CANADIAN LAND RECLAMATION ASSOCIATION

ATLANTIC CHAPTER NEWSLETTER

issue 1 | Spring 2014

in this issue:

new newsletter, new stories to share
past activities and upcoming events
how can *you* become involved?
featured projects


Michele Coleman

PRESIDENT'S MESSAGE

Welcome to the first issue (Spring 2014) of the Canadian Land Reclamation Association, Atlantic Chapter Newsletter. In this age of ever increasing demands of our time from tweets and twitters to links and blogs, we have lost the basic art of communication. Oh sure, we send the photo of the awesome sunset, but how much will that impact our life? It is but a brief respite. How often do we actually check out an organization's website just to see if anything new has been added?

Our chapter, under the initiative of Fred Bonner and David Hopper, delivered the first of the Atlantic Reclamation Conferences (ARC) in 2008 in Stellarton, Nova Scotia. ARC gatherings have continued each year moving from Stellarton to Halifax (ARC 2009, ARC 2010), to Gagetown, New Brunswick (ARC 2011), to Sydney, Cape Breton (ARC 2012) to Sackville, New Brunswick (ARC 2013). These events are well attended and sometimes spawn off more localized events (NB Wetland Forums- Fredericton 2009 and Moncton 2010).

CLRA Atlantic also hosts informal get-togethers to discuss current projects and to just enjoy each other's company. The conferences are a great way to network but they only happen once a year. More localized events allow the same exchange with a smaller group of members. We do, however, represent all four Atlantic Provinces so we need to find a way to communicate when we are not at conferences or for when we cannot make it to a conference. This newsletter will be able to reach all CLRA members and recent conference attendees.

PUBLISHER'S MESSAGE

The initial goal is to publish a newsletter three times a year (Spring, Summer and Fall issues). It will be a forum to keep us connected to upcoming events; provide the status of current conference planning; offer conference information in related fields; furnish information about our members, ongoing reclamation undertakings, reminders for available scholarships and membership applications; and contact information for those currently on the Atlantic Chapter Executive and Board of Directors. It can also include anything else that you deem worthy or interesting enough to share with other members. Maybe it is a great shot of an uncommon plant species making use of the habitat on a recently reclaimed site.

If you have something to contribute, send it along so that it can be included in the next "newsletter issue". Please send information to denis.rushton@stantec.com. Past publications will also be stored on the www.atlanticclra.ca website.

The Newsletter should provide the vehicle for the CLRA Atlantic Chapter to grow in membership and standing. However, for this to happen it is important that members think to contribute articles for publication that they think will help bring this goal to fruition.

Executive 2014

Michele Coleman, President
mcoleman@nbpower.com

Tony Bowron, Vice President
tony.bowron@gmail.com

Bob Pett, Past President
pettrj@gov.ns.ca

David Hopper, Treasurer & Secretary
dbhopper@gov.ns.ca

Board of Directors 2014

Fred Bonner
fred.bonner@tblresourcesolutions.ca

Virgil Grecian
virgil.grecian@wspgroup.com

Denis Rushton
denis.rushton@stantec.com

Bob Rutherford
bobrutherford@accesswave.ca

Andy Walter
awalter@strum.ca

WEBMASTER'S MESSAGE

The new CLRA/ACRSD National website has been launched. The address is still www.clra.ca. Information on the Atlantic Chapter can be found by navigating the site map. Check it out! If you have any comments or have any material that you would like to see added to the website, please direct this information to: David Hopper (webmaster) dbhopper@gov.ns.ca or Bob Rutherford (assistant webmaster) bobrutherford@accesswave.ca.

Many presentations from ARC 2013 are now on the CLRA Atlantic website and more are being added weekly. This site can be reached through the Atlantic Chapter website www.atlanticclra.ca and then opening the "Atlantic Reclamation Conference" site. So if you missed a presentation that you really wanted to see, check out the conference site and then click on "Program".

A Tribute to Larry Bell, Director of CLRA Atlantic Chapter, and CLRA member

It was with great sadness that we learned of the passing of Larry Bell in October 2013. Larry had been an active Director on the Board for the Canadian Land Reclamation Association Atlantic Chapter since 2008 and a long term member. We polled several members that knew Larry and talked to Larry's widow, Mrs. Barb Bell, for their thoughts about Larry's impact with the CLRA Atlantic Chapter. We heard many of the same impressions over and over again.

Our memories of Larry are of a man with many ideas and a lot of energy. He also had a kind heart and was willing to talk to new members to make them feel welcome to the CLRA and the Atlantic Chapter Board. CLRA's focus on reclamation and remediation of environmentally challenged lands and waterways resonated poignantly with Larry's passion for marine and environmental science. Throughout his life he excelled at finding solutions to unique environmental problems by combining technologies and ideas in unique and innovative ways. Membership provided Larry with a vehicle to share his ideas and to benefit from these ideas and experience of others in the field.

Larry's career spanned from scientist, researcher, entrepreneur and consultant. In his later years, he strived to promote a culture of environmental awareness through his remediation projects. Once Larry joined the CLRA Atlantic Chapter Board as a Director in 2008, we can all agree that he always made conference calls and meetings more entertaining. A charismatic and creative individual, Larry enjoyed nothing more than to network and share ideas. He had great intentions and big ideas and certainly moved things forward on several fronts and for that he will be missed.

A quote from Larry's widow, Barb Bell sums it up:"There are many things that could be said about the man, but he was always interesting". To that, we can all agree. Thank you for sharing your enthusiasm, Larry and may your reclamation dreams live on in the landscapes of Nova Scotia. We send our condolences to his wife (Mrs. Barb Bell) and family for their personal loss.

6th Annual Atlantic Reclamation Conference (ARC 2013)

The 6th Annual Atlantic Reclamation Conference (ARC 2013) was held at the Tantramar Veteran's Civic Centre in Sackville, New Brunswick on October 2-4, 2013. The event was organized by the Canadian Land Reclamation Association (CLRA) Atlantic Chapter, in cooperation with Ducks Unlimited Canada and the Town of Sackville New Brunswick. CLRA was fortunate to have invaluable organizing assistance from Ron Kelly-Sprules (Sackville Tourism Manager) and Dr. Jeff Ollerhead (Dean of Science, Mt. Allison University) for their expertise and local knowledge. "Reclaiming our Heritage – Reclamation with climate change adaptation" was the theme of the conference. The conference consisted of technical session talks, workshops, field trips and social events.

Scholarships were awarded to each of five student presenters at the conference. From (L to R): Caitlin Porter (SMU), Carly Wrathall (SMU), Bob Pett (President CLRA), Jennifer Graham (SMU), Christa Skinner (SMU), Laura Bursey (UNB), Michele Coleman (Conference Co-chair)

Conference Members attending the restoration project in the Tantramar Salt Marsh, led by Dr. Jeff Ollerhead

Becoming a CLRA/ ACRSD member has its benefits!

- **Access to an Annual Membership Directory** containing contact information for more than 1100 individual and corporate CLRA members involved in land reclamation across Canada
- **Two copies of Canadian Reclamation Magazine** per year – featuring news, project articles, supplier information and much more information pertaining to land reclamation in Canada and around the world
- **Receive notices, calls for papers at discounted registration fees** for National Annual Meetings and Conferences and Chapter events
- **Networking opportunities** at National and Chapter events and linkages with other professional land reclamation associations in the UK, USA, Australia and China
- **Information on new regulatory initiatives** at chapter workshops
- **Give back to the community.** We are involved in charitable activities. We also fund educational awards and scholarships in land reclamation.

MEMBERSHIPS

For those of you who want to continue as members or wish to become new members of CLRA/ACRSD, please be reminded that membership fees are now due for 2014. Information on the application for membership can be found at the following link: www.clra.ca/default.aspx?page22.

Annual Dues:

Corporate Membership ($200 + $10 GST)
Regular Membership ($50 + $2.50 GST)
Full-Time Students ($15 + $0.75 GST)
Retirees ($15 + $0.75 GST)

UPCOMING EVENTS

39th National Conference and AGM

This event will be held between September 22 and 25, 2014 at the Centre des congrès Tremblant, Mont-Tremblant, Québec, Canada. Refer to the National Website www.clra.ca for more information on the conference.

2014 ARC Conference

The 7th Annual Atlantic Reclamation Conference (ARC 2014) will be held in October 2014 in Wolfville, Nova Scotia. The theme of this year's conference is "Learning from Today... Planning for Tomorrow". The conference could potentially be held at the KC Irving Environmental Science Center at Acadia University and include workshops and tours of nearby reclamation projects. Consult the CLRA Atlantic Chapter website in the following weeks and months as more information on this event becomes available.

Bi-Monthly Meetings

The CLRA executive is promoting the continuation of bi-monthly informal social gatherings as a medium for Chapter members to meet and discuss reclamation projects and an opportunity for members to network. E-mail notices will be sent out to advertise these events, which are scheduled to commence in late May. The participants of past social gatherings all reported value in having face time with fellow members.

SCHOLARSHIPS

Students who participate in presentations or poster sessions at conferences are eligible for consideration of monetary scholarships. The number of awards and their cash value is determined by the conference organizing committee. You can see the scholarship award winners from ARC 2013 Conference in this newsletter issue.

COMMITTEES

There are a number of committees within the CLRA Atlantic Chapter that you, as members, could volunteer to assist those presently involved. These committees include:

Communications Committee

Newsletter

This group is responsible for gathering articles of interest to the membership and publishing this information in a newsletter; to be sent out three times annually (Spring, Summer and Fall Issues). Those members wishing to take part in this task can contact Elizabeth Kennedy at elizabeth.kennedy@stantec.com or Denis Rushton at denis.rushton@stantec.com.

Facebook Page

This group is responsible for collating information on upcoming events and posting this news on our Facebook Page. Those members wishing to take part in this task can contact Tony Bowron at tony.bowron@gmail.com.

Membership and Participation

This group is responsible for updating the Atlantic based membership or participation list in order to keep people informed on what CLRA are planning and also to send out annual membership forms. Those members wishing to take part in this task can contact Michele Coleman at mcoleman@nbpower.com.

Website and Webmasters

This group is responsible for ensuring the CLRA Atlantic Chapter website is kept up to date mainly with regards to the annual ARC conference and the archiving past conference presentations. Those members wishing to take part in this task can contact David Hopper at dbhopper@gov.ns,.ca or Bob Rutherford at bobrutherford@accesswave.ca.

Social Committee

This group will be responsible for organizing the informal bi-monthly meetings and any other social gatherings that involve the Atlantic Chapter. This is a new committee and those wishing to take part in this task can contact mcoleman@nbpower.com.

Conference Committee

This group is responsible for the planning and organization of the annual ARC conferences. This year's event is planned to take place in November 2014. Those wishing to help out with this undertaking can contact Tony Bowron at tony.bowron@gmail.com, Andy Walter at awalter@strum.com, Virgil Grecian at virgil.grecian@wpsgroup.com or Frank Potter at potterfr@gov.ns.ca.

ADVERTISING

The Atlantic Chapter will explore the idea of offering advertising space for consultants and companies in future issues of the Newsletter to help offset the operating costs incurred by committees. Your thoughts on this matter are welcomed.

FEATURE PROJECT:

Restoration of the Atlantic View Trail in East Lawrencetown, Nova Scotia

Company: Stantec Consulting Ltd. | Contact: Denis Rushton (denis.rushton@stantec.com)

Restoration Issue:

Stantec was approached by the Atlantic View Trail Association (AVTA) to prepare design drawings to address the ongoing erosion on a section of the Atlantic View Trail in East Lawrencetown. Fisheries and Oceans (DFO) required that the embankment slope be restored by vegetation instead of rock fill, which was the normal practice in the past.

This section of trail commences at the eastern end of a former train trestle structure over the tidal inflow/outflow at the southern end of Lawrencetown Lake and extends southeasterly along the trail for a distance of 270 metres (see Figure 1). This section of trail was experiencing ongoing degrees of erosion ranging between the entire loss of slope (reducing trail width) to localized washouts along the toe of slope. Work was carried out in 2012 and 2013 due to funding limitations.

Restoration:

For the slopes to be restored with vegetation, the design included the use of a turf reinforced mat (TRM) to be applied over the restored embankment slopes to increase the shear stress of the vegetative mat. The TRM will prevent long-term soil and vegetation loss resulting from high water levels (storm surge) coupled with a current along the toe of slope. The design called for the TRM to be infilled with hydraulically applied mulch, applied in slurry that contained the seed mix and fertilizer. The seed mix was selected based on site conditions and included Canada bluegrass, fescues, clovers, fults grass, perennial and annual ryegrass. The fertilizer chosen consisted of methylene urea and ammonia sulphate providing the nitrogen component and triple super sulphate furnishing the potassium component.

Figure 1

Have a project to share?

Each issue will feature two reclamation, restoration or remediation projects submitted by Atlantic Chapter members. We hope that these project stories whet the appetite of the membership and become the focal point of future newsletters.

If you have a project that you think would be interesting to Chapter members, please submit it to Elizabeth Kennedy at elizabeth.kennedy@stantec.com or Denis Rushton at denis.rushton@stantec.com.

Construction Sequencing: (Refer to Figure 2)

1. Prior to any work commencing a silt fence was installed along the shorelines outside the finished toe of slope.
2. The existing vegetation on both embankment slopes was cut down as low as possible with a brush cutter/trimmer including the woody vegetation so that the TRM could be placed flush with the ground surface.
3. A shallow trench was excavated along the toe of slope and 850 mm± diameter armour rock was placed in the trench to provide hard protection to a height slightly above the OHW elevation.
4. A 150 mm layer of 25 mm Clear Stone was placed between the armour rock and the existing toe of slope.
5. A trench (0.3 m x 0.3 m) was then excavated along the top of slope.
6. For the following items 7 to 10, work was confined to a length of 8 to 10 m (one side).
7. Four to five roll widths of TRM (2-m widths) were cut to the required length (i.e., bottom of slope to trench at top of slope), rolled up and temporarily placed over the armour rock so that TRM was not in way during the placement of common borrow material used to restore the embankment slopes.
8. The common borrow was placed, graded and compacted to the re-establish 2:1 embankment slopes.
9. Common borrow material was also placed as a top dressing to remove any undulations on the slope or shoulder of the trail to ensure that the TRM was in direct contact with the ground surface.
10. The TRM was then rolled up over the slope and pinned to the ground surface, terminating in the trench at the top of the slope as denoted in Figure 2.
11. Once a 75-m section of slope was re-established and covered in TRM, hydraulic mulch was applied to that area.
12. After the slopes were re-established, the existing trail was graded and augmented with new crusher dust.

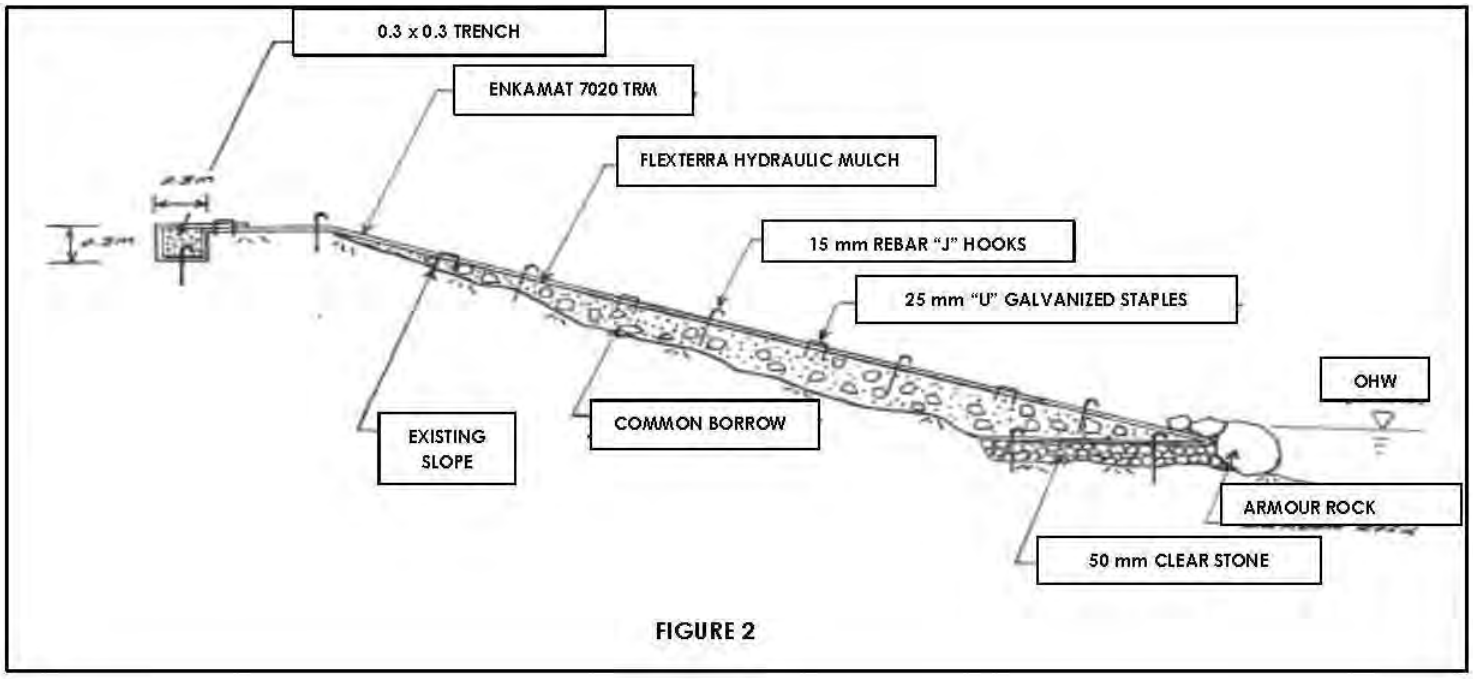

FIGURE 2

The following photographs are in chronological order depicting the existing trail condition prior to construction through to the completion of the restored embankment slopes:

Ongoing erosion with the majority of embankments slopes < 1:1, with isolated areas where the trail width was compromised – May 2012

Silt control fence installed; armour rock placed along the restored toe of slope; 25 mm clear stone placed between the armour rock and the existing toe of slope – September 2012

Common material placed to restore 2:1 embankment slope; installed TRM (Enkamat 7020); and ongoing application of hydraulic mulch – October 2012

Restored vegetative slope – June 2013 ….. AVTA contemplating live stake plantings of shrub species (i.e., wild rose, meadowsweet) on slopes by volunteers in 2014

FEATURE PROJECT:

Restoration of a Floating Marsh, Brierly Brook Watershed, Antigonish, NS

Company: Stantec Consulting Ltd. | Contact: Elizabeth Kennedy (elizabeth.kennedy@stantec.com)

Background:

Nova Scotia Transportation and Infrastructure Renewal has completed the upgrade of Highway 104 through Antigonish, Nova Scotia, to a four-lane, divided, controlled access highway. The Project necessitated the alteration of wetland and fish habitat and appropriate approvals were in place at the time of construction. During construction, a failure occurred resulting in 0.89 ha of unapproved physical alterations to a large wetland in the headwaters of Brierly Brook, including:

- Direct infilling of 0.19 ha of wetland area during construction of a structural berm;
- Heaving of 0.70 ha of wetland surface relative to the water table by horizontal compaction of the peat underlying the root mat that comprises the wetland surface; and
- Horizontal displacement of the root mat and peat such that a fish-bearing watercourse was closed.

Site Description:

The affected wetland is located on the south side of Highway 104, approximately 0.8 km west of the Addington Forks interchange (Exit 31A) near Antigonish, Nova Scotia.
At the initiation of this restoration work, Wetland 1 was approximately 11.7 ha in area and comprised of floating low shrub stream swamp, tall shrub stream swamp, mixed wood treed stream swamp, and floating stream marsh. Two species of conservation concern, marsh mermaid-weed (Proserpinaca palustris; NSDNR secure; ACCDC uncommon) and yellow tufted loosestrife (Lysimachia thyrsiflora; NSDNR secure; ACCDC uncommon to fairly uncommon) have been recorded in the wetland since 2002.

The wetland is also a contributor to Brierly Brook, a fish bearing watercourse. It has been suggested that this wetland is summer rearing habitat for stickleback and dace, and is also potentially habitat for overwintering brook trout and other salmonid species.

Figure 1 - Heaved Wetland Surface

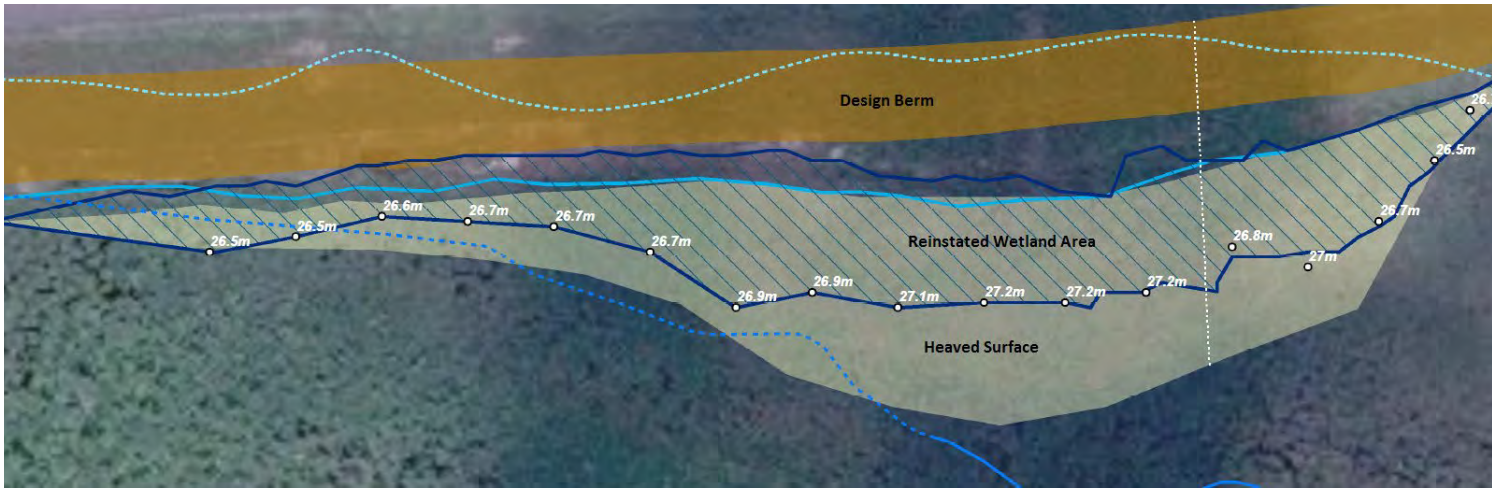

Figure 2 - Plan View of Heaved Wetland Area and the Extent of the Reinstatement

Wetland Reinstatement:

In 2013, Ditch Doctor Atlantic Limited was contracted to complete the proposed restoration activities with Stantec to provide professional oversight, to develop and confirm effectiveness of environmental control plans, and to report the results of the restoration activities. The goal of the work was to return, to the extent possible, the heaved portion of the wetland to its natural surface elevation of approximately 26.5 m asl and to create the conditions for the re-establishment of a mat of low shrubs and cattails that characterized the area before the alteration.

It was decided that excess berm materials would remain in place because of the risk of release of the fine mineral sediment during excavation, transport and temporary storage. The restoration of fish passage into the wetland was not included in the scope of the current restoration project. The construction sequencing and methods were developed with the priority of environmental protection and erosion prevention, and so the work plan and the environmental control plan are inextricably linked.

Reinstatement of the wetland was initiated on September 16, 2013 in the western end of the altered area according to existing approvals and proposed plans. The excavation work was completed by a long reach excavator with a precision reach of 18 m and custom attachments to extend the reach to 22 and 25 m. Working in sections of 10-15 m wide at a time, the heaved surface of the wetland was excavated to an average elevation of 26.5 m asl. The work was completed from the berm on a temporary platform of corduroy and rock.

At the furthest extent of the normal reach of the excavator, the peat was excavated to as deep as 25 m asl. At this point

Figure 3 - Linkbelt 3400 LII Long Reach excavator with extension

materials beyond the normal reach of the machine were scraped into the deepest point of the excavation. This maximized the extent to which the wetland surface could be restored to its natural elevation.

The restored area adjacent to the remaining crest of the heaved surface was left at a lower elevation (approximately <26.0 m asl) to encourage the crest to settle to a lower elevation over time. Hummocks salvaged from the vegetation mat were distributed irregularly in the excavated area; and hollows were created to mimic the pre-disturbance micro-

topography. The excess peat excavated from the wetland was taken by truck to the approved area of peat disposal just beyond the eastern extent of the berm.

The work progressed incrementally, working from west to east and parallel to the berm. At the completion of each 10-15 m section, the temporary structural platform was removed and the area was graded and dressed with hay according to the ECP.

At the completion of the work on October 4th, 2013, the temporary access road was graded such that there were no steep edges or rough terrain remaining. Areas with pooled or flowing water were filled with rock to slow drainage and reduce erosion, and exposed soils were dressed with hay. The peat disposal area was graded and worked into the landscape. The peat was left exposed because it was stable with little chance of erosion, and likely to be colonized by stabilizing vegetation in the spring.

Results:

The work was completed without release of sediment to Brierly Brook. At the conclusion of the reinstatement work, the wetland surface soils that could be reached by the earthmoving equipment were returned to the natural pre-alteration elevation of 26.5 m on average). Of the 0.89 ha of unintentional and unapproved alterations, 0.53 ha have been directly reinstated as a result of this project.

Elevations along the crest of the remaining heaved surface range between 26.6 to 27.2 m asl, or 0.1 to 0.7 m above the pre-alteration surface elevation of 26.5 m asl. It is recommended that the elevations of the peat along the crest of the remaining heaved surface be determined annually and compared with those recorded before the reinstatement work, as it is expected that the remaining heaved wetland area is settling to a lower elevation, which is desirable.

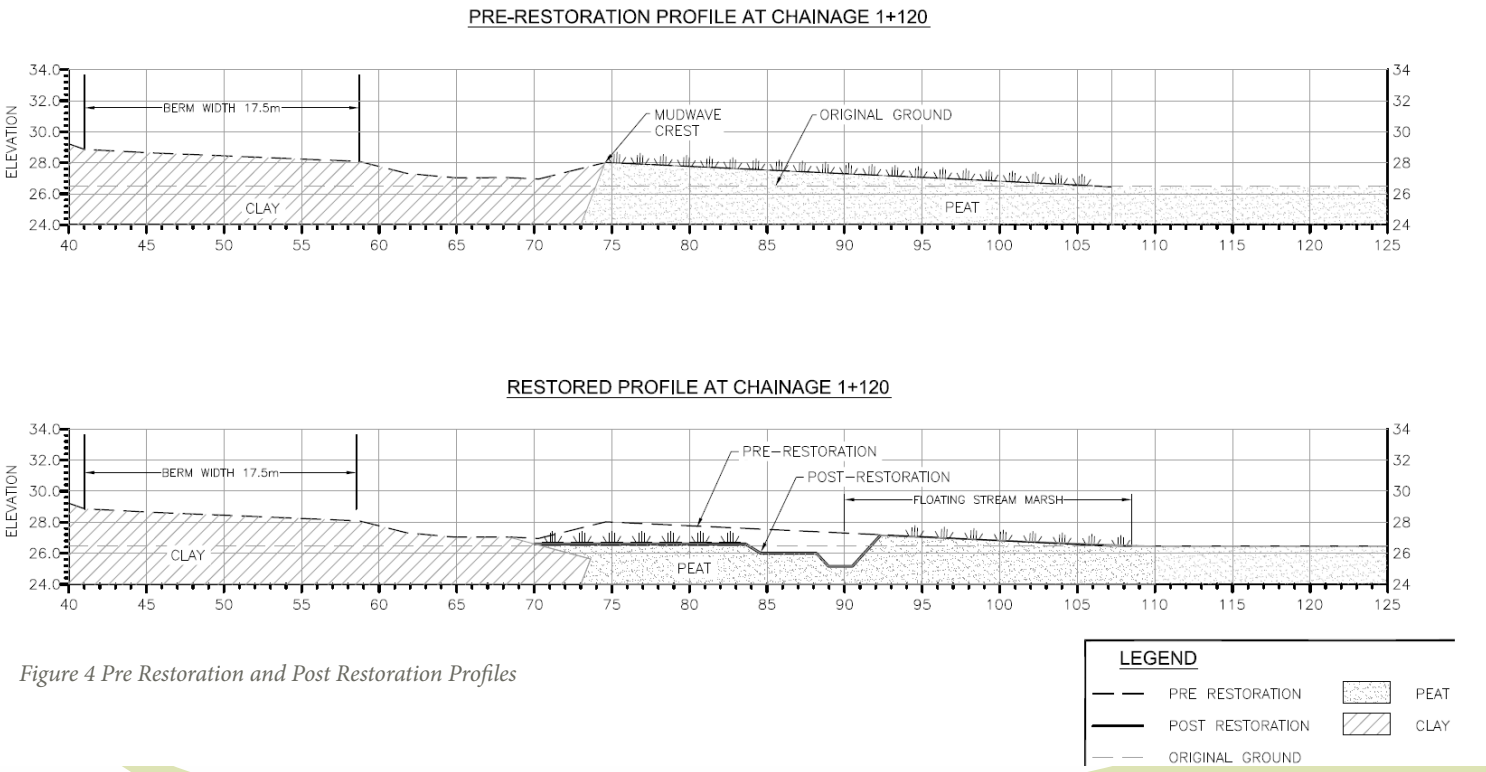

Figure 4 Pre Restoration and Post Restoration Profiles

Figure 5 Site overview at completion (October 2013). Berm slopes remain vegetated and largely undisturbed, temporary gravel road remains in place. Irregular surface of recovered portion of wetland will facilitate vegetation recovery and adaptability of community to changing conditions.

The profile of the restoration work at chainage 1+120 represents the area where the wetland surface was the highest (Figure 4). Prior to restoration work, the crest of the heaved surface in this profile was 28 m asl approximately 74.5 m from the twinned highway centerline. At the conclusion of the restoration, the maximum elevation of the remaining heaved surface was 27.2 m asl approximately 92.5 m from the twinned highway centerline.

Of the originally-delineated heaved wetland area, 0.30 ha remains at the site. The profile in Figure 4 shows the deeper water area that was left adjacent to the crest of the remaining heaved surface to encourage the crest to slump into this area. It is expected that the crest may continue to settle in the winter and spring of 2014, allowing more wetland area to be recovered from the unintentional alterations. South of the remaining crest of heaved wetland, the soils are saturated and unstable. These areas, which were originally delineated as elevated above pre-construction conditions and comprised part of the altered area, are now observed to be floating and saturated.