALLATIONS
Wed., May 01, 2013

CONSTRUCTION QA/QC FOR COMPACTED CLAY LINER & GCL INSTALLATION
Thurs., May 02, 2013

GEOSYNTHETIC INSTITUTE (GSI) - CQA INSPECTORS CERTIFICATION PROGRAM - CQA CERTIFICATION EXAM
Friday, May 04, 2013

Location

TRI/Environmental, Inc.
Bldg. A Facility
9063 Bee Cave Road, Austin, TX 78733, USA

About the Training Courses

LISA (2-Day) Training (April 29-30, 2013)

Recent CQA technology development has encouraged the geosynthetics industry to re-think the historical paradigm of destructive seam testing (peel and shear). Part of the response to these considerations has been the encouragement and rapid development of non-destructive testing specifically Liner Integrity Surveys/Assessments (LISA).

LISA technologies can be utilized to swiftly and non-destructively detect small holes or leaks in geomembrane liner systems. A variety of eclectically based LISA surveying methods are available for leak detection. The selection of a method is a contingent upon specific the lining conditions. Each method combines a different application technology with the use of electrical current to detect holes/leaks in lining systems.

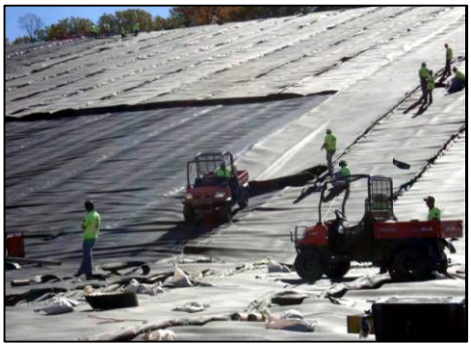
CQA firms adept with these technologies are creating new revenue centers for themselves while providing much needed services to their clients. LISA, as a service, naturally complements the existing services offered by most CQA firms practicing in the waste management construction industry.

A 3-part certification process has been specifically designed for those persons who have a desire to perform LISA. Graduates of this certification program will:

- understand the basis of electrical leak testing
- be able to select the most appropriate LISA Methodology under a variety of circumstances
- be able to perform each method of LISA
- be able to report on their LISA findings
- have on-going access to the resources of TRI and Dr. Ian Peggs as they begin to perform LISAs for their clients.

This course, offered by the ***TRI-Corp Liner Integrity Center (TCLIC)***, is intended to assist those who are interested in adding LISA to their core business, or for those reviewing results of LISA for regulatory or client approval.

Field CQC / CQA Training (May 01-02, 2013)



These two 1-day courses have been specifically designed for those persons who have a need for a detailed understanding of proper CQC and CQA procedures for waste containment facilities.

This course is ideal preparation for the Geosynthetic Certification Institute's certification exam and will provide a comprehensive understanding to those professionals who are: preparing CQC/CQA plans, reviewing CQC/CQA plans, performing CQC/CQA observations and tests, and reviewing field CQC/CQA procedures.

Professionals who will benefit from this course include

- Specifying/Certifying Engineers
- Construction/Quality Assurance
- Project Managers
- Installers/Contractors
- Third Party Inspectors
- Regulators

The two courses present the materials in two parts, each complementing the other to provide maximum benefit. The first day focuses on installation of geomembranes, geotextiles, geocomposites, geogrids and geoapertenance, and includes a geomembrane seaming demonstration with a detailed explanation & demonstration of seam peel and shear testing. The second day focuses on the installation of compacted clay and compacted clay and geosynthetic clay liner (GCLs). Special emphasis will be given to establishing rationale and standard operating procedures for field inspections, documentation of test and visual observations and implementation of CQA plans. A broad based appreciation for the manufacturing and installation of waste containment facility materials will be provided. A tour of TRI's Geosynthetic Testing and Research Laboratories will be provided with test demonstrations, explanation of some TRI internal R&D projects, etc. and other relevant topics, all supporting class curriculum.

GCI CQA Certification Exam (Friday, May 03, 2013)

Each CQA course student will be allowed to sit for the ***Construction Quality Assurance-Inspectors Certification Program (CQA-ICP)*** exams immediately following the CQA courses. The GCI exam itself is part of the GCI CQA technician certification program. Thus, students MUST REGISTER with the Geosynthetic Institute (GSI) and pay their required certification fee in order to take this exam. TRI does NOT collect this fee as it must be paid directly to GSI (GSI phone: 610-522-8440).

Why you should attend...

Electrical Resistivity Testing and Construction QA of geosynthetics can be smooth additions to your Engineering Consulting and Design Practice. Each student will be provided a certificate of course completion, suitable for use in proposals and statements of qualifications for CQC/CQA work. This unique one-week dedicated CQA training program provides a wonderful opportunity for professional growth and business development.

Where to stay for the courses…

Holiday Inn Express Hotel & Suites, Austin-Sunset Valley, 4892 US Highway 290 West, Austin, TX 78733, 1 800 315 2621, 10 miles from airport, 9.9 miles from short course, NO shuttle service
Extended StayAmerica Austin – Southwest, 5100 US Hwy. 290 W., Austin, TX 78735, Telephone: 512-892-4272, 15.7 miles from airport, 9.54 miles from short course, NO shuttle service

About TRI…

TRI/Environmental, Inc. (TRI) has been active in geosynthetics testing, inspection and research and development for over eighteen years. TRI is an independent, third party laboratory unaffiliated with any manufacturing, engineering/consulting, or construction management firm.

Download registration forms for the courses and exams at **www.GeosyntheticTesting.com**

INSTRUCTORS

Abigail Beck, M.S., P.E.

Abigail Beck is a Senior Engineer for TRI/Environmental, Inc. and directs all Liner Integrity services worldwide. She has over nine years and 70 million square feet of liner integrity survey / leak location experience and has written and presented papers to industry conferences and taught short courses world-wide regarding the technical aspects of liner integrity / leak location surveys. She is an expert in the LISA leak location equipment offered by TRI and oversees equipment acquisition, operator certification and field training.

Special Instructor: Dr. Ian Peggs, P.E.

Dr. Peggs, a materials scientist, has been involved with the testing of plastics, geomembranes, seams, and lining systems for over 25 years. He has been performing and developing liner integrity and leak location surveys since 1987. Dr. Peggs has performed water-covered and exposed liner surveys on liners up to 6,350,000 ft2 in area, waste-covered liners up to 15 ft deep, complex concrete basin liners, and GCL-only liners. In addition to applied potential methods, he is involved with acoustic, streaming potential, and IR spectroscopy methods for locating leaks in bottom liners and caps.

Special Guest Instructor: Mark Sieracke, P.E. - Landfill Design and CQA Consultant

Mark D. Sieracke, P.E. is an industry recognized expert in the fields of landfill design and construction quality assurance. Mark serves as a Principal and Solid Waste Practice Area Manager for Weaver Boos Consultants. Mark has served as a Technical Reviewer of the USEPA Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities (EPA/600/R- 93/182, Sept. 1993). Mark has served as a hands-on CQA practitioner, certifying engineer and as a consultant for over 1000 acres of geosynthetic installations. He currently contributes routinely to landfill failure investigations and constructability reviews for design engineers. Mark currently serves on the Waste Management Inc. (WMI) Geosynthetic task force creating the corporate standards for CQA.

Dr. Robert Gilbert, P.E. - Professor, The University of Texas at Austin

Robert (Bob) Gilbert, Ph.D., P.E. is a professor of civil engineering at The University of Texas at Austin. He has more than ten years of consulting experience in the design and construction of landfill lining and cover systems. He has authored or co-authored numerous publications on the stability of these systems. Dr. Gilbert has been very instrumental in understanding clay and GCL liner systems, interface friction testing, and the use of data for slope stability design.

Sam Allen - Vice President and Division Manager

Mr. Allen is the Vice President of the Texas Research International (TRI) Geosynthetics Services Division. Sam is the Chairman of Committee D35 on Geosynthetics within ASTM. Sam also serves on the Technical Advisory Board of Geotechnical Fabrics Report, and is special advisor to the In the Lab column presenting testing issues. Sam currently serves on the Board of Directors of the Geosynthetics Institute in Folsom, PA.

Short Course / GCI Exam Cost/Tuition (see registration form)
For registrations before Friday, April 12, 2013

Liner Integrity Survey Short Course

April 29-30, 1 registrant per company	$1350/person
April 29-30, 2 registrants per company	$1250.00/person
April 29-30, 3 + registrants per company	$1095.00/person

CQC/CQA Short Courses and CQA Exam

May 01-02, both courses, 1 registrant per company	$825.00/person
May 01-02, both courses, 2 registrants per company	$750.00/person
May 01-02, both courses, 3 + registrants per company	$675.00/person
May 01-02, both courses, both courses, government	$250.00/person
One course (day) only, 1 registrant per company	$525.00/person
One course (day) only, 2 registrants per company	$475.00/person
One course (day) only, 3 + registrants per company	$425.00/person
One course (day) only, government	$145.00/person

GCI Exam

May 03, TRI fee for one applicant only per company	$35.00/person*
May 03, TRI fee for 2+ applicants per company	$20.00/person*

***The exam costs above **DO NOT reflect the TOTAL cost for sitting for the GCI exam,** only TRI's exam proctoring cost for offering the exam as part of the short course event.

The GCI exam is part of the GCI CQA technician certification program. Because of this, **one MUST REGISTER** with the **Geosynthetic Institute (GSI)** and **pay their required certification fee** in order to take this exam. **TRI does NOT collect this fee,** it must be paid directly to GSI.
GSI phone: 610-522-8440

LISA - SHORT COURSE OUTLINE
Days 1 and 2 – Monday & Tuesday, April 29-30, 2013

PART 1: Classroom – Monday, April 29, 2013

8:30-8:45 am	Welcome
8:45-9:00	LIS Accreditation System
9:00-9:30	Why Liner Integrity Surveys? Introduction and LIS History and Statistics
9:30-10:30	Theory, Boundary Conditions
10:30-10:45	Break
10:45-11:30	Designing Facilities for LIS
11:30-12:15	LUNCH
12:15-1:15	Field Procedures - for pond, soil, uncovered, in-situ; ASTM procedure review; Calibration
1:15-1:45	Technology Limitations; Examples
1:45-2:30	Case Histories / Questions / Answers
2:30-3:00	Field Coordination
3:00-5:00	Field Demonstrations (water-covered, soil-covered and exposed liner test installations)
5:00-5:30	Refreshments/Questions/Answers (in classroom)
5:30–6:30 pm	Tour of TRI's Accredited Geosynthetics Testing Laboratory
6:30-9:00 pm	***Tex-Mex Bash***

PART 2: Field Training – Tuesday, April 30, 2013

8:30-9:00 am	Classroom review and planning
9:00-12:00 pm	HANDS-ON GROUP FIELD TRAINING
12:00-1:00 pm	LUNCH
1:00-4:30 pm	HANDS-ON GROUP FIELD TRAINING (continued)
4:30-5:00 pm	Closing CLASS Session (Questions/Answers)

CQA FOR GEOSYNTHETIC INSTALLATIONS SHORT COURSE OUTLINE
Day 3 – Wednesday, May 01, 2013

7:30-8:00am	Registration	
8:00-8:15	Welcome and Introductions	Allen
8:15-8:30	CQA Principles and Philosophy *(Responsibilities, appreciation of role, professional considerations and on-site protocol, conflict resolution, etc.)*	Sieracke
8:30-9:30	Background of Geosynthetics and Manufacturing *(Polymers to products, material properties, product manufacturing)*	Allen
9:30-10:30	HDPE & LLDPE & fPP Geomembranes & Seams *(Types and specifications, shipping/receiving, unloading, storage & installation)*	Sieracke
10:30-10:45	Break	
10:45-11:15	HDPE & LLDPE & fPP Geomembranes & Seams - Continued	Sieracke
11:15-12:15	Welding Demonstration/Seam Testing *(Double track fusion welds, extrusion welds, "T" welds, seam sampling, peel and shear testing, peel incursion and strain measurements, modes of failure, break codes, field vs. laboratory testing)*	Sieracke & Installer
12:15-1:00 pm	Lunch (provided)	
1:00-2:00	**Special Guest Lecture: TBD**	
2:00-2:30	PVC Geomembranes & Seams (*Types and specifications, shipping/receiving, unloading, storage & installation)*	Allen
2:30-3:30	Geotextiles, Geonets/Geocomposites, Geogrids, Pipe, Erosion Control *(Types and specifications, shipping/receiving, unloading, storage & installation)*	Allen
3:30-3:45	Break	
3:45-4:30	Protection and Soil Cover	Sieracke
4:30-4:45	CQA Paperwork and Record Keeping *(Importance of documentation, communication records, examples of record keeping and documentation, checklists)*	Sieracke
4:45-5:00 pm	Discussion	
5:00-6:30 pm	Tour of TRI Geosynthetic Testing and Research Laboratories (test demonstrations, explanation of some TRI internal R&D projects, etc.)	
6:00-8:00	**Texas BBQ Dinner !!!! (provided)**	

CQA FOR COMPACTED CLAY & GEOSYNTHETIC CLAY LINER INSTALLATIONS
SHORT COURSE OUTLINE – Dr. Robert (Bob) Gilbert
Day 4: Thursday, May 02, 2013

8:00-8:30 am	Registration
8:30-9:00	Liner and Cover Systems *(single liners/double liners/composite liners, leakage rates through soil, composite action with geomembranes, importance of drainage layer properties*
9:00-10:30	Compacted Clay *(materials, factors affecting hydraulic conductivity, clod vs. particle orientation theory, keys to low hydraulic conductivity, water content-density criteria, recommended procedures for determining acceptable zone, influence of overburden stress, bonding of lifts, thickness)*
10:30-10:45	break
10:45-12:00	Construction of Compacted Clay Liners and Covers *(equipment, preprocessing of soil, soil moisture control, sieving, clod control, crushing/pulverizing materials, compaction, test pads)*
Noon-1:00 pm	Lunch (provided)
1:00-2:00	CQA for Compacted Clay Liners and Covers *(CQA principles, CQA plan, tests, observations, field water content tests, field density tests, hydraulic conductivity compliance tests, frequency of tests, sampling pattern, outliers, corrective action, role of test pads, final certification)*
2:00-3:00	History of GCLs *(commercially-produced GCLs, geosynthetic materials, manufacturing of GCLs, manufacturing quality control, recommended specifications)*
3:00-3:15	break
3:15-4:00	Bentonite *(measures of and tests for bentonite quality, recommended specifications for bentonite in GCLs, contaminant-resistant bentonite)*
4:00-5:00	Installation of GCLs *(transportation, handling, storage, subgrade preparation, placement procedures, seaming protection, construction quality control and assurance, observations, types of tests, frequency of testing, field case history)*
5:00-5:30	Open discussion

CERTIFICATION EXAM
Construction Quality Assurance-Inspectors Certification Program
Day 5 - Friday, May 03, 2013

7:45-8:00 am	Registration and Introduction
8:00-10:00 am	Geosynthetic Exam
10:00 - 10:25 am	Break (on your own)
10:30-11:30 am	Compacted Clay Liner Exam

INFORMATION regarding exams:

1) ALL students wishing to sit for the exam(s) **MUST FIRST register for certification through the Geosynthetics Certification Institute and pay the applicable fees directly to GSI** (phone: 610-522- 8440). GSI registration must be received by the GSI 7-10 days before the Dec. 10th exam(s).

2) Students are REQUIRED to bring a government-issued photo ID prior to entering the testing room. They must also supply the Proctor with a photocopy of the ID when turning in the test.

3) Time allowed:
Students will be given two hours to take the geosynthetic test. There are 140 questions and you must answer 70% of the questions correctly in order to pass. Please note that there is only one correct answer for each question.

You will be given one hour to take the compacted clay liner test; there are 30 questions and you must answer 70% of the questions correctly in order to pass. Please note that there is only one correct answer for each question.

4. The test is a multiple-choice test. The student must circle the correct answer (and only one answer) for each question. They must not select multiple answers for the same question.

TRI REGISTRATION FORM

LISA – Electrical Resistivity testing Course Registration Fees:

__ April 29-30, 1 registrant per company	$1350.00/person
__ April 29-30, 2 registrants per company	$1350.00/person
__ April 29-30, 3 + registrants per company	$1095.00/person

CQA Course Registration Fees:

__ May 01-02, both courses, 1 registrant per company	$825.00/person
__ May 01-02, both courses, 2 registrants per company	$750.00/person
__ May 01-02, both courses, 3 + registrants per company	$675.00/person
__ One course only, 1 registrant per company	$525.00/person
__ One course only, 2 registrants per company	$475.00/person
__ One course only, 3 + registrants per company	$450.00/person

GCI Exam Fees

__ May 03, One applicant only per company	$45.00/person*
__ May 03, 2+ applicants per company	$30.00/person*

* These fees DO NOT pay for the exam, only the venue for taking the exam. The GCI exam is part of the GCI CQA technician certification. You MUST REGISTER with the Geosynthetic Institute (GSI) and pay the required certification fee directly to GSI in order to take this exam, (GSI phone: 610-522-8440)

Registrations must be received by **5:00 pm CST, Friday, April 12, 2013** - $50.00 /person late fee thereafter. Fee includes: course notes and handouts, designated dinners the evenings of April 29 and May 01, and lunch and AM & PM breaks each day. $50.00 cancellation fee for refunds requested before April 12, 2013 -- no refund thereafter. Course notes are NOT sold separately.

Method of Payment: Payment may be made by check, money order, American Express, Visa or MasterCard.

☐ Check ☐ Money Order ☐ Purchase Order

Make check or purchase order payable to TRI/Environmental, Inc.,

Credit Card: ☐ American Express ☐ Visa ☐ MasterCard

Credit Card # _____ Expiration Date:

Please direct questions to Ms. Melissa Hunter or Mr. Sam Allen, phone: (800) 880-8378, fax: 512) 263 2558.

PLEASE TYPE OR PRINT CAREFULLY

Name	
Position / Company	
Address	
phone / e-mail	
amount paid ($'s)	

I have registered with GCI & paid the GCI certification fee. I will take the Geosynthetic CQA Exam May 03, 2013 (check=>)	
I have registered with GCI & paid the GCI certification fee, and I will take the Compacted Clay Liner CQA Exam May 03, 2013 (check=>)	

Return Registration and Payment via Mail or Fax to:
(CPerez@tri-env.com; fax: 512-263-2558)

TRI
ATTN: Chris Perez
9063 Bee Caves Road
Austin, Texas 78733