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Web site: www.terraerosion.com

Work Experience:

Terra Erosion Control Ltd.

Principal, owner & operator

Nelson, B.C.

Soil Bioengineering/Bioremediation and Riparian Habitat Restoration

Projects:

Canadian Pacific Railway- Elk River, Elko, B.C. Fall 2003

Vegetated riprap using live cuttings and placement of root wads clusters to enhance fish habitat and provide bank protection. Assisted in construction and implementation of project.

Braderwoods Strata Council- Nelson, B.C. Fall 2003

Site assessment and prescription of slope failure. Implementation of biotechnical slope stabilisation treatment.

Syncrude Canada Ltd.- Fort McMurray, Alberta, Spring, Summer, Fall 2003

Site assessment and trials establishment of soil bioengineering techniques on re-habilitated mine dump and watercourse. Prescription development, training of local crew and implementation of project.

B.C. Hydro Keenleyside Dam- Castlegar, B.C. Summer and Fall 2003

Re-establishment of vegetation on previously constructed berm to provide fish habitat. Prescription development and implementation of project.

Ministry of Transportation and Highways- Riondel, B.C. Spring 2003

Walkers Landing Road, steep slope stabilization of slope failure using soil bioengineering treatment. Prescription development and implementation of project using “Spyder hoe” to perform machine- assisted planting.

Private Land, Veterinary Clinic- Creston, B.C. Spring 2003

Stabilization of eroded slope using biotechnical slope stabilization techniques. Prescription development and implementation of project.

Ministry of Transportation and Highways- Moyie, B.C. Spring 2003

Moyie 18 Miles Pit steep slope stabilization of debris slide using soil bioengineering treatment. Prescription development and implementation of project.

Ministry of Transportation and Highways- Moyie, B.C. Spring 2003

Moyie Bluff steep slope stabilization using soil bioengineering treatment. Prescription development and implementation of project. Trial treatment on two sites using “Straw wattle” and “compost application” in conjunction with live cuttings and seeding.

Klohn Crippen Consultants Ltd.- Thrums, B.C. Winter 2003

Stream Bank Protection Assessment and Bioremediation Prescription.

Brilliant reservoir. Columbia Power Corporation

Transportadora de Gas del Peru- Upper Amazon, Peru, Spring, Summer and Fall 2002.
Evaluation and recommendation of erosion/sediment control and slope stability control measures for the Camisea gas pipeline system. Training and direction of local personnel as well as the establishment of two trial sites using soil bioengineering techniques

Kalesnikoff Lumber Co. Ltd.- West Kootenay, B.C. Summer 2002
Soil bioengineering / Riparian habitat restoration, Bald Face Creek
Soil bioengineering / Upper slope stabilization, Shroeder Creek

Ministry of Transportation and Highways- Moyie, B.C. Spring 2002
Moyie Bluff steep slope stabilization using soil bioengineering treatment. Prescription development, implementation and quality control of project

Klohn Crippen Consultants Ltd- Salmo, B.C. Spring 2002
South Salmo Slide Review. Columbia Basin Fish & Wildlife Compensation Program.

Klohn Crippen Consultants Ltd.- Shore Acres, B.C. Spring 2002
Slope Protection Assessment and Bioremediation Prescription,
Thiessen Property, Brilliant reservoir. Columbia Power Corporation

Meadow Creek Cedar Ltd- Coffee Creek, B.C. Fall 2001
Installation of five large sediment traps at bottom of landslide to reduce sediment delivery into fish bearing stream. Planting of riparian species.

Kalesnikoff Lumber Co. Ltd- Nelson, B.C. Fall 2001
Manual deactivation of old road system to reduced sediment delivery into domestic water supplies, helicopter access.

Tembec Industries Inc. Cranbrook, B.C. Fall, 2001
Riparian Restoration and Fish Habitat Restoration. Live gravel bar staking; establishment of 12,000 live gravel bar stakes over 9 gravel bars using hand crews and excavator to assist planting within Bighorn Creek. South of Elko, B.C.

Tembec Industries Inc.- Cranbrook, B.C. Fall, 2001
Soil Bioengineering Treatment for Landslide Rehabilitation Matthew Creek, as well as upgrade and maintenance of two sites established in fall of 2000 near Kimberley, B.C.

Ministry of Transportation and Highways Central Kootenay District- Edgewood, B.C. Summer 2001. **Root wads and vegetated crib wall establishment** for bank stabilization and enhancement of fish habitat on the Inonoaklin River.

Nelson Waldorf School- Nelson, B.C. Spring 2001
Cut slope stabilization behind new constructed building. Establishment of three rows of brush layer combined with fascines bundles and mycorrhiza fungus inoculation.

Downie Street Sawmills Ltd.- Revelstoke, B.C. Spring 2001
Bioremediation, Akolkolex River FSR, km 21. Site 2.
Completion of section 1, using soil bioengineering techniques, alder seedlings and grass seeding.

Pope and Talbot Ltd- Nakusp, B.C. Spring 2001
Soil Bioengineering / Riparian Habitat Restoration Heart Creek Site 1 and 2, near Fauquier, B.C. Completion of site started in the Fall of 2000.

Ministry of Transportation and Highways Central Kootenay District- Salmo, B.C. Spring 2001
Slope stabilization of large slope failure with riparian area using soil bioengineering techniques, addressing water drainage and sedimentation input into Sheep Creek.

Columbia Basin Power Projects- Castlegar, B.C. Spring 2001
Vegetated Rip-rap/Bank Stabilization - Drazdoff Property – Brilliant Reservoir,
Established 27 pockets of live cuttings. Planting of native shrub seedlings and seeding.

Ministry of Transportation and Highways, Central Kootenay District- Creston, B.C. Spring 2001.
Vegetated RipRap, Goat River, Site maintenance and monitoring

Tembec Industries Inc.- Cranbrook, B.C. Fall 2000
Riparian Habitat Restoration Bighorn Creek Site 1 and 2, near Elko, B.C. Site assessment and prescription of eroded stream bank. Implementation of biotechnical slope stabilisation treatment and planting of native shrub seedlings and seeding of a large riparian area.

Pope & Talbot Ltd.- Nakusp, B.C. Fall 2000.
Soil Bioengineering / Riparian Habitat Restoration Heart Creek Site 1 and 2, near Fauquier, B.C. Site assessment, prescription and implementation of biotechnical slope stabilisation treatment and planting of native shrub seedlings and seeding.

Tembec Industries Inc.- Cranbrook, B.C. Fall 2000
Soil Bioengineering Treatment for Landslide Rehabilitation Matthew Creek near Kimberley, B.C. Implementation of site prescription developed by Polster Environmental Services.

Ministry of Transportation and Highways, Central Kootenay District- Creston, B.C. Summer 2000. **Vegetated RipRap, Goat River.**

Harrop Procter Watershed Protection Society- Procter, B.C. Spring 2000. **Training of youth crew in live staking installation as erosion control prevention on Mill Creek hiking trail.**

M.O.E.L.P. Columbia Forest District, Kootenay Region- Revelstoke, B.C. Spring 2000.
Bioremediation/ Riparian Habitat Restoration, Akolkolex River FSR, km 21. Site 3, Site maintenance and repair.

M.O.E.L.P. Columbia Forest District, Kootenay Region- Golden, B.C. Spring 2000.
Bioremediation/ Riparian Habitat Restoration, Moose Creek, Beaverfoot Valley, Site prescription and implementation of biotechnical slope stabilization treatment.

Downie Street Sawmills Ltd.- Revelstoke, B.C. Spring 2000.
Bioremediation, Akolkolex River FSR, km 21. Site 2, Site maintenance and completion of project implementation using biotechnical slope stabilization treatment.

Kalesnikoff Lumber Co. Ltd- Blewet, B.C. Spring 2000. **Soil Bioengineering, Rover/Connor Creek**, Site maintenance (repair and pruning), and continuation of slope stabilization using live cuttings.

M.O.E.L.P. Columbia Forest District, Kootenay Region- Revelstoke, B.C. October 1999.
Bioremediation/ Riparian Habitat Restoration, Akolkolex River FSR, km 21. Site 3, Site assessment and implementation of biotechnical slope stabilization treatment.

M.O.E.L.P. Columbia Forest District, Kootenay Region- Golden, B.C. Fall 1999.

Bioremediation/ Riparian Habitat Restoration, Moose Creek, Beaverfoot Valley, Site assessment and harvesting of live material to be placed in cold storage for spring project.

Kootenay River Dyke Repairs, Nelson, Fall 1999. **Revegetation Plan Review**, for Klohn-Crippen Consultants Ltd. Nelson office

Creston, Community Forest Corporation, Erickson, B.C. Fall 1999. **Soil Bioengineering, Sullivan Creek**. Site maintenance (repair and pruning), and installation of cross ditches.

Downie Street Sawmills Ltd.- Revelstoke, B.C. Fall 1999.

Soil Bioengineering, Akolkolex River FSR, km 21, Site 2, Site maintenance (repair and pruning), and completion of project.

Kootenay Lake Forest District- Nelson, B.C. Fall 1999. **Soil Bioengineering, Busk Creek**. Site maintenance and monitoring.

Kalesnikoff Lumber Co. Ltd- Nelson, B.C. Fall 1999. **Soil Bioengineering, Duhamel Creek**. Site assessment and implementation of biotechnical slope stabilization treatment.

Meadow Creek Cedar Ltd.- Nelson, B.C. Fall 1999. **Soil Bioengineering, Coffee Creek**. Site assessment and implementation of biotechnical slope stabilization trial treatment on large gully.

Kootenay Lake Forest District- Nelson, B.C. Fall 1999. **Landslide and Erosion Channel Rehabilitation of Smallwood Creek**, Site assessment and implementation of biotechnical slope stabilization treatment on three different sites.

Downie Street Sawmills Ltd.- Revelstoke, B.C. June 1999 **Soil Bioengineering, Akolkolex River FSR, km 21. Site 2**, Site assessment and implementation of biotechnical slope stabilization treatment.

M.O.E.L.P. Columbia Forest District, Kootenay Region, Revelstoke, B.C. June 1999. **Soil Bioengineering / Riparian Habitat Restoration, Akolkolex River FSR, km 21. Site 1**, Site assessment and implementation of biotechnical slope stabilization treatment.

M.O.E.L.P. Kootenay Region- Nelson, B.C.

Hawkins Creek Dike Planting, Compensatory Habitat Project, May, 1999. Site assessment and implementation of mounds, planting of native shrubs and grass seeding.

Kootenay Lake Forest District- Nelson, B.C. Fall 1998. **Bioremediation, Busk Creek**, Landslide rehabilitation using various types of willow structures and sediment traps (with rocks, logs, and straw bales), silt fences (Geo. textile), grass seeding and mapping.

Atco Lumber Ltd- Nelson, B.C. Fall 1998. **Give out Creek**, Installation of **coconut matting** on side cast materials on downstream side of bridge, using live stakes to secure matting and grass seeding.

Crestbrook Forest Industries Ltd- Yack, B.C. Fall 1998. **Soil Bioengineering, Russell Creek**, Site assessment and implementation of biotechnical slope stabilization treatment including the use of sediment traps.

Boundary Forest District- Beaver Del, Fall 1998. **Soil Bioengineering, Hall Creek**, Site assessment and implementation of biotechnical slope stabilization treatment for demonstration site.

Kalesnikoff Lumber Co. Ltd- Nelson, B.C. Fall 1998. **Soil Bioengineering, Rover/Connor Creek**, Site assessment and implementation of biotechnical slope stabilization treatment. Installation of a catchment basin to bridge water over Referendum Creek land slide.

Slocan Forest Products Ltd- Slocan, B.C. Summer 1998. **Soil Bioengineering, Springer Creek**, Site assessment and implementation of biotechnical slope stabilization treatment using dormant willow from cold storage

Nelson Forest Region- Nelson, B.C. Fall 1997. **Soil Bioengineering, Coffee Creek**, Formal on-site training on implementation techniques on two different sites (1.1 & 2.2 km) and installation of various structures including willow gathering.

Crestbrook Forest Industries Ltd- Yack, B.C. Fall 1997. **Bioengineering, Russell Creek**, Site assessment and implementation of biotechnical slope stabilization treatment.

Arrow Forest District- Castlegar, B.C. Summer, 1996. **College Creek, Blueberry Community Watershed**, Level II road deactivation, assessment and prescription. Level III machine supervision and implementation of major works, stream bank rehabilitation, grass seeding and surface erosion control.

Technical and Research Projects:

Wildlife and Danger Trees Assessment, Summit Creek Campground, Spring 2001.
Creston Valley Wildlife Management Authority. Creston, B.C.

Placement of slope stability pins & mapping, Fall 1999.
Destiny Bay Area, Kootenay Lake Forest District

Road Deactivation Level II & III, Fall 1999.
Sullivan Creek, Creston Community Forest Corporation

Wildlife and Danger Trees Assessment, Rory Creek, Summer 1999.
Heartwood Holdings Ltd. Nelson, B.C. Assessed and supervised snag falling and conducted site inspection.

Silviculture Surveys, Season 1999.
Kootenay Lake Forest District 180 ha.

Silviculture Surveys, Season 1998.
Kootenay Lake Forest District 360 ha.

Field-Testing of New Proposed Free Growing Standards, Fall 1998.
Kootenay Lake Forest District / Forest Practices Branch, Victoria. B.C.

Disturbance in Riparian Corridors Research Project, August/September 1998.
Foothills Model Forest, Hinton, Alberta. Established transects through various sized streams into forest matrix, including extensive data gathering and ecological assessment using the Alberta eco-classification system.

Timber Cruise, Volume Assessment, Private Land, Fall 1997.
M. Bronaugh, Nelson, B.C.

Advanced Training for Spacers; Crop Tree Selection in Juvenile Stands, Field Season 1997. Developed course curriculum, materials and delivered six sessions of training for First Nations Band, licensees, and spacing contractors (FRBC funded project).

Silviculture Survey Contracts season 1997.

Kootenay Lake Forest District 620 ha. surveyed and G.P.S. traversing of treatment unit.
Pope & Talbot Ltd, Castlegar Division, 350 ha. surveyed.

Road Location/Timber Cruising/Deflection lines for commercial thinning purposes, March 1997. Almforest Timber Co. Ltd. Nelson, B.C.

Inventory Caribou Habitat Project, Central Selkirk, Winter 1996/97

Caribou trailing, random transects, habitat studies, data entries

Implementation of mechanical brushing & weeding Contract, Field Season 1996.

Kootenay Lake Forest District, North Zone. Reconnaissance and lay out of treatment boundaries, silviculture prescription, contract supervision and administration (220 ha), mapping and data processing.

Appropriate Forestry Services Ltd:

Kaslo, B.C.

Tel:(250) 353-7621

Implementation Contract / Kootenay Lake Forest District, North Zone

Seasons: 1991,92,93,94,95

-Contract supervision and administration: planting, mechanical brushing & weeding, juvenile spacing and mechanical site preparation / soil and site sensitivity data collection.

-Lay out of treatment boundaries, silviculture prescriptions.

-Minor access road layout including culvert location and road building supervision.

-Silviculture surveys: regeneration, multilayer, pre-stand tending, free growing and forest health assessment (Pw blister rust, Pl gall rust, mistletoe, pixel).

-Wildlife habitat, hydrology and recreation assessment (within silvicultural management units).

-Silviculture surveys audit.

-Photo and map interpretation, mapping and data processing to BCFS standards.

“Timber Appraisal and operational cost analysis” Lots 21, 53, 30 including a 100% timber cruise of projected road section for the village of Kaslo private lands. Summer 1995

“Silvicultural Evaluation and Management Report” private landowner: P.Boorman

SL65 District lot 4595, Riindel, B.C. under the F.R.D.A. II Small Scale Forestry Program.

Planting prescription, juvenile spacing prescription, pixel survey, volume evaluation of forested area, road surface erosion and culvert location assessment, Fall 1995.

“Location and description of Nelson field sites for Silviculture Survey

Accreditation Program, MOF Silviculture Branch.” Oct- Dec 1994.

“Silvicultural Evaluation and Management Report” Village of Kaslo forested lands, under the F.R.D.A. II Small Scale Forestry Program. Management options evaluated by stratum attributes, occurrence of pests and disease and non-timber resources. Spring 1993.

Engineering

G.P.S. traversing of roads, cut blocks and silviculture treatment boundary (Spring 93-Fall 95)

Timber reconnaissance, timber cruising and inventory assessment.

Workshops

Teaching of basic surveying and layout practices to the management personnel of silviculture contractors. March 1993, Golden Raven Co-op, Kelowna, B.C.

Kokanee Forest Consulting Ltd.

Nelson, B.C.

Fall 1992: Traversing and **timber cruise checks** for Arrow Forest District

Timberland Consulting Ltd.

Nelson, B.C. June - December 1990

Silviculture: various surveys, mountain pine beetle probes, growth and yield plot establishments

Engineering: traversing, timber reconnaissance and cruising, road and block lay out, P.H.S.P. data collection.

Reforestation:

Global Forestry Consulting, Nelson, B.C. spring 1996 (fill plant, Kootenay Lake Forest District)/

Rothkop Contracting, Procter, B.C. 1989/ Zanzibar Holdings, Vancouver, B.C. 1983-88/

Future stock, Toronto, Ontario, 1986 crew foreman for two seasons.

Education

February 2003

Biotechnical Soil Stabilization for Slope and Streambanks. Las Vegas, B.M.P., I.E.C.A.

February 2003

How to Establish, Select and Use Plants for Erosion Control. Las Vegas, B.M.P., I.E.C.A

July 2000
Certification/update

Wildlife/Danger Trees Assessor's Course
BC Forestry Continuing Studies Network

August 1996

Mountain Pine Bark Beetle Survey Certification
Selkirk College and BC Forest Service

May 1996

Forest Road Deactivation Course- RRET 0410
BC Forestry Continuing Studies Network

August 1993

Silviculture Survey Certification
Selkirk College and BC Forest Service

September 1988- May 1990

Selkirk College, Castlegar, BC
Renewable Resource Program

September 1987- May 1988

College Rosemont, Montreal, Québec
Pure Science

Workshops, Presentations and Courses

Erosion Control 2003 Conference Pacific Northwest Chapter I.E.C.A	Stevenson, Washington December 2003
Presented talk on “BioTechnical Slope Stabilization of Heart Creek Landslide”	
Banff Mountain Summit Mountain as Water Towers	Banff, Alberta November 2003
Erosion Control 2003 Conference Annual I.E.C.A Conference	Las Vegas, Nevada February 2003
Presented talk on “Biotechnical Stabilization of a Landslide, Case Study: Sheep Creek, British Columbia, Canada”	
Erosion Control 2002 Conference Pacific Northwest Chapter I.E.C.A	Vancouver, B.C. December 2002
Erosion Control 2001 Conference Pacific Northwest Chapter I.E.C.A	Tacoma, Washington November 2001
Presented talk on “Soil Bioengineering/Riparian Restoration on Challenging Sites”	
Terrain Stability and Forest Management in the Interior of BC	Nelson, May 2001
Interior Forest Site Rehabilitation Workshop	Kamloops, April 2001
Presented talk on “Soil Bioengineering/Riparian Restoration on Challenging Sites”	
Interior Forest Site Rehabilitation Workshop	Kelowna, April 2000
Interior Watershed Assessment Procedure Review	Kamloops, March 2000
Interior Forest Site Rehabilitation Workshop	Kamloops, April 1999
Fish Habitat Rehabilitation Workshop Side Channels and Ponds	Chilliwack, March 1999 MOELP
Soil Bioengineering for Forest Land Reclamation	Polster Environmental Services, Kaslo, summer 1998
Interior Forest Site Rehabilitation Workshop	Kelowna, April 1998
Restoration of Disturbed Interior Sites using Bioengineering Techniques	Polster Environmental Services Cranbrook, October 1997
Commercial Thinning: Miracle or Myth	(Southern Interior Silviculture Conference 1997)
Occupational First Aid /Transportation Endorsement: Fall, 1996	

Global Positioning System in Forestry	Kelowna, November 1996 BC Forestry Continuing Studies Network
What is Good Silviculture	(Southern Interior Silviculture Conference 1996)
Occupational First Aid /Transportation Endorsement:	Fall, 1994
Soil Disturbance Survey Procedure	Fall, 1994 BC Forestry Continuing Studies Network
Pilot course on multilayer survey	August 1994 BC Forestry Continuing Studies Network
Poster Session on Biodiversity	(Southern Interior Silviculture Conference 1994)
Armillaria Issue	(Southern Interior Silviculture Conference 1993)
Biodiversity and Forest Management	March 1993 BC Forestry Continuing Studies Network
Basic Watershed Management	October 1992 BC Forestry Continuing Studies Network
Soil Texturing and Soil Type	Soils Scientist Greg Utzig October 1990

References

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Habitat Protection Officer
Ministry of Environment, Lands, and Parks
Kootenay Lake Office
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