Geoff Sweaney

Professional and Academic Qualifications

Member of the Chartered Institute of water and Environmental Management (MCIWEM, C. WEM)

1993: Institution of Environmental Sciences Postgraduate Diploma in Advanced Environmental Practice. Farnborough College of Technology / University of Surrey.

1991: BA (Hons) in Physics and Philosophy, Corpus Christi College, Oxford University

In a Nutshell

Geoff has 24 years of varied professional experience in pollution mitigation and environmental engineering, having worked for large engineering companies and small specialist environmental consultancies on projects in the public and private sector, and more recently for NGOs. He has successfully completed projects in water engineering, land remediation, engineering strategy and technical research. With a sound all-round knowledge of science and engineering disciplines and a flair for communication, Geoff is an excellent contributor to multi-disciplinary projects, particularly ones requiring new approaches and innovation. Geoff has a technical specialism in "Natural Treatment Systems", the science of creating wetland ecosystems to improve the quality of water. He is the serving chairman of the Constructed Wetland Association.

Key Technical Skills

- Wetland treatment systems
- Contaminated Land and Groundwater Remediation
- River restoration
- Sustainable Urban Drainage systems
- Design manager / project manager of water engineering and research projects
- Published author and experienced in delivery of conference papers

Life outside work

I have 3 sons aged 6, 8 and 11 who occupy a lot of the time that I am not working. I also have a commitment to the Constructed Wetland Association (CWA) and assist the Colne and Calder Rivers Trust and Bat Conservation Trust on a voluntary basis. I do a bit of hill walking and easy rock climbing in my spare time, and have managed to convince my boys that this can be some kind of fun. I grow veggies with varied success on an allotment, and have had good success making my own excellent beer from raw ingredients (malt, hops etc). I also play folk/ blues acoustic guitar, but no longer expect anyone else to get any pleasure from this.

Professional experience

April 2015-Present: Wetland Engineering

Geoff runs his own design consultancy, specialising in river and habitat restoration projects, natural treatment systems and sustainable drainage. He works as an associate for a number of environmental consultancies, and has delivered numerous wetland treatment and habitat creation project for private sector and third sector clients.

May 2014-present: Chairman of the Constructed Wetland Association (CWA)

Geoff is responsible for leading and co-ordinating the CWA committee, including organisation of the CWA's annual conference. Projects have included co-ordinating CWA response to DEFRA's reform to small sewage discharges, leading a project to develop new standard for constructed wetlands to treat septic tank effluent, reviewing and revising the CWA's accreditation scheme for wetland designers.

May 2009 - November 2014: Principal consultant at Halcrow Group Ltd/ CH2M Hill Ltd

Working within CH2M Hill's Water business, Geoff had a number of roles including Regional Technology Leader for Natural Treatment Systems (Europe region), Design manager and project manager for civil engineering projects in the Wastewater and River Engineering sectors; technical lead for wetland treatment projects (SuDS design, river quality improvements, landfill leachate treatment, environmental remediation) and project manager of engineering strategy development for UK water companies and UKWIR.

December 2006 - May 2009: Team Leader at Halcrow Group Ltd

Working in Halcrow's Environment business, Geoff led the UK North Risk and Remediation team, which was a technical team delivering contaminated land investigation and remediation. Responsibilities included recruitment, performance reviews, resource management and technical oversight of a team of up to 9 people. Projects included land development, highways, flood defence projects for public and private sector clients.

October 2004- December 2006: Senior/ principal consultant, Arcadis Gerraghty and Miller International Ltd.

Geoff worked as a technical contaminated land consultant for private sector clients. Geoff was taken on to manage a new retail sector client which he accomplished successfully. Geoff also took on management of contaminated land services for 2 major housing developments and prepared proofs of evidence for a planning enquiry.

November 1993- October 2004 Graduate through to principal consultant, Oceans-ESU Ltd

Geoff joined Oceans as a graduate, operating a 7 Ha wetland treatment plant at ICI Chemicals and Polymers in Billingham Cleveland. Over his 10 years at Oceans, he became central to the technical delivery of this small (up to 20 strong) specialist environmental consultancy, designing wetland treatment systems for industrial wastewaters, urban drainage and environmental remediation, supervising construction and operating these systems. He worked as technical lead and project manager for many of the company's land and groundwater remediation projects for blue-chip clients.

Publications:

CM Weedon, C Murphy, G Sweaney 2017. **Establishing a design for passive vertical flow constructed wetlands treating small sewage discharges to meet British Standard EN 12566.** Environmental Technology Volume 38, Issue 2 pp 220-229.

Sweaney, G 2011. **The Performance of Sustainable Wastewater Treatment Works Solutions** UKWIR Report 11/WW/04/16 April 2011. ISBN: 1 84057 585 9

Sweaney G.D., Gittings C.A., Langstraat J.W., Norton M.R. and Stephenson P 2009. **Low Carbon Technology for Wastewater Treatment.** Proceedings of the 3rd European Water and Wastewater Management Conference, Edited by Horan, N. Aqua Enviro, September 2009.

Conference Presentations:

September 2016: 10th European Wastewater Management Conference and 12th Constructed Wetland Association annual conference. "A Standard Approach to Treating Small Sewage Discharges using Constructed Wetlands

October 2014: 8th EWWM Conference and Constructed Wetland Association annual conference. Two papers presented: 1: Advances in removal of metals and metalloids using passive technologies; 2: Standards and Accreditation for Constructed Wetlands

June 2011: CWA annual Conference The Performance of Constructed Wetlands in the UK Water Industry

March 2011: CIWEM annual Conference "The Performance of Sustainable Wastewater Treatment Systems in the UK Water Industry"

October 2009: 3rd European Wastewater Management Conference. "Low Carbon Technology for Wastewater Treatment"

Professional Training Summary

2015:	**River Restoration – Project Planning and Delivery**
	London Wildlife Trust/ River Catchment Partnerships
2015:	**River Invertebrate Monitoring**
	Riverfly Partnership:
2014:	**EUSR Water Hygiene Certificate**
2011:	**Use of Wetlands for Water Pollution Control**
	Aarhus University:
2009:	**Environmental Impact Assessment Technical Specialist Course**
	Halcrow Group Ltd
2008:	**PM03 Project Management**
	Halcrow Group Ltd
2005:	**PFA Forecourt Safety Training**
2002:	**Contaminated Land Exposure Assessment**
2001:	**Applied Groundwater Flow and Contaminant Transport, Modelling**
	University of Birmingham/ ESI:

Project experience summary

2015-2016: Wetland Engineering

Lake Restoration Year: 2017	Geoff is part of a multi-disciplinary team planning the restoration of a sequence of man-made lakes in Northamptonshire, UK.
SUDS options appraisal Year: 2017	Geoff investigated opportunities for SUDS interventions to reduce contaminant risk in surface water discharges to the lower Lune and Lune estuary in Lancaster, UK
Tertiary Treatment Options Appraisal Year: **2016**	Geoff conducted an appraisal of the options for wetland treatment for a proposed new-build wastewater treatment works to serve a settlement of 10,000 people in the Isle of Man.
Farm Wetland Design Year: 2016-2017	Geoff has designed a farm wetland to treat runoff from a dairy farm in Lancashire as a part of a project aimed at improving coastal water quality by tackling diffuse sources of pathogen and nutrient load in the catchment.
Wetland Design Year: **2016**	Geoff designed farm wetlands to deliver natural flood management, ecosystem enhancement and educational benefits at two sites in the Ribble Valley, UK.
Ochre Control, Norfolk Year: 2016	Geoff advised upon the likely impacts upon water chemistry of reducing the levels in drainage ditches on HLS farmland in a sensitive ecological setting in the Norfolk Broads area. The project was to involve removing ochre from pumped drainage water, and introducing drainage control to prevent salinity increase and protect groundwater in surrounding ecosystems.
Wastewater Treatment System Refurbishment Year: 2016	Geoff was lead designer for the options appraisal for upgrade of the wastewater treatment system for a school housing up to 150 people. The treatment system had been installed in the 1960s and was under-performing. Options included refurbishment of the existing activated sludge system and replacement with a low energy treatment alternative.
Blanket bog restotation Year: 2015	Geoff led a specialist investigation into the feasibility of repairing relict upland catch-waters to re-wet areas of degraded blanket bog to achieve habitat restoration and flood mitigation benefits.

2014-2016 Calder and Colne Rivers Trust

TOUCH project Year: 2015-2016	Geoff took a central role in the development of this project to develop the potential of a tributary of the River Calder in West Yorkshire, UK. The project aimed to improve fish passage at 5 weirs, and to engage the community with their River by developing it's potential as a resource for wildlife, education, leisure and tourism. Geoff achieved enthusiastic support from the town council and Local Nature Partnership by presenting the project at a number of events, and forged partnerships with local interest groups that could help to deliver the project.

2014-2016- Constructed Wetland Association

Accreditation scheme Year: 2014-2016	Geoff led reform of the CWA's accreditation scheme for constructed wetland practitioners, to make the accreditation process more transparent, universally applicable and attractive to its members.
Standard for Wetland Treatment of Small Sewage Discharges Year: 2014-2016	Geoff represented the CWA during DEFRA's reform of regulation surrounding discharges from septic tanks in England. During the consultation, it became apparent that it would be beneficial to develop a standard approach for wetland treatment in order to qualify for exemptions from environmental permitting. To this end, Geoff led a workshop of the leading wetland treatment designers to agree the content of the standard design, which was subsequently written as a national standard.

2009-2014 Halcrow Group Ltd/ CH2M Hill's Water Business

Gulley Waste Treatment System Year: 2014	Geoff was designer/ project manager of an innovative system to separate and treat the liquid fraction of waste that the client collected by emptying gullies during maintenance of the road network for the Highways Agency in northeast England, UK. The solution was a separating mechanism within specially designed unloading bays which drained into a wetland Treatment System at one on the client's depots. Activities included liaising with the depot operations manager, designing and commissioning surveys and producing design drawings.
Reservoir Abandonment Year: 2014	This project was to render a former dam incapable of holding water, so it is no longer covered by the reservoirs act. This dam had long been out of use and there were complex environmental implications for the scheme. Geoff's role was to design treatment wetlands to improve the quality of surface water entering a proposed habitat creation scheme at the site of the former reservoir. This water quality was believed to be impaired by nearby former landfill sites and mining activity.
MSc Industrial supervisor Year: 2014	Geoff was the industrial supervisor for an MSc Student from Imperial College London. The title of the MSc was "Analysis of Biological Oxygen Demand Reduction Performance of Tertiary Treatment Wetlands of the UK Water Industry using the P-k-C* Model". Geoff provided the subject for the MSC and mentored the student through the technical discipline of modelling wetland treatment performance.
Managed Realignment Year 2014	Geoff led the design of an innovative system to passively treat leachate from excavation spoil on a former brine extraction site that is to be restored as 20 hectares of salt marsh. The treatment system had to be designed operate in the inter-tidal zone, so be robust to intermittent inundation with seawater, yet effectively mitigate the effect of contaminants from runoff and leachate entering the creeks and ditches during low water.
River Restoration Year: 2014	Geoff had a role co-ordinating inputs to redesign a scheme to open up the River Roch in the centre of Rochdale in line with revised client requirements to be submitted with a Heritage Lottery Funding application.

Wastewater treatment options appraisal Year: 2014	Geoff provided specialist advice on a proposal to convert a wastewater treatment works in County Fermanagh, Northern Ireland to an "Integrated Constructed Wetland" (ICW) treatment system. The discharge from the works was a particularly sensitive freshwater lake which is a candidate SAC and contains an endemic fish species. Geoff advised upon the potential strengths and limitations of the ICW approach, and identified potential sites for a new ICW treatment system and the feasibility of such a scheme.
SuDS for highway development Year: 2014	Geoff designed a sustainable drainage scheme incorporating infiltration ponds, detention ponds, swales and a 10m drop cascade for a major highways scheme in a sensitive location. Geoff had to co-ordinate his work closely with ecologists, geotechnical engineers contaminated land specialists and highways engineers to discharge the requirements. This scheme was developed using a BIM system with 3D drawings and clash detection in complex before/ after topographical models.
State of the Technology reports: Resource Recovery Year: 2014	A major UK water company commissioned report to brief them on the maturity of available technologies to recover resources from municipal wastewater and biosolids. Geoff co-authored the report, managing the specialist inputs and advising upon the fit of available technologies with the client's existing infrastructure and facilities.
River Restoration Year: 2014	This was an investigation of the issues surrounding deterioration in water quality in the upper reaches of a river in Nottinghamshire. Working with CH2M's hydrologists and ecologists, Geoff devised an outline design for natural water quality improvements to reduce sediment load during storm events. The improvement options needed to include a "soft engineering" river restoration approach sensitive to the hydro-morphological and ecological objectives for the river.
River Asset Surveys Year: 2014	Geoff devised the delivery strategy, and began to manage this project before he left CH2M in December 2014. The project was to survey, log and assess the condition of assets along over 50km of open course and culverted waterways over 4 local authority districts then to model the flood risks associated with these waterways.
Airport Water and Wastewater Study Year 2013-2014	Working on a project to investigate the options for dealing with water and wastewater requirements associated with a proposed new runway at a major UK Airport, Geoff was responsible for assessing wastewater treatment options including artificially aerated wetlands, passive wetland treatment and MBBR options, and developing outline design for a report for submission to the Airports Commission.
Wetland Remediation Year 2013-2014	Geoff was the remediation technical lead, conducting an appraisal of remedial options and completing the outline design of wetland treatment solution to reduce the risk of pollution from a surface water drainage system following accidental release of hydrocarbon contamination to the environment around a transport depot in North London, UK.
Low Carbon Water Year:2013	Repeat commission following the successful "Low Carbon Sub- Catchment" project for the client's wastewater business, "Low Carbon Water" was a project to devise similar tools to help the client identify carbon saving opportunities within the clean water supply business of a major UK water company.

UID remediation project 2012-2013	Geoff was design manager for a major capital programme involving improvements to wastewater infrastructure to correct four CSO discharges that required improvement. The commission required management of complex interfaces between the design team and the engineers, planners, land agents, management and operations teams within the client body. There were considerable challenges to address such as access to remote sites, major town-centre road crossings, and working in and around customers' private residences.
Wastewater Pumping Station Improvements Year:2012-2013	Geoff was Design Manager of multi-disciplinary design teams to investigate and deliver the design of improvements to wastewater pumping station for a major UK water company. The project challenges included very poor prior knowledge of the wastewater infrastructure which had recently been adopted, and involved extensive hydrological and engineering studies of the wastewater networks and rising main.
Phosphate Position Statement Year:2012	Geoff researched and wrote a report detailing the client's position regarding the issues surrounding phosphorous in the environment and the associated cost to the client. This project had a very tight delivery date, and a large number of interested parties within the client body that had to be interviewed.
Land Bank Study Year:2011	Geoff was design manager for a multi-disciplinary study to investigate constraints on the land bank for sludge recycling, and forecast land bank availability in the short, medium and long term. This commission was for a major UK water company.
Low Carbon Sub Catchment Pilot Study **Year: 2011**	Geoff was the project manager of a small delivery team comprising 2 consultancy companies and employees of the client – a major UK water company. Embedded within the client organisation, the team was charged with devising new tools and business processes to enable the client to identify and realise energy and carbon saving opportunities within their wastewater business. This project was singled out by the client for particular praise for its innovative approach and collaborative working.
SuDS Feasibility Study Year: 2011	Geoff investigated the feasibility of achieving water quality enhancements in a north London waterway by pre- treating surface water runoff using a SuDS scheme.
Performance of Sustainable Wastewater Treatment Systems Year: 2010-2011	Geoff was project manager for research to investigate the performance of constructed wetlands, lagoons and grass plots in use by UK water companies. He led steering group meetings with representatives from 9 UK water companies and was author of national guidance resulting from the research.

Landfill Remediation Year: 2010 - 2014	Geoff was the technical lead for a project to provide a leachate treatment system for a former landfill site, and to remediate contaminants that were thought to be escaping from the landfill. Geoff reviewed the geo-environmental studies for landfill site, designed an environmental monitoring programme to supplement pre-existing data, designed and wrote specifications for a wetland treatment system to mitigate impact of contaminants on the local river catchments. 2 separate water sources were identified for treatment: 1) leachate from a containment lagoon, which will be treated passively using dosing siphon and vertical flow wetland, 2) a spring which was depositing ferric iron into local surface water systems. The treatment design for this source is a surface flow wetland.
Pollution Mitigation Year: 2010-2011	Geoff completed outline and detailed design and wrote specifications for an innovative passive treatment system to mitigate risk from dissolved heavy metals in runoff from the M6 Motorway in Cheshire, UK. The solution included attenuation ponds and compost medium up-flow wetland treatment system.

2006-2009 Halcrow Group Ltd's Environmental Consulting Business

Groundwater and Leachate Assessment Year: 2008 - 2009	Geoff provided technical support to a local authority during the development of a contaminated site as a Park and Ride hub. Geoff advised upon the environmental risks presented by a closed municipal landfill site adjacent to a wetland SSSI site and wrote chapters in the Environmental Assessment. Geoff's inputs included an assessment of leachate generation capacity of the landfill based upon bespoke assessments of infiltration/runoff ratios and modelling of leachate load using the "Landsim" model.
North Shore Remediation Year: 2008-2009	Geoff was responsible for the management of technical inputs into a ground investigation to inform the design and specification of a permeable reactive barrier remediation system to provide protection from contaminated groundwater.
MoD Site redevelopments: Year: 2008-2009	Geoff led the ground investigation teams to design and procure ground investigation and managed specialist inputs relating to Ground Conditions for Environmental Impact Assessments for two large ((60 Hectare +) former Ministry of Defence sites in Greater London, UK that were proposed for mixed use redevelopment.
Blyth Power station site investigation Year: 2008	Geoff managed the design and implementation of contaminated land investigation for development of a new power station on the 65 Ha site of the old power station, ash tip and coal stacking yards adjacent to the Blyth Estuary SSSI.

North-west England large brownfield redevelopment projects Year: 2007-2009	Geoff was responsible for technical management and coordination of site investigations and remediation of numerous large redevelopment sites a private property development company, including client-facing inputs at design-team meetings. Geoff's projects include: • Geotechnical, Geoenvironmental and geohazards Investigation and remedial design for former colliery site which had also been used for warehousing and HGV maintenance and refuelling. The site contained a number of disused mineshafts, shallow mine workings, an oil spill, underground fuel tanks and a disused culvert running beneath the site in an unknown position. • Ground investigation in advance of major regeneration in Liverpool. Challenges included and elevated risk of unexploded ordnance owing to heavy bombing of the area in WWII, and the site was in ownership of several different parties, with differing access requirements. • Remediation of former landfill with substantial quantities of Le Blanc waste (Galligu). Remedial design included cement stabilisation of le Blanc waste.
Peer review, Chemical works, Manchester Year: 2008 - 2009	Geoff reviewed third party reports to produce a conceptual ground model and advise client upon ground conditions and liabilities associated with purchase of an active chemical works site in Manchester. Following purchase, the vendor was obliged to remediate that site in accordance with a legal agreement, and Geoff reviewed risk assessments and remediation proposals of the vendor's consultants to protect the interests of the client.

2004-2006: Arcadis GMI Ltd, Leeds.

Planning Enquiry Year: 2006	Geoff managed a site investigation and conceptual remedial design for redevelopment of a former industrial landfill and colliery site in the Midlands for residential use, and prepared proofs of evidence for the planning inquiry which he attended in support of the expert witness.
Package treatment plant investigations Year: 2005 - 2006	Geoff managed a team of drainage and mechanical engineers to troubleshoot package sewage treatment plants at a number of petrol stations sites which were failing to meet their discharge consents
Client Manager Year: 2004-2006	Geoff was client manager for a new client for the Arcadis GMI's consultancy business, their first incursion into the retail sector. Geoff assisted the client with management of their brownfield site portfolio and development of new sites in line with ambitious expansion plans. Geoff was successful in developing a trust relationship with the client, using his knowledge of the English planning process to assist the client in developing its strategy for ground investigation.

1993-2004 Oceans-ESU Ltd.

Gasholder Effluent Treatment Trials Year: 2004	Geoff Designed and constructed a pilot system to study the efficiency of treatment of contaminated runoff from a gasholder in Northern England using containerised treatment wetlands.
Various treatment wetland projects Year:2002 - 2004	Geoff designed and implemented treatment wetlands for a variety of industrial and agricultural effluents, including: Removal of heavy metals and ammonia from runoff from a waste transfer station; • Treatment of liquid waste from a food factory, • 2 systems to treat runoff from fire training grounds at airports • 2 systems to treat runoff from dairy farms • Treatment of runoff from a waste transfer station
Bioremediation of High BOD Effluent 2002-2004	Geoff was the project manager and design manager for research programme in partnership with the client to treat extremely high BOD (12000mg/l) 'Pot Ale' effluents from a whisky distillery using an innovative method involving white rot fungus. Geoff's inputs included design and management of construction of pilot scale plant for batch reactor and in-line reactor alternatives.
Oilfield passive treatment system, Sudan Year: 2004	Geoff was part of the team responsible for commissioning a sequence of treatment lagoons and wetlands removing entrained oil from produced water at an oilfield in Sudan. The project was designed to remediate produced water to be used for irrigation water for forestry and orchards.
Steelworks Effluent Treatment, Australia Years: 2000, 2002 and 2004	Geoff served three terms as the relief manager for the operation of the wetland system treating coke ovens effluent in arid climate at a steelworks in South Australia**.**
Chlorinated Solvent remediation, UK Year: 1999-2004	Geoff was the technical lead and project manager for remediation of a former tannery in southeast England that was being redeveloped as a supermarket. Geoff reported to the development design team and spoke at a public meeting with local residents. Shallow groundwater was contaminated with chlorinated solvents. There was a very tight construction programme and a high public site profile. The technical solution included removing the most heavily contaminated soils, and containing the solvent plume by pumping from the centre, and re-injecting treated groundwater.
Chemical Works Remediation, UK. Year: 1998 - 2004	Geoff was a remediation scientist on a project to clean up the site of a pesticide factory in southern England. Geoff had responsibility for conducting pilot scale trials to augment natural attenuation of contaminants in soils and for commissioning and testing a treatment wetland to remove pesticide from groundwater.

Landfill Leachate treatment, UK Year 1996 - 2004	Geoff commissioned and evaluated a treatment wetland with an innovative reactive peat media pre-treatment unit that removed cadmium and zinc from groundwater at a former industrial landfill in County Durham, UK. Geoff redesigned the reactive medium system to overcome difficulties with hydraulic flow that were experienced initially. Once the treatment system was proven to be effective, the client was able to decommission a pre-existing chemical dosing treatment system, resulting in a huge saving in operational costs.
Oil Shale Minewater Treatment, UK 1996 – 2004	Geoff commissioned the Phase 1 soil-media wetland at an award winning site reclamation project in Scotland. The system was designed to treat minewater and groundwater contaminated with PAH and surfactants. Geoff conducted performance evaluations of the phase 1 system, and was responsible for design and specification of the Phase 2 treatment wetland and overall project and client management of delivery of the treatment systems.
Steelworks reed bed treatment System, UK 1994 – 1999	Geoff was an operations engineer conducting quarterly visits to assist and advise the operators at the treatment system, Surveying and monitoring the wetland and reporting on the effect of recent modifications to the treatment system.
Chemical Works Reed Bed Treatment System 1993 – 1995	Geoff was the full time operations engineer during the commissioning of a 5 Hectare treatment system at a major UK Chemical works. Geoff's duties included day-to day operation and effluent testing, performance evaluations and reporting, conducting bench scale and pilot scale treatability trials for new effluent streams.