Sanitary Survey Report and Sampling Plan for Lough Foyle

Produced by

AQUAFACT International Services Ltd

On behalf of

The Loughs Agency
The Food Standards Agency of Northern Ireland
The Sea Fisheries Protection Authority
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Glossary

ADCP	Acoustic Doppler Current Profiler
AFBI	Agri-Food and Biosciences Institute
ANOVA	Analysis Of Variance
APP	Average Physical Product
ASP	Amnesic Shellfish Poisoning
BAP	Biodiversity Action Plan
Bathymetry	The measurement of water depth at various places of a water body
Benthic	Of, pertaining to, or occurring at the bottom of a body of water
Biogenic	Produced by living organisms or biological processes
Bioturbation	The stirring or mixing of sediment or soil by organisms
BoCCI	Birds of Conservation Concern in Ireland
BOD	Biochemical Oxygen Demand
BTO	British Trust for Ornithology
Bysso-pelagic drifting	Drifting or dispersal that is aided by long byssus threads produced by young post-larval mussels
Byssus Threads	Strong filaments by which mussels attach themselves to fixed surfaces
CD	Chart Datum
CEFAS	Centre for Environmental, Fisheries & Aquaculture Science
CSO	Central Statistics Office
Cultch	Shell clumps, shells, and shell fragments without attached live oysters or boxes
DARD	Department of Agriculture and Regional Development
DED	District Electoral Divisions
Depuration	The process of purification or removal of impurities
Detrital/Detritus	Non-living, particulate, organic fragments which have been separated from the body to which they belonged
Diurnal	Occurring once every 24 hours or daily during daylight hours
DSP	Diarrhetic Shellfish Poisoning
EC	European Communities
E. coli	*Escherichia coli*
EMS	Environmental Monitoring Stations
Epifauna	Animals living on the surface of marine or freshwater sediments
Epiflora	Plants living on the surface of marine or freshwater sediments

Fecundity A measure of fertility or the capability to produce offspring

Fetch The distance a wave can travel towards land without being blocked

FSA Food Standards Agency

FSANI Food Standards Agency of Northern Ireland

Gamete A reproductive cell that fuses with another gamete to produce a zygote, which develops into a new individual

Gametogenesis The formation or production of gametes or reproductive cells

Genotype The genetic makeup of an organism

GESAMP Joint Group of Experts on the Scientific Aspects of Marine environmental Pollution

GIS Geographical Information Systems

GPS Global Positioning System

GSM Global System for Mobile Communication

Heterozygosity Having two different alleles of the same gene

Hydrodynamic Forces in or motions of liquids

Hydrography The description and analysis of the physical conditions, boundaries, flows and related characteristics of water bodies

INAB Irish National Accreditation Board

Interspecific Competition Competition for resources between different species

Intraspecific competition Competition for resources between members of the same species

I-WeBS Irish Wetland Bird Survey

LAT Lowest Astronomical Tide

LPHC Londonderry Port and Harbour Commissioners

Marpol 73/78 International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978. Marpol is short for Marine Pollution, 73 for 1973 and 78 for 1978.

Metamorphosis The transformation from the larval to the adult form that occurs in the life cycle of many invertebrates and amphibians

MPN Most Probable Number

MSD Marine Sanitation Device

Multilocus Occurring at more than one position or locus on a chromosome

NH_4 Ammonium

NIEA Northern Ireland Environment Agency

NISRA Northern Ireland Statistics and Research Agency

NITB Northern Ireland Tourist Board

Nitrification The conversion of ammonia to nitrate

NI Water Northern Ireland Water

NO_2 Nitrite

NO_3 Nitrate

NRL National Reference Laboratory

OSPAR Oslo/Paris convention (for the Protection of the Marine Environment of the North-East Atlantic)

P Phosphorus

PAH Polycyclic Aromatic Hydrocarbons

Pathogenic Capable of causing disease

PCB Polychlorionated Biphenyls

PCP Pentachlorophenol

p.e. Population Equivalent

Plankton/Planktonic Pertaining to small, free-floating organisms of aquatic systems

PMFSC Pacific States Marine Fisheries Commission

Pseudofaeces Material rejected by suspension or deposit feeders as potential food before entering the gut

PSP Paralytic Shellfish Poisoning

PSU Practical Salinity Units

Pycnocline A region in a water body where water density increases relatively rapidly with depth

RAMSAR A term adopted following an international conference, held in 1971 in Ramsar in Iran, to identify wetland sites of international importance, especially as waterfowl habitat.

Regulation (EC) 854/2004 REGULATION (EC) No 854/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption

RIB Rigid Inflatable Boat

RMP Representative Monitoring Point

SAC Special Area of Conservation

Semi-diurnal Occurring every 12 hours

SOA Super Output Areas or ward

Suspension feeders Animals that feed on small particles suspended in water

SPS Sewage Pumping Station

SPA Special Protection Area

SFPA Sea Fisheries Protection Authority

SMILE Sustainable Mariculture in northern Irish Lough Ecosystems

SS Suspended Solids

SWAN Simulating WAves Nearshore

TBTO Tributyl Tin Oxide

Telemetry The measurement and transmission of data from remote sources to receiving stations for recording and analysis

TPP Total Physical Product

UKAS United Kingdom Accreditation Service

UKHO United Kingdom Hydrographic Office

UNCED United Nations Conference on Environment and Development

Vector A carrier, which transmits a disease from one party to another

VTMS Vessel Traffic Management System

WeBS Wetland Bird Survey

WWTW Waste Water Treatment Works

1. Executive Summary

Under Regulation (EC) 854/2004, there is a requirement for competent authorities intending to classify bivalve production and relaying areas to undertake a sanitary survey. The purpose of this is to inform the sampling plan for the Official Control Microbiological Monitoring Programme, the results of which determine the annual classification for bivalve mollusc production areas. Other wider benefits of sanitary surveys include the potential to improve the identification of pollution events and the sources of those events so that in the future remedial action can be taken to the benefit of the fisheries in the area.

Lough Foyle is a 186km^2 shallow estuarine sea Lough located along the northern coast of Ireland between Co. Donegal in the Republic of Ireland and County Derry in Northern Ireland. It exhibits extensive intertidal and subtidal areas of mud flats and sand flats, which are intersected by tidal channels. The Lough is relatively shallow, with an average depth of approximately 4m. The deeper tidal channels reach an average depth of approximately 8-12m, whereas the entrance channel, where the width is constrained by headlands, is over 20m deep. The Lough supports populations of blue mussels (*Mytilus edulis*), native oysters (*Ostrea edulis*) and Pacific oysters (*Crassostrea gigas*), all of which have designated fisheries within the Lough.

This report attempts to document and quantify all known sources of pollution to the Lough. It was concluded that the main sources of pollution in Lough Foyle come from direct sewage discharges into the Lough and into the Rivers Foyle, Faughan and Roe and from non-point sources related to agricultural land-use in the wider Foyle area. There are also seasonal variations in the contribution of microbiological sources of contamination from wildfowl (birds), boats (shipping and recreational activity) and tourism.

The southeastern section of the Lough is more vulnerable to pollution due to the shallow depths (increased suspended sediment concentration) and weak currents than the northwestern section which has deeper depths and much stronger currents. It was on the basis of hydrodynamic and spatial features (i.e. areas of similar depth, tidal currents, suspended sediment levels and freshwater influence) that resulted in the Lough been divided into 4 production areas. Each of these production areas contain one Representative Monitoring Point

(RMP) for each of the species found within it i.e. blue mussel, native oyster and Pacific oyster. In total there are 9 RMPs in the Lough, to be sampled monthly.

2. Overview of the Fishery/Production Area

2.1. Location/Extent of Growing/Harvesting Area

Figure 2-1 shows the locations of the blue mussel (*Mytilus edulis*) grounds within Lough Foyle. This map was produced following an extensive baseline survey by CEFAS (Centre for Environmental, Fisheries & Aquaculture Science) (2007). During the CEFAS (2007) survey, it was not possible to distinguish between wild and re-laid mussels in all cases; however, experienced opinions were sought as to the likely locations of wild and re-laid mussels. The mussel grounds that could not be differentiated were labelled ‘undifferentiated mussel’. There is 23.34km^2 of re-laid mussel ground, 4.11km^2 of wild mussel ground, 7.62km^2 of undifferentiated mussel ground and 2km^2 of intertidal mussel beds. The intertidal mussel beds are located at Vances Point, north of Leper’s Point and south of Ture Point on the western shoreline, at Longfield Bank east to Cross Bank on the southern shoreline and at Shell Bank and approximately 1km west of Balls Point on the eastern shoreline.

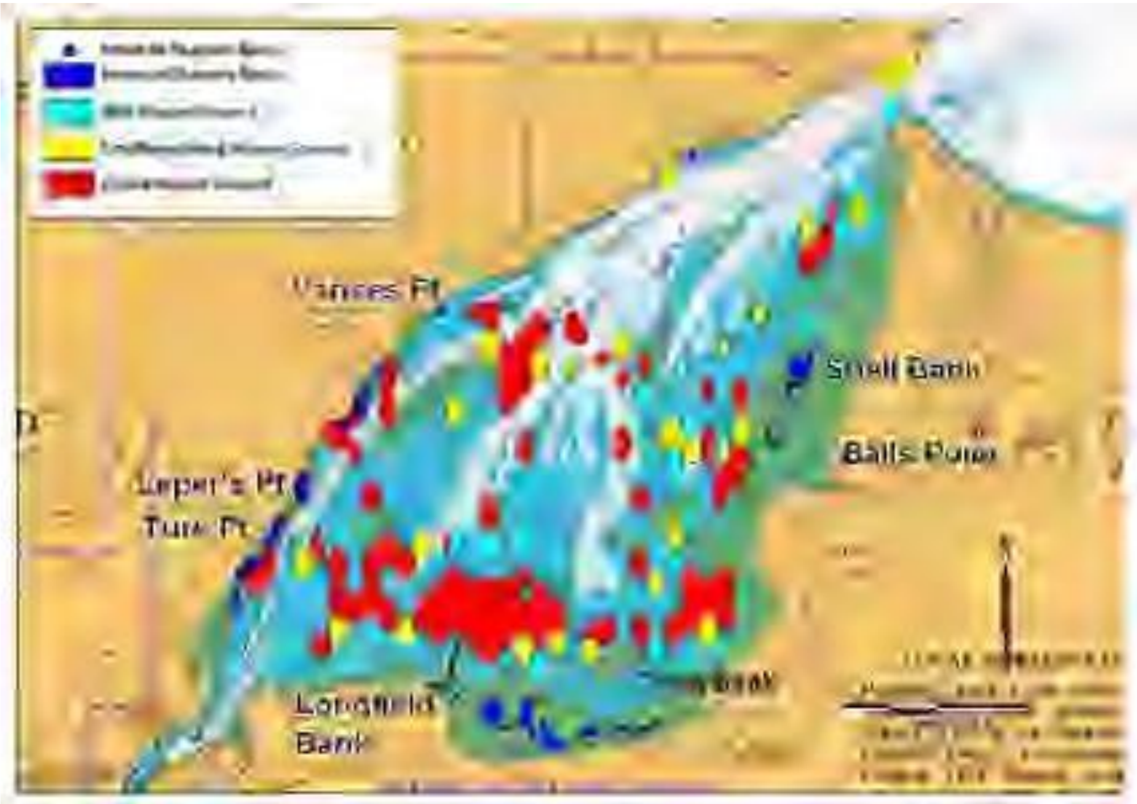

Figure 2.1: Mussel grounds located within Lough Foyle (Source: CEFAS, 2007 & Loughs Agency).

Figure 2-2 shows the native oyster (*Ostrea edulis*) grounds within Lough Foyle. This map was also produced following an extensive baseline survey by CEFAS (2007). The oyster grounds were typified not only by the presence of oysters but also of suitable shell cultch. The cultch typically contained oyster shell, but also clam, cockle and mussel shell. The oyster ground shown in Figure 2-2 includes locations that, while containing few if any oysters, contained quantities of cultch which would suggest that it had supported oysters in the past and might do so again in the future. There is 63.83km^2 of potential oyster grounds and 0.02km^2 of intertidal Pacific oyster grounds, which are farmed within Lough Foyle. The intertidal oyster grounds are located along the western shoreline and extend from Culmore Point to Black Point located some 13km northeast. Figure 2-2 also shows the wild Pacific oyster sites recorded on native oyster beds during a Loughs Agency survey in 2009 (Loughs Agency, 2009a). Wild Pacific oyster populations were observed in 25 different locations around the Lough. Figure 2-3 shows oyster density class recorded from oyster beds during a Loughs Agency survey in 2010 (Loughs Agency, 2010). The High class oysters are located at The Perch, between Quigleys Point and Vances Point, between Ture Point and Quigley's Point and in the Crooked Channel. The majority of Medium class oysters are located between Ture Point and Castlecary, in the East Channel, South Middle Bank, Crooked Channel and northwest and northeast of the Crooked Channel. The remaining locations are all of a Low class.

Figure 2.2: Oyster grounds located within Lough Foyle (Source: CEFAS, 2007 & Loughs Agency).

Figure 2.3: Oyster density class in Lough Foyle (Source: The Loughs Agency).

2.2. *Description of the Area*

Lough Foyle is a 186km^2 shallow estuarine sea Lough located along the northern coast of Ireland between Co. Donegal in the Republic of Ireland and County Derry in Northern Ireland. The littoral communities found in Lough Foyle reflect the dominance of intertidal sands and muds (Ramsar, 2009). While rocky substrate is very limited, the extensive beds of common mussel *Mytilus edulis* provide a stable surface for acorn barnacle *Semibalanus balanoides* and edible periwinkle *Littorina littorea*. The polychaete green leaf worm *Eulalia viridis* is a common associate. The soft shores hold a range of invertebrates typical of mud and sand shores, with a number of species, such as the polychaete worm *Hediste diversicolor*, indicative of reduced salinity conditions. Balls Point has the highest diversity of sediment and community types in Lough Foyle and holds large populations of the bivalves sand gaper *Mya arenaria* and peppery furrow shell *Scrobicularia plana*.

The intertidal area consists of extensive mudflats, which support large beds of both common mussel *Mytilus edulis* and eelgrass *Zostera* spp. (Ramsar, 2009). The latter are amongst the largest colonies of this vegetation type in Northern Ireland and includes two species, narrow-leaved eelgrass *Zostera angustifolia* and dwarf eelgrass *Z. noltii*. Large stands of saltmarsh vegetation occur along the foreshore, displaying a transitional sequence of community types. The lower colonising saltmarsh consists of a community dominated by common saltmarsh- grass *Puccinellia maritima*. As tidal influence declines up the shore, this is replaced by a 'middle-marsh' community, characterised by red fescue *Festuca rubra* and mud rush *Juncus gerardii*. Localised stands of sea club-rush *Bolboschoenus maritimus* and common reed *Phragmites australis* also occur. The uppermost saltmarsh features a community dominated by common couch *Elytrigia repens*. Just west of the Ballykelly Bank, on the large intertidal mudflats which form part of a larger creek network, the lower saltmarsh communities are replaced by extensive stands of common cord-grass *Spartina anglica*. Brackish dykes behind the shore support a maritime aquatic and swamp vegetation, including the rare reflexed saltmarsh-grass *Puccinellia distans* and spiral tasselweed *Ruppia cirrhosa*.

Lough Foyle supports a wide diversity of species, especially shellfish. A survey carried out in the 1930s documented over 118 different species of mollusc (MacDonald & McMillan, 1951). Historically, fisheries in the Lough have included oyster, mussel and salmon. More recently, green and velvet crab, pacific oyster, lobster, clam, whelk, periwinkle and cockle fisheries have developed (CEFAS, 2007). Many fishermen diversify their fishing portfolio throughout the year to benefit from the seasonality of stocks.

Lough Foyle has numerous functions and processes, which are listed below:

- Dispersal of water quality characteristics brought about by the movement of water masses;
- Nutrient exchange;
- Bioturbation;
- Gas exchange;
- Primary and secondary production;
- Provision of habitats and ecosystems;
- Supports plankton populations, benthic infauna, epifauna, fish populations, bird populations;
- Propagule (e.g. seed stock/larvae) dispersion brought about by the movement of water masses;
- Fishing activities;
- Navigation/trade;
- Aquaculture activities;
- Socio-economic activities;
- Recreational activities;

Oyster beds themselves perform important ecological functions including supporting oyster populations, providing refuge for fish and invertebrates that retreat from exposed intertidal flats and estuarine marshes at low tide, and serving as spawning and nursery areas for numerous species of aquatic animals. Oysters are an important food source for many other animals including starfish, crabs, fishes, and waterfowl.

Beds of mussels provide substratum for epiflora and epifauna, while the mussel matrix provides interstices and refuges for a diverse community of organisms. The buildup of mussel muds under the bed supports infaunal species, and in sedimentary habitats, the underlying sediment may support an enriched infauna. The diversity and species richness increases with the size and age of the mussel bed. In sedimentary habitats, mussel beds stablise and modify the substratum, and mussel beds have a higher biodiversity than surrounding mudflats. Mussel beds may also form biogenic reefs and *Mytilus edulis* is considered to be a habitat engineer

(Holt *et al*, 1998; Hild & Günther, 1999).

In addition, larval production represents a significant contribution to the zooplankton, forming an important food source for herring larvae and carnivorous zooplankton (Seed & Suchanek, 1992). Dense beds of bivalve suspension feeders increase turnover of nutrients and organic carbon in estuarine (and presumably coastal) environments by effectively transferring pelagic phytoplanktonic primary production to secondary production (pelagic-benthic coupling) (Dame, 1996).

Within Lough Foyle there is approximately 23.3km^2 of re-laid mussel ground, 4.1km^2 of wild mussel ground, 7.6km^2 of undifferentiated mussel ground and 0.3km^2 of intertidal mussel ground. (See Figure 2-1). Figure 2-2 shows the locations and boundaries of the potential oyster ground (63.8km^2), Pacific oyster intertidal farms (0.02km^2) and wild Pacific oyster grounds within Lough Foyle.

In 2007 Ferreira *et al.* produced a carrying capacity assessment of Lough Foyle as part of the SMILE (Sustainable Mariculture in northern Irish Lough Ecosystems) Project. The approach used in the SMILE Project combined field data acquisition, experimental work on shellfish feeding behaviour, database and GIS and the implementation and coupling of various types of dynamic models. The concept of carrying capacity of an ecosystem for natural populations is derived from the logistic growth curve in population ecology, and defined as the maximum standing stock that can be supported by a given ecosystem for a given time. Carrying capacity estimates in terms of aquaculture (production) may be defined as the stocking density at which production levels are maximised without having a negative impact on growth. Subsequently, carrying capacity for shellfish culture has been further defined as the standing stock at which the annual production of the marketable cohort is maximized. This will differ substantially from the ecological carrying capacity and is termed the sustainable aquaculture carrying capacity.

For bivalve suspension feeders, the dominant factors determining the sustainable carrying capacity at the ecosystem scale are primary production, detrital inputs and exchange with adjacent ecosystems. At the local scale, carrying capacity depends on physical constraints such as substrate, shelter and food transported by tidal currents, and density-dependent food depletion. Mortality is a critical factor, and high seed mortality due to sub-optimal seed deployment, particularly in bottom culture, is a key factor in reducing production yield and economic competitiveness.

Table 2-1 shows the summary of SMILE model results for Lough Foyle. The average physical product (APP) is defined as the ratio between harvested biomass (total physical product – TPP) and seed biomass, and is a measure of ecological and economic efficiency. The total production per unit of area is also shown, and varies within the system depending on the location of the aquaculture.

Table 2.1: Summary of SMILE model results for Lough Foyle (Source: Ferreira *et al.* 2007).

Ecosystem and Species		Aquaculture Area (ha)	TPP (tons)	APP	TPP per ha
Lough Foyle	Blue Mussel	1602	1325	2.5	0.83
	Pacific Oyster	0.1	12	6.9	171

2.3. Description of Species

2.3.1. Blue Mussels (*Mytilus edulis*)

2.3.1.1. General Biology

Mytilus edulis is a filter feeding marine bivalve. It occurs from the high intertidal to the shallow subtidal attached by fibrous byssus threads to suitable substrata. It is found on the rocky shores of open coasts attached to the rock surface and in crevices, and on rocks and piers in sheltered harbours and estuaries, often occurring as dense masses. They are a gregarious species and at high densities form dense beds of one or more (up to 5 or 6) layers, with individuals bound together by their byssus threads. Young mussels colonise spaces within the bed increasing the spatial complexity, and the bed provides numerous niches for other organisms. Overcrowding results in mortality as underlying mussels are starved or suffocated by the accumulation of silt, faeces and pseudofaeces, especially in rapidly growing populations (Richardson & Seed, 1990). Death of underlying individuals may detach the mussel bed from the substratum, leaving the bed vulnerable to tidal scour and wave action (Seed & Suchanek, 1992).

Growth rates in *Mytilus* spp. are highly variable. Part of this variation is explained by genotype and multilocus heterozygosity (Gosling, 1992) but the majority of variation is probably environmentally determined. The following factors affect growth rates in *Mytilus* species: temperature, salinity, food availability, tidal exposure, intraspecific competition for space and food and parasitism.

Several factors may work together, depending on location and environmental conditions (Seed & Suchanek, 1992) or the presence of contaminants (e.g. Thompson *et al.*, 2000). For example, in optimal conditions *Mytilus edulis* can grow to 60 -80mm in length within 2 years but in the high intertidal growth is significantly lower, and mussels may take 15 -20 years to reach 20 -30mm in length (Seed & Suchanek, 1992). Bayne *et al.* (1976) demonstrated that between 10-20 °C water temperature had little effect on scope for growth and Carter & Seed (1998) showed that latitudinal variations in temperature influences shell structure in *Mytilus* species.

Several factors contribute to mortality and the dynamics of *Mytilus edulis* populations e.g.

temperature, desiccation, storms and wave action, siltation and biodeposits and intra- and interspecific competition, but predation is the single most important source of mortality. Many predators target specific sizes of mussels and, therefore, influence population size structure. The vulnerability of mussels decreases as they grow, since they can grow larger than their predators preferred size. *Mytilus* sp. may be preyed upon by neogastropods such as *Nucella lapillus*, starfish such as *Asterias rubens*, the sea urchin *Paracentrotus lividus*, crabs such as *Carcinus maenas* and *Cancer pagurus*, fish such as *Platichthys flesus* (plaice), *Pleuronectes platessa* (flounder) and *Limanda limanda* (dab), and birds such as oystercatcher, eider, scooter, sandpiper, knot, turnstone, gulls and crows (Seed & Suchanek, 1992; Seed, 1993).

Fouling organisms, e.g. barnacles and seaweeds, can also increase mussel mortality by increasing weight and drag, resulting in an increased risk of removal by wave action and tidal scour. Fouling organisms may also restrict feeding currents and lower the fitness of individual mussels. However, *Mytilus edulis* is able to sweep its prehensile foot over the dorsal part of the shell (Thiesen, 1972, Seed & Suchanek, 1992). Fouling by ascidians can be a problem in rope- cultured mussels (Seed & Suchanek, 1992).

In addition, the polychaete *Polydora ciliata* may burrow into the shell of *Mytilus edulis*, which weakens the shell leaving individuals more susceptible to predation by birds and shore crabs resulting in significant mortality, especially in mussels >6 cm (Holt *et al.*, 1998).

Longevity is dependent on locality and habitat. On the lower shore, few individuals probably survive more than 2-3 years due to intense predation as discussed above, whereas high shore populations are composed of numerous year classes (Seed, 1969a). Specimens have been reported to reach 18-24 years of age (Thiesen, 1973).

Spawning is protracted in many populations, with a peak of spawning in spring and summer. Resting gonads begin to develop from October to November, gametogenesis occurring throughout winter so that gonads are ripe in early spring. A partial spawning in spring is followed by rapid gametogenesis, gonads ripening by early summer, resulting in a less intensive secondary spawning in summer to late August or September (Seed, 1969b). Mantle tissues store nutrient reserves between August and October, ready for gametogenesis in winter when food is scarce (Seed & Suchanek, 1992). Larvae spawned in spring can take advantage of the phytoplankton bloom. The secondary spawning is opportunistic, depending on favourable environmental conditions and food availability. Reproductive strategies in *Mytilus edulis* probably vary depending on environmental conditions (Newell *et al.*, 1982). Fertilization is external and can occur successfully between 5 -22°C and at salinities of 15 -40psu (Bayne, 1965; Lutz & Kennish, 1992).

Fecundity and reproductive effort increase with age and size, young mussels diverting energy to rapid growth rather than reproduction. Reproductive output is influenced by temperature, food availability and tidal exposure and can therefore vary from year to year. An individual female (ca 7mm) can produce 7-8 million eggs, while larger individuals may produce as many as 40 million eggs (Thompson, 1979).

In optimal conditions larval development may be complete in less than 20 days but growth and metamorphosis in the plankton between spring and early summer, at ca. 10 °C, usually takes 1 month. However, it is not unusual for planktonic life to extend beyond 2 months in the absence of suitable substrata or optimal conditions (Bayne, 1965; Bayne, 1976). Pediveligers (the third and final free swimming larval stage, prior to settlement or attachment to a substrate) can delay metamorphosis for up to 40 days at 10 °C (Lutz & Kennish, 1992) or for up to 6 months in some cases (Lane *et al.*, 1985). The duration of the delay is mainly determined by temperature, with longer delays at low temperature (Strathmann, 1987). Larvae become less selective of substrata the longer metamorphosis is delayed. In many populations *Mytilus edulis* exhibits a two stage settlement, the pediveliger settling on filamentous substrates such as, bryozoans, hydroids, filamentous algae such as *Polysiphonia* sp., *Corallina* sp. and *Mastocarpus* sp., or the byssus threads of previously settled adults and then moving on to suitable adult substrata by bysso-pelagic drifting. Post-larvae may remain on their primary attachment until 1-2mm in size (sometimes larger), and many late post-larvae over-winter on algae, moving to adult substrata in spring, although many will leave the algae earlier due to winter storms or death of the algae (Seed & Suchanek, 1992). Newly settled mussels are termed 'spat'.

Dispersal is dependent on the duration of planktonic life. Maintenance of their position in the water column by active swimming ensures that larvae can be potentially dispersed over great distances by currents. In addition, post-larvae can become bysso-pelagic up to 2-2.5 mm in size, which may take ca. 2 months to achieve, during which time they may be transported significant distances by currents. Recruitment is dependent on larval supply and settlement, together with larval and post-settlement mortality. Larval mortality is probably due to adverse environmental conditions, especially temperature, inadequate food supply (fluctuations in phytoplankton populations), inhalation by suspension feeding adult mytillids, difficulty in finding suitable substrata and predation (Lutz & Kennish, 1992). Recruitment in many *Mytilus* sp. populations is sporadic, with unpredictable pulses of recruitment, possibly from the pool of young mussels on filamentous algae (Seed & Suchanek, 1992). *Mytilus* sp. is highly gregarious and final settlement often occurs around or in between individual mussels of established populations (AQUAFACT, 2007). Competition with surrounding adults may suppress growth of the young mussels settling within the mussel bed, due to competition for food and space, until larger mussels are lost (Seed & Suchanek, 1992).Persistent mussel beds can be maintained by relatively low levels of recruitment.

Mytilus edulis is a filter feeding organism, which collects algae, detritus and organic material for food but also filters out other contaminants in the process. Shumway (1992) noted that mussels are likely to serve as vectors for any water-borne disease or contaminant. Mussels have been reported to accumulate faecal and pathogenic bacteria and viruses, and toxins from toxic algal blooms. Bacteria may be removed or significantly reduced by depuration (removing contaminated mussels into clean water) although outbreaks of diseases have resulted from poor depuration and viruses may not be removed by depuration. Recent improvements in waste water treatment and shellfish water quality regulations may reduce the risk of bacterial and viral contamination. The accumulation of toxins from toxic algal blooms may result in paralytic shellfish poisoning (PSP), diarrhetic shellfish poisoning (DSP) or amnesic shellfish poisoning (ASP). These toxins are not destroyed by cooking. Shumway (1992) suggested that mussels should only be collected from areas routinely monitored by public health agencies, or obtained from approved sources and never harvested from waters contaminated with raw sewerage.

Mytilus edulis is not listed as threatened or endangered; however, intertidal *Mytilus edulis* beds are listed as threatened or in decline in the OSPAR [Oslo/Paris convention (for the Protection of the Marine Environment of the North-East Atlantic)] List of Threatened and/or Declining Species and Habitats (OSPAR, 2008).

2.3.1.2. Distribution

Figure 2-4 shows mussel distribution in Lough Foyle based on size class (CEFAS, 2007). Figure 2-5 shows the distribution of wild and re-laid mussels. Large areas of the Lough are in use for mussel relaying and there are also considerable stocks of wild mussels either naturally settled or remnants of previous relaying exercises. There is, for example, an area of mussels on the Northern Ireland shore, south of Magilligan Point that were laid there approximately six years ago. These are now very large mussels, heavily fouled with barnacles, which are of no commercial value, but which conceivably constitute a parent stock for spat-fall that occurs outside the entrance to the Lough.

A survey carried out by the Loughs Agency in 2009 identified an area in the North Channel, approximately 700m outside Lough Foyle as showing evidence of recent spatfall (Loughs Agency, 2009c). Other than in areas that were clearly stocked with seed mussels from elsewhere, few mussels of less than 50mm shell length were observed during the CEFAS (2007) survey. Significant areas of this ground hold fishable densities of mussels and currently support much of the wild mussel fishery.

Figure 2.4: Mussel distribution in Lough Foyle by size class based on average size in the catch (Source: CEFAS, 2007).

Figure 2.5: Mussel distribution in Lough Foyle by type (Source: CEFAS, 2007).

These mussel beds constitute the SS.SBR.SMus.MytSS *Mytilus edulis* beds on sublittoral sediment biotope (classified using the Connor *et al.* (2004) Marine Habitat Classification for Britain and Ireland. Version 04.05). Characteristics of this biotope are outline below.

Mussel beds are found in shallow sublittoral mixed sediments, in fully marine coastal habitats or sometimes in variable salinity conditions in the outer regions of estuaries. They are characterised by beds of the common mussel *Mytilus edulis*. Other characterising infaunal species include the amphipod *Gammarus salinus* and oligochaetes of the genus *Tubificoides*. The polychaetes *Harmothoe* spp., *Kefersteinia cirrata* and *Heteromastus filiformis* are also important. Epifaunal species in addition to the *M. edulis* include the whelks *Nucella lapillus* and *Buccinum undatum*, the common starfish *Asterias rubens* the spider crab *Maja squinado* and the anemone *Urticina felina*.

2.3.1.3. Fishery

A survey carried out in 1982 showed that Lough Foyle had the largest quantity of blue mussels (*M. edulis*) of any Irish estuary (Crowley *et al*., 1982). The majority of wild mussels harvested are landed into Greencastle and Moville and are destined for local markets in Ireland and England and to foreign markets, mainly in France, Holland and Spain. Blue mussel landings from 2003 to 2009 into Greencastle, Co. Donegal, as reported by the Sea Fisheries Protection Authority (SFPA) are shown in Figure 2-6. Landed values in 2007 were low, this was due to the reduction in mussel seed relaid in 2005 (MERC, 2008) but increased both in terms of value and catch in 2008. Price per tonne was €1,144 in 2007 (MERC, 2008). Figure 2-7 shows blue mussel landings into Moville, Co. Donegal as reported by SFPA from 2003 to 2008. Landings in Moville declined to a minimum of 30 tonnes (€24,000) in 2005 from approximately 3,500 tonnes (€1.4 million) in 2003. Quantities and value increased in 2006 (1,400 tonnes; €1.1 million), however decreased steadily to 550 tonnes in 2008 (€440,000).

Mussel landings into Lisahally for the period 2003-2009, as provided by Londonderry Port and Harbour Commissioners (LPHC), can be seen in Figure 2-8. Quantities landed declined from approximately 4,500 tonnes in 2003 to 0 in 2005. Values decreased again from approximately 2,600 tonnes in 2006 to 0 in 2008 with a slight increase in 2009 to approximately 400 tonnes.

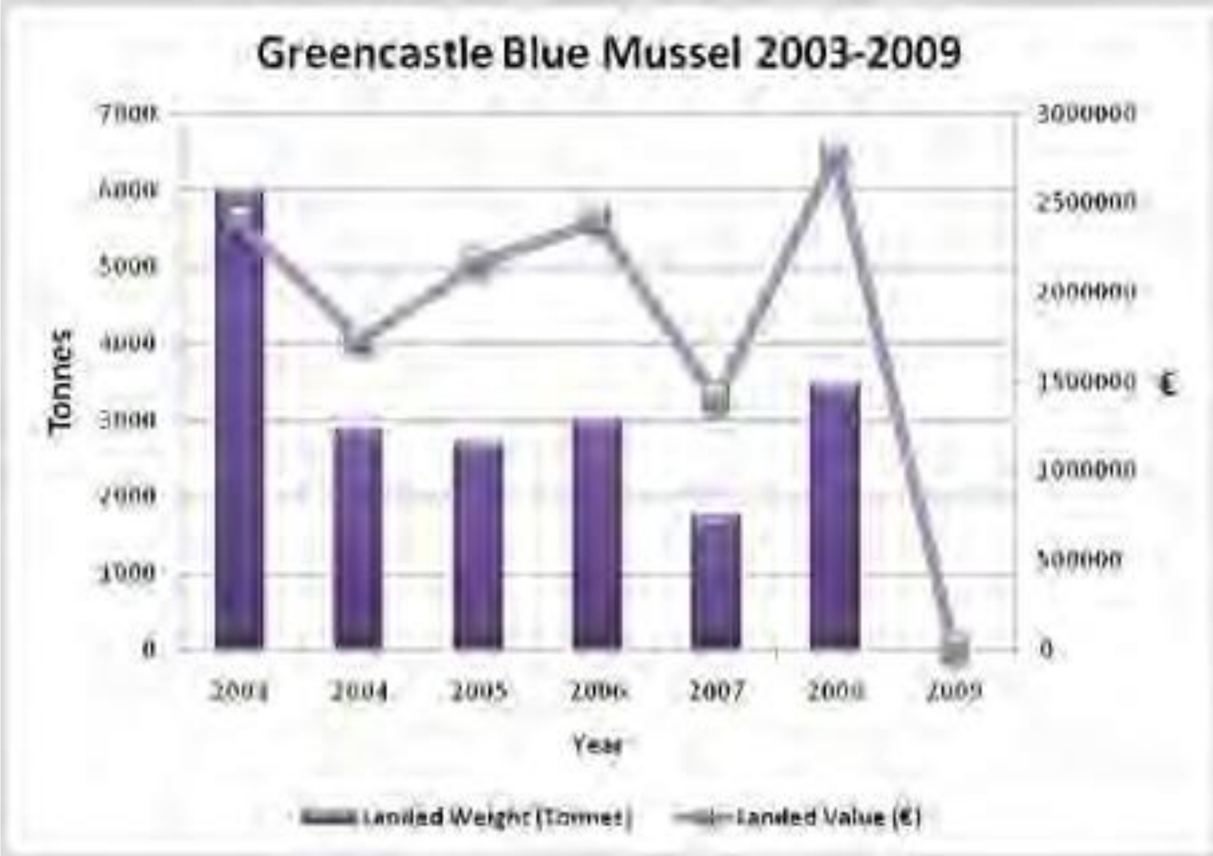

Figure 2.6: Blue mussel landings into Greencastle for 2003-2009 (Source: SFPA).

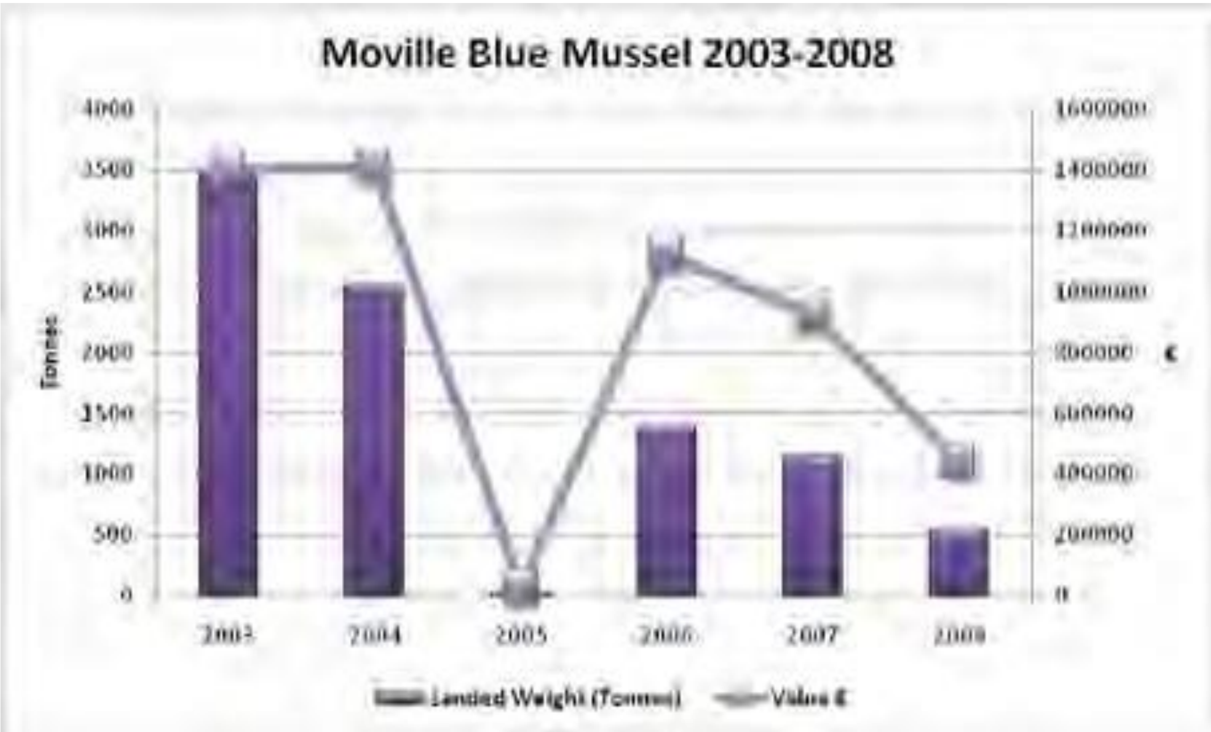

Figure 2.7: Blue mussel landings into Moville for 2003-2008 (Source: SFPA).

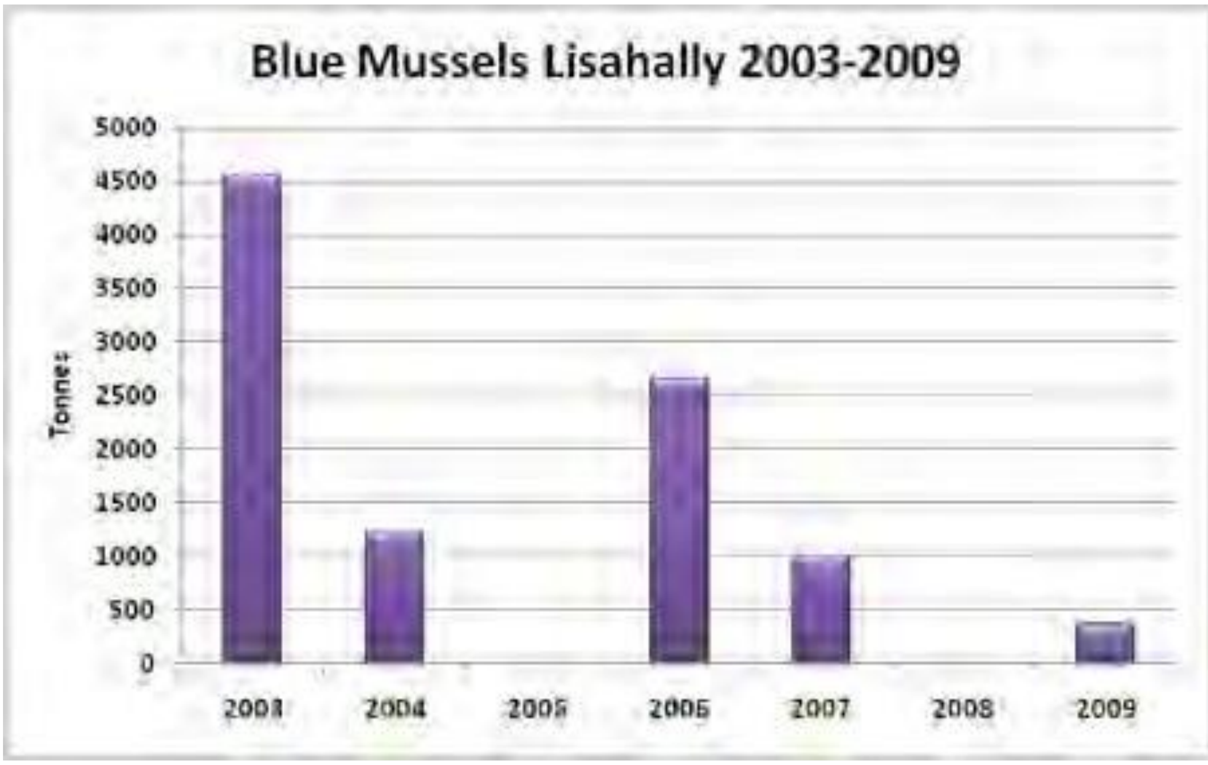

Figure 2.8: Blue mussel landings into Lisahally for 2003-2009 (Source: LPHC).

As mussels are a non-quota species, any appropriately licensed fishing vessel can fish them. Two types of mussel fisheries exist in the Lough: a wild mussel fishery where mussels are left to spawn and restock on their native beds, and a farmed mussel industry, where spat is laid in specific areas or 'lays' for growing-on and harvesting at commercial size. Where the remnants of re-laid mussels have remained in place for some years, they are difficult to tell from wild mussels.

Wild mussel, also known as 'rough mussel' due to its tendency to be heavily fouled with barnacles and other encrusting organisms and as a result has a more irregular surface than its farmed counterpart. Box dredges and oyster/mussel dredges are used for harvesting wild mussel, depending on the type of ground and can range in size from 1m to 2.5 m width. A small number of fishermen fish for wild mussel on the Lough. Wild mussel is harvested throughout the year on the Lough (CEFAS, 2007). Mussel collection tends to be 'to order' and therefore determined by demand. For some fishers, the peak in harvesting occurs in the summer months, in order to meet demand from the tourist trade. For others, fishing is more focussed during the winter months from September to April meeting seasonal demand. Harvesting figures vary.

A specialist wild mussel fisherman contacted as part of the CEFAS (2007) survey, reported annual landings of between 500-750 tonnes, reaching prices of €200- 500 per tonne. These landings were noted as being fairly stable in the previous years since a high of 1,200 tonnes in 2001. Other fishermen reported landings averaging from 1 to 35 tonnes a week depending on supply needs. One seller commented that there had been a decline in the amount of wild mussel they were handling, with only a few tonnes per year, as compared to 20-150 tonnes historically.

The farmed mussel industry in Greencastle has increased significantly since the late 1990s with the introduction of bottom mussel culture and large commercial dredgers (CEFAS, 2007).

Extensive bottom culture is based on the principle of dredging mussel spat or seed from areas where they have settled in abundance, to transfer them to specifically prepared plots (cleaned by [mussel] dredging) to re-lay the seed at lower densities, allowing for improved growth and meat content.

Re-seeding on the Lough occurs between July and November, with spat from the mouth of the Lough being used when sufficient quantities are available. Increasing demand, together with declines in spat levels such as seen in 2005, have led to the requirement for sourcing spat from further afield, such as the Irish Sea. Mussels are harvested when they reach marketable size, which can take 1-2 years depending on the size of the initial spat. In general, single or double dredges of approximately 1.5 to 2 m are used for harvesting. Dredger capacity ranges from 20 tonnes or more. Harvesting can occur all year round but predominantly occurs between November and March. Mussels have greater meat yields during this period and the winter months are optimal for transport of shellfish bivalves as shelf life and product quality is better at cooler temperatures. Meat yields of around 25% and sometimes higher can be achieved in the best areas. Yields may be as low as 14% when and where growing conditions are less favourable.

The industry has grown significantly since the late 1990s and production reached 15,000 tonnes in 2003 from approximately 10 producers. Production has declined since, close to 7,000 tonnes being recorded for 2006 (Figures 2-6 to 2-8). Bottom cultivation of blue mussels is an important industry in Ireland. Current production is at a level of about 35,000 tonnes, showing the relative importance of the Lough Foyle industry, which supplies one third of this amount. Farmed mussel tends to be of better meat content than the wild mussel, obtaining a higher average market price. Values of up to €1,000 per tonne are obtainable. The mussels produced in Lough Foyle are exported to The Netherlands, France and small quantities are sold to local markets in Ireland (CEFAS, 2007).

2.3.2. Native Oysters (*Ostrea edulis*)

2.3.2.1. General Biology

Ostrea edulis is associated with highly productive estuarine and shallow coastal water habitats on firm bottoms of mud, rocks, muddy sand, muddy gravel with shells and hard silt. In exploited areas, suitable habitat is/has been created in the form of 'cultch' - broken shells and other hard substrata.

There is some evidence that reduced growth, weight and poor conditions are a consequence of high population densities (300 per square yard). Size and shape can be extremely variable. Because the oysters cements themselves to the substratum, growth of neighbouring individuals may result in competition or space and distort the usual shell shape. Feeding is carried out by pumping water through a filter in the gill chamber removing suspended organic particles. Particulate matter which is re-suspended from the bottom material by tidal currents and storms is likely to be an important food source (Grant *et al.*, 1990). Growth rates of *Ostrea edulis* are faster in sheltered sites than exposed locations, however this is thought to be attributed to the seston volume rather than flow speed or food availability (Valero, 2006).

The native oyster starts life as male, becoming mature at around 3 years of age. After spawning the oyster becomes a functional female. Larvae are seldom produced by oysters under 50 mm. Growth is quite rapid for the first year and a half. It then remains constant at around 20 grams per year before slowing down after five years. In the British Isles, the main growing season is from April to October. The oyster faces serious competition from the introduced species *Crepidula fornicata*, the slipper limpet. Brought over from the United States this species can occur in very high densities competing for space and food. The slipper limpet deposits pseudo faeces which forms 'mussel mud' changing the substratum and hindering settlement. Native oysters are preyed on by a variety of species including starfish and *Ocenebra erinacea*, the sting winkle or rough tingle. *Buccinum undatum*, the common whelk also feeds on oysters but not as exclusively as the sting winkle. *Urosalpinx cinerea*, the American oyster drill was accidentally introduced to the British Isles with American oysters. This species lives on oyster beds and feeds almost entirely on oyster spat.

A life span of 5-10 years is probably typical (majority of individuals in populations are 2-6 years old). However, they may reach in excess of 15 years old. Oysters are protandrous (animal is first a male then become a female) alternating hermaphrodites (have both male and female reproductive organs). This means that they start off as males producing sperm then switch to egg producing females, back to males and so on. Gamete maturation begins in March or April and is in part temperature dependent. Gametogenesis may be continuous in warmer conditions. On the west coast of Ireland there is at least one spawning in each sexual phase during the summer. There may be some periodicity in spawning with peaks during full moon periods. Fecundity may be as high as 2,000,000 in large individuals. Eggs produced during the female stage are held in the gills and mantle cavity. The eggs are fertilised by sperm drawn in by the inhalant water flow used for feeding and respiration. The fertilised eggs are retained for 7-10 days for the early development until the veliger stage is reached.

Ostrea edulis is listed as a UK Biodiversity Action Plan (BAP) Species. Biodiversity Action Plans were developed in the UK as a result of the Convention on Biological Diversity which was signed in 1992 in Rio de Janeiro, Brazil, in connection with the United Nations Conference on Environment and Development (UNCED). Oyster beds are listed as threatened or in decline in the OSPAR List of Threatened and/or Declining Species and Habitats (OSPAR, 2008).

2.3.2.2. Distribution

Figure 2-9 shows the distribution of oysters in Lough Foyle based on density class (High; >0.5 individuals/m^2, Medium; 0.1-0.5 individuals/m^2 and Low; <0.1 individuals/m^2) (Loughs Agency, 2010). The High class oysters are located at The Perch, between Quigleys Point and Vances Point, between Ture Point and Quigley's Point and in the Crooked Channel. The majority of Medium class oysters are located between Ture Point and Castlecary, in the East Channel, South Middle Bank, Crooked Channel and northwest and northeast of the Crooked Channel. The remaining locations are all of a Low class. Figure 2-10 shows the distribution of oysters in Lough Foyle based on size class (> and < 75mm) (CEFAS, 2007). It is clear from the map that numbers of large oysters are at a low level throughout the Lough but there are grounds that maintain high numbers of juveniles. This lack of large oysters on the ground suggests that the population is over-fished and in need of management to reduce the exploitation rate (CEFAS, 2007). There were mussels present on all oyster grounds, but these appeared to be several years old and were generally heavily fouled. There was no evidence of mussels having settled on these grounds for several years. Mussel shell makes up a proportion of the cultch and oysters were seen to have settled on it and also onto live mussels.

Figure 2.9: Oyster density class in Lough Foyle (Source: The Loughs Agency).

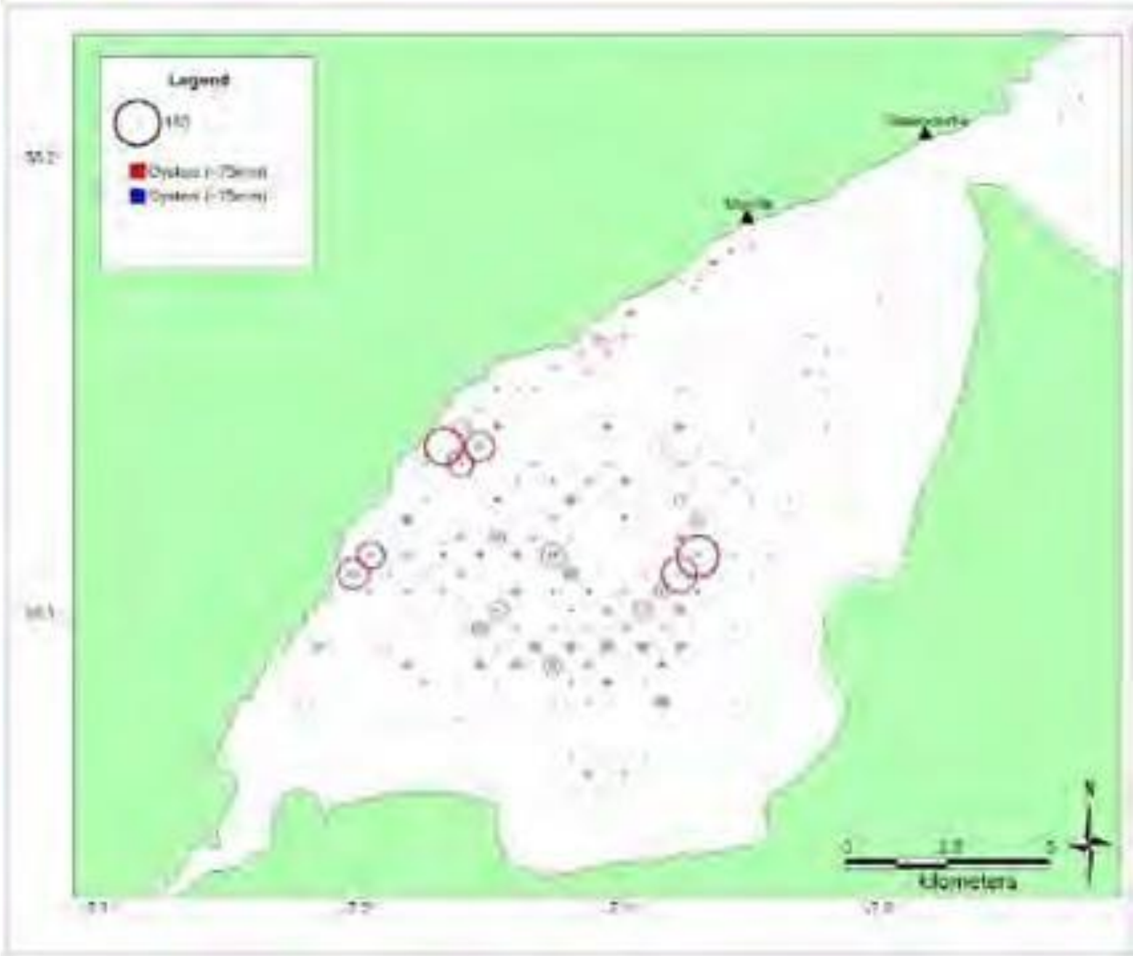

Figure 2.10: Distribution of oysters in Lough Foyle based on size class (Source: CEFAS, 2007).

These oyster beds constitute the SS.SMX.IMx.Ost *Ostrea edulis* beds on shallow sublittoral muddy mixed sediment biotope (classified using the Connor *et al.* (2004) Marine Habitat Classification for Britain and Ireland Version 04.05). Characteristics of this biotope are outline below.

Considerable quantities of dead oyster shell can make up a substantial portion of the substratum. The clumps of dead shells and oysters can support large numbers of *Ascidiella aspersa* and *Ascidiella scabra*. Sponges such as *Halichondria bowerbanki* may also be present. Several conspicuously large polychaetes, such as *Chaetopterus variopedatus* and terebellids, as well as additional suspension-feeding polychaetes such as *Myxicola infundibulum* and *Sabella pavonina* may be important in this biotope, whilst the opisthobranch *Philine aperta* may also be frequent in some areas. A turf of seaweeds such as *Plocamium cartilagineum*, *Nitophyllum punctatum* and *Spyridia filamentosa* may also be present.

2.3.2.3. Fishery

Oysters have been fished in Lough Foyle since the 18th century, and probably earlier (CEFAS, 2007). The Lough Foyle oyster fishery has been based on self-propagating spat production on natural beds. There have also been instances of assisting the restocking of the native oyster beds. In 1970, 250,000 *Ostrea edulis* spat were introduced into the Lough to replenish dwindling stocks (Kennedy & Roberts, 1999).

The Foyle Area (Control of Oyster Fishing) Regulations 2008 states that the oyster fishing season begins on the 18th September and runs through to the 1st April. Most fishermen surveyed by CEFAS (2007) noted that oyster hauls were the largest in the first few days or weeks of the season followed by a decline in both average size and catch volume. Therefore, corresponding to this, there is a tendency for a larger number of boats to be dredging for oysters in September (approximately forty or more boats), declining to less than ten after Christmas, depending on catch rates. Oyster dredges used for harvesting average between 1 and 1.5m width.

Fishermen reported that oysters landed in more recent seasons tended to be smaller, immature and thinner 'wafer oysters'. These smaller oysters are noted as being more susceptible to higher mortality during shipping. Also mentioned is that in the past few years there has been a lack of the 'Clog' oysters: large, older specimens believed to be brood stock.

Figures 2-11 and 2-12 show oyster landings into Greencastle, Co. Donegal and Moville, Co. Donegal from 2003 to 2008, based on SFPA landings data. There were no native oyster landings into Lisahally according to LPHC data. In Greencastle, there has been a steady decline since 2004 (approximately 700 tonnes, approximately €2m) to 50 tonnes (€190,000) in 2008. In Moville, there was a slight increase in landings from 2003 to 2004 levels of 86 tonnes worth approximately €260,000. In the following year, no oysters were landed in Moville. Numbers then increased to a maximum in 2007 (96 tonnes, approximately €365,000) but declined again in 2008 (20 tonnes, €76,000). Oysters in 2007 obtained prices of approximately €4,267 per tonne (MERC, 2008), a decrease of 20% on 2006 figures. The main oyster markets include France and Spain.

The Loughs Agency licensed less than 40 vessels in the 2009-2010 season under The Foyle Area

(Control of Oyster Fishing) Regulations 2008. Up until 2005, the Lough was a *Bonamia*-free area. However during a routine screening programme, *Bonamia ostreae* was detected for the first time in 13 out of 30 flat oysters tested from Lough Foyle (ICES, 2006).

There has been no aquaculture of this species. CEFAS (2007) offer a number of proposals for stock enhancement.

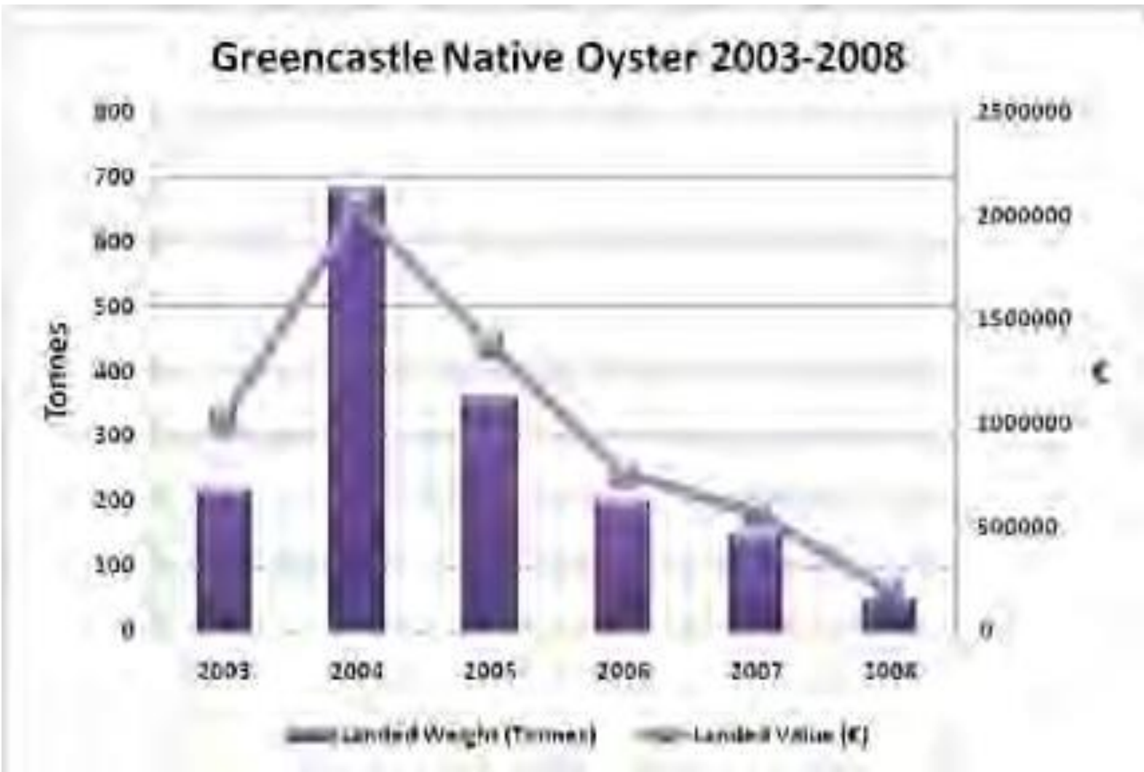

Figure 2.11: Native oyster landings into Greencastle for 2003-2008 (Source: SFPA).

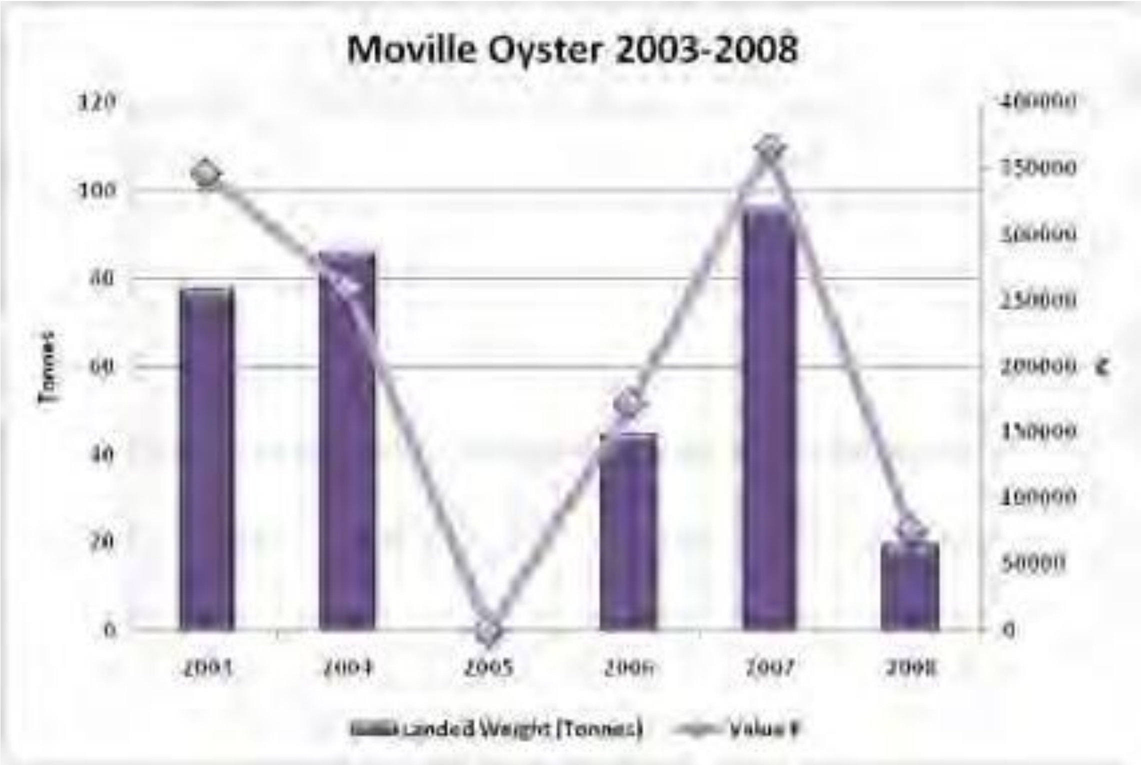

Figure 2.12: Native oyster landings into Moville for 2003-2008 (Source: SFPA).

2.3.3. Pacific Oysters (*Crassostrea gigas*)

2.3.3.1. General Biology

Pacific oysters are not native to Irish waters; they were introduced from the Pacific coasts of Asia. They can be found in intertidal and subtidal zones. They prefer to attach to hard or rocky surfaces in shallow or sheltered waters but have been known to attach to muddy or sandy areas when the preferred habitat is scarce. They can also be found on the shells of other animals. Larvae often settle on the shells of adults, and great masses of oysters can grow together to form oyster reefs.

Pacific oysters need a temperature of above 18°C to reproduce (PMFSC [Pacific States Marine Fisheries Commission], 1996). The larvae are planktonic and spend several weeks in this phase. Then after that time, once an acceptable location has been found the oyster drops out of the plankton and attaches itself to its chosen surface, at which point it is known as "spat". It spends the first year of its attached life as a male, before eventually becoming female. Unharvested oysters can live up to 30 years. The conservation status of *Crassostrea gigas* is not listed.

2.3.3.2. Distribution

Figure 2-13 shows the locations of intertidal farmed Pacific oyster sites in Lough Foyle and those sites where wild Pacific oysters were recorded by the Loughs Agency in 2009 (Loughs Agency, 2009a). There are 5-10 small Pacific oyster farmers on the Lough with small scale trestle farms. The intertidal farms are located along the western shore of Lough Foyle from Culmore to Vances Point.

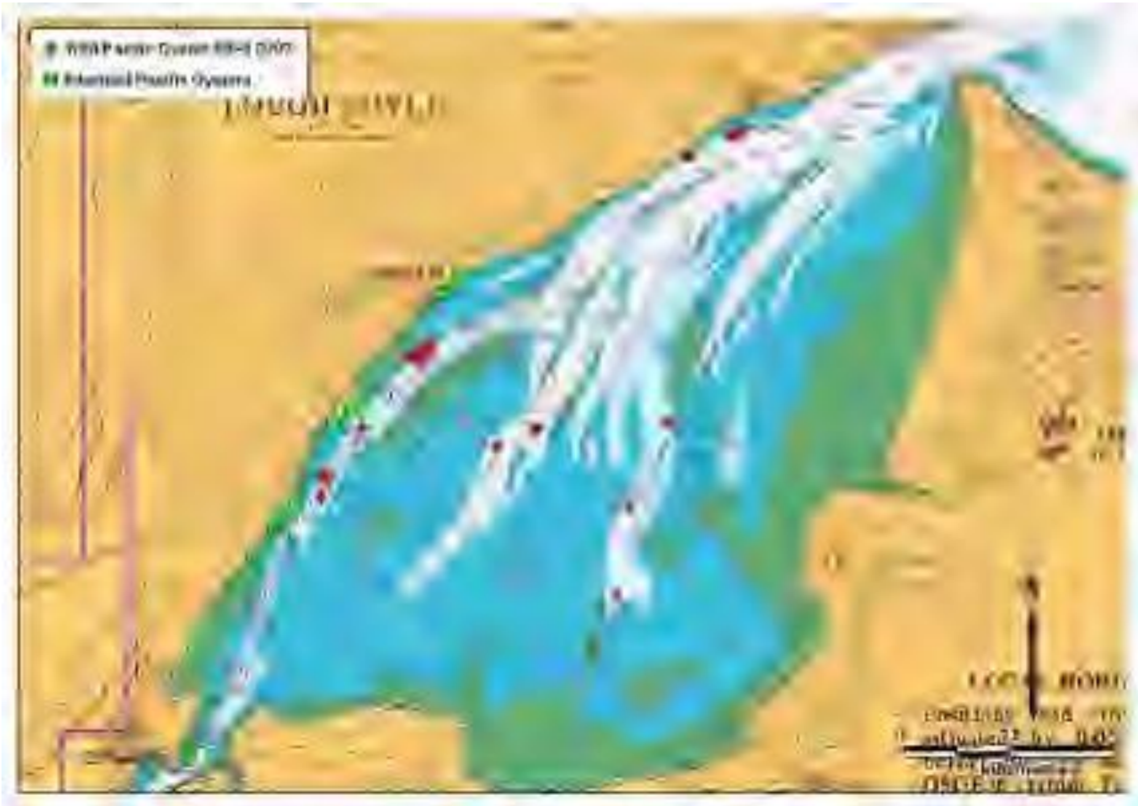

Figure 2.13: Intertidal farmed and wild Pacific Oyster sites in Lough Foyle (Source: The Loughs Agency).

2.3.3.3. Fishery

There are 5-10 small Pacific oyster farmers on the Lough with small scale trestle farms. The intertidal farms are located along the western shore of Lough Foyle from Culmore to Vances Point. One main farmer obtains triploid seed from the hatchery in Guernsey. Most of this seed is on-grown by the farmer himself, but he is also the sole supplier of very small quantities of this seed to 5 other growers on the Lough. Production at present is less than 50 tonnes with process of €1,500-€2,500. The seed is bought in the summer months. The oysters are kept in bags sitting on specially built trestles in the low inter-tidal area. The oysters reach market size in 2-3 years. The marketable oysters have good meat content and are mainly sold on in the winter months to specialist restaurant markets in France and Italy.

3. Hydrography/Hydrodynamics

It should be noted that the used hydrodynamic data were derived from an existing hydrodynamic model (Delft3D-FLOW) that was set up by Deltares for a sediment dispersion study in Lough Foyle. This model was calibrated and validated for the purpose of this sediment dispersion study and provides an indication of the expected flow in other areas of Lough Foyle, but requires additional validation (by means of measurements) in the shallow east and southeast parts of Lough Foyle. The presented hydrodynamic flow data were derived from model simulations that simulated normal (tidal) flow conditions, average river discharges and used a normal wind condition, i.e. 7 m/s from a south-westerly direction (240°N).

3.1. Tides & Currents

The Londonderry Port and Harbour Commissioners (LPHC) operates a tidal gauge near Lisahally in the southwest corner of Lough Foyle. A time series of recorded water levels for the period 1-1-2006 to 30-11-2008 (at a 1 min interval); can be seen in Figure 3-1 (Deltares, 2009). The tidal motion in the Lough is characterised by a semi-diurnal tide travelling from east to west, with daily inequality, especially apparent in the heights of high waters. A 14-day spring-neap cycle can be observed, with a mean spring tidal range of 2.2m and mean neap tidal range of 1m. From the Deltares (2009) Delft3D-FLOW model, validated by data from EGS International Ltd., the tidal wave gets amplified as it travels up the Lough; the mean tidal range increases by several decimetres from the entrance channel to the south-western corner of Lough Foyle near Culmore, a distance of approximately 25km. The tidal amplification is accompanied by a phase difference between the northern and southern corner of the Lough, which is approximately 1 hour. Next to water level variations due to tidal forcing, variations in air pressure and wind setup affects the water level in the Lough. These phenomena may generate water level variations in the order of a few decimetres.

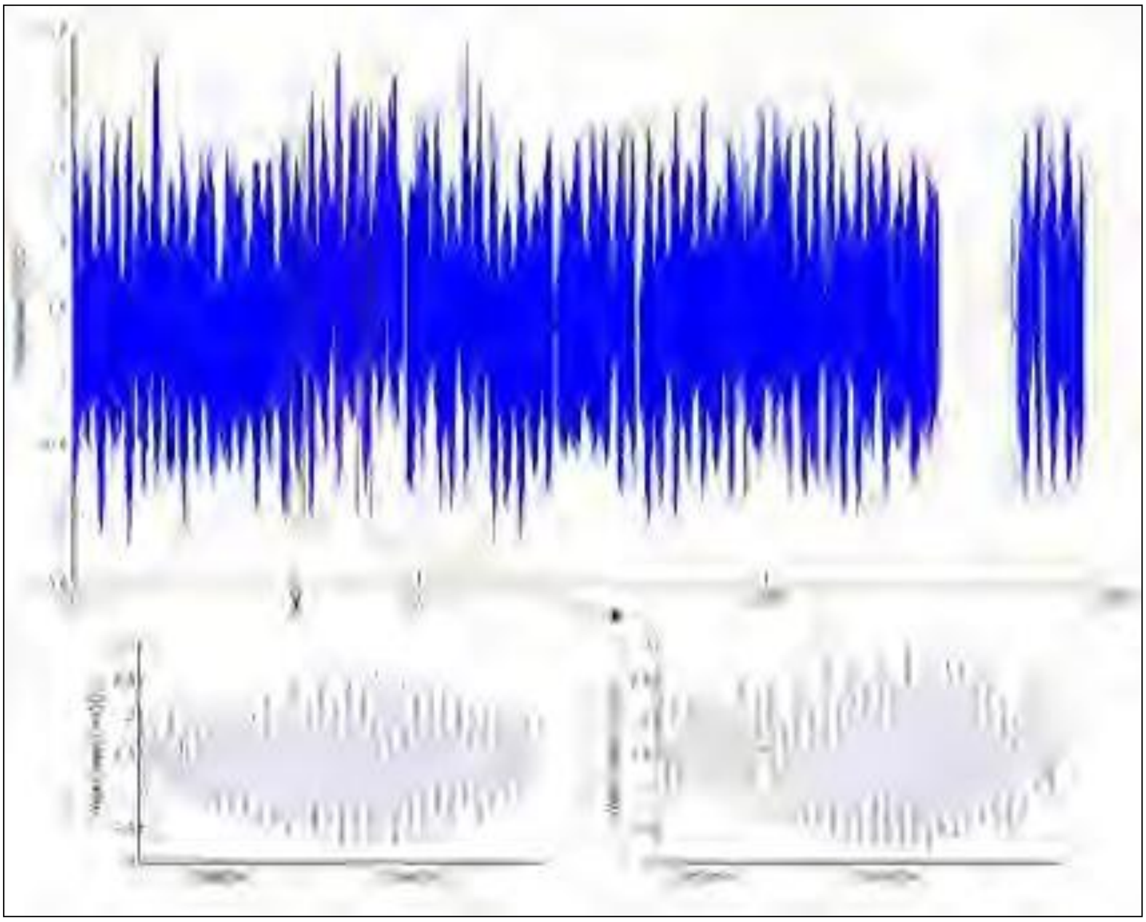

Figure 3.1: Lough Foyle water levels 2008-2009 (Source: Deltares, 2009).

The characteristic tidal levels at the River Foyle at Lisahally can be seen in Table 3-1. These are taken from the Admiralty Tide Tables (UKHO, 2006) and from tidal analysis carried out by Deltares (2009). Levels are presented in metres Chart Datum, which is approximately equal to Lowest Astronomical Tide (LAT).

Table 3.1: River Foyle (Lisahally) tidal characteristics (Source: UKHO, 2006 and tidal analysis carried out by Deltares, 2009).

Tidal Level	Admiralty Chart Levels (m CD)	Derived levels (m CD)
HAT	3.1	2.96
MNWS	2.6	2.52
MHWN	1.9	1.78
MSL	1.4	1.36
MLWN	0.9	0.97
MLWS	0.4	0.23
LAT	0.0	-0.04
Ordnance Datum Belfast (ODB)	1.37	-

*CD = Chart Datum

The current flow within Lough Foyle is governed by the tides and river flow and to a lesser extent by wind conditions. The combination of fresh water flowing in from the rivers and salt water from the ocean leads to density differences between these two water masses, creating stratified conditions and three dimensional flow patterns. In combination with a bathymetry consisting of extensive shallow tidal flats intersected by tidal channels, complex hydrodynamic patterns and considerable spatial variation in current flow are found in the Lough.

A 1990 survey carried out by Atkins indicated a complex flow regime with significant spatial variation in the vicinity of the major channels (Atkins, 1990). Fragmented current speed data is reported in Atkins (1990) for various survey sites spread over the Lough. Maximum current velocities up to 1.2 m/s were recorded in the East Channel and flow reversal around slack tides was observed. In addition to this survey, EGS International Ltd. collected ADCP (Acoustic Doppler Current Profiler) measurements from Lough Foyle to validate a Delft3D-FLOW model which Deltares (2009) produced. The outputs from this model show the current speeds and directions during a spring and neap tide (See Figure 3-2 to 3-9).

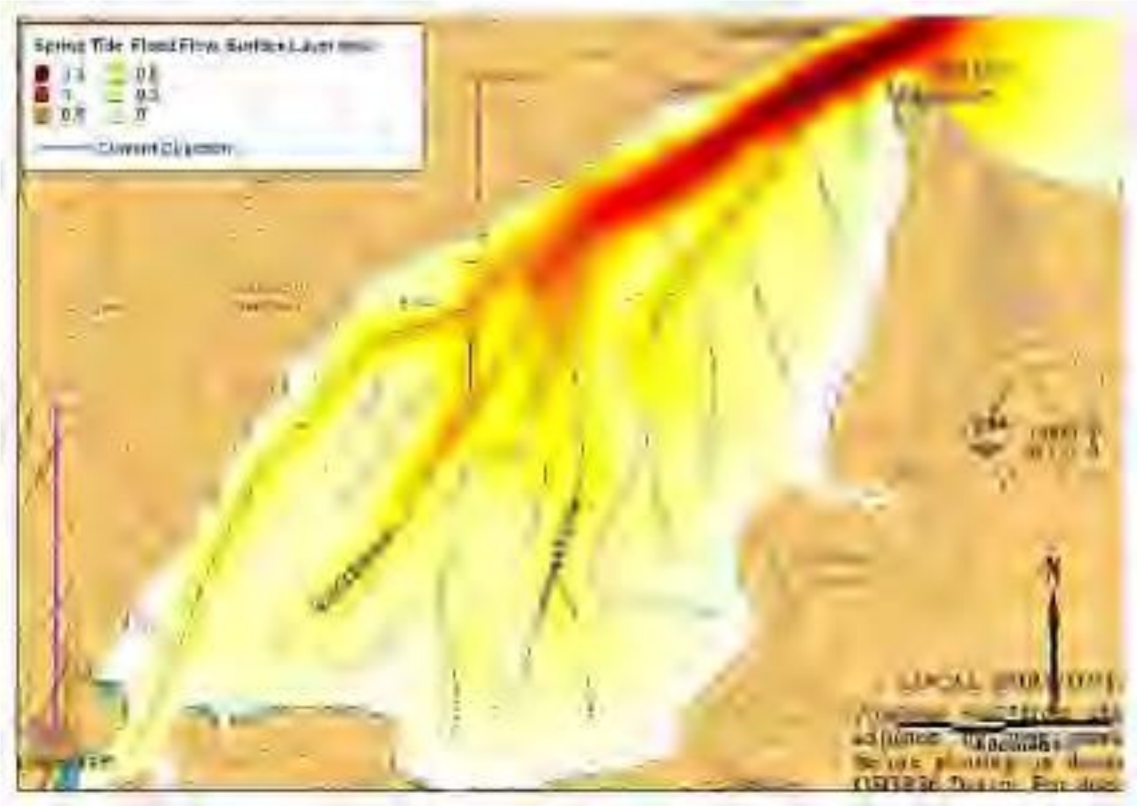

Figure 3.2: Surface current velocities and direction during a spring tide, flood flow at 16:30:00 November 13th 2008 (Source: Deltares Delft3D-FLOW).

Figure 3.3: Bottom current velocities and direction during a spring tide, flood flow at 16:30:00 November 13th 2008 (Source: Deltares Delft3D-FLOW).

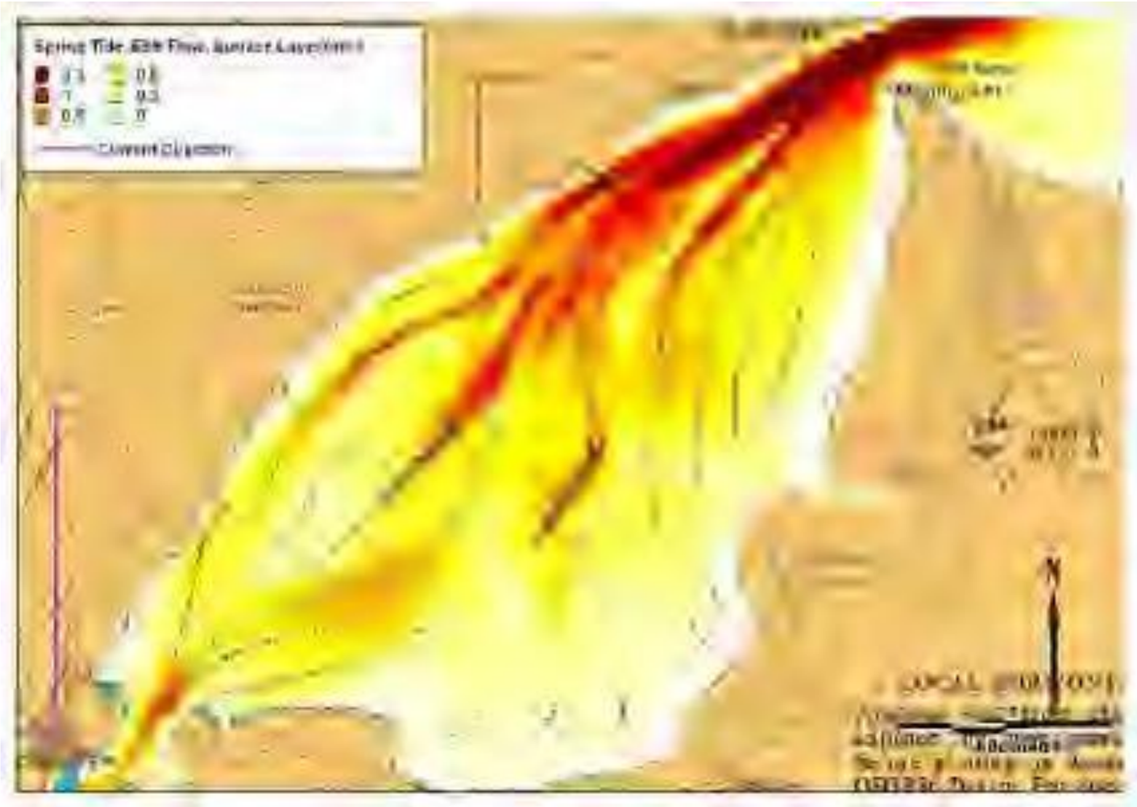

Figure 3.4: Surface current velocities and direction during a spring tide, ebb flow at 21:30:00 November 13th 2008 (Source: Deltares Delft3D-FLOW).

Figure 3.5: Bottom current velocities and direction during a spring tide, ebb flow at 21:30:00 November 13th 2008 (Source: Deltares Delft3D-FLOW).

Figure 3.6: Surface current velocities and direction during a neap tide, flood flow at 10:30:00 November 5th 2008 (Source: Deltares Delft3D-FLOW).

Figure 3.7: Bottom current velocities and direction during a neap tide, flood flow at 10:30:00 November 5th 2008 (Source: Deltares Delft3D-FLOW).

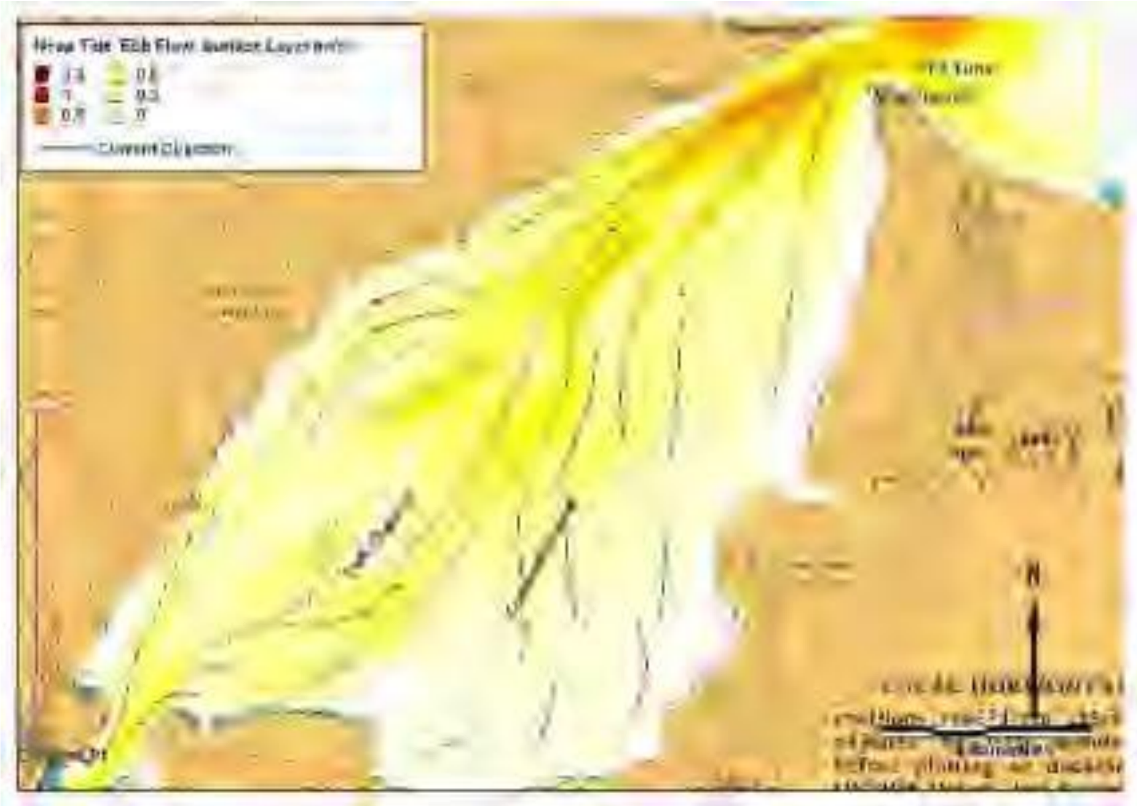

Figure 3.8: Surface current velocities and direction during a neap tide, ebb flow at 15:30:00 November 5th 2008 (Source: Deltares Delft3D-FLOW).

Figure 3.9: Bottom current velocities and direction during a neap tide, ebb flow at 15:30:00 November 5th 2008 (Source: Deltares Delft3D-FLOW).

From low water, the tidal currents start filling Lough Foyle from the southern side of the entrance channel: the flow first passes over The Tuns (a shallow offshore area east of the entrance to Lough Foyle), especially during spring tide, and only later arrives from the North Channel. Maximum flood velocities are found in the narrowest and deepest part of the entrance channel between Magilligan Point and Greencastle. The flow fills the Lough through the deeper channels before laterally flooding the shallower areas. Velocities over the shallow areas are low in comparison to the velocities in the tidal channels and navigation channel. Differences between the bottom and surface currents express themselves mainly in magnitude.

Water during flood flow largely moves into the East Channel, before flooding over the shallower tidal flats in the south, and also into the navigation channel. Under spring tidal conditions, the flood tidal flow pushes back the river flow and currents are directed upstream in the River Foyle mouth. Conversely, under neap tidal conditions, the tidal flow is less dominant relative to the river flow. At the bottom in the mouth of the Foyle, inward directed currents are still present, whereas at the surface, seaward directed river runoff is evident (see Figures 3-6 and 3-7).

On the ebbing tide, strong currents are generated at the surface layer in the river mouth. Bottom velocities, especially in the vicinity of the river mouth, are relatively low in comparison to the surface velocities. This can be explained by the increased return flow in the surface layer due to the less dense river discharge affecting the vertical velocity profile.

The river discharge and tidal emptying of the south-western corner of Lough Foyle occurs mostly through East Channel and Crooked Channel. Water running off the shallow areas is not strictly confined to the deeper tidal channels, opposite to the flooding tide, but generally takes the shortest route towards the entrance channel. The strongest ebb currents occur in the entrance channel region.

The velocity distribution over Lough Foyle shows a clear spring-neap variation and a reduction in magnitude further into the Lough, with an exception in the river mouth. The largest velocities are found in the entrance channel with maximum of approximately 1.9 m/s on the ebb flow during spring tides and slightly lower maximums on the flood flow.

The current pattern in the river mouth is clearly affected by the density differences between the river runoff and sea water. Strong ebb flow peaks are generated at the surface and strong flood flow peaks at the bottom, pointing at stratified conditions and the influence of a salt- water wedge. In the navigation channel, large differences between the bottom and surface velocities are apparent during the ebb flow, whereas this is less evident during the flood flow. This is also related to the river discharge affecting the velocity profile over depth. The reduced flow in the top layer in flood currents is caused by the opposing river flow and the accelerated ebb flow by the reinforcement of the river flow. In addition, the bottom ebb tide velocities, especially during neap tide, are reduced due to the penetrating salt wedge, resulting in a net inland residual current (estuarine circulation).

The effect of density differences on flow patterns is evident from differences in current magnitudes over the vertical profile. However, it also affects current directions, resulting in a net estuarine circulation. The estuarine circulation affects the residual current pattern over Lough Foyle, which in turn has an effect on transport and sedimentation patterns. The net inward bottom flow due to estuarine circulation will give the bed load transport a mainly inward direction on the long term, whereas suspended sediment will be affected by both the inward directed bottom flow and outward directed surface flow. This generalised trend can be overruled by short-term events (e.g. storms), in which this sediment transport direction will depend on surges, wave and wind driven currents and local bathymetry.

3.2. Rainfall Data

3.2.1. Amount & Time of Year

Figures 3-10 and 3-11 show the average monthly rainfall data for Northern Ireland (Met Office, 2010) from 1971 to 2000. Table 3-2 shows the average rainfall range and median value along the Lough Foyle coastline. During the period 1971 to 2000, the average rainfall along the Northern Ireland coastline of Lough Foyle ranged from 30-120mm, with the lowest levels occurring in May (40-60mm) and the highest levels occurring in December (60-120mm). The lowest median value was 50mm in May and the highest was 90mm in December. Table 3-3 shows the total seasonal rainfall values based on the median rainfall values. Seasonally, spring was the driest season (178mm) and winter was the wettest season (235mm). Seasons were selected by grouping the results from the following periods: spring (March - May), summer (June – July), autumn (September – November) and winter (December – February).

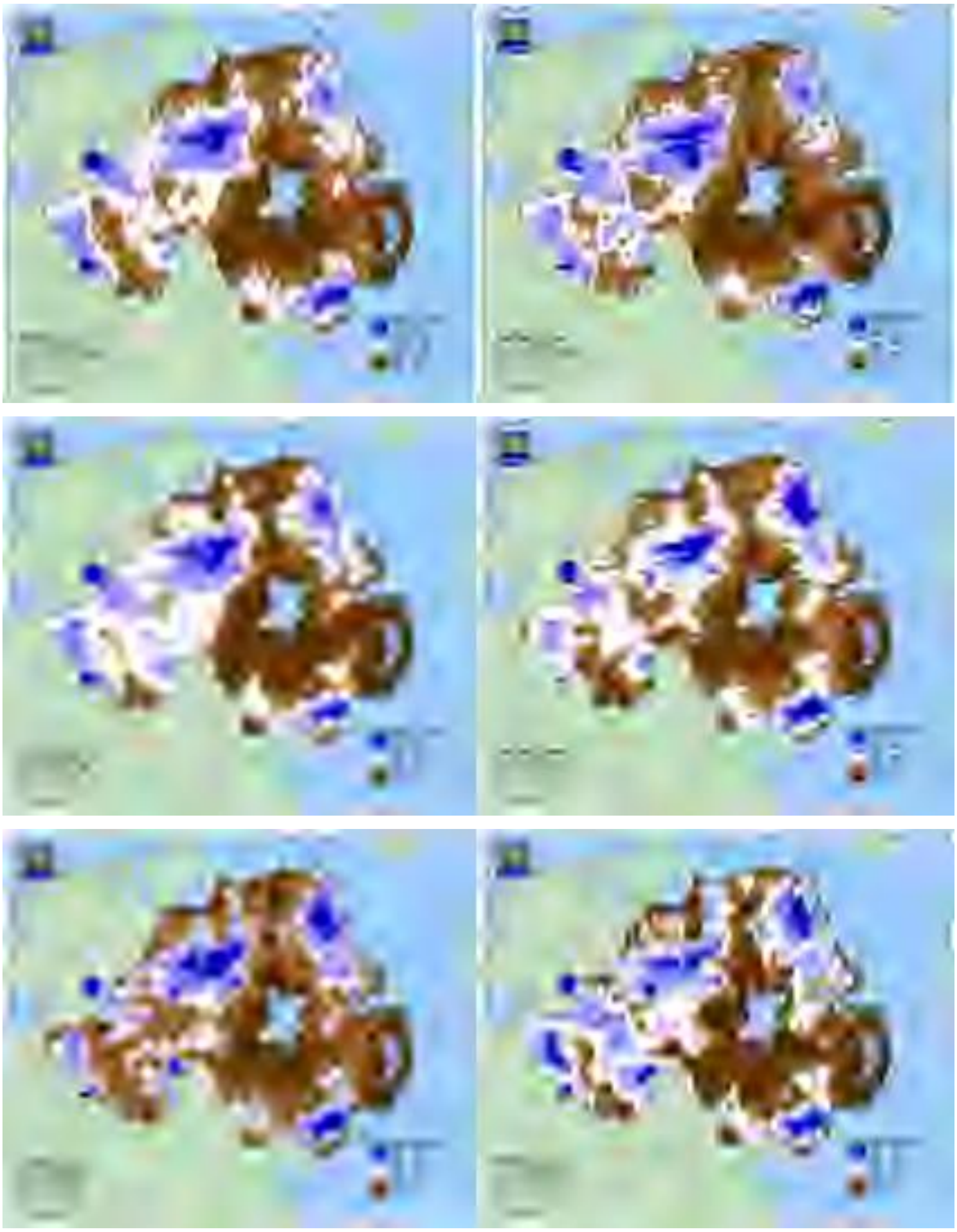

Figure 3.10: Average monthly rainfall (mm) data for January to June from 1971 to 2000 for Northern Ireland (Source: Met Office, 2010).

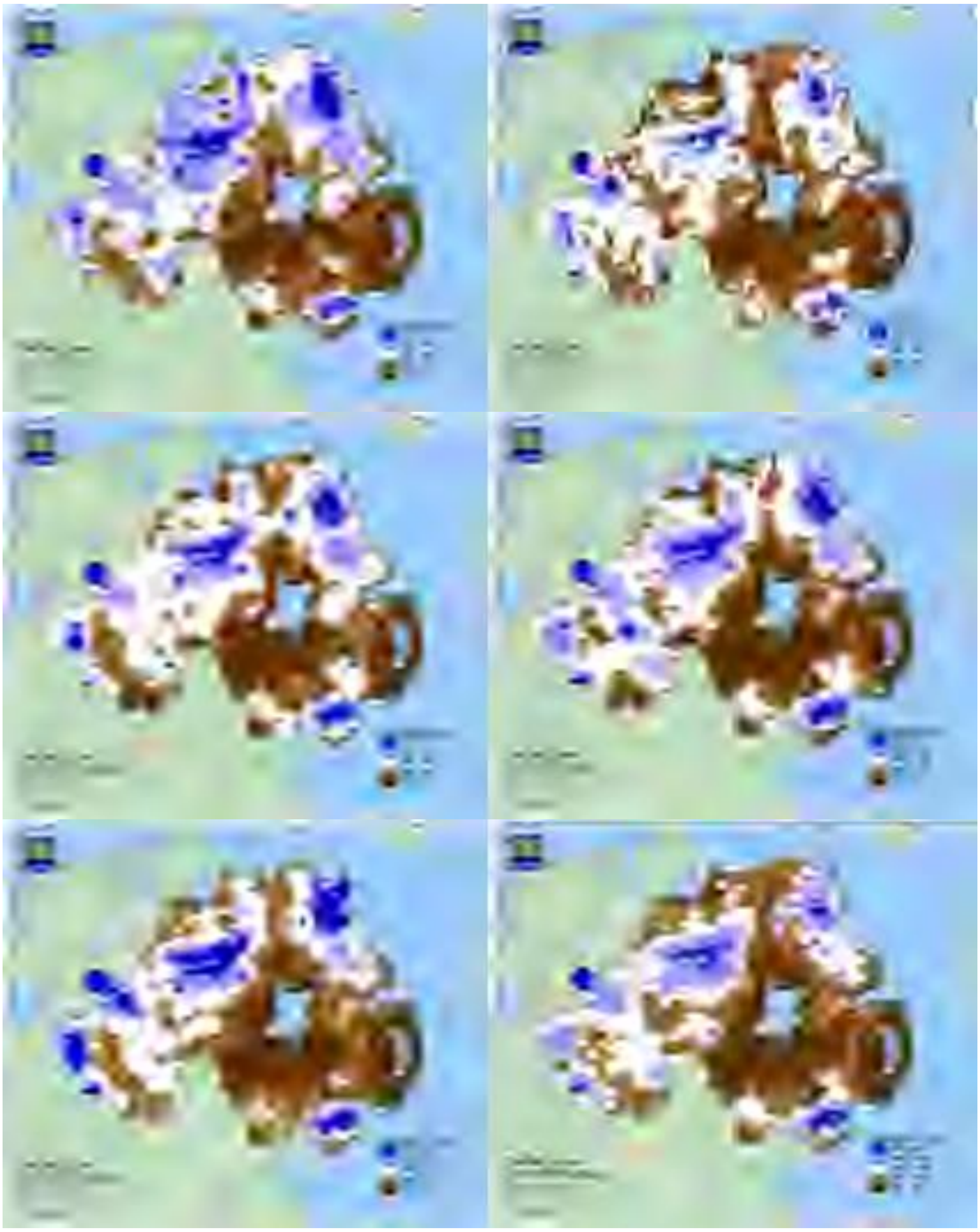

Figure 3.11: Average monthly rainfall (mm) data for July to December from 1971 to 2000 for Northern Ireland (Source: Met Office, 2010).

Table 3.2: **Rainfall range and median monthly rainfall (mm) data along the Lough Foyle coastline (Source: Met Office, 2010).**

Month/Season	Rainfall Range (mm)	Median Value (mm)
January	60-110	85
February	30-90	60
March	50-90	70
April	45-70	58
May	40-60	50
June	40-65	53
July	40-100	70
August	50-90	70
September	50-90	70
October	50-110	80
November	50-110	80
December	60-120	90

Table 3.3: Total seasonal rainfall values (mm) from 1971-2000 based on the median rainfall value (Source: Met Office, 2010).

Season	Median
Spring	178
Summer	193
Autumn	230
Winter	235

Table 3-4 shows average monthly rainfall data at Malin Head from 2005 to 2009 (Met Eireann, 2010a). Table 3-5 shows the total seasonal rainfall at Malin Head from 2005-2009 (Met Eireann, 2010a). The Malin Head station is located approximately 30km northwest of Lough Foyle. Rainfall ranged from 7.4mm in May 2008 to 227.6mm in November 2009. The following seasonal fluctuations were observed from 2005-2009: In 2005, the summer was the driest season and winter was the wettest, in 2006, summer was driest and autumn was the wettest, in 2007 spring was the driest and winter was the wettest, in 2008 spring was the driest and autumn and winter were the wettest and in 2009 winter was the driest season and autumn was the wettest. This data was collected from Met Eireann Monthly Weather Bulletins from 2005 to 2009. These reports included all Ireland monthly rainfall maps, a sample of which (year 2008) are reproduced in Figure 3-12 below. Tables 3-6 and 3-7 show the average and median monthly rainfall values from 2005 to 2009 from Met Eireann's rainfall maps for the entire Lough Foyle coastline (Met Eireann, 2010a).

Table 3.4: Average monthly rainfall (mm) data at Malin Head, Co. Donegal from 2005 to 2009 (Source: Met Eireann, 2010a).

Month/Year	2009	2008	2007	2006	2005	Monthly Total	Monthly Average
Jan	98.8	188.9	161.5	67.6	139.1	655.9	131.18
Feb	40.4	89.6	63.9	40.6	75.2	309.7	61.94
Mar	87.6	142.7	59.7	107.2	65.2	462.4	92.48
Apr	94.7	54.2	32.6	69.9	78.8	330.2	66.04
May	95.2	7.4	101.8	73.4	94.6	372.4	74.48
Jun	47.7	74.8	83.3	63.3	65.9	335	67
Jul	72.2	125.8	105.4	74.1	24.3	401.8	80.36
Aug	170.9	123.2	86.2	73.1	128	581.4	116.28
Sep	71	89.9	79.5	112.7	94	447.1	89.42
Oct	108.6	144.8	77	123.9	109.5	563.8	112.76
Nov	227.6	115.6	102.1	170.2	107.7	723.2	144.64
Dec	57	85.7	109.4	184.7	103.8	540.6	108.12
Annual Total	1171.7	1242.6	1062.4	1160.7	1086.1	-	-
Annual Average	97.6	103.6	88.5	96.7	90.5	-	-

Table 3.5: Total seasonal rainfall (mm) at Malin Head from 2005-2009 (Source: Met Eireann, 2010a)

Season/Year	2009	2008	2007	2006	2005
Spring	277.5	204.3	194.1	250.5	236.8
Summer	290.8	323.8	274.9	210.5	218.2
Autumn	407.2	350.3	258.6	406.8	311.2
Winter	196.2	364.2	334.8	292.9	318.1

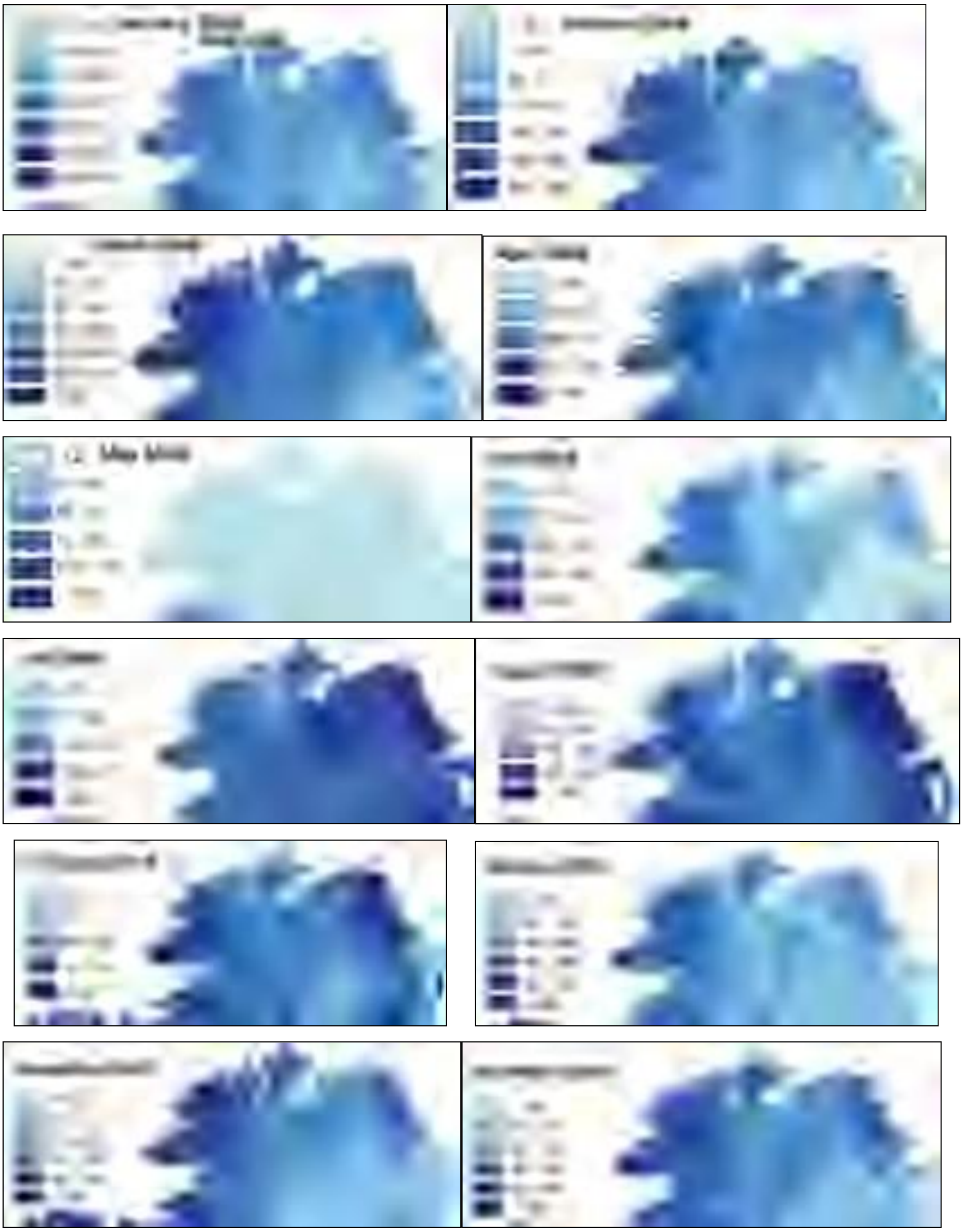

Figure 3.12: Average monthly rainfall (mm) data for 2008 (Source: Met Eireann, 2010a).

Table 3.6: Averaged monthly rainfall (mm) data summarised for the Lough Foyle area (Source: Met Eireann, 2010a).

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	75-150	25-50	25-100	75-150	75-150	<50-75	75-150	100-200	25-75	75-150	150-250	75-100
2008	100-200	50-100	100-200	50-75	<25	<75-100	100-150	150-200	75-150	100-200	50-150	75-200
2007	100-150	75-100	25-100	25-50	50-100	100-150	100-150	50-100	50-100	50-100	50-150	100-150
2006	25-75	25-75	75-150	50-100	75-100	25-75	50-100	50-100	100-150	75-150	75-150	100-200
2005	100-200	50-100	25-75	50-100	50-150	25-100	25-50	50-150	75-150	100-150	50-100	100-150

Table 3.7: Median monthly rainfall (mm) data summarised for the Lough Foyle area (Source: Met Eireann, 2010a).

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	125	38	63	113	113	38	113	150	38	113	200	88
2008	150	75	150	63	13	50	125	175	113	150	100	138
2007	125	88	63	38	75	125	125	75	75	75	100	125
2006	50	50	113	75	88	50	75	75	125	113	113	150
2005	150	75	50	75	100	63	38	100	113	125	75	125

Table 3.8: Total seasonal rainfall (mm) values from 2005-2009 based on median rainfall values (Source: Met Eireann, 2010a).

Year	Spring	Summer	Autumn	Winter
2009	289	301	351	251
2008	226	350	363	363
2007	176	325	250	338
2006	276	200	351	250
2005	225	201	313	350

It can be seen from Table 3-6 and Figure 3-12 that the lowest rainfall in the past 5 years occurred in May 2008 (<25mm) with the highest occurring in August 2008 (175mm). Figure 3- 12 indicates that for the most part, rainfall values along the eastern and southern shores of Lough Foyle are lower than those experienced along the western shore. Table 3-8 shows seasonal rainfall figures for the Lough Foyle area based on median rainfall values from 2005- 2009 (Met Eireann, 2010a). The following seasonal fluctuations were observed from 2005- 2008: In 2005, the summer was the driest season and winter was the wettest, in 2006, summer was driest and autumn was the wettest, in 2007 spring was the driest and winter was the wettest, in 2008 spring was the driest and autumn and winter were the wettest and in 2009 autumn was the wettest season and winter was the driest. These values compare well with the data from the Malin Head station, located approximately 30km northwest of Lough Foyle.

3.2.2. Frequency of Significant Rainfalls

Figures 3-13 and 3-14 show the average monthly rainfall for the Lough Foyle area from 1971-2000 and 2005-2009 respectively. Figure 3-15 shows the average monthly rainfall data at the Malin Head station from 2005-2009. October, November, December and January are typically the wettest months on average and therefore during these months there may be an increased risk of contamination from land run-off and rainfall associated sewer overflows. It is important to highlight that it is not just the winter months that are at risk of increased contamination as can be seen in Figures 3-14 and 3-15 when July and August experienced very heavy rainfall in 2008 and 2009.

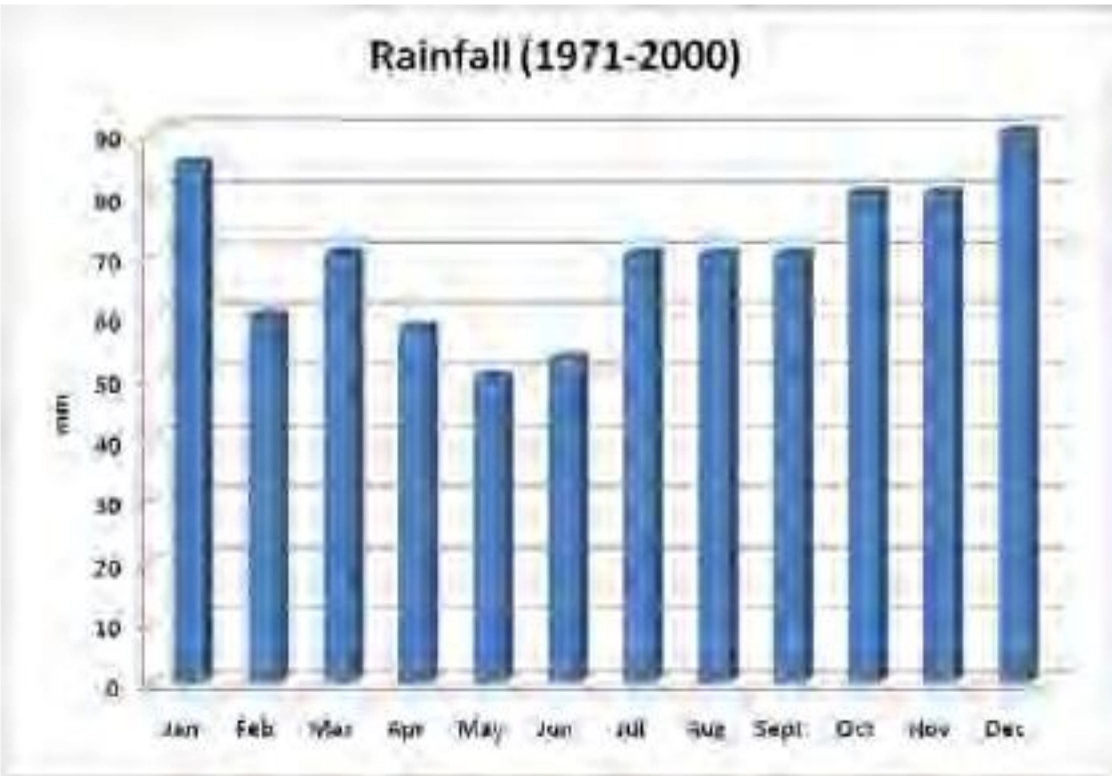

Figure 3.13: Average monthly rainfall (mm) data along the Lough Foyle coast from 1971-2000 (Source: Met Office, 2010).

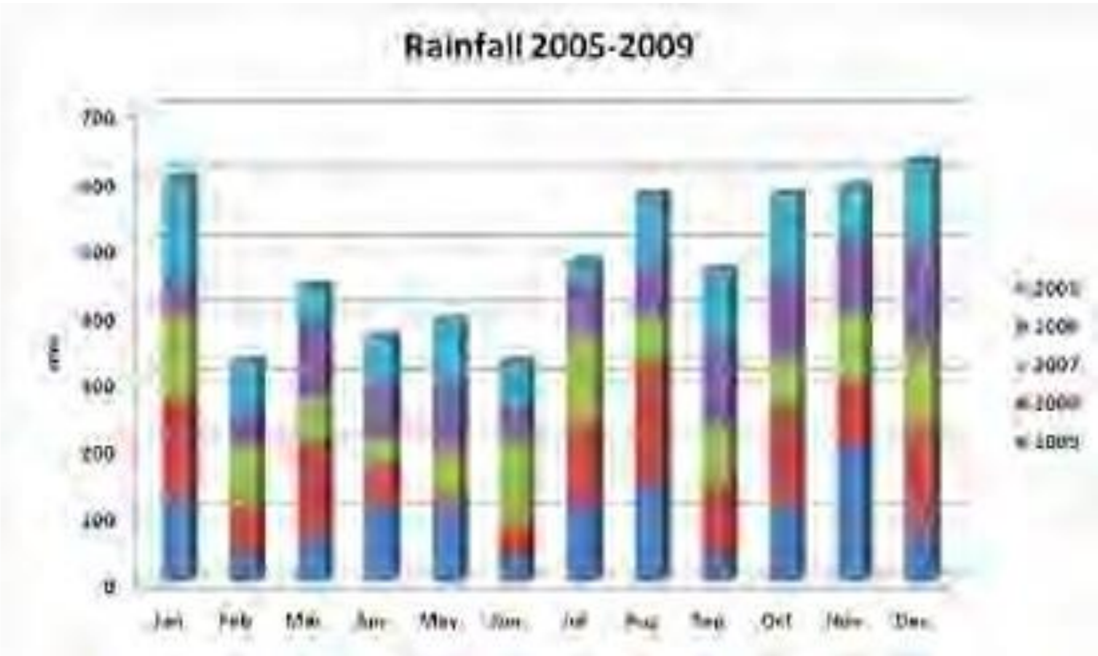

Figure 3.14: Average monthly rainfall (mm) data along the Lough Foyle coast from 2005-2009 (Source: Met Eireann, 2010a).

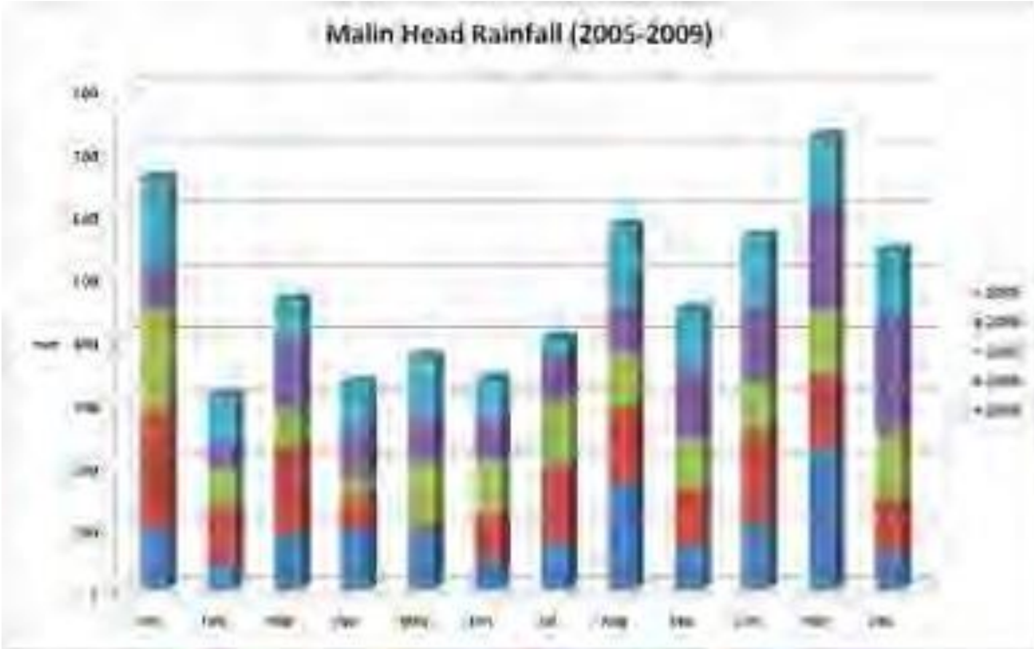

Figure 3.15: Average monthly rainfall (mm) data at Malin Head, Co. Donegal from 2005 to 2009 (Source: Met Eireann, 2010a).

3.3. Wind and Waves

Wind data for Malin Head from 2005 to 2009 is displayed in Table 3-9 below and wind roses for each year can be seen in Figure 3-16 below. In 2005, 25% of the wind came from the south south west; while 16.7% each came from the north, east south east and the south. The strongest winds came from the south south west (16-21 knots). In 2006, 25% of the wind came from the south while 16.7% each came from the north, west, west south west and south south west. The strongest winds in 2006 came from the south, north and west (16-21 knots). In 2007, 25% of the wind came from the south while 16.7% each came from the north north west and south west. The strongest winds in 2007 were from the south west (>21 knots). In 2008, 25% of the winds came from both the north and west south west. The strongest winds in 2008 came from the north, north north west, north west and west south west (16-21 knots). In 2009 20% of the wind came from each of the following directions: east north east, south west and west south west. The strongest winds in 2009 came from the south east. Table 3-10 shows the seasonal averages from 2005 to 2009. Seasonal averages over the past 5 years indicate that winds are typically stronger in the winter months, decreasing by approximately 2 knots in the spring and decreasing by approximately a further 3.5 knots in the summer and increasing by approximately 3 knots in autumn.

Table 3.9: Wind speed and direction data for Malin Head from 2005-2009 (Source: Met Eireann, 2010a).

	2005		2006		2007		2008		2009	
Month	**Mean Speed (kn)**	**Max 10-min Mean Dir (°)**	**Mean Speed (kn)**	**Max 10-min Mean Dir (°)**	**Mean Speed (kn)**	**Max 10-min Mean Dir (°)**	**Mean Speed (kn)**	**Max 10-min Mean Dir (°)**	**Mean Speed (kn)**	**Max 10-min Mean Dir (°)**
January	20.7	200	15.7	200	21.5	230	18.4	250	16.5	140
February	15.8	340	16.6	360	15.8	190	18.7	350	14.4	60
March	14.1	360	16.1	170	17.9	350	20.4	320	16	360
April	14.4	210	14.9	10	11.4	310	17.3	10	12.1	70
May	11	110	16.3	190	13.8	220	13.1	130	14.8	230
June	8.5	230	11.6	250	11.8	90	14.5	240	10.7	250
July	8.6	210	10.5	210	10.2	180	14.2	170	10.8	100
August	9.9	170	13.3	300	12.7	340	12.8	110	12.3	230
September	13	190	13	180	13.5	340	12.3	50	12.8	170
October	13.2	110	15.2	250	13	180	19.2	10	12.1	250
November	15.8	350	19.3	260	17.2	50	17.4	330	n/a	n/a
December	13.7	150	17.5	280	16.5	150	15.6	250	n/a	n/a

Degrees Direction Key: 0°/360° = N; 23° = NNE; 45° = NE; 68° = ENE; 90° = N; 113° = ESE; 135° = SE; 158° = SSE; 180° = S; 203° = SSW; 225° = SW; 248° = WSW; 270° = W; 293° = WNW; 315° = NW; 338° = NNW

Table 3.10: Seasonal averages (knots) for Malin Head wind data (Source: Met Eireann, 2010a).

Season	2009	2008	2007	2006	2005	5-year Average
Winter	15.5	17.6	17.9	16.6	16.7	16.9
Spring	14.3	16.9	14.4	15.8	13.2	14.9
Summer	11.3	13.8	11.6	11.8	9	11.5
Autumn	12.5	16.3	14.6	15.8	14	14.6

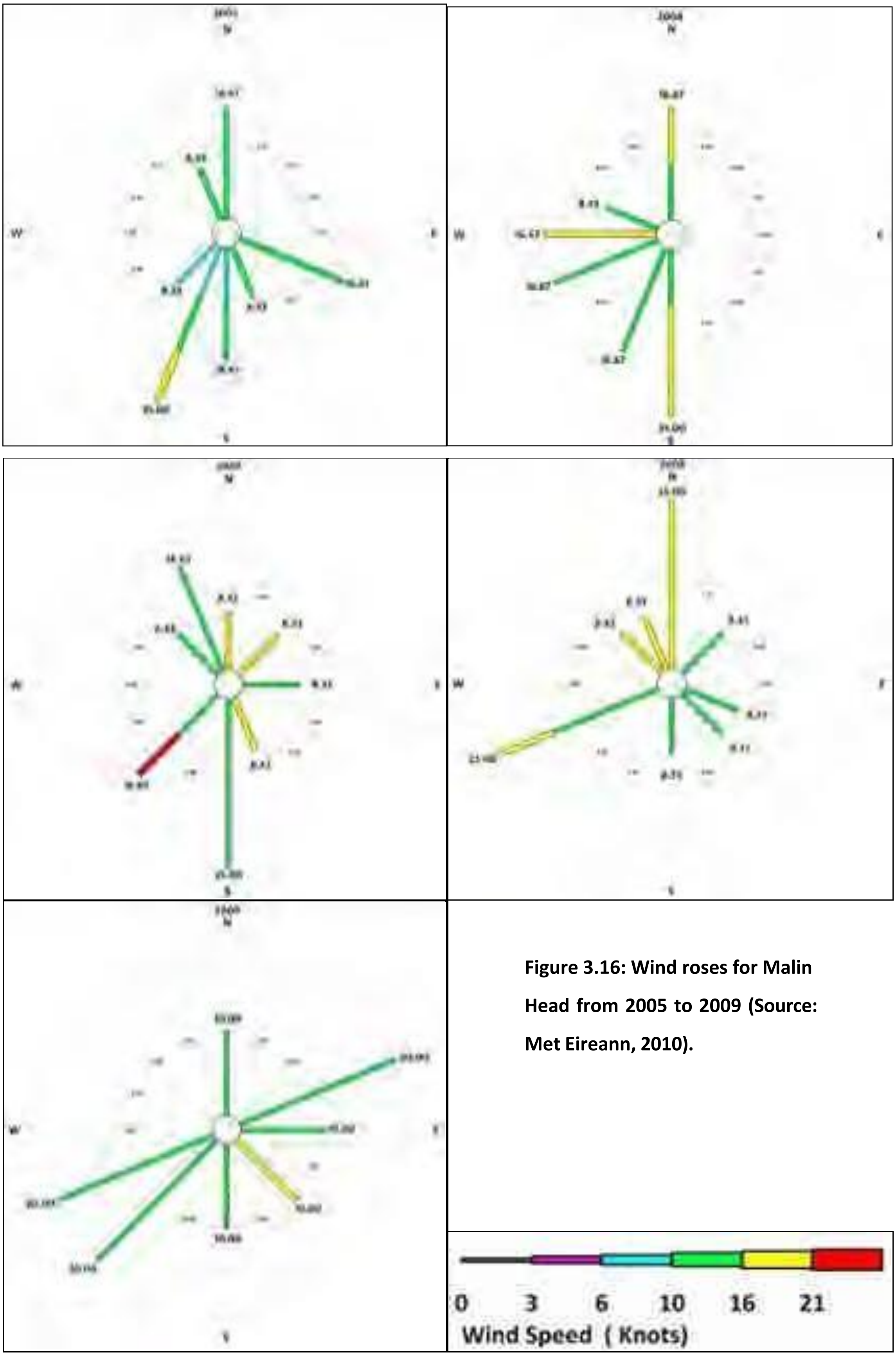

Figure 3.16: Wind roses for Malin Head from 2005 to 2009 (Source: Met Eireann, 2010).

Wind conditions affect the hydrodynamic conditions in Lough Foyle by generating set up, wind-induced currents and waves. Of these phenomena, wind-induced waves are an important factor in the process of sediment resuspension and transport. Especially over the vast shallow areas of Lough Foyle, wave-induced bottom friction may lead to resuspension of material and entrainment of sediments in the water column. Atkins (1992) reports that even for the smallest wind waves (< 30cm), the critical shear stress may be exceeded for resuspension of fine material in shallow areas.

Wind data recorded at the port of Lisahally at the south-western corner of Lough Foyle, from 1/1/2006 to 25/11/2008 was used to analyse the local wind conditions for the Delft3D-FLOW model (Deltares, 2009). It should be noted that there were gaps in the dataset used i.e. December 2006, August-September 2008 and December 2008. The median wind speed over the months varied between 6 and 8 m/s, with a mean monthly average of 7 m/s. Over the year a slight seasonal effect was apparent, with lower wind speeds in summer months and somewhat higher in winter months. The mean monthly wind direction was 240°N (WSW), which corresponds to the approximate orientation of Lough Foyle. A strong divergence of the average value occurred in the month of May, when mean wind direction was 150°N (SSE). No clear seasonal effect in mean direction was apparent; however during spring and summer, the wind direction was more variable than during autumn and winter. It is expected that because of the hills alongside the Lough, the wind is somewhat tunnelled in the direction of the Lough and will have an even more uniform direction over the water. It is therefore expected that the potential for wind driven advection of potentially contaminated surface waters is predominately from the head to the mouth of the Lough.

There is no significant offshore wave penetration into Lough Foyle beyond Greencastle (Deltares, 2009). Any wave energy arriving from offshore is presumable dissipated mostly on The Tuns (a shallow area east offshore of the Lough's entrance) and does not enter the narrow entrance channel to Lough Foyle. Local wind generated waves thus predominate the wave climate in Lough Foyle. Atkins (1992) reports monthly wave height exceedances based on local wind data. Their analysis showed that during the winter months, wave heights exceeded 0.9 m only 1% of time and 0.6 m about 7% of time. In summer, there is a 2% exceedance of 0.6 m and 17% of 0.3 m. This shows that Lough Foyle experiences mild wave conditions over the year.

Figure 3-17 shows wave heights, peak period and near-bed orbital velocity for a wind speed 7m/s and a wind direction of 240°. This was produced by Deltares using the wave model SWAN

(Booij *et al.,* 1999). The predominant wind direction (240°, WSW) lies parallel to the dominant axis of the Lough, therefore resulting in the longest fetch length and highest waves on the northeasterly shore. The maximum computed wave height at the downwind shore is approximately 0.3m and maximum wave period of 2s. On the shallow tidal flats, the wave heights are reduced because of depth limitations, whereas the highest and longest waves are found in the deeper channels of the Lough. However, the largest near-bed velocities (and bed shear stresses) were found on the shallow areas (see Figure 3-17, lowest panel), indicating that most sediment resuspension through wave action takes place in these areas.

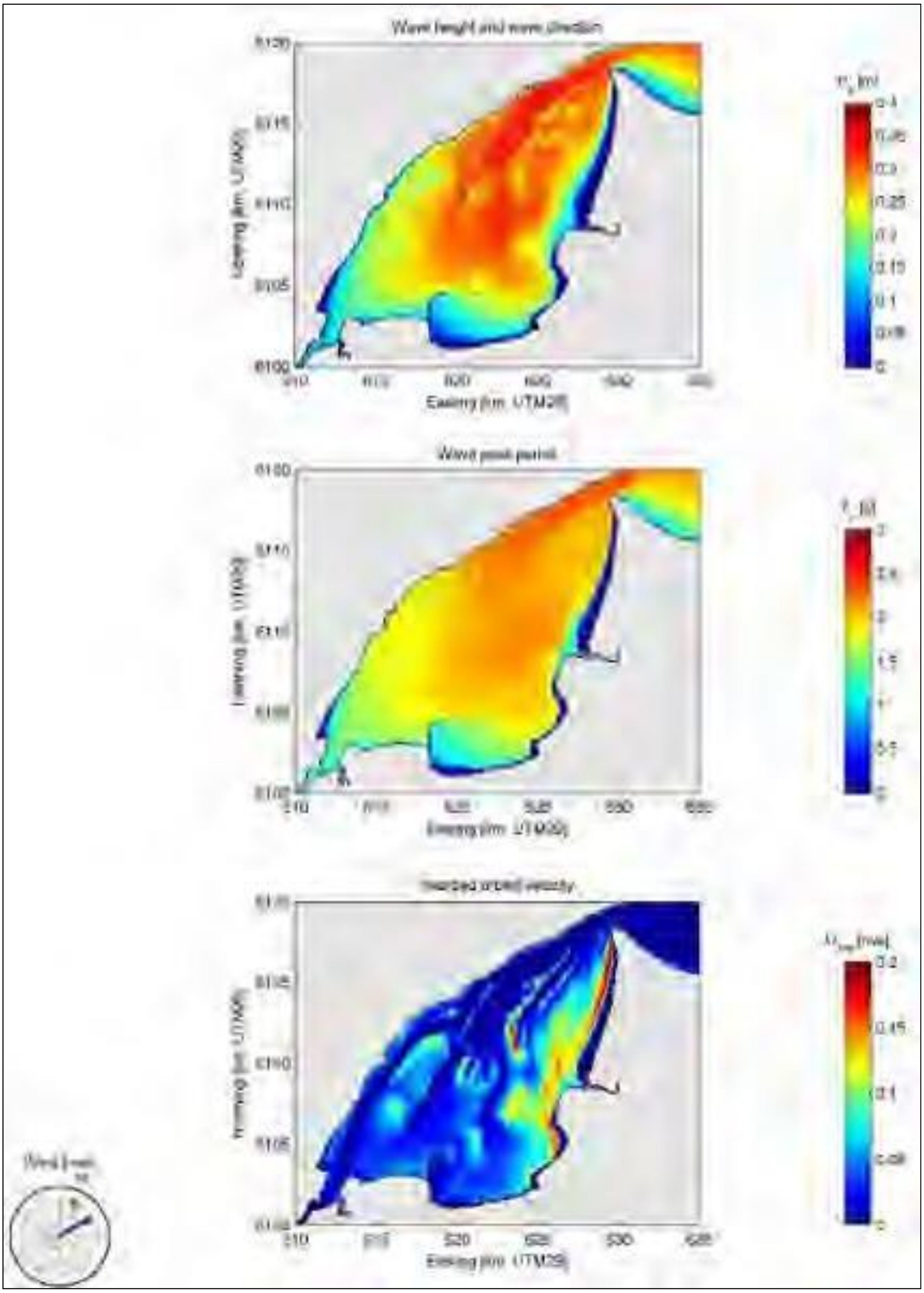

Figure 3.17: Computed wave height, peak period and near-bed orbital velocity for wind speed of 7 m/s and a wind direction of 240° (Source: Deltares, 2009).

3.4. River Discharges

Lough Foyle receives a large quantity of freshwater from the rivers Foyle, Faughan and Roe (Loughs Agency, 2009b). Figure 3-18 below shows the catchment areas of these rivers with three permanent measuring stations, operated by the Rivers Agency. It should be noted that there is no operational measurement data available for the River Foyle. Therefore the measurement station at River Mourne (Drumnabouy House) was used as a representative for the variations in river discharge for the River Foyle. Based on the records at these locations (15 min. interval) strong yearly variation in fluvial flow can be observed for all three rivers. Peaks in discharge occur in all rivers after large rain events.

The discharge for Drumnabouy House (River Mourne) is presented in Figure 3-19 for the period 2006 - 2008. Strong seasonal patterns in river flow are evident with the largest discharges in late summer and autumn. The average monthly values range from 10 to 75 m^3/s. The peak recorded discharge reached 1058 m^3/s on 22-Oct-1987. Based on the time series, characteristic discharge values are derived for the three rivers, presented in Table 3-11. Average values are 7 m^3/s for the River Faughan, 8 m^3/s for the River Roe and 58 m^3/s for the River Mourne. No permanent record for the actual river discharge at River Foyle is available. The Loughs Agency report a mean value of 90 m^3/s for the River Foyle (Loughs Agency, 2009b).

The river discharge also determines the limit of tidal influence upriver, the vertical current profiles near the river mouth and the distance that the salt wedge travels upriver. During periods of high river flows, the tide will be kept back further than during lower river flows.

Figure 3.18: River discharge monitoring locations (Source: Deltares, 2009).

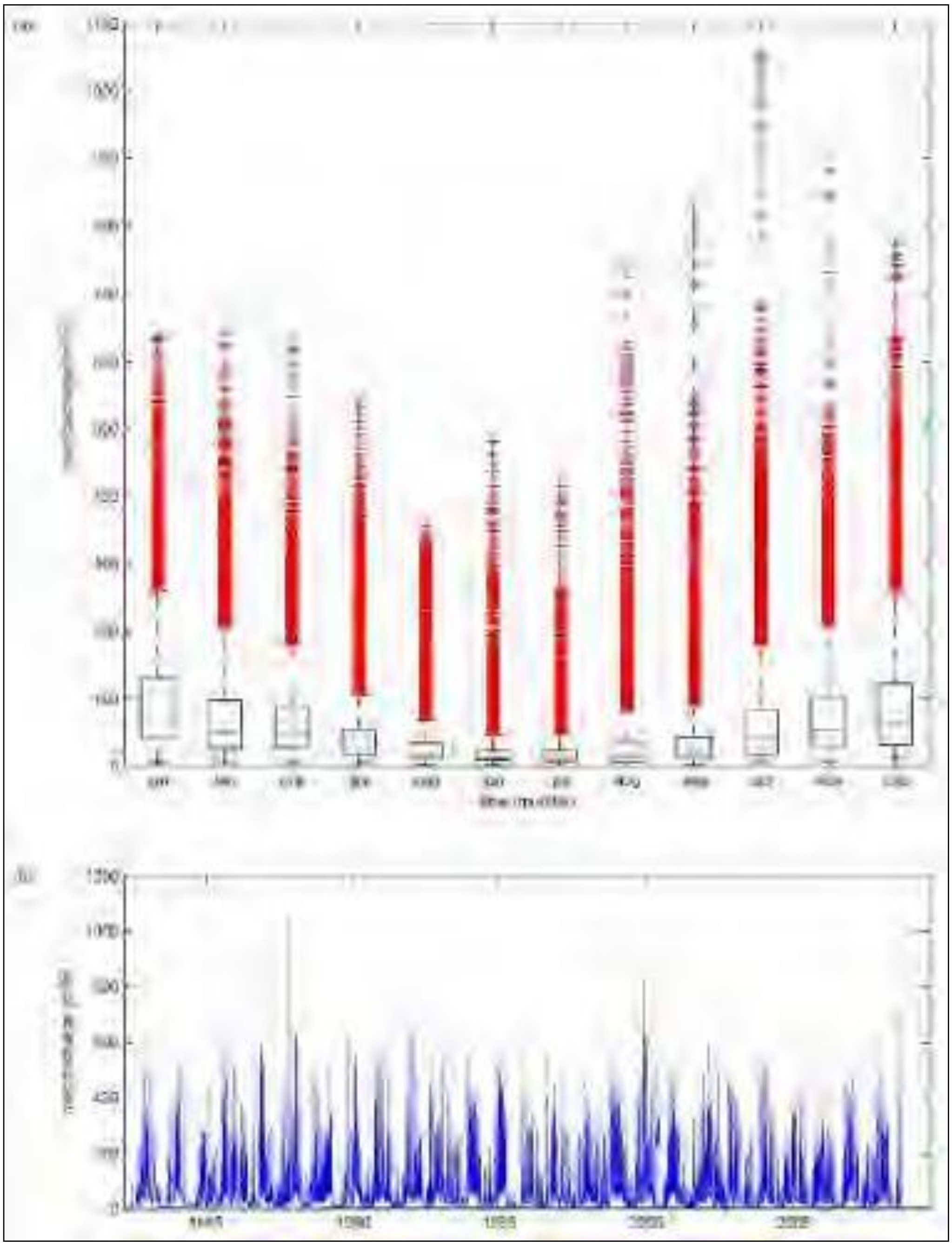

Figure 3.19: River Mourne discharge at Drumnabouy House a) boxplot distribution of discharge per month and b) recorded time series (Source: Deltares, 2009).

Table 3.11: River discharges m^3/s (Source: Rivers Agency in Deltares, 2009).

River	Gauge Location	Interval	1% percentile	10% percentile	Mean	90% percentile	99% percentile	Max
Mourne	Drumnabouy House	17/6/1982–5/9/2008	4	8	58	139	357	1058
Faughan	Drumahoe	27/8/1976-15/9/2008	1	2	8	17	51	253
Roe	Ardnargle	10/1/1975-15/9/2008	0	1	9	23	71	186

3.5. Depth

Lough Foyle exhibits extensive intertidal and subtidal areas of mud flats and sand flats, which are intersected by tidal channels. The Lough is relatively shallow, with an average depth of approximately 4m. The deeper tidal channels reach an average depth of approximately 8 – 12m, whereas the entrance channel, where the width is constrained by headlands, is over 20m deep. Figure 3-20 shows a bathymetric map of Lough Foyle.

Figure 3.20: Depths in Lough Foyle (Source: The Loughs Agency).

3.6. Salinity

Lough Foyle receives a large quantity of freshwater from the rivers Foyle ($90m^3/s$), Faughan ($7m^3/s$) and Roe ($8m^3/s$) (Loughs Agency, 2009b). This freshwater and the saltwater that enters the Lough every tidal cycle creates density differences and variations in salinity distribution over the water column and spatially over the Lough.

The Loughs Agency collects data on coastal water quality including salinity via a network of remotely moored Environmental Monitoring Stations (EMS) in Loughs Foyle. The Agri-Food and

Biosciences Institute (AFBI) manage and process this data. The EMS consists of an electronic unit which houses the data storage devices for capturing real time data and the GSM (Global System for Mobile Communication) telemetry system for communication of this data with a base station on-land. There are two EMS stations located within Lough Foyle, North and South (See Figure 3-21). The Lough Foyle North EMS is located at Magilligan Point and the Lough Foyle South EMS is located at Black Braes.

In addition, the Loughs Agency hold salinity data from a number of growth monitoring sites located with Lough Foyle. These sites can also be seen in Figure 3-21. It should be noted that the Loughs Agency growth monitoring site LF BB is the same as EMS South.

Figure 3.21: Location of the 2 EMS sites in Lough Foyle.

The salinity data presented in Figure 3-22 (from the Lough Foyle South EMS) shows the seasonal flow of freshwater runoff to the Foyle estuary at the Black Braes site. This less dense fresh water stays at the surface of the estuarine water thereby lowering surface salinity and creating a pycnocline. This trend is most closely associated with the high precipitation levels experienced during these periods. Low summer river levels and tidal ingress of seawater lead to higher salinity values during the summer months. The bottom salinities are usually higher than the surface owing to the fact that dense oceanic seawater with high salinity inhabits the bottom of the water column, the less dense freshwater floating on top of this highly saline bottom layer. The results of the salinity measurements at Black Braes reveal a variable salinity throughout the year with surface levels as low as 6.34 psu in October 2008 and as high as 30.38 psu in January 2009. Bottom salinity ranged from 11.36 psu (October 2008) to 33.91 (January 2009).

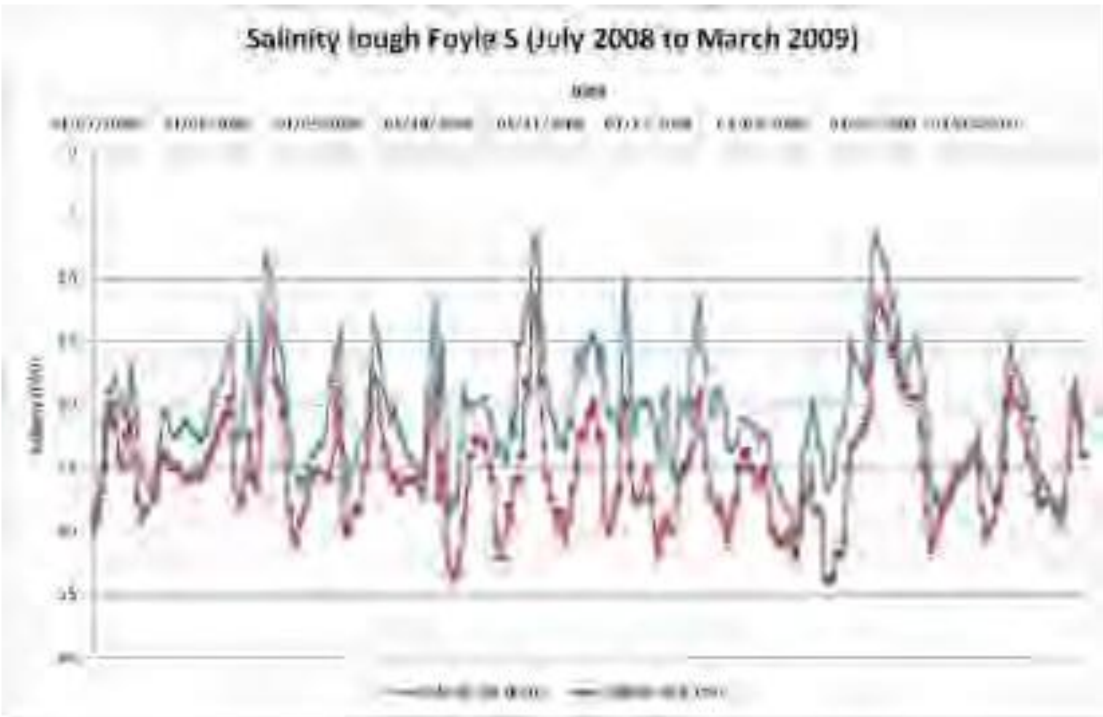

Figure 3.22: Salinity profile at Lough Foyle South EMS from July 2008 to March 2009. (Source: Loughs Agency).

Salinity levels are typically much higher at Magilligan than at the inner Lough station as seen in Figure 3-23. Surface levels typically ranged from 8.27 psu (October 2008) to 35.44 psu (July 2008) and bottom salinity levels ranged from 4.84 psu (March 2009) to 35.02 psu (July 2008). The variability seen is probably associated with the tidal cycle and river discharge levels. Salinity levels appear to become more variable as the year progresses and as precipitation levels increase in the Autumn/Winter period, with some decreases in salinity (October and November 2008) probably correlating with freshwater discharges after periods of high precipitation.

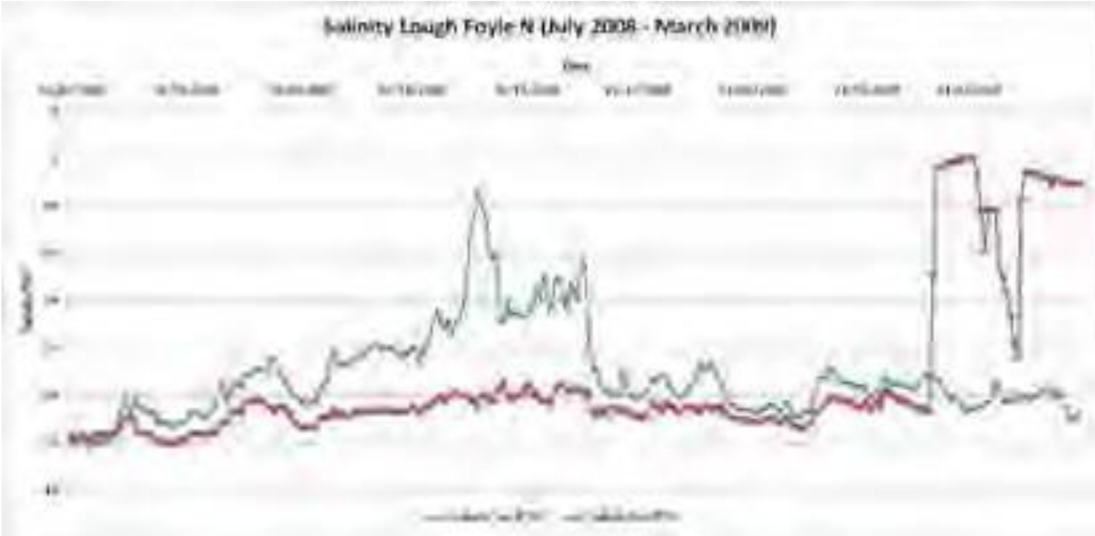

Figure 3.23: Salinity profile at Lough Foyle North EMS from July 2008 to March 2009 (Source: Loughs Agency).

Figure 3-24 shows salinity values at station LF LDC from August 2006 to June 2008. Values ranged from 0 (24/4/2007, 1m) to 32.5 psu (30/8/2006, 3m). For the most part, from August 2006 to April 2007 salinity levels at 1m depth were much lower than those from deeper waters. From May 2007 to April 2008 surface and bottom salinity levels did not indicate a pycnocline.

Figure 3.24: Salinity profile at Lough Foyle LF LDC from August 2006 to June 2008 (Source: Loughs Agency).

Figure 3-25 shows salinity values at station LF D2 from April 2006 to June 2008. With the exception of the summer months in 2007 and 2008, surface salinity levels were lower than those from deeper waters.

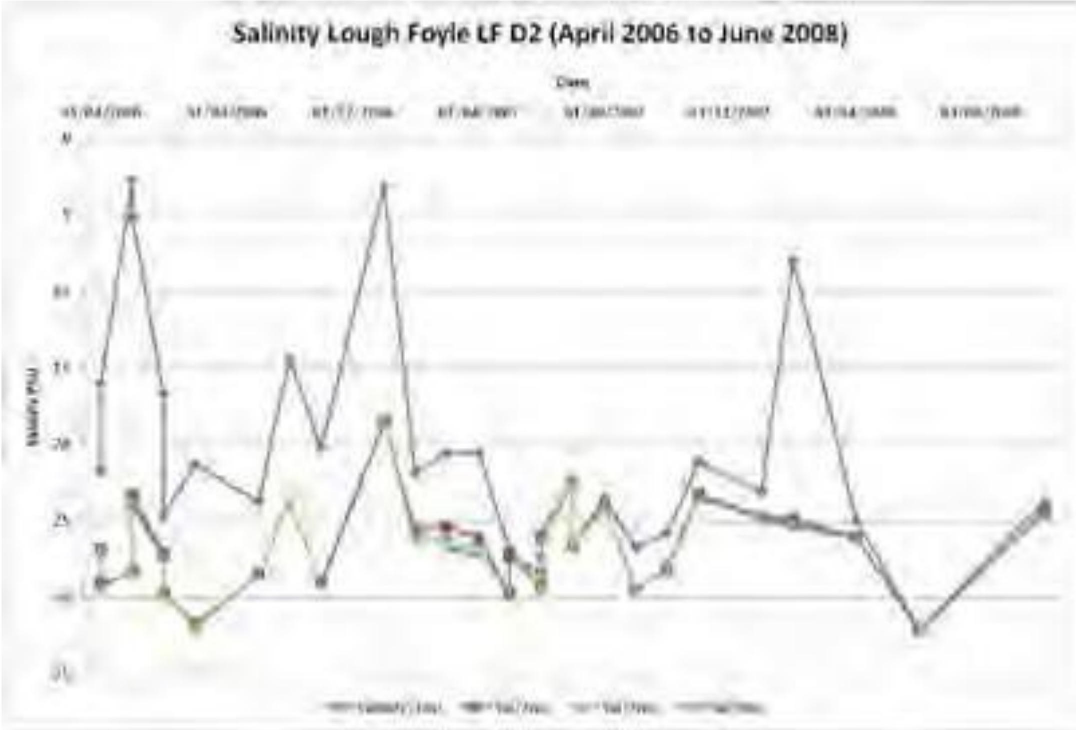

Figure 3.25: Salinity profile at Lough Foyle LF D2 from April 2006 to June 2008 (Source: Loughs Agency).

Figure 3-26 shows salinity values at station LF CC from July 2007 to June 2008. At this station, located towards the eastern shoreline surface and bottom salinity were very similar with the exception of one reading in February 2008.

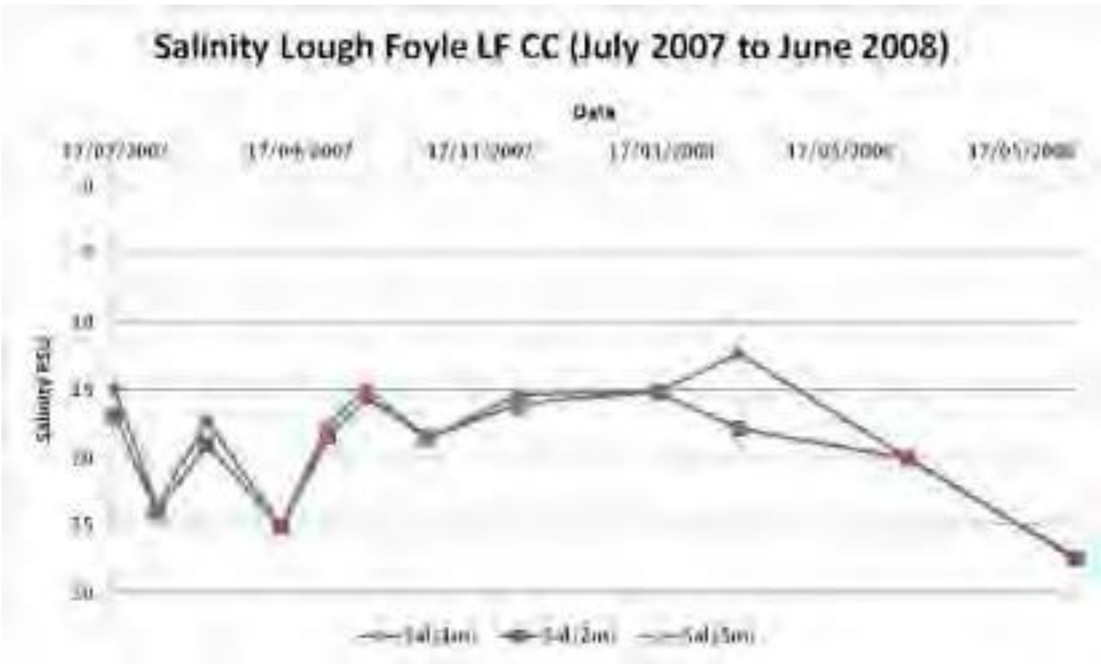

Figure 3.26: Salinity profile at Lough Foyle LF CC from July 2007 to June 2008 (Source: Loughs Agency).

Figure 3-27 shows salinity values at station LF S2 from February 2006 to June 2008. Surface salinity values varied greatly from bottom salinities for the most part until June 2007 when all values were very similar.

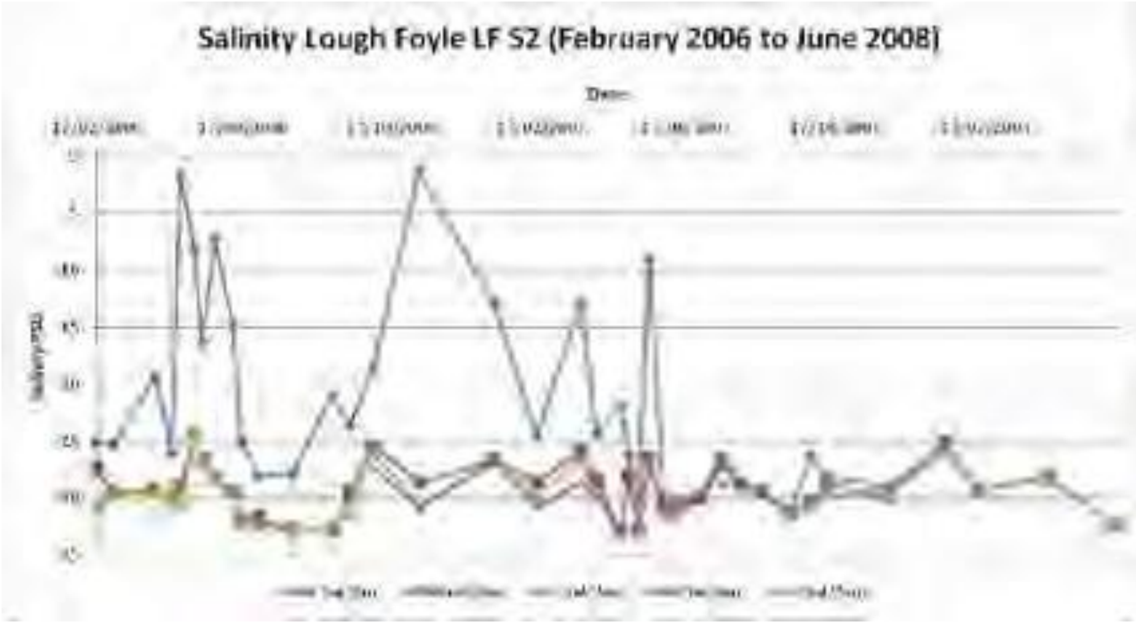

Figure 3.27: Salinity profile at Lough Foyle LF S2 from February 2006 to June 2008 (Source: Loughs Agency).

3.7. Simple/Complex Models

The Loughs Agency in conjunction with Londonderry Port & Harbour Commissioners commissioned a Delft3D-FLOW model in 2008. This work modelled the hydrodynamics of Lough Foyle and current velocity and direction outputs can be seen in Section 3.1 above and wave outputs can be seen in Section 3.3 above. These model outputs were consulted to aid in the identification of sampling points.

It should be noted that the used hydrodynamic data were derived from an existing hydrodynamic model (Delft3D-FLOW) that was set up by Deltares for a sediment dispersion study in Lough Foyle. This model was calibrated and validated for the purpose of this sediment dispersion study and provides an indication of the expected flow in other areas of Lough Foyle, but requires additional validation (by means of measurements) in the shallow east and southeast parts of Lough Foyle. The presented hydrodynamic flow data were derived from model simulations that simulated normal (tidal) flow conditions, average river discharges and used a normal wind condition, i.e. 7 m/s from a south-westerly direction (240°N).

3.8. Discussion

The bathymetric and hydrographic characteristics of Lough Foyle are such that the northwestern section with deeper depths and strong tidal currents is a well mixed and flushed area of the Lough and as a result any contaminants will be diluted and dispersed rapidly. This area is therefore less vulnerable to contamination than other areas of the Lough. The southeastern section of the Lough is much shallower in nature and therefore has higher suspended sediment concentrations coupled with weak currents. This area receives large quantities of freshwater input from the Foyle, Faughan and Roe and as a result of these factors is more vulnerable to contamination. The area at the mouth of the Foyle, while it does have strong tidal currents during the ebb flow of a spring tide, it also receives the largest freshwater input accompanied with high suspended sediment loads and is therefore also vulnerable to contamination.

4. Identification of Pollution Sources

4.1. Summary of Sources and Locations

4.2. Desktop Survey

Pollution sources were considered up to a distance of 20km from the shores of Lough Foyle and are where appropriate divided into three zones; 0-5km, 5-10km and 10-20km. Sources greater than 20km from Lough Foyle were considered if significant. Any sources within the 20km limit that discharged into Lough Swilly and not Lough Foyle were not considered. Figure 4-1 shows the 3 distance limits used for this assessment.

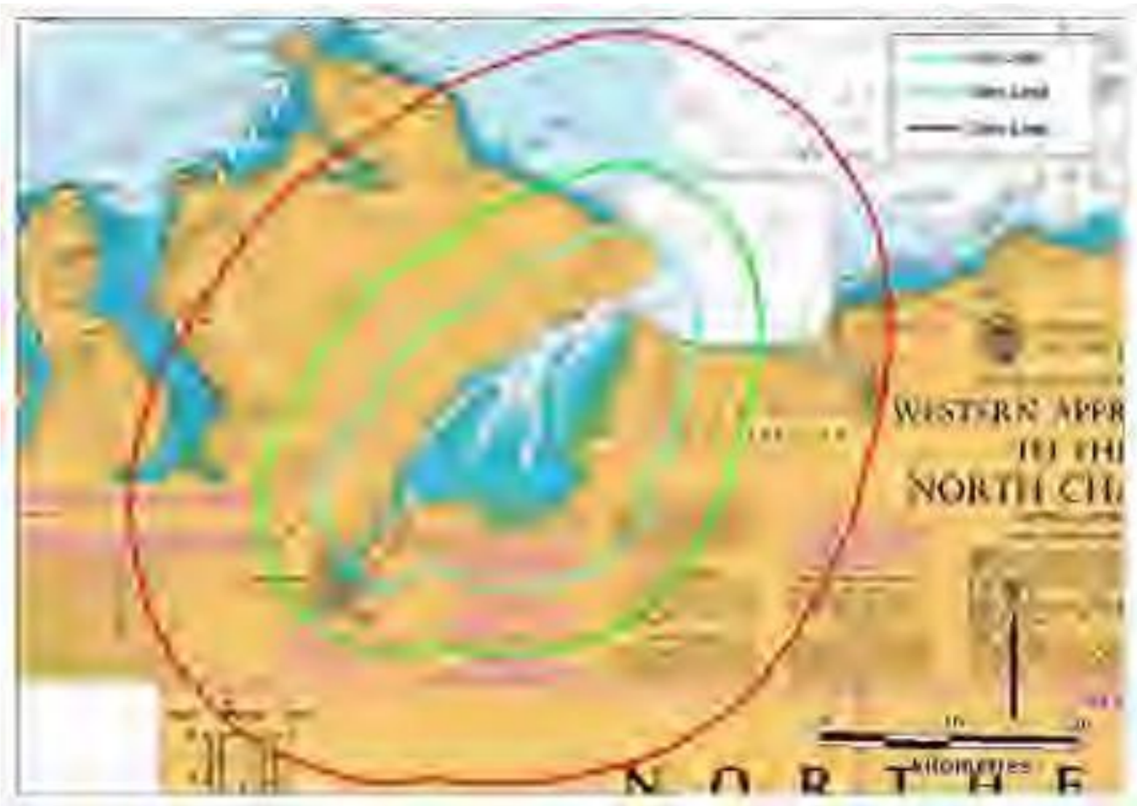

Figure 4.1: Distance limits used for assessment of the pollution sources.

4.2.1. Human Population & Activities

Figure 4-2 shows all of the counties which fall within the 20km limit for Lough Foyle: Donegal, Tyrone, Derry and Antrim. Population census data for Northern Ireland is given in units of

Super Output Areas (SOA) or wards and District Electoral Divisions (DED) are used by the Central Statistics Office (CSO) for Co. Donegal. Figure 4-3 shows the Northern Ireland SOA/wards and the Republic of Ireland DEDs with a 20km radius of Lough Foyle (Figure 4-4 shows the legend for Figure 4-3).

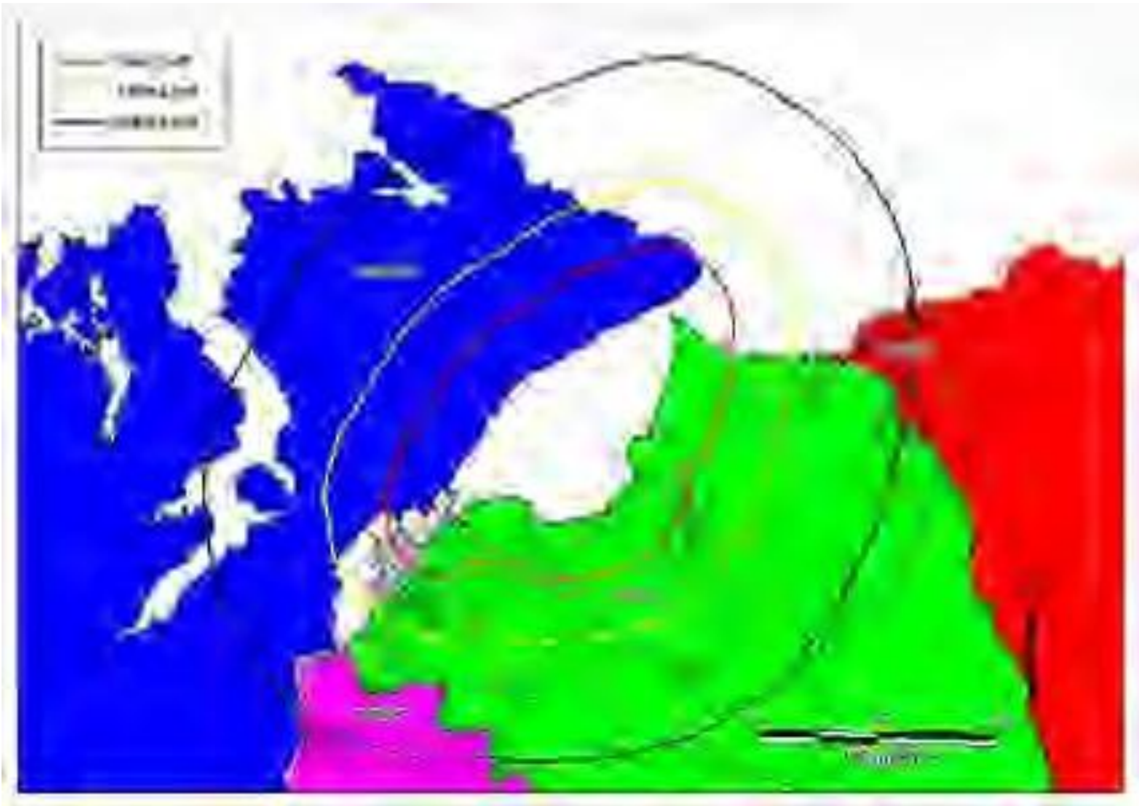

Figure 4.2: Counties within a 20km radius of Lough Foyle.

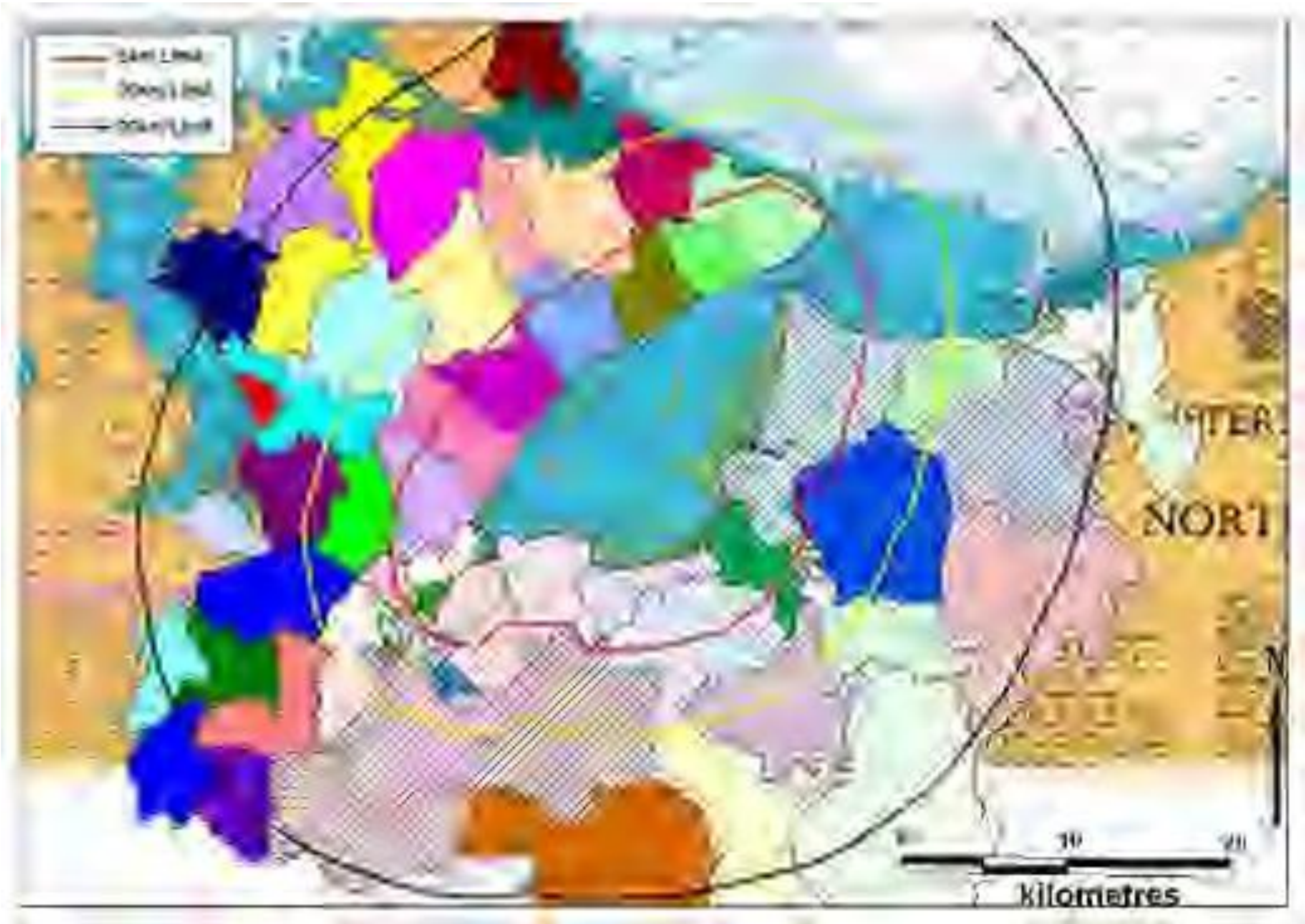

Figure 4.3: SOPs and DEDs within a 20km radius of Lough Foyle.

Figure 4.4: Legend to accompany Figure 4-3.

Data on human populations for Northern Ireland was obtained from The Northern Ireland Statistics and Research Agency (NISRA) website. Only small area statistics from 2003 could be sourced. The Republic of Ireland data was obtained through the Central Statistics Office (CSO) online census programme (CSO, 2010) for the year 2006. Figure 4-5 shows the human population within a 20km radius of Lough Foyle and Table 4-1 shows this data in graphical form (Northern Ireland data has been rounded to 5 persons).

The largest population centres in the study area is Culmore and Shantallow West, followed by Crevagh in Londonderry City. Along the western coastline, population size are < 1000 except at Moville (2174) and Kilderry (1744). The remainder of the Inishowen Peninsula and west of Londonderry City populations are < 2000 with the exception of Buncrana on the eastern coast of Lough Swilly. Along the eastern shoreline, the population in Magilligan is <2000. The southern shoreline has a population size ranging from 3000 to 5000 in Greysteel, Eglington and Enagh Derry. South and east of Lough Foyle, populations are <4000 with the exception of The Cuts in Co. Antrim.

Human population in given areas is obtainable from census data, however relating this information to the level of microbial contamination in coastal waters is difficult and is constrained by the geographic boundaries used. However, it is clear that areas with a higher population will have higher levels of sewage and wastewater entering the Foyle system.

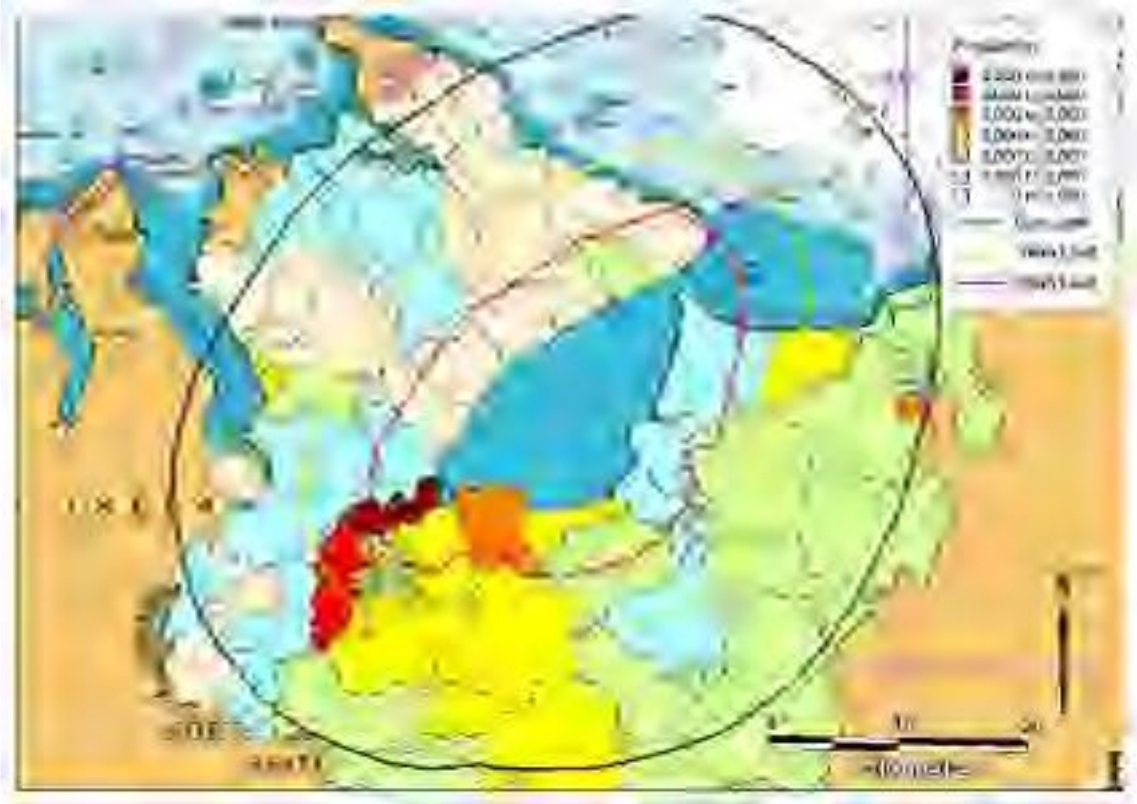

Figure 4.5: Human population within 20km of Lough Foyle (Source: NISRA, 2010; CSO, 2010).

Table 4.1: Human population within 20km of Lough Foyle (Source: NISRA, 2010; CSO, 2010).

County	DED/SOA	Population	County	DED/SOA	Population
Donegal	Buncrana Urban	3411	Derry	Aghanloo	2290
Donegal	Ballyliffin	1299	Derry	Westland	2255
Donegal	Birdstown	1026	Derry	Victoria Derry	2530
Donegal	Buncrana Rural	2949	Derry	The Diamond	2355
Donegal	Burt	1264	Derry	Strand Derry	3490
Donegal	Carndonagh	1931	Derry	Springtown	3610
Donegal	Carthage	995	Derry	Shantallow West	6460
Donegal	Castlecary	666	Derry	Shantallow East	2745
Donegal	Castleforward	909	Derry	Rosemount	2490
Donegal	Culdaff	899	Derry	Pennyburn	2895
Donegal	Desertegny	662	Derry	New Buildings	3655
Donegal	Fahan	1476	Derry	Lisnagelvin	3705
Donegal	Glennagannon	671	Derry	Kilfennan	3235
Donegal	Gleneely	746	Derry	Holly Mount	3895
Donegal	Glentogher	1133	Derry	Foyle Springs	4095
Donegal	Greencastle	807	Derry	Enagh Derry	3435
Donegal	Illies	796	Derry	Eglinton	4305

County	DED/SOA	Population	County	DED/SOA	Population
Donegal	Inch Island	438	Derry	Ebrington	2725
Donegal	Kilderry	1744	Derry	Culmore	8625
Donegal	Killea	1547	Derry	Crevagh	5225
Donegal	Malin	622	Derry	Creggan South	2395
Donegal	Mintiaghs	797	Derry	Creggan Central	3015
Donegal	Moville	2174	Derry	Claudy	3560
Donegal	Newtown Cunningham	1178	Derry	Caw	2700
Donegal	Redcastle	791	Derry	Carn Hill	3245
Donegal	Straid	1344	Derry	Brandywell	2630
Donegal	Three Trees	646	Derry	Beechwood	2555
Donegal	Turmone	297	Derry	Banagher	3120
Donegal	Whitecastle	883	Derry	Ballynashallog	3990
Donegal	St. Johnstown	1227	Derry	Altnagelvin	3210
Donegal	Treantaghmucklagh	637	Antrim	Waterside	2585
Derry	Clondermot	2945	Antrim	University	2565
Tyrone	Slievekirk	2090	Antrim	The Cuts	4295
Tyrone	Dunnamanagh	2085	Antrim	Strand Coleraine	2700
Derry	Upper Glenshane	2150	Antrim	Royal Portrush	2310
Derry	The Highlands	1635	Antrim	Ringsend	2210
Derry	Roeside	1435	Antrim	Portstewart	1930
Derry	Rathbrady	1645	Antrim	Mount Sandel	1815
Derry	Magilligan	1960	Antrim	Macosquin	2105
Derry	Greystone_Limavady	1595	Antrim	Hopefield	3345
Derry	Greysteel	3920	Antrim	Dundooan	2915
Derry	Glack	2050	Antrim	Cross Glebe	2455
Derry	Forest	2385	Antrim	Churchland	2270
Derry	Feeny	2115	Antrim	Central Coleraine	1620
Derry	Enagh Limavady	2865	Antrim	Castlerock	3075
Derry	Dungiven	2110	Antrim	Ballysally	2555
Derry	Coolessan	1680	Antrim	Atlantic	2550
Derry	Ballykelly	1900			

4.2.2. Tourism

In 2008, 1,596,000 tourists visited the North Western Region of Ireland (Failte Ireland, 2008), of these, 204,000 visited Co. Donegal. There is no way of estimating what percentage of these visitors spent time along the Inishowen Peninsula. There has been a steady increase in tourist numbers from 2003 to 2008 and the number of tourists that visited the North West in 2008 was a 27% increase on 2003 numbers (Failte Ireland, 2008). Of these tourists, 58% were holidaying and 34% were visiting family and friends, 42% of them arrived in between July and

September and 34% of them arrived between April and June and 50% stayed in a hotel or B&B.

In 2008, 2,076,000 tourists visited Northern Ireland (Northern Ireland Tourist Board, 2008) compared with 2,107,000 in 2007. This was a 9.5% increase on 2003 numbers but a 1.5% decrease on 2007 numbers. Of these tourists, 45% were visiting family and friends and 25% were holidaying, 32% of them arrived in between July and September and 26% of them arrived between April and June and 57% stayed with family or friends while 36% stayed in a hotel or B&B. The number of tourists visiting the Lough Foyle area can be estimated from regional data for 2007, when 149,000 tourists visited the Derry city council area (7% of the Northern Ireland total) and 883,700 tourists visited the Causeway Coast and Glens (which includes the Limavady Borough Council area). The figure visiting the Causeway coast and Glens is 42% of the total visiting Northern Ireland, but this figure must be regarded with caution as it includes a vast area outside of Limavady Borough Council.

There are numerous activities which tourists can partake in along the shores of Lough Foyle, i.e. walking, climbing, water activities, golf, cycling, equestrian, spa and wellness and cultural and heritage sights and centres. Figure 4-6 shows all tourism related activity sites around Lough Foyle. This data was gathered from a Loughs Agency Marine Tourism Audit.

Increases in population in the local area due to tourism may result in an increase in the quantity of sewage discharged within the Lough Foyle area. In addition, Papadakis *et al.* (1997) found significant correlations between the number of swimmers present on beaches and the presence of pathogenic bacteria. In 2007, Elmir *et al.* (2007) showed the role of human skin as an intermediate mechanism of pathogen transmission to the water column.

In order to identify any increase in *E. coli* levels based on seasonality, a one-way analysis of variance (ANOVA) was performed on *E. coli* results from 10 water sampling sites at Longfield Bank and Balls Point and on *E. coli* results from shellfish flesh taken at a number of beds around the Lough (Refer to Sections 5.3.1 and 5.3.2 for more details on these sampling points). For this analysis, all results that returned a less than (<) value (i.e. <1) were halved (i.e. <1 becomes 0.5). No significant differences in the *E. coli* concentrations in water and flesh were observed at any of the sites based on seasonality from 2000 to 2008. However, it should be noted that not all seasons from 2000 to 2008 were equally represented and the sampling sites were not representative of the entire Lough.

Figure 4.6: Tourist activity sites around Lough Foyle.

4.2.3. Sewage Discharges

Sewage effluent can vary in nature depending on the degree to which the sewage has been treated. Discharges of sewage effluent can arise from a number of different sources and be continuous or intermittent in nature:

- treated effluent from urban sewage treatment plants (continuous);
- storm discharges from urban sewage treatment plants (intermittent);
- effluent from 'package' sewage treatment plants serving small populations (continuous);
- combined sewer and emergency overflows from sewerage systems (intermittent);
- septic tanks (intermittent);
- crude sewage discharges at some estuarine and coastal locations (continuous).

Treatment of sewage ranges from:

- none at all (crude sewage);
- preliminary (screening and/or maceration to remove/disguise solid matter;
- primary (settling to remove suspended solids as sewage sludge). Typically removes 40% of BOD (Biochemical Oxygen Demand), 60% of suspended solids; 17% of nitrogen and

20% of phosphorus from the untreated sewage;

- secondary (settling and biological treatment to reduce the organic matter content). Typically removes 95% of BOD, 95% of suspended solids, 29% of nitrogen and 35% of phosphorus from the untreated sewage. Nutrient removal steps can be incorporated into secondary treatment which can reduce ammonia - N down to 5 mg/l and phosphorus to 2mg/l.
- tertiary (settling, biological treatment and an effluent polishing step which may involve a reed bed (unlikely for a coastal works) or a treatment to reduce the load of micro-organisms in the effluent). Typically removes 100% of BOD, 100% of suspended solids, 33% of nitrogen and 38% of phosphorus from the untreated sewage.

4.2.3.1. Continuous Sewage Discharges

Figure 4-7 shows the continuous sewage discharges and waste water treatment works (WWTW) within a 20km radius of Lough Foyle accounted for during the desk-based assessment. A large-scale cross-referenced Figure can be found in Section 4.4 Location of Sources. Any treatment plant or discharge within the 20km limit not discharging into Lough Foyle has been omitted. There are no WWTW in the Republic of Ireland that discharge into Lough Foyle. All of the WWTW have associated continuous discharge pipes associated with them, however coordinates for some discharge pipes associated with the WWTW were not available i.e. Benone WWTW, Carmoney WWTW, Strathfoyle (SPS, Sewage Pumping Station), Molenan WWTW. Assumptions as to the location of their discharge pipes were made based on the plant's location, e.g. Benone WWTW – discharge out to sea; Carmoney WWTW – discharge into the River Faughan or a tributary of it; Strathfoyle (SPS) and Molenan WWTW – discharge into the River Foyle or a tributary of it. It was also assumed that each of these plants had one continuous discharge pipe. Discharge data for the >250 p.e. (population equivalent) plants were obtained from Northern Ireland Water (NI Water).

In total there are 66 WWTW located within the study area, of these 19 are located 0-5km from Lough Foyle, 11 are located 5-10km from Lough Foyle and 36 are located 10-20km from the Lough. In addition to WWTW discharge pipes, there are 6 domestic sewage pipes discharging into Lough Foyle from Moville, Co. Donegal. In total, there are 7 direct discharges into Lough Foyle (or a tributary of Lough Foyle) and the remainder discharge into rivers which ultimately discharge into Lough Foyle. Table 4-2 shows details on the continuous discharges (Source: WWTW Public Register). Those which have a Y in the Discharge Data column of Table 4-2 have accompanying discharge analysis results (Source: NI Water), which can be found in Appendix 1 (from 2006-2010). The following parameters are available for these discharges: Ammonia, Nitrate, Nitrite, Nitrogen oxides, Total Nitrogen, Phosphorus, Biochemical Oxygen Demand, Suspended Solids and pH. The largest volumes discharged by these plants come from the Culmore WWTW, which discharges secondary treated waste water directly into Lough Foyle (69,978 m^3/day) and the Limavady WWTW, which discharges secondary treated waste water into the Roe River, approximately 9.5km from Lough Foyle (10,347 m^3/day).


N O R T

Figure 4.7: Locations of Continuous Sewage Discharges within 20km of Lough Foyle (Source: EPA, NI Water, NIEA and The Loughs Agency).

Table 4.2: Continuous Discharges within 20km of Lough Foyle.

Map Code	Source	Size (p.e.)	Site Code	Discharge Data	Treatment	Easting	Northing	Longitude	Latitude	Receiving Water Body	Max discharge /day (m^3)	DWF/ day (m^3)
67A	Moville Domestic Wastewater	n/a	D0212-01	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Bredagh River	n/a	n/a
68A	Moville Domestic Wastewater	n/a	D0212-01	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Bredagh River	n/a	n/a
69A	Moville Domestic Wastewater	n/a	D0212-01	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Lough Foyle	n/a	n/a
70A	Moville Domestic Wastewater	n/a	D0212-01	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Bredagh River	n/a	n/a
71A	Moville Domestic Wastewater	n/a	D0212-01	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Bredagh River	n/a	n/a
72A	Moville Domestic Wastewater	n/a	D0212-01	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Bredagh River	n/a	n/a
73A	Moville Domestic Wastewater	n/a	n/a	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Bredagh River	n/a	n/a
1A	Drumavally WWTW	>250	S43DH	Y	Primary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Lough Foyle	1032	344
2A	Aughil WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of L. Foyle	105	35
3A	Benone WWTW	n/a	n/a	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	To Sea	n/a	n/a
4A	Glack WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Ballykelly River	255	85

Map Code	Source	Size (p.e.)	Site Code	Discharge Data	Treatment	Easting	Northing	Longitude	Latitude	Receiving Water Body	Max discharge /day (m^3)	DWF/ day (m^3)
5A	Drumsurn WWTW	>250	S43DG	Y	Primary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Castle River	335	112
6A	Ballyquin WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib of R. Roe	35	12
7A	Ballymacallion WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Gelvin	17	6
8A	Bonnanaboigh WWTW	>250	S43BF	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Bovevagh River	320	107
9A	Largy WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Roe	102	34
10A	Gortnahey WWTW	>250	S43EJ	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Wood Burn	224	74.7
11A	Ballymonie WWTW	>250	S43BA	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib of Woodburn	326	112
12A	Feeny WWTW	>250	S43EE	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib of Altcattan Water	469	156
13A	Dernaflaw WWTW	>250	S43DA	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Owenbeg River	179	60
14A	Owenbeg WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Owenbeg River	35	12

Map Code	Source	Size (p.e.)	Site Code	Discharge Data	Treatment	Easting	Northing	Longitude	Latitude	Receiving Water Body	Max discharge /day (m^3)	DWF/ day (m^3)
15A	Dungiven WWTW	>250	S43DJ	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	1600	533
16A	Caugh Hill WWTW	<250	n/a	N	Good secondary treated effluent with nitirification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Owenrigh River	20	7
17A	Crebarkey WWTW	<250	n/a	N	Good secondary treated effluent with nitirification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Roe	38	13
18A	Carnanbane WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Owenrigh River	63	21
19A	Fincarn WWTW	<250	n/a	N	Good secondary treated effluent with nitirification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Altcattan River	153	51
20A	Limavady WWTW	>250	S43GI	Y	Secondary treated wate water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	10347	3997
21A	Ardgarvan WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	115	38
22A	Dromore Highlands WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Bessbrook River	90	30

Map Code	Source	Size (p.e.)	Site Code	Discharge Data	Treatment	Easting	Northing	Longitude	Latitude	Receiving Water Body	Max discharge /day (m^3)	DWF/ day (m^3)
23A	Drumraighland WWTW	<250	n/a	N	Good secondary treated effluent with nitirification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Burnfoot	81	27
24A	Edenmore Road WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Castle River	9.6	3
25A	Lisnakilly WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	38	13
26A	Drummond WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Castle River	25	8
27A	Bolea WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Curly River	126	42
28A	Myroe WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	72	24
29A	Aghanloo WWTW	>250	S43AB	Y	Secondary Treated Water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	440	147
30A	Aghanloo WWTW	>250	n/a	N	Balanced pre-treated water water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	2658	0
31A	Ballykelly WWTW	>250	S43AJ	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Ballykelly River	6272	2091

Map Code	Source	Size (p.e.)	Site Code	Discharge Data	Treatment	Easting	Northing	Longitude	Latitude	Receiving Water Body	Max discharge /day (m^3)	DWF/ day (m^3)
32A	Longfield WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Foyle	122	40.8
33A	Greysteel (Gortgare) WWTW	>250	S43FF	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Lough Foyle	1158	458
34A	Ervey Road WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Crunkin River	17	6
35A	Killylane WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Muff River	35	12
36A	Park WWTW	>250	S43IJ	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan	520	204
37A	Gortscreagan WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Faughan	114	38

Map Code	Source	Size (p.e.)	Site Code	Discharge Data	Treatment	Easting	Northing	Longitude	Latitude	Receiving Water Body	Max discharge /day (m^3)	DWF/ day (m^3)
38A	Killaloo WWTW	<250	n/a	N	Treated waste water effluent to ground water via a subsoil irrigation system	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Groundwater	72	24
39A	Kinculbrack WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan	127	42
40A	Claudy WWTW	>250	S43CE	Y	Secondary Treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan	1345	537
41A	Mulderg WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Foreglen River	80	27
42A	Clagan WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Faughan	38	13
43A	Legaghory WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Faughan	17.1	7.8
44A	Gosheden (1) WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Faughan	32	11
45A	Gosheden (2) WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan	44	15
46A	Ardground WWTW	<250	n/a	N	Secondary Treated Effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Faughan	40.7	18.6
47A	Knockbrack WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan	29	10

Map Code	Source	Size (p.e.)	Site Code	Discharge Data	Treatment	Easting	Northing	Longitude	Latitude	Receiving Water Body	Max discharge /day (m^3)	DWF/ day (m^3)
48A	Moneycanon WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Altinaghree Burn	65	22
49A	Carmoney WWTW	n/a	n/a	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	R. Faughan or Trib of R. Faughan	n/a	n/a
50A	Donnybrewer WWTW	>250	S43DB	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Lough Foyle	2376	792
51A	Culmore WWTW	>250	S43CI	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Lough Foyle	69978	26370
52A	Strathfoyle (SPS)	n/a	n/a	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	R. Foyle or Trib of R. Foyle	n/a	n/a
53A	Donemana WWTW	>250	S45DB	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Burn Dennet	506	169
54A	Mountcastle WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Burn Dennet	14	5
55A	Tamnaherin WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Muff Glen River	171	57
56A	Oghill WWTW	<250	n/a	N	Good secondary treated effluent with nitirfication	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Faughan	35	12

Map Code	Source	Size (p.e.)	Site Code	Discharge Data	Treatment	Easting	Northing	Longitude	Latitude	Receiving Water Body	Max discharge /day (m^3)	DWF/ day (m^3)
57A	Drumahoe WWTW	>250	S43DD	Y	Tertiary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan. Pumped to Culmore since 2008	6402	2134
58A	Nixons Corner WWTW	<250	n/a	N	Good secondary treated effluent with nitrification	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Foyle	145	48
59A	Molenan WWTW	n/a	n/a	N	Unknown	[Redacted]	[Redacted]	[Redacted]	[Redacted]	R. Foyle or Trib or R. Foyle	n/a	n/a
60A	Magheramason WWTW	>250	S45HA	Y	Secondary treated waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Foyle	360	120
61A	Creaghcor WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Foyle	14	5
62A	Cullion (Bready) WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Burngibbagh River	69	23
63A	Donagheady WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Foyle	80	27
64A	Milltown (Burndennet) WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Burn Dennet	80	27
65A	Bready WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib of R. Foyle	162	54
66A	Faughan WWTW	<250	n/a	N	Secondary treated effluent	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan	7.2	2

4.2.3.2. Rainfall Dependent Sewage Discharges

In addition to WWTW having a continuous discharge pipe a number of them also have intermittent discharge pipes. These can be seen in Figure 4-8 along with all other rainfall dependent discharges i.e. septic tanks and overflows. Figure 4-9 shows the legend associated with Figure 4-8. A large-scale cross-referenced Figure can be found in Section 4.4 Location of Sources. There are 110 rainfall dependent discharges within 20km of Lough Foyle (some of these are discharged through the same pipe). Thirty-seven of them are located within 5km of the Lough and the remainder between 5-20km. There are 34 septic tanks in the area, 21 within 5km of the Lough, 3 between 5-10km of the Lough and 10 >10km from the Lough. Table 4-4 shows all available data on these discharges and Table 4-5 shows all available data on septic tanks.

Figure 4.8: All rainfall dependent sewage discharges and septic tanks within a 20km radius of Lough Foyle (Source: EPA, NIEA and The Loughs Agency).

Figure 4.9: Legend associated with Figure 4-8.

Table 4.3: Details on rainfall dependent discharges.

Map Code	Location	Discharge Type	Easting	Northing	Longitude	Latitude	Water Body	Discharge Details
15B-E	Dungiven	Secondary treated effluent overflow (B); Screened storm waste water (C); Settled waste water (D); Temporary secondary treated waste water discharge (E)	268530	409930	-6.9308	54.9322	River Roe	Secondary treated effluent overflow (B) may discharge in combination with C, D and E; B and E conditions - max 1600m^3/day, DWF 533m^3/day. Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 371 l/s (Discharge C) due to rain/snow melt. Discharge D limited to what overflows when the flow at the flow to full treatment overflow exceeds 15.5 l/s (1600m3/day) due to rain/snow melt.
51B, 15C	Culmore (WWTW)	Settled storm waste water (B), Screened storm waste water (C)	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Lough Foyle	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 810 l/s)Discharge B) due to rain/snow melt. Volume of Discharge C is limited to that which over flows at the boundary storm overflow weir due to rain/snow melt while the inlet pumping station is passing forward @ maximum flow of 2232 l/s.
53B	Donemana (WWTW)	Settled storm sewage	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Burn Denn et	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 5.91 l/s due to rain/snow melt.

Map Code	Location	Discharge Type	Easting	Northing	Longitude	Latitude	Water Body	Discharge Details
57B, 57B	Drumahoe (WWTW)	Settled storm waste water (B), Screened storm waste water (C)	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 74 l/s (Discharge B) and 148 l/s (Discharge C) due to rain/snow melt.
60B	Magheramason	Screened settled storm waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Foyle	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 4.2 l/s due to rain/snow melt.
18B	Carnanbane	Screened storm waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Owenrigh River	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 0.73 l/s due to rain/snow melt.
20B, 20C	Limavady	Settled storm waste water (B), Screened storm waste water (C)	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 120 l/s (Discharge B) and 326.4 l/s (Discharge C) due to rain/snow melt.
21B	Ardgarvan (WWTW)	Screened storm waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 1.33 l/s due to rain/snow melt.
29B	Aghanloo (WWTW)	Settled storm sewage	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Roe	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 5.09 l/s due to rain/snow melt.

Map Code	Location	Discharge Type	Easting	Northing	Longitude	Latitude	Water Body	Discharge Details
31B	Ballykelly (WWTW)	Screened storm waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Ballykelly River	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 72.6 l/s due to rain/snow melt.
33B, 33C	Greysteel (Gortgare) (WWTW)	Screened settled storm waste water (B), Screened storm waste water (C)	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Stream to Lough Foyle	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 13.4 l/s (Discharge B) and 21.2 l/s (Discharge C) due to rain/snow melt.
36B, 36C	Park (WWTW)	Settled storm waste water (B), Screened storm sewage (C)	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 6.02 l/s (Discharge B) and 19 l/s (Discharge C) due to rain/snow melt.
40B, 40C	Claudy	Screened storm waste water (B), Screened settled storm waste water (C)	[Redacted]	[Redacted]	[Redacted]	[Redacted]	River Faughan	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 15.6 l/s (Discharge B) and 27.4 l/s (Discharge C) due to rain/snow melt.
43B, 43C	Legaghory	Screened unsettled storm waste water (B & C)	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Faughan	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 0.2 l/s (Discharge B) and 0.59 l/s (Discharge C) due to rain/snow melt.
46B	Ardground	Screened unsettled storm waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of R. Faughan	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 0.47 l/s (Discharge B) and 1.41 l/s (Discharge C) due to rain/snow melt.

Map Code	Location	Discharge Type	Easting	Northing	Longitude	Latitude	Water Body	Discharge Details
1B	Drumavally	Untreated storm sewage	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Lough Foyle	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 12 l/s due to rain/snow melt.
5B	Drumsurn (WWTW)	Settled storm waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Castle River	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 3.9 l/s due to rain/snow melt.
10B	Gortnahey (WWTW)	Screened storm waste water	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Trib. Of Wood Burn	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 2.6 l/s due to rain/snow melt.
11B, 11C	Ballymonie	Settled storm water (B), Settled Storm Water (C)	262810	409390	-7.02014	54.9281	Trib of Woodburn	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 3.8 l/s (Discharge B) and 9.5 l/s (Discharge C) due to rain/snow melt.
12B	Feeny	Screened storm waste water	262690	404860	-7.023	54.8875	Trib of Altcattan Water	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 5.4 l/s due to rain/snow melt.
13B	Dernaflaw	Screened storm waste water	266710	408990	-6.9594	54.924	Owenbeg River	Volume of settled storm waste water discharge is limited to that which overflows when the flow at storm overflow weir exceeds 2.1 l/s due to rain/snow melt.
74	Unknown	Surface	267956.12	425175.73	-6.93613	55.0693	Unknown	Unknown

Map Code	Location	Discharge Type	Easting	Northing	Longitude	Latitude	Water Body	Discharge Details
75	Unknown	Final Effluent	267463.45	423775.59	-6.94417	55.0567	Unknown	Unknown
76	Unknown	Final Effluent	267483.26	423795.93	-6.94386	55.0569	Unknown	Unknown
77	Unknown	Unknown	267441.61	423864.92	-6.94449	55.0575	Unknown	Unknown
78	Unknown	Combined	267436.18	423773.28	-6.9446	55.0567	Unknown	Unknown
79	Unknown	Combined	267423.65	423762.17	-6.9448	55.0566	Unknown	Unknown
80	Unknown	Combined	267448.18	423761.11	-6.94442	55.0566	Unknown	Unknown
81	Alexander Road	Combined	267303	423405	-6.94677	55.0534	Unknown	Unknown
82	Unknown	Foul	266251.18	427148.95	-6.96236	55.0872	Unknown	Unknown
83	Unknown	Foul	267458.39	423728.68	-6.94426	55.0563	Unknown	Unknown
84	Unknown	Foul	267457.41	423723.88	-6.94428	55.0563	Unknown	Unknown
85	Unknown	Surface	267391.46	423730.46	-6.94531	55.0564	Unknown	Unknown
86	Ballyclose Street	Final Effluent	267286	423449	-6.94703	55.0538	Unknown	Unknown
87	Roemill Road	Combined	266874	422877	-6.95361	55.0488	Unknown	Unknown
88	Glasvey Drive	Foul	261886.92	421900.35	-7.03184	55.0406	Unknown	Unknown
89	Pinewood Cresent	Combined	254543	407350	-7.14948	54.9108	Unknown	Unknown
90	Lettershendony	Foul	250143	415061	-7.21674	54.9805	Unknown	Unknown
91	Lettershendoney Avenue	Foul	250447	415148	-7.21197	54.9813	Unknown	Unknown
92	DLR/JW 17/7/99 X	Foul	247291	422655	-7.26003	55.049	Unknown	Unknown
93	Unknown	Unknown	250373.54	420061.92	-7.21226	55.0254	Unknown	Unknown
94	Killylane Road	Final Effluent	253252.8	420465.41	-7.16716	55.0287	Unknown	Unknown
95	Unknown	Unknown	250381.16	419977.86	-7.21215	55.0247	Unknown	Unknown
96	Unknown	Unknown	250391.92	419911.89	-7.212	55.0241	Unknown	Unknown
97	Unknown	Unknown	250416.69	420020.16	-7.21159	55.025	Unknown	Unknown

Map Code	Location	Discharge Type	Easting	Northing	Longitude	Latitude	Water Body	Discharge Details
98	Unknown	Unknown	250457.35	420060.06	-7.21095	55.0254	Unknown	Unknown
99	Unknown	Unknown	250454.42	420055.25	-7.21099	55.0253	Unknown	Unknown
100	Unknown	Unknown	250320.8	419943.44	-7.2131	55.0244	Unknown	Unknown
101	Unknown	Unknown	250309.04	419956.45	-7.21328	55.0245	Unknown	Unknown
102	Unknown	Unknown	250347.28	420011.58	-7.21268	55.025	Unknown	Unknown
103	Unknown	Unknown	250386.1	420052.01	-7.21206	55.0253	Unknown	Unknown
104	Unknown	Unknown	250380.89	419901.31	-7.21217	55.024	Unknown	Unknown
105	Unknown	Unknown	250376.3	419904.73	-7.21224	55.024	Unknown	Unknown
106	Unknown	Unknown	250342.43	419938.29	-7.21277	55.0243	Unknown	Unknown
107	Unknown	Unknown	250447.21	420047.6	-7.21111	55.0253	Unknown	Unknown
108	Unknown	Unknown	250442.68	420043.08	-7.21118	55.0252	Unknown	Unknown
109	King Street	Final Effluent	244029	416704	-7.31198	54.9958	Unknown	Unknown
110	Unknown	Foul	245544.11	414672.58	-7.28863	54.9775	Unknown	Unknown
111	Duke Street Roundabout	Combined	244060	416311	-7.31156	54.9923	Unknown	Unknown
112	Bonds Hill	Combined	244088.93	416431.72	-7.31109	54.9934	Unknown	Unknown
113	Emergency Overflow	Combined	243825	416037	-7.31527	54.9899	Unknown	Unknown
114	Fountain Hill	Combined	243935	416121	-7.31354	54.9906	Unknown	Unknown
115	Top of the Hill Dunfield Terrace	Combined	243948	415879	-7.31337	54.9884	Unknown	Unknown
116	Victoria Road	Combined	243820	415974	-7.31536	54.9893	Unknown	Unknown
117	Unknown	Combined	245120.86	415488.05	-7.29511	54.9848	Unknown	Unknown
118	Unknown	Foul	245121.5	415488.92	-7.2951	54.9848	Unknown	Unknown
119	Donemana	Combined	244048	403098	-7.31377	54.8736	Unknown	Unknown
120	St. Columbs Park	Foul	244205	417668	-7.30908	55.0045	Unknown	Unknown

Map Code	Location	Discharge Type	Easting	Northing	Longitude	Latitude	Water Body	Discharge Details
121	Caw Park	Combined	245037.89	417910.94	-7.29603	55.0066	Unknown	Unknown
122	Victoria Market No 2	Combined	243496	417031	-7.32026	54.9988	Unknown	Unknown
123	Victoria Market No 1	Combined	243501	417038	-7.32018	54.9989	Unknown	Unknown
124	Pennyburn Interceptor	Combined	244949	419213	-7.29721	55.0183	Unknown	Unknown
125	Culmore Road	Combined	244092.97	418936.98	-7.31064	55.0159	Unknown	Unknown
126	Unknown	Combined	243699	419418	-7.31672	55.0203	Unknown	Unknown
127	Racecourse Road No.1	Combined	243480	419033	-7.32021	55.0168	Unknown	Unknown
128	Duncreggan Road	Combined	243641.43	418485.94	-7.31777	55.0119	Unknown	Unknown
129	Belmont CSO	Combined	243662	419394	-7.31731	55.02	Unknown	Unknown
130	Rock Road	Combined	243558	418009	-7.31914	55.0076	Unknown	Unknown
131	Clarendon Street	Combined	243323	417257	-7.32293	55.0009	Unknown	Unknown
132	Lawrence Hill	Final Effluent	243375	417525	-7.32208	55.0033	Unknown	Unknown
133	Pennyburn Industrial Estate	Combined	242981	418619	-7.32807	55.0131	Unknown	Unknown
134	Glen Road	Surface	242394.21	417935.51	-7.33734	55.0071	Unknown	Unknown
135	Moat Street	Combined	243097	415939	-7.32666	54.9891	Unknown	Unknown
136	Bridge Street	Combined	243693	416394	-7.31728	54.9931	Unknown	Unknown
137	Orchard Street	Combined	243672.14	416695.45	-7.31756	54.9958	Unknown	Unknown
138	Union Hall Place	Combined	243566	416834	-7.3192	54.9971	Unknown	Unknown
139	Foyle Road	Combined	243570.49	416189.35	-7.31922	54.9913	Unknown	Unknown
140	John Street	Combined	243718	416364	-7.31689	54.9928	Unknown	Unknown

Map Code	Location	Discharge Type	Easting	Northing	Longitude	Latitude	Water Body	Discharge Details
141	Lower Bennett Street	Combined	243387	416116	-7.3221	54.9906	Unknown	Unknown
142	Coshowen	Combined	242529	415760	-7.33556	54.9875	Unknown	Unknown
143	Sunningdale Drive	Combined	241963	414553	-7.34458	54.9767	Unknown	Unknown
144	Prehen Park	Combined	242071.8	414826.15	-7.34284	54.9791	Unknown	Unknown
145	Lone Moor Road 1	Combined	242307	415859	-7.33901	54.9884	Unknown	Unknown
146	Lone Moor Road 2	Combined	242331.37	415906.82	-7.33863	54.9888	Unknown	Unknown
147	Unknown	Foul	237119.27	407628.37	-7.42112	54.9149	Unknown	Unknown
148	Unknown	Foul	237089.13	408434.44	-7.42149	54.9221	Unknown	Unknown

Table 4.4: Septic tank data within 20km limit of Lough Foyle.

Map Code	Name	Ownership	Longitude	Latitude	Easting	Northing
149	Ballyhacket (WWTW)	Water Service	[Redacted]	[Redacted]	[Redacted]	[Redacted]
150	Limestone Road (2)	NIHE	-6.93797	55.1372	267724	432732
151	Limestone Road (1)	NIHE	-6.93728	55.1371	267768	432727
152	Drumneechy	Water Service	-6.91436	54.9706	269517	414214
153	Roeside	Water Service	-6.94834	55.0553	267199	423616
154	Airfield	Water Service	-7.16803	55.0388	253184	421586
155	Meat Plant	Water Service	-7.16817	55.0382	253176	421516
156	Ervey Road (Septic Tank 1)	NIHE	-7.17794	54.972	252638	414140
157	Ervey Road (Septic Tank 2)	Water Service	-7.17864	54.9714	252594	414078
158	Mulderg (WWTW Original)	Water Service	[Redacted]	[Redacted]	[Redacted]	[Redacted]
159	Killycor	Water Service	-7.09752	54.8997	257891	406163
160	McLean Road (2)	NIHE	-7.20038	55.0405	251114	421750
161	Culmore Point (WWTW)	Private	[Redacted]	[Redacted]	[Redacted]	[Redacted]
162	Donnybrewer Road 88	NIHE	-7.20876	55.0398	250579	421667
163	97-99 Donnybrewer Road	NIHE	-7.20257	55.04	250974	421694
164	98-100 Donnybrewer Road	NIHE	-7.20502	55.0408	250817	421775
165	Donnybrewer Road 101a	NIHE	-7.19854	55.0413	251230	421838
166	Donnybrewer Road 101b	NIHE	-7.198	55.0413	251265	421840
167	Donnybrewer Road 101	NIHE	-7.19754	55.0413	251294	421842
168	Donnybrewer Road 103a	NIHE	-7.19711	55.0413	251322	421844
169	McLean Road (1)	NIHE	-7.19873	55.0399	251220	421680
170	Gransha (Septic Tank)	Water Service	-7.27036	55.0182	246667	419216
171	Stradreagh (Septic Tank)	Water Service	-7.26662	55.0156	246909	418937
172	Faughan (WWTW)	Water Service	[Redacted]	[Redacted]	[Redacted]	[Redacted]

Map Code	Name	Ownership	Longitude	Latitude	Easting	Northing
173	Carmoney (WTW)	Water Service	[Redacted]	[Redacted]	[Redacted]	[Redacted]
174	Castlemellan Upper	Water Service	-7.32688	54.8945	243184	405414
175	Glenagoorland	Water Service	-7.28566	54.9009	245821	406156
176	Castlemellan Lower	Water Service	-7.33204	54.8855	242863	404405
177	Tullyard (Donemana)	Water Service	-7.33007	54.8849	242990	404340
178	Willow Road	Unadopted	-7.40854	54.8989	237941	405855
179	Carrigans		-7.42719	54.9502	236698	411554
180	Greencastle (Housing Scheme)		-6.98008	55.2053	264928	440276
181	Redcastle (Housing Scheme)		-7.13202	55.1592	255319	435013
182	St. Johnston (Housing Scheme)		-7.45896	54.9358	234675	409932

4.2.3.3. Emergency Discharges

Figure 4-10 shows all emergency discharges located within a 20km limit of Lough Foyle. A large-scale cross-referenced Figure can be found in Section 4.4 Location of Sources. Three are within 5km of the Lough and 1 is between 5-10km of the Lough. Table 4-5 shows all available detail on these emergency discharges (Source WWTW Public Register). Appendix 2 shows all pollution incident locations in the Lough Foyle area from 2004-2009 (Source: NIEA, Northern Ireland Environment Agency). There were 135 incidents reported in total. All of these were of a low severity with the exception of 2 high severity incidents and 9 medium severity incidents. None resulted in instantaneous fish kills. The first high severity incident occurred in January 2006, approximately 2.8km west of Ballykelly on the southeastern shore of Lough Foyle. This incident involved a sewage fungus in the watercourse at Carrickhugh. It was an agricultural pollution incident resulting from poor working practice. The second occurred in October 2009 in Campsey, approximately 2.5km south Lough Foyle. It was a chemical pollution incident resulting from a fire at a tyre depot.

Figure 4.10: Emergency discharges within a 20km limit of Lough Foyle.

Table 4.5: Details on emergency discharges (WWTW Public Register).

Map Code	Source	Location	Size (p.e.)	Site Code	Discharge Data	Discharge	Easting	Northing	Water Body
51D	WWTW Plant	Culmore (WWTW)	>250	S43CI	Y	Screened waste water in emergency	[Redacted]	[Redacted]	Lough Foyle
57D	WWTW Plant	Drumahoe (WWTW)	>250	S43DD	Y	Screened waste water in emergency	[Redacted]	[Redacted]	River Faughan
1C	WWTW Plant	Drumavally	>250	S43DH	Y	Primary treated waste water in emergency	[Redacted]	[Redacted]	Trib. Of Lough Foyle
50B	WWTW Plant	Donnybrewer (WWTW)	>250	S43DB	Y	Secondary treated effluent in emergency	[Redacted]	[Redacted]	Trib. Of Lough Foyle

4.2.4. Industrial Discharges

Figure 4-11 shows the industrial discharges within a 20km radius of Lough Foyle accounted for during the desk-based assessment. A large-scale cross-referenced Figure can be found in Section 4.4 Location of Sources. In total there are 15 industrial discharge all of which are along the River Foyle, 12 are located within 0-5km of the Lough, 2 within 5-10km of the Lough and 1 >10km from the Lough. Details on these industrial discharges can be seen in Table 4-6.


10
kilometres

Figure 4.11: All industrial discharges within a 20km radius of Lough Foyle (Source: EPA and Loughs Agency).

Table 4.6: Details on industrial discharges with a 20km radius of Lough Foyle (Source: EPA and Loughs Agency).

Map Code	Station	Industry	FileRef	Longitude	Latitude	Easting	Northing
183	61237	Site Drainage: Unspecified	TC68/00	-7.33633	54.984	242483.1	415371.2
184	61325	Site Drainage: Unspecified	TC76/01	-7.24375	55.0461	248334.9	422336.9
185	61401	Site Drainage: Unspecified	TC161/01	-7.28599	55.0223	245662.6	419659.6
186	62019	Fish Processing: Fish	TC155/00	-7.33688	54.9841	242448.4	415381.4
187	62147	Waste Disposal Site	WC7/03	-7.24638	55.0453	248167.9	422253
188	60004	Site Drainage: Unspecified	TC28/00	-7.25373	55.0439	247699.5	422091.3
189	62320	Site Drainage: Unspecified	TC150/03	-7.26582	55.0384	246933.1	421475.2
190	61718	Waste Disposal Site	WC13/95	-7.24456	55.0403	248290.1	421701.2
191	62131	Private Sewage: Unspecified	TC64/03	-7.24635	55.0453	248169.5	422249.7
192	62132	Private Sewage: Unspecified	TC64/03	-7.24634	55.0454	248170.5	422257.9
193	60001	Textiles	TC65/03	-7.24591	55.0454	248197.4	422266.6
194	60002	Cooling Water	TC102/89	-7.246	55.0439	248193.7	422094.5
195	61323	Private Sewage: Unspecified	TC17/01	-7.23585	55.0419	248844.7	421885
196	60003	Cooling Water	TC102/89	-7.2459	55.0439	248200	422094.5
197	P0187-02	Donegal Meat Processors		-7.40077	54.9476	238392.9	411285.3

4.2.5. Landuse Discharges

Figure 4-12 shows the Corine land use within 20km of Lough Foyle. Figure 4-13 shows the landuse legend associated with this map. Figure 4-14 shows all water bodies within a 20km radius of Lough Foyle that flow into Lough Foyle.

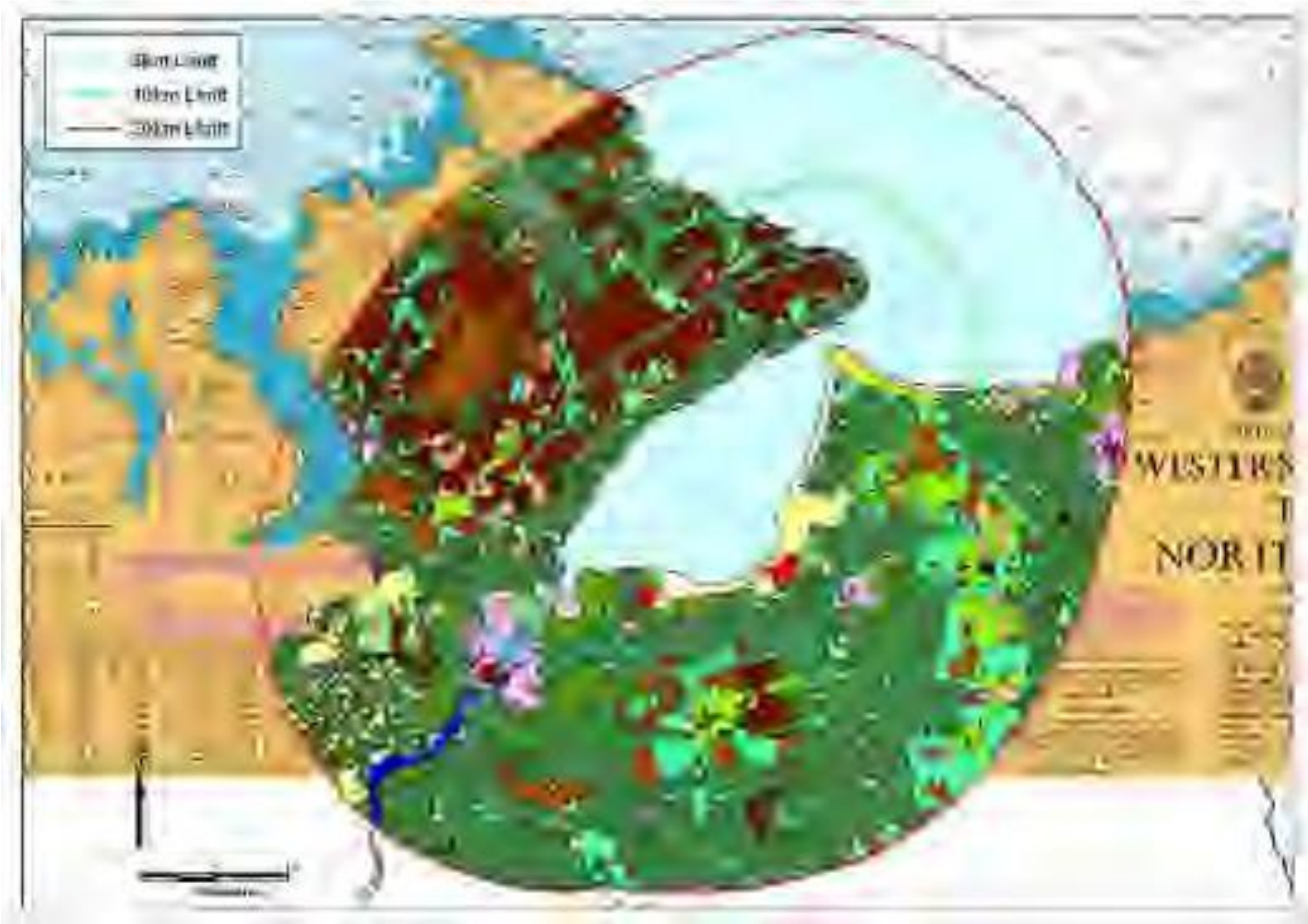

Figure 4.12: Land use within a 20km radius of Lough Foyle (Source: The Loughs Agency).

Figure 4.13: Legend associated with Figure 4-5.

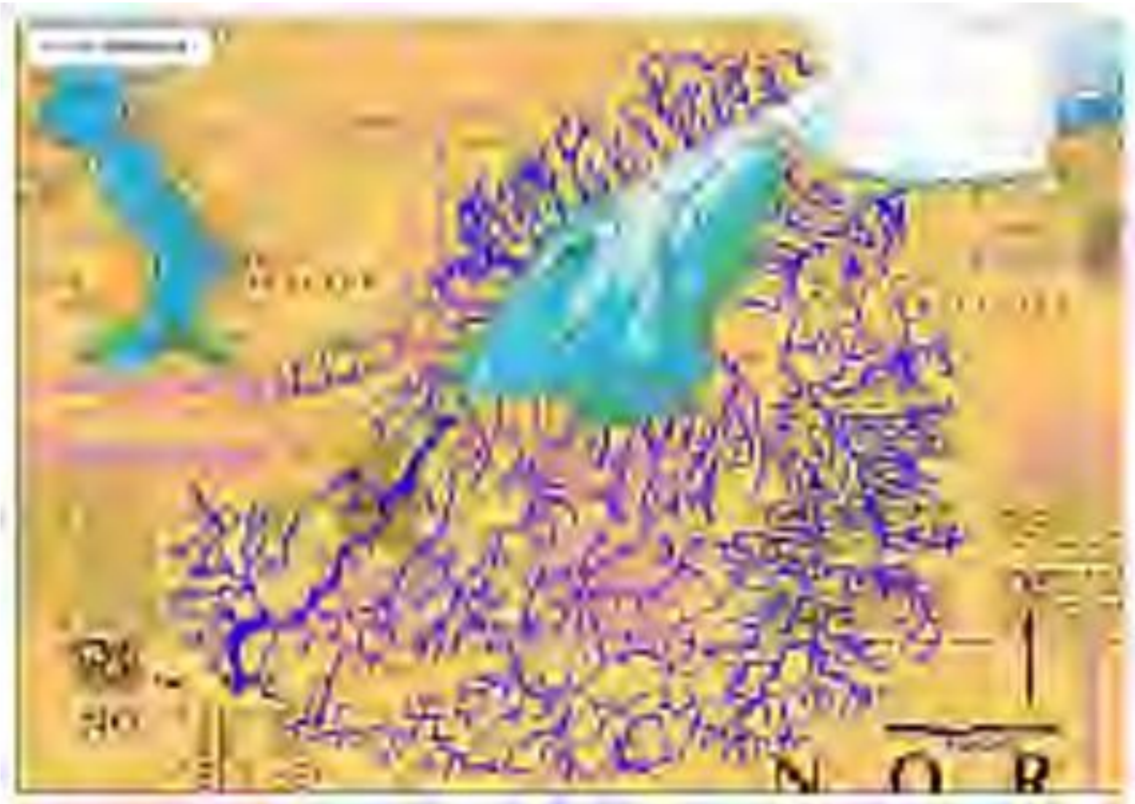

Figure 4.14: Waterbodies discharging into Lough Foyle, within a 20km radius of Lough Foyle.

Within this 20km limit, landuse is dominated by pastures (875.3km^2; 47%), followed by peat bogs (259.7km^2; 13.9%) and moors and heathland (115.6km^2; 6.2%) (See Figure 4-15). Forestry (coniferous, broad-leafed and mixed) makes up 4% of the landuse in the area (76.7km^2). In total, agricultural activities (non-irrigated arable land, pastures, complex cultivation patterns and agriculture/natural vegetation) comprise 59.1% (1109.3km^2) of the landuse in the area.

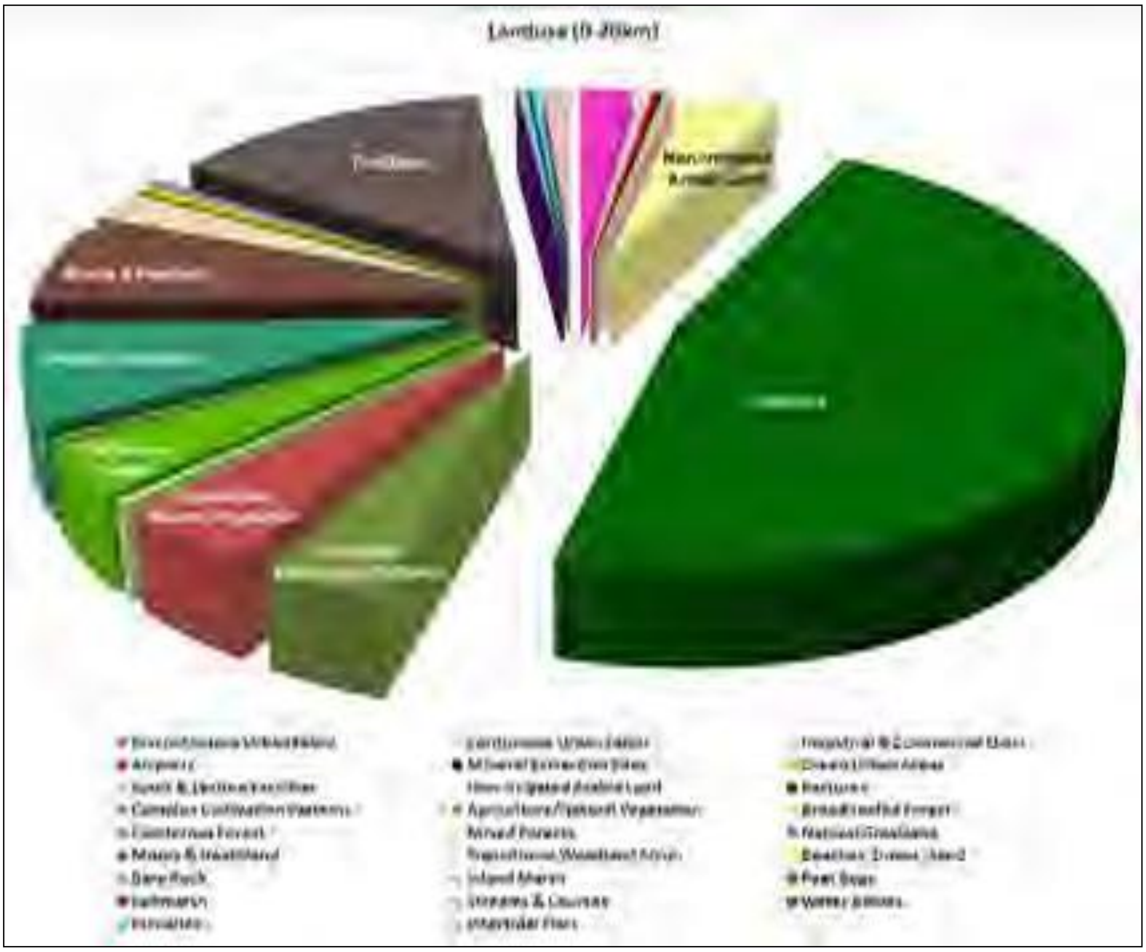

Figure 4.15: Breakdown of landuse within 20km of Lough Foyle.

The landuse breakdown within 5km of Lough Foyle can be seen in Figure 4-16. Within this 5km limit, landuse is dominated by pastures (182.4km^2; 48%), followed by peat bogs (55.94km^2; 14.8%) and non-irrigated arable land (23.95km^2; 6.3%). Forestry (coniferous, broad-leafed and mixed) makes up 2% of the landuse in the area (7.67km^2). In total, agricultural activities (non-irrigated arable land, pastures, complex cultivation patterns and agriculture/natural vegetation) comprise 65.61% (248.09km^2) of the landuse in the area.

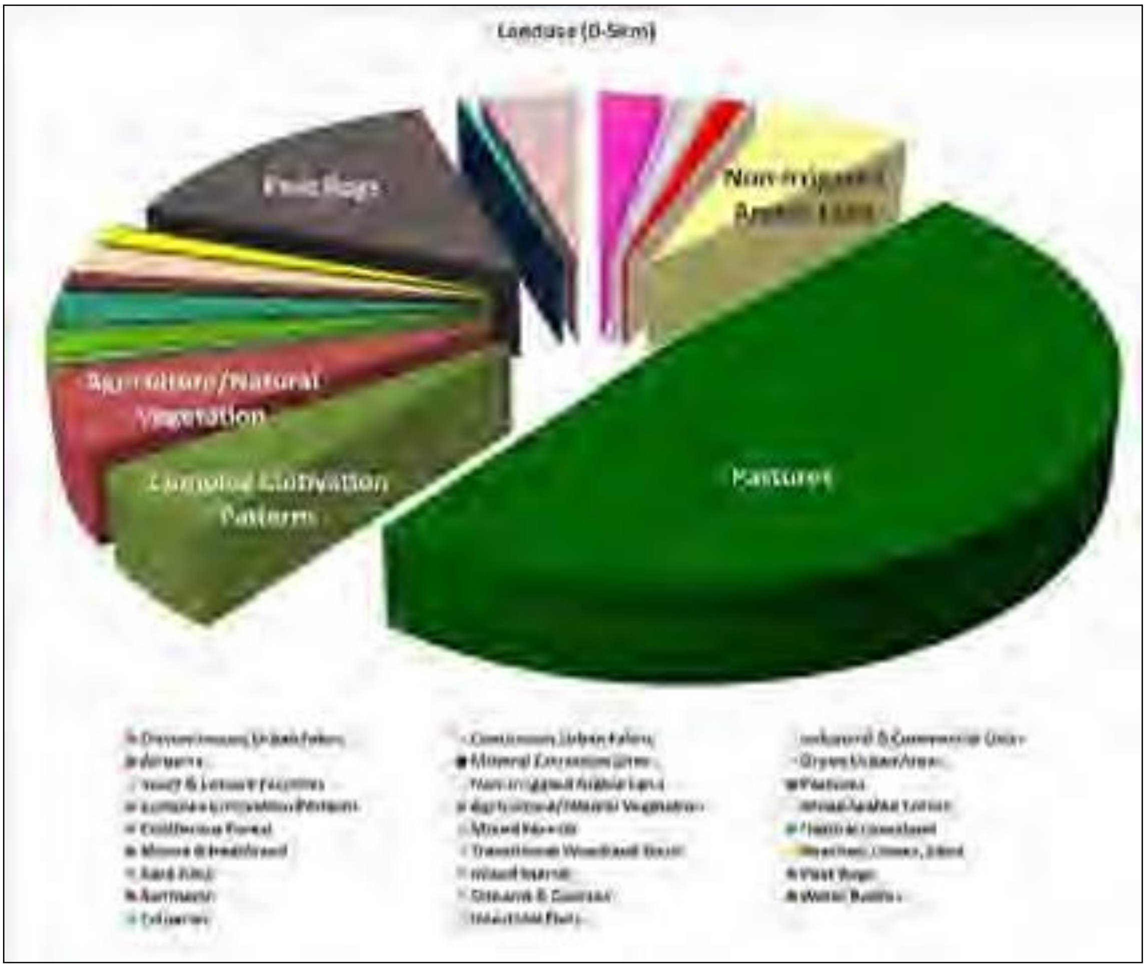

Figure 4.16: Breakdown of landuse within 0-5km of Lough Foyle.

The landuse breakdown between 5-10km of Lough Foyle can be seen in Figure 4-17. Within this 5-10km limit, landuse is dominated by peat bogs (96.73km^2; 25.7%), followed by pastures (93.98km^2; 25%), moors and heathland (33.5km^2; 8.9%) and coniferous forest (31.58km^2, 8.4%). Forestry (coniferous, broad-leafed and mixed) makes up 9.4% of the landuse in the area (35.42km^2). In total, agricultural activities (non-irrigated arable land, pastures, complex cultivation patterns and agriculture/natural vegetation) comprise 36.9% (139.07km^2) of the landuse in the area.

Figure 4.17: Breakdown of landuse within 5-10km of Lough Foyle.

The landuse breakdown between 10-20 km of Lough Foyle can be seen in Figure 4-18. Within this 10-20km limit, landuse is dominated by pastures (598.9km^2; 53.9%), followed by peat bogs (106.99km^2; 9.6%) and natural grassland (103.37km^2; 9.3%). Forestry (coniferous, broad-leafed and mixed) makes up 3% of the landuse in the area (33.56km^2). In total, agricultural activities (non-irrigated arable land, pastures, complex cultivation patterns and agriculture/natural vegetation) comprise 64.9% (722.08km^2) of the landuse in the area.

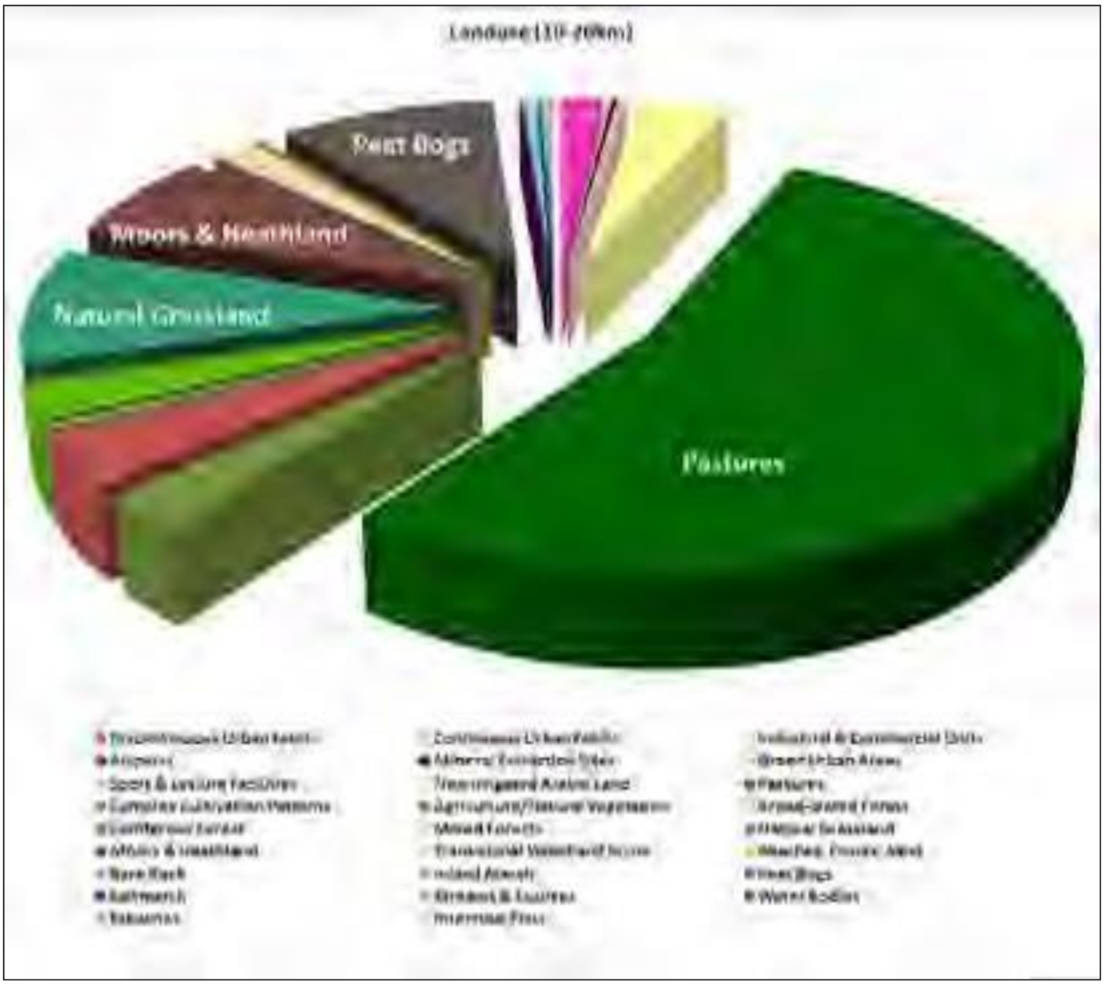

Figure 4.18: Breakdown of landuse within 10-20km of Lough Foyle.

Data from the Department of Agriculture and Regional Development Farm Census 2008 (DARD, 2008) and from the Census of Agriculture 2000 (CSO, 2000) can be seen in Table 4-7 below. Figures 4-19 to 4-26 show thematic maps for each category in Table 4-7. Numbers of farms within 5km of Lough Foyle varied from 0 in Londonderry (Carnhill, Pennyburn, Ballynashallog, Shantallow West and Shantallow East), 1-25 in Ballykelly, Enagh Derry and Culmore, 25-50 in Three trees, Castlecary, Moville, Greysteel and Eglinton, 50-100 in Greencastle, Redcastle, Whitecastle, Kilderry, Glack and Magilligan. The highest number of farms (150-200) was found in Banagher, Ringsend and Dunmanagh, approximately 10-25km from Lough Foyle.

The total area farmed within 5km of Lough Foyle varied from 0ha in Londonderry (Carnhill, Pennyburn, Ballynashallog, Shantallow West and Shantallow East), 1-4,000ha all along the west, south and southeast coast of Lough Foyle and 4,000 – 6,000ha in Magilligan (northeastern coast of Lough Foyle). The largest area farmed was in Banagher (9,500-

11,300ha), which is located approximately 15km south of Lough Foyle.

The total crops farmed within 5km of Lough Foyle varied from 0ha in Castlecary on the Inishowen Peninsula and Londonderry City to >1,000ha in Magilligan. The remainder of the Inishowen coastline occupied <200ha while total crops along the southern shore of Lough Foyle ranged from 200-800ha.

The largest total grass and rough grazing areas within 5km of Lough Foyle were Whitecastle (along the Inishowen Peninsula), Magilligan (along the eastern shore of Lough Foyle) and Glack (south of Lough Foyle) (2,000-5,500ha). The remainder of the areas along the coastline of Lough Foyle had grass and rough grazing areas of <2,000ha. The largest area farmed was in Banagher (9,000-11,000ha), which is located approximately 15km south of Lough Foyle.

The total number of cattle along the coastline of Lough Foyle ranged from 5,000-8,000 in Magilligan, 2,500-5,000 in Kilderry and Glack and <2,500 in all others areas within 5km of Lough Foyle. The area with the highest numbers of cattle was Slievekirk (12,000-15,000), located approximately 14km south of Lough Foyle.

The total number of sheep along the coastline of Lough Foyle ranged from 10,000-20,000 in Magilligan to 0 in Castlecary. The remainder of the areas along the Foyle coastline contained 1,000-10,000 sheep. The area with the highest numbers of cattle was Banagher (50,000- 60,000), located approximately 15km south of Lough Foyle.

No data for pigs was available for the Republic of Ireland. Along the Northern Ireland coast of Lough Foyle, no pigs are farmed. Glack is the only district within 5km of Lough Foyle where pig farming is carried out (<300). The area with the highest number of pigs is Macosquin (1,600-2,040), located approximately 9km east of Lough Foyle.

No data for poultry was available for the Republic of Ireland. Along the Northern Ireland coast of Lough Foyle, Ballykelly is the only district that farm poultry (1-5). Glack also farms poultry (1- 5). The areas with the highest numbers of poultry are Sleivekirk (80-110); located approximately 14km south of Lough Foyle and Ringsend (80-110) located approximately 13km east of Lough Foyle.

Table 4.7: Farm census data for all DEDs/SOAs within 20km of Lough Foyle (Source: DARD, 2008 and CSO, 2000).

County	DED/SOA	No. Farms	Area Farmed (ha)	Total Crops*	Total Grass and Rough Grazing#	Cattle	Sheep	Pigs$	Poultry$
Donegal	Buncrana Urban	0	0	0	0	0	0	0	0
Donegal	Ballyliffin	81	1307	19	1288	950	5860	0	0
Donegal	Birdstown	52	1371	89	1281	1265	8465	0	0
Donegal	Buncrana Rural	61	1861	7	1854	191	7135	0	0
Donegal	Burt	52	2557	1227	1331	1945	8664	0	0
Donegal	Carndonagh	94	1786	36	1751	1757	8493	0	0
Donegal	Carthage	58	884	19	866	1119	1677	0	0
Donegal	Castlecary	41	1213	0	937	1724	0	0	0
Donegal	Castleforward	23	1296	467	830	1135	6287	0	0
Donegal	Culdaff	84	1947	79	1868	2579	6561	0	0
Donegal	Desertegny	77	1589	8	1545	917	8072	0	0
Donegal	Fahan	66	1851	55	1741	1948	8899	0	0
Donegal	Glennagannon	47	956	0	956	1351	5097	0	0
Donegal	Gleneely	68	1561	56	1505	1629	6648	0	0
Donegal	Glentogher	54	1459	0	1460	493	7774	0	0
Donegal	Greencastle	66	1382	13	1370	1085	6027	0	0
Donegal	Illies	94	3375	11	3364	829	7699	0	0
Donegal	Inch Island	15	712	157	481	457	2654	0	0
Donegal	Kilderry	63	2060	106	1953	2825	8554	0	0
Donegal	Killea	61	3209	1227	1981	2970	9284	0	0
Donegal	Malin	82	2003	21	1982	2089	7443	0	0
Donegal	Mintiaghs	64	1513	12	1502	601	6366	0	0
Donegal	Moville	45	764	33	731	1055	1901	0	0
Donegal	Newtown Cunningham	44	2110	657	1454	2773	7072	0	0

County	DED/SOA	No. Farms	Area Farmed (ha)	Total Crops*	Total Grass and Rough Grazing#	Cattle	Sheep	Pigs$	Poultry$
Donegal	Redcastle	66	1156	55	1101	870	6280	0	0
Donegal	Straid	90	1281	49	1232	751	6330	0	0
Donegal	Three Trees	34	1205	27	1172	687	6592	0	0
Donegal	Turmone	51	1209	20	1188	1298	3028	0	0
Donegal	Whitecastle	71	2120	85	2036	1613	8555	0	0
Donegal	St. Johnstown	39	1583	0	1118	2829	0	0	0
Donegal	Treantaghmucklagh	68	2580	672	1908	3073	4421	0	0
Derry	Clondermot	0	0	0	0	0	0	0	0
Tyrone	Slievekirk	104	7403	608	6591	15084	13986	417	52
Tyrone	Dunnamanagh	158	8154	143	8878	5650	33734	4	0
Derry	Upper Glenshane	96	7988	23	7899	4385	35503	3	0
Derry	The Highlands	84	5193	702	4447	7026	12132	130	38
Derry	Roeside	5	72	0	72	88	344	0	0
Derry	Rathbrady	0	0	0	0	0	0	0	0
Derry	Magilligan	61	4268	1071	3091	5290	10531	0	0
Derry	Greystone_Limavady	0	0	0	0	0	0	0	0
Derry	Greysteel	35	1348	464	824	1903	1794	0	0
Derry	Glack	76	3798	724	3039	3743	11472	5	1
Derry	Forest	51	3202	313	2841	4010	12728	0	0
Derry	Feeny	86	5283	144	5053	3102	19941	0	11
Derry	Enagh Limavady	0	0	0	0	0	0	0	0
Derry	Dungiven	11	751	16	734	397	3955	0	0
Derry	Coolessan	0	0	0	0	0	0	0	0
Derry	Ballykelly	21	1032	498	526	798	2468	0	2
Derry	Aghanloo	85	4646	260	4259	5812	16532	63	6
Derry	Westland	0	0	0	0	0	0	0	0

County	DED/SOA	No. Farms	Area Farmed (ha)	Total Crops*	Total Grass and Rough Grazing#	Cattle	Sheep	Pigs$	Poultry$
Derry	Victoria_Derry	0	0	0	0	0	0	0	0
Derry	The Diamond	0	0	0	0	0	0	0	0
Derry	Strand Derry	0	0	0	0	0	0	0	0
Derry	Springtown	0	0	0	0	0	0	0	0
Derry	Shantallow West	0	0	0	0	0	0	0	0
Derry	Shantallow East	0	0	0	0	0	0	0	0
Derry	Rosemount	0	0	0	0	0	0	0	0
Derry	Pennyburn	0	0	0	0	0	0	0	0
Derry	New Buildings	0	0	0	0	0	0	0	0
Derry	Lisnagelvin	0	0	0	0	0	0	0	0
Derry	Kilfennan	0	0	0	0	0	0	0	0
Derry	Holly Mount	78	4321	451	3826	6355	11253	1	0
Derry	Foyle Springs	0	0	0	0	0	0	0	0
Derry	Enagh Derry	17	1464	480	939	1655	2216	0	0
Derry	Eglinton	40	1736	386	1319	2283	4796	0	0
Derry	Ebrington	0	0	0	0	0	0	0	0
Derry	Culmore	10	336	108	219	438	739	0	0
Derry	Crevagh	26	1513	440	1052	2024	1755	2	0
Derry	Creggan South	0	0	0	0	0	0	0	0
Derry	Creggan Central	0	0	0	0	0	0	0	0
Derry	Claudy	96	4845	151	4514	4273	17225	0	0
Derry	Caw	0	0	0	0	0	0	0	0
Derry	Carn Hill	0	0	0	0	0	0	0	0
Derry	Brandywell	0	0	0	0	0	0	0	0
Derry	Beechwood	0	0	0	0	0	0	0	0
Derry	Banagher	196	11266	162	10988	7825	59995	648	12

County	DED/SOA	No. Farms	Area Farmed (ha)	Total Crops*	Total Grass and Rough Grazing#	Cattle	Sheep	Pigs$	Poultry$
Derry	Ballynashallog	0	0	0	0	0	0	0	0
Derry	Altnagelvin	9	212	0	209	182	716	0	0
Antrim	Waterside	0	0	0	0	0	0	0	0
Antrim	University	0	0	0	0	0	0	0	0
Antrim	The Cuts	0	0	0	0	0	0	0	0
Antrim	Strand Coleraine	0	0	0	0	0	0	0	0
Antrim	Royal Portrush	0	0	0	0	0	0	0	0
Antrim	Ringsend	150	7209	333	6594	10267	14691	13	110
Antrim	Portstewart	0	0	0	0	0	0	0	0
Antrim	Mount Sandel	0	0	0	0	0	0	0	0
Antrim	Macosquin	90	5065	575	4437	8937	10670	2036	0
Antrim	Hopefield	0	0	0	0	0	0	0	0
Antrim	Dundooan	60	3507	697	2748	7083	4954	0	9
Antrim	Cross Glebe	0	0	0	0	0	0	0	0
Antrim	Churchland	0	0	0	0	0	0	0	0
Antrim	Central Coleraine	0	0	0	0	0	0	0	0
Antrim	Castlerock	38	2141	134	1991	2755	6025	40	0
Antrim	Ballysally	0	0	0	0	0	0	0	0
Antrim	Atlantic	0	0	0	0	0	0	0	0

* For the Republic of Ireland DEDs, Total Cops includes Fruit and Horticulture.

For the Republic of Ireland DEDs, Total Grass and Rough Grazing was taken to be the sum of Total Pasture, Total Silage, Total Hay and Rough Grazing.

$ No data was available for Pigs and Poultry for the Republic of Ireland DEDs.

Figure 4.19: Number of farms within a 20km radius of Lough Foyle (Source: DARD, 2008 and CSO, 2000).

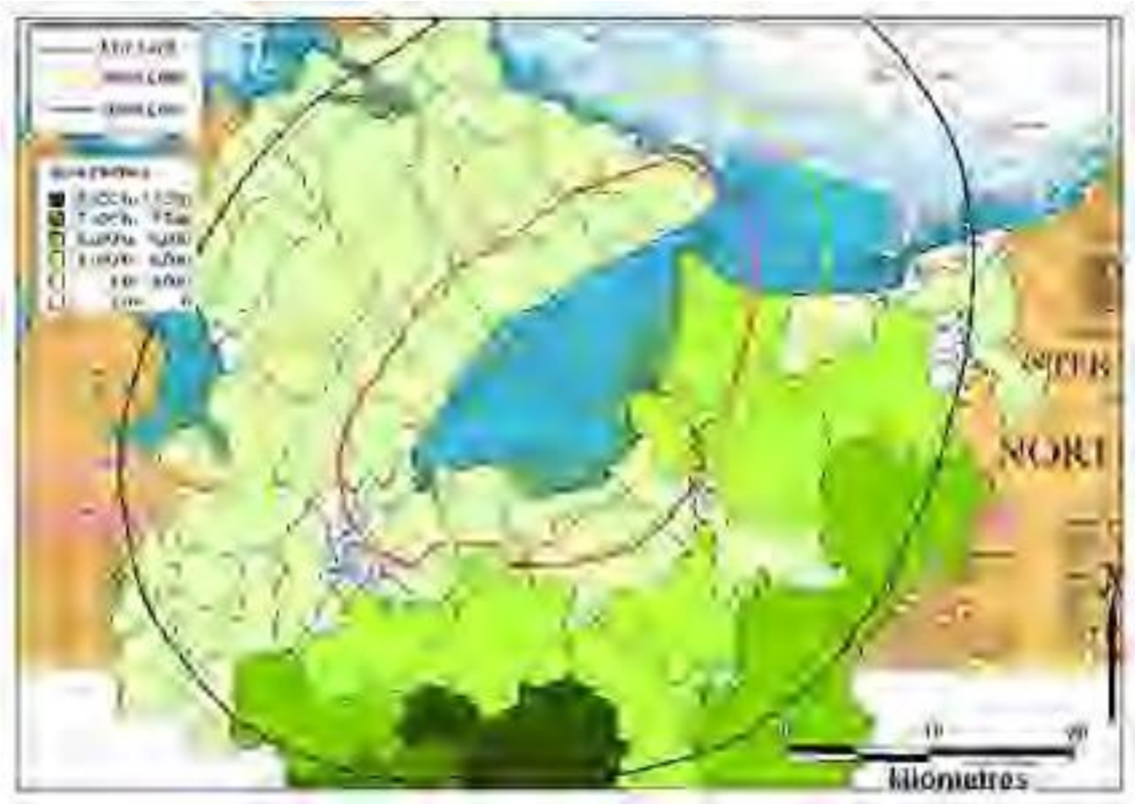

Figure 4.20: Area farmed (ha) within a 20km radius of Lough Foyle (Source: DARD, 2008 and CSO, 2000).

Figure 4.21: Total crops within a 20km radius of Lough Foyle (Source: DARD, 2008 and CSO, 2000).

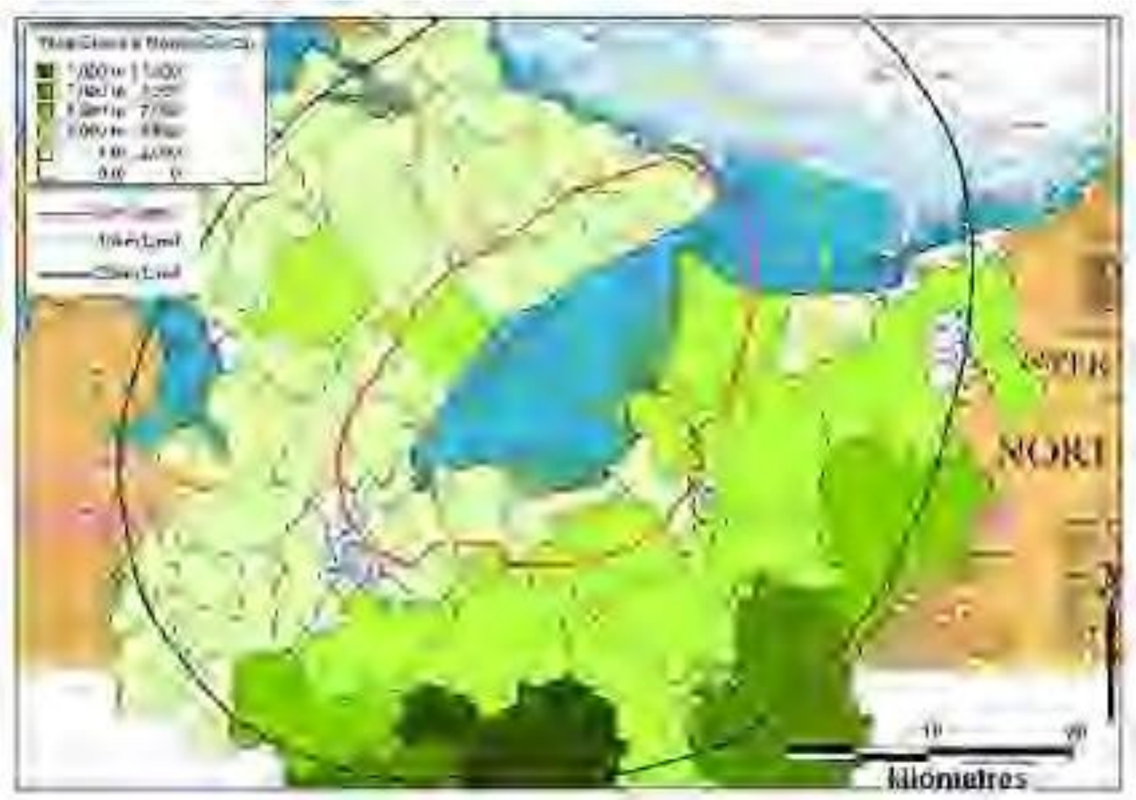

Figure 4.22: Total grass and rough grazing within a 20km radius of Lough Foyle (Source: DARD, 2008 and CSO, 2000).

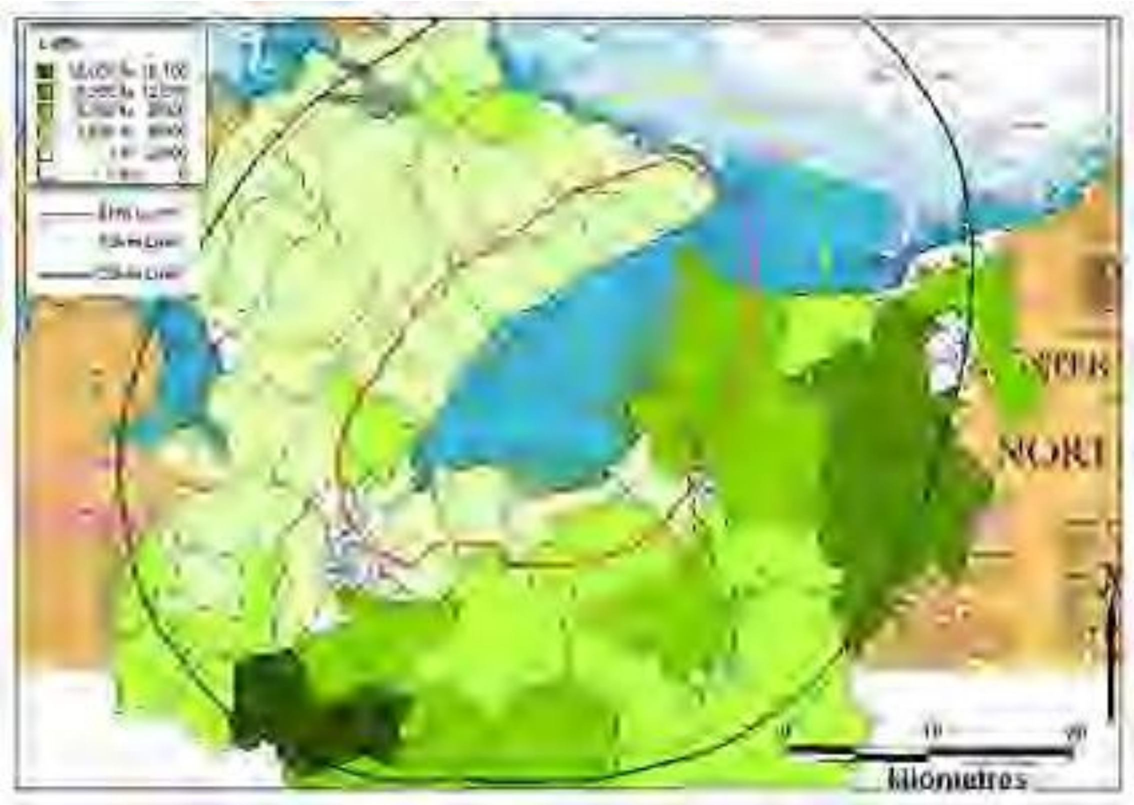

Figure 4.23: Cattle within a 20km radius of Lough Foyle (Source: DARD, 2008 and CSO, 2000).

Figure 4.24: Sheep within a 20km radius of Lough Foyle (Source: DARD, 2008 and CSO, 2000).

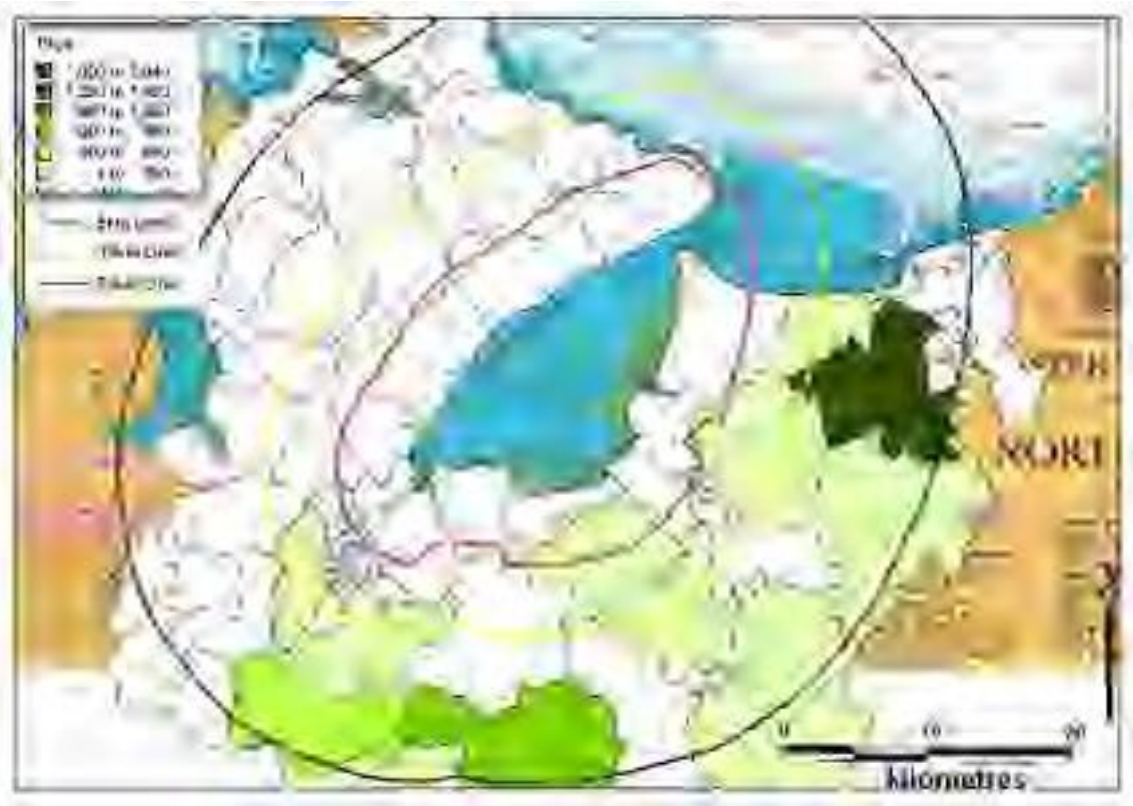

Figure 4.25: Pigs within a 20km radius of Lough Foyle (Source: DARD, 2008 and CSO, 2000). No data available for Co. Donegal.

Figure 4.26: Poultry within a 20km radius of Lough Foyle (Source: DARD, 2008 and CSO, 2000). No data available for Co. Donegal.

A number of studies have reported a strong association between intensive livestock farming areas and faecal indicator concentrations of microorganisms in streams and coastal waters, especially during high flow conditions, both from point and non-point sources of contamination (e.g. Crowther *et al.,* 2002). However, microbial data is not available from the streams and rivers flowing into Lough Foyle and therefore an estimation of the contribution of agricultural activities to faecal contamination of the Lough cannot be made.

4.2.6. Other Pollution Sources

4.2.6.1. Shipping

Operational waste from vessels, if not properly managed, can end up in the sea where the potential for contamination or pollution occurs. Wastes generated or landed in ports and harbours can be broadly divided into a) operational and domestic waste from ships and boats, b) waste from commercial cargo activities and c) wastes generated from maintenance activities and associated maritime industry activities.

Marpol Annex IV defines sewage as “drainage from medical premises, toilets, urinals, spaces containing live animals and other waste waters when mixed with sewage waste streams”. Although adopted in 1973, the Annex did not come into effect until September 2003, with subsequent amendments entered into force in August 2005. Annex IV requires ships to be equipped with either a sewage treatment plant, a sewage comminuting and disinfecting system or a sewage holding tank. Within 3 miles of shore, Annex IV requires that sewage discharges be treated by a certified Marine Sanitation Device (MSD) prior to discharge into the ocean. Sewage discharges made between 3 and 12 miles of shore must be treated by no less than maceration and chlorination and sewage discharged greater than 12 miles from shore are unrestricted. Annex IV also established certain sewage reception facility standards and responsibilities for ports and contracting parties.

Ship sewage originates from water-borne human waste, wastewaters generated in preparing food, washing dishes, laundries, showers, toilets and medical facilities. However, as waste enters the Lough environment from many sources, it makes the identification of specific impacts from ship/boat waste very difficult. It is widely recognised that the majority of pollution entering the marine environment comes from land based sources and atmospheric inputs from land based industrial activities, with only an estimated 12% originating from shipping activities (GESAMP [Joint Group of Experts on the Scientific Aspects of Marine environmental Pollution], 1990).

Figure 4-27 shows all boat facilities and activities in Lough Foyle. There are approximately 600 vessel movements annually in Lough Foyle, ranging from 1,000 to 50,000 tonne vessels (*pers. comm.* Capt. Bill McCann LPHC). All vessel movements are monitored by the Port's Vessel Traffic Management System (VTMS). Compulsory pilotage is required on all vessels >50m in length and on all passenger vessels >35m in length.

While data on sewage discharge levels from shipping activities in Lough Foyle is not available, it is highly likely that discharging does occur within the Lough. The effect is likely to be the greatest in enclosed areas and shallow water with little or no tidal flow in the summer and autumn when temperatures are at their highest, coinciding with the peak of the boating season. However, it is also likely that these levels are very low compared with land-based discharges.

Figure 4.27: Location of all boating facilities and activities in Lough Foyle.

4.2.6.2. Birds

It is important to document the bird populations in the Lough Foyle area as bird faeces are rich in faecal bacteria (Oshira & Fujioka, 1995) and have been shown to be a source of faecal contamination in the marine environment (Jones *et al.* 1978; Standridge *et al.* 1979; Levesque *et al.* 1993, Alderisio & DeLuca 1999, Levesque *et al.* 2000, Ishii *et al.* 2007).

Figure 4-28 shows the locations of the Special Protection Areas (SPA) and Ramsar Sites in Lough Foyle. The Lough Foyle SPA (Site Code: IE004087) is located on the County Donegal coastline from Muff northwards to approximately 1km south of Vances Point. The Lough Foyle SPA (Site Code: UK9020031) is located all along the southern and eastern coastline of Lough Foyle from the River Faughan to Magilligan Point. This SPA also includes an isolated site at Muff, Co. Donegal. The Lough Foyle Ramsar Site (Site Code: UK12014) covers the same area as the UK SPA.

The conservation sites are almost entirely comprised of intertidal mudflat, but do include small areas of sand and shingle. In winter, the site regularly supports internationally important numbers of the following 3 species: whooper swan, light-bellied Brent goose and bar-tailed godwit. The site also supports over 20,000 migratory waterfowl. This total includes both the internationally important species listed above and the following waterfowl species which are nationally important in an all-Ireland context: red-throated diver, great crested grebe, mute swan, Bewick's swan, greylag geese, shelduck, teal, mallard, wigeon, eider, red-breasted merganser, oystercatcher, golden plover, grey plover, lapwing, knot, dunlin, curlew, redshank and greenshank. Lough Foyle itself supports a small wintering population of Slavonian grebe. Gulls are also regular visitors to the site and include such species as Black-Headed Gull, Common Gull, Herring Gull and Great Black-backed Gull.

The water birds in the Lough tend to congregate mostly on the exposed mudflats along the southern and eastern shores. Limited areas of available mud along the western shore form an important refuge for teal and knot. The waders are generally well distributed over the intertidal area, with sanderling and ringed plover showing preference for Magilligan Point in the northeast. Curlew, golden plover and lapwing also feed on nearby grazing marshes.

Figure 4.28: SPA, Ramsar Site and Wetland Bird Survey Sites.

Thirteen Wetland Bird Survey Sites are routinely surveyed by Birdwatch Ireland (through the I-WeBS [Irish Wetland Bird Survey] Project) and by the British Trust for Ornithology (BTO) (Through the WeBS [Wetland Bird Survey] Project). These survey sites can be seen above in Figure 4-28. Table 4-9 shows the most recent results from the I-WEBS surveys that are carried out each year.

Table 4.8: Total number of waterbirds in Lough Foyle between 2002/03 and 2006/07 (Source: Boland *et al*., 2008)

Site Name	2002/03	2003/04	2004/05	2005/06	2006/07	Mean
Lough Foyle	34,154	37,292	33,076	38,324	34,850	35,539

The species that occurred in significant numbers were: whooper swan*[1], greylag goose*, light-bellied brent goose*, shelduck, wigeon, teal, mallard, pintail, eider, red-breasted merganser, red-throated diver, great northern diver, little grebe, great crested grebe, grey heron, oystercatcher, golden plover, lapwing, knot, dunlin, black-tailed godwit, bar-tailed godwit*, curlew, greenshank and redshank. In addition, white backed gulls are present in winter and

[1] * denotes Internationally Important Numbers

tern spp. are present in the summer months. Of these species, 5 are listed in Annex I of the EU Birds Directive: whooper swan, red-throated diver, great northern diver, golden plover and bar-tailed godwit. Table 4-10 lists the BoCCI (Birds of Conservation Concern in Ireland) categories for these birds (where applicable). The Red List birds are of high conservation concern (BirdWatch Ireland, 2009a); the Amber List birds are of medium conservation concern (BirdWatch Ireland, 2009b).

Table 4.9: Red and Amber listed Birds of Conservation Concern in Ireland (Source: BirdWatch Ireland, 2009a; 2009b).

Red List	**Amber List**
Curlew (B)	Bar-tailed Godwit
Golden Plover (B)	Black-tailed Godwit
Lapwing (B)	Brent Goose
Redshank (B)	Dunlin
Knot (W)	Eider
Pintail (W)	Golden Plover
	Great Crested Grebe
	Greenshank
	Greylag Goose
	Little Grebe
	Osytercatcher
	Red-throated Diver
	Teal
	Wooper Swan
	Wigeon

B = Breeding Population. W = Wintering Population

Bird populations in the Foyle area are typically higher in early winter and late spring due to migratory events and they are typically higher in mid winter than spring and summer as the local birds tend to move off-site in the summer months to breed. Therefore, it is highly probable that the contribution made by wildfowl to pollution levels in Lough Foyle is higher in the winter months. However, it is highly likely that these levels are low when compared with land-based discharges.

4.3. *Shoreline Survey Report*

A shoreline survey was carried out on the 9th and 10th of February 2010. The eastern and southern shoreline was surveyed using the Loughs Agency Argo Cat amphibious vehicle. The western shoreline was surveyed from AQUAFACT's RIB (Rigid Inflatable Boat). The aim of this survey was to identify/confirm and mark all discharges, pollution sources, waterways and marinas along the shoreline. GPS (Global Positioning System) coordinates were recorded for all features and marked on a map. In addition, all features were photographed digitally. Notes were made on the numbers and types of farm animals obvious from the shoreline and on wild fowl/populations of wild animals with an estimation of their numbers. Figure 4-29 shows the areas covered by the RIB and the Argo Cat and Figure 4-30 shows the GPS and photograph sites.

Figure 4.29: Boundaries of the RIB and Argo Cat surveys carried out on the 8th and 9th February 2010.

Figure 4.30: Locations of GPS and Photograph Sites.

Figure 4-31 shows the locations of the discharge pipes/outfalls located during the shoreline survey. In total, 36 were identified. Figures 4-32 and 4-33 show images of these outfall/discharge locations.

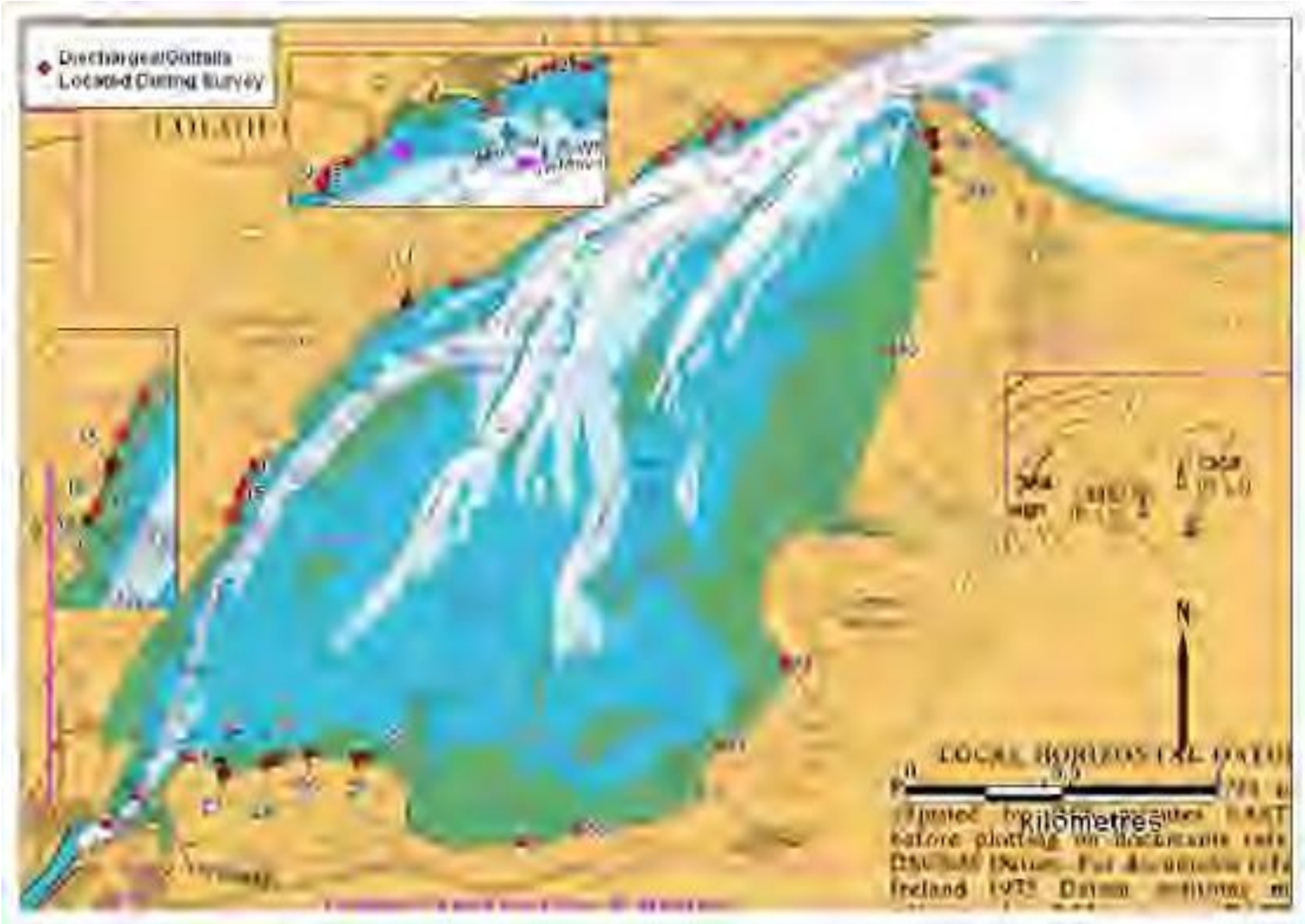
Discharges/Outfalls
Located During Survey
N
Kilometres

Figure 4.31: Discharges/Outfalls located during the shoreline survey.

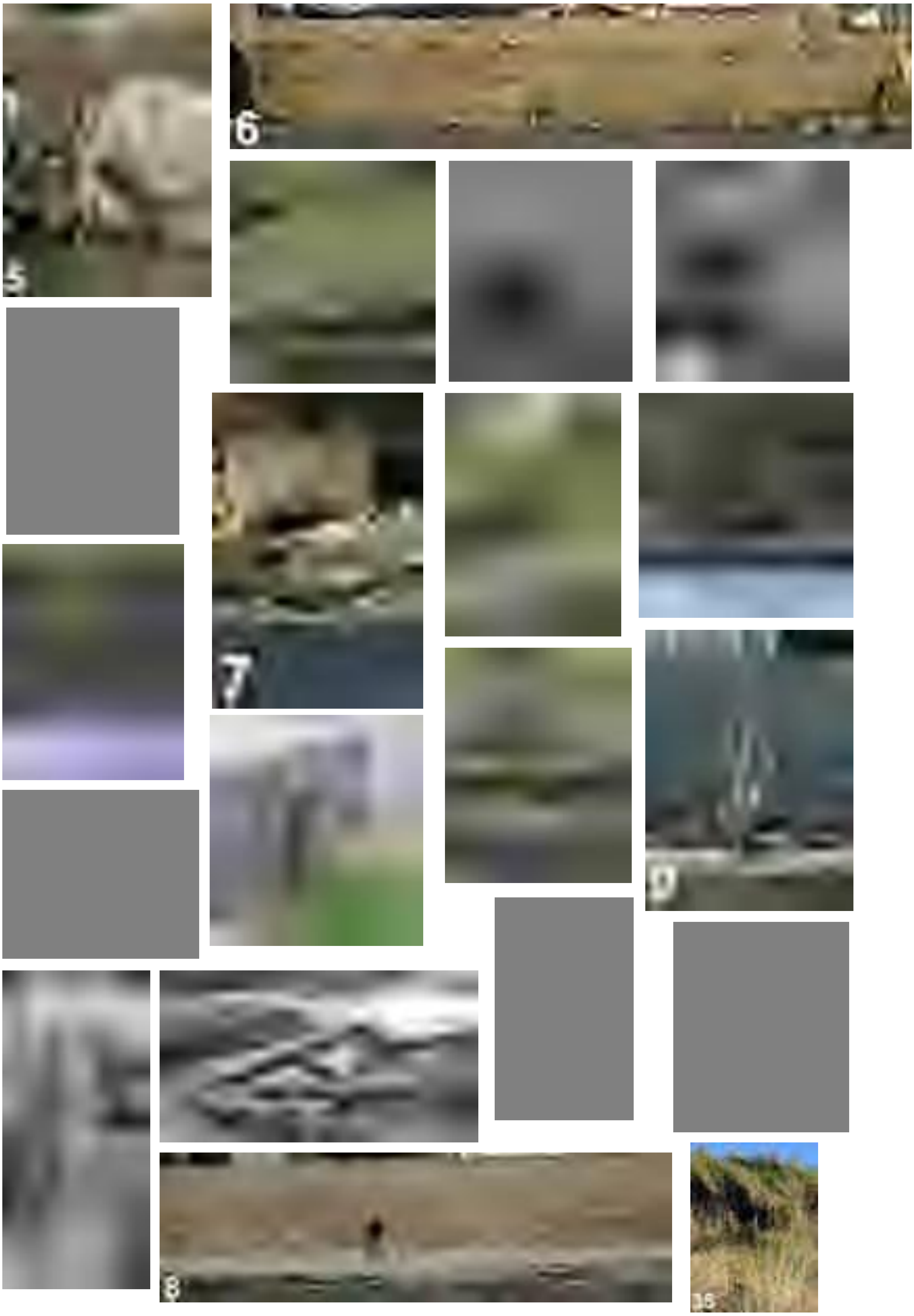

Figure 4.32: Outfall pipes/discharges located during the shoreline survey. Refer to Figure 4-31 for site locations.

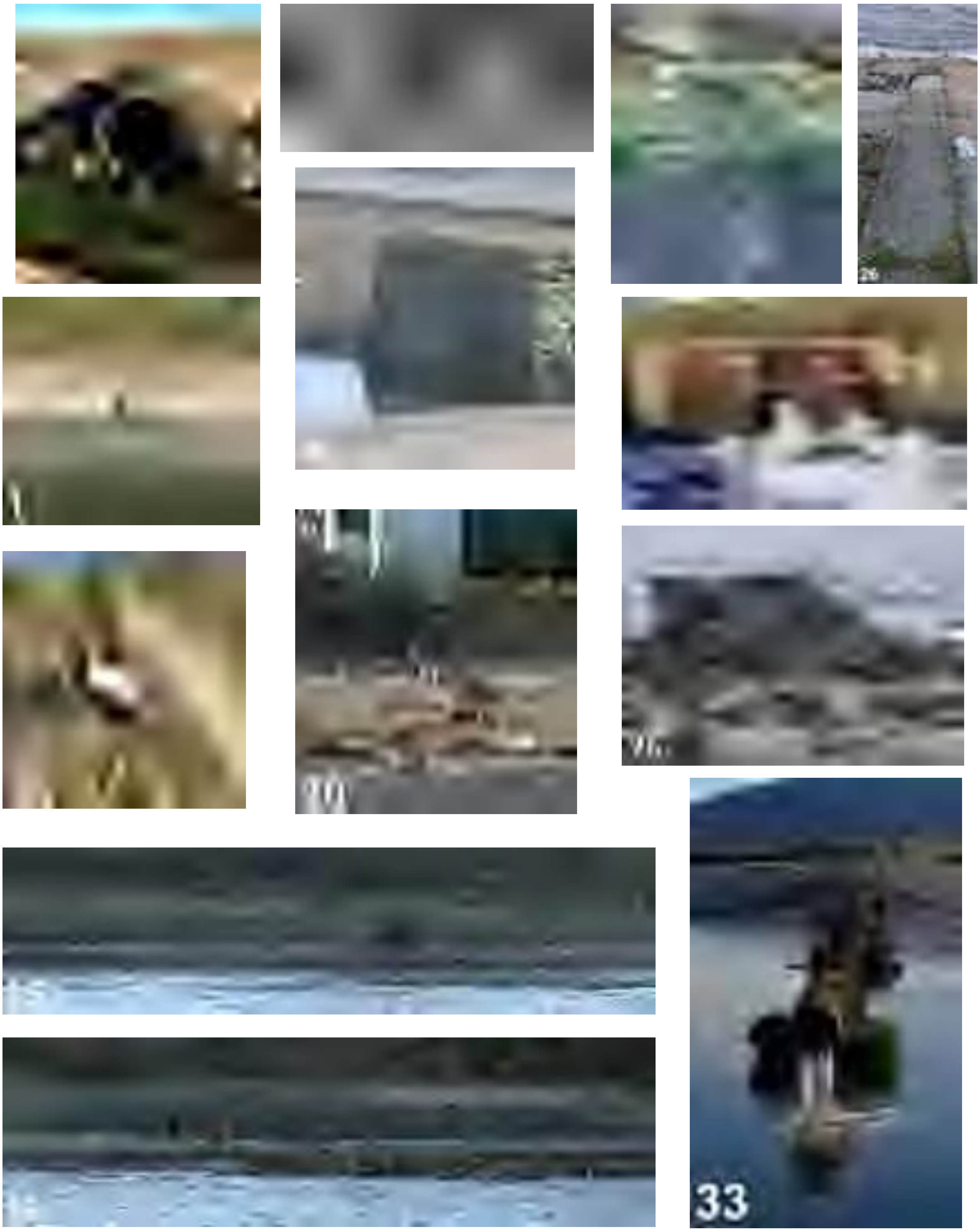

Figure 4.33: Outfall pipes/discharges located during the shoreline survey. Refer to Figure 4-31 for site locations.

Figure 4-34 shows the locations of the rivers/streams/drainage channels located during the shoreline survey. In total, 45 were identified. Figures 4-35 and 4-36 show images of these sites.

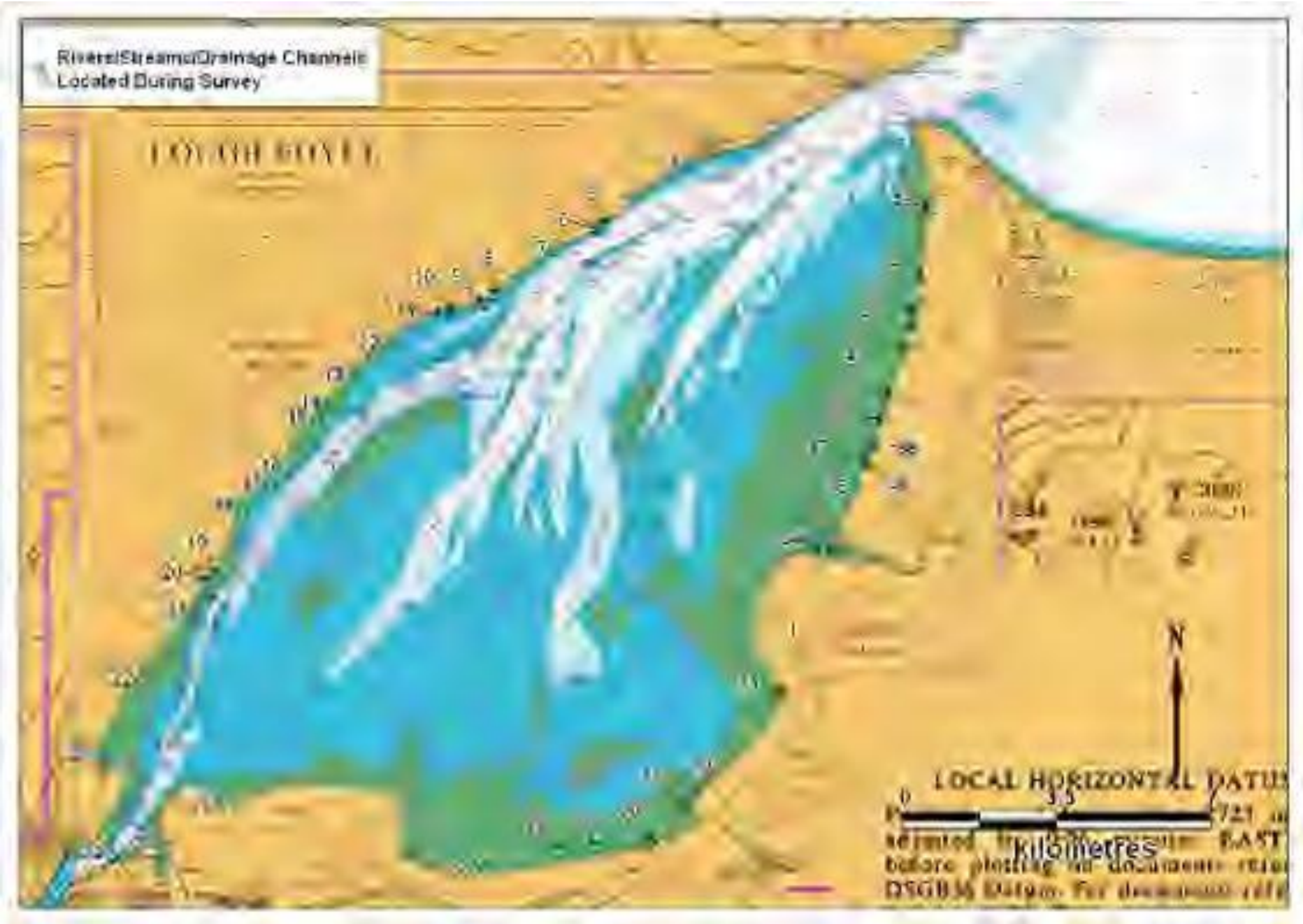

Figure 4.34: Rivers/Streams/Drainage Channels located during the shoreline survey.

Figure 4.35: Rivers/streams/drainage channels located during the shoreline survey. Refer to Figure 4-34 for site locations.

Figure 4.36: Rivers/streams/drainage channels located during the shoreline survey. Refer to Figure 4-34 for site locations.

Figure 4-37 shows the locations of the piers/jetties/slipways located during the shoreline survey. In total, 13 were identified. Figure 4-38 shows images of these sites.

Figure 4.37: Pier/Jetty/Slipways located during the shoreline survey.

Figure 4.38: Piers/Jetties/slipways located during the shoreline survey. Refer to Figure 4-37 for site locations.

4.4. Locations of Sources

Figure 4-39 shows all watercourses discharging into Lough Foyle and Table 4.11 provides cross-referenced details for this map. Figure 4-40 shows all WWTWs (Waste Water Treatment Works) and continuous discharges discharging into Lough Foyle and Table 4.12 provides cross-referenced details for this map. Figure 4-41 shows all intermittent discharges and septic tanks discharging into Lough Foyle and Tables 4.13 and 4-14 provides cross-referenced details for this map. Figure 4-42 shows all emergency and industrial discharges discharging into Lough Foyle and Table 4.15 provides cross-referenced details for this map.

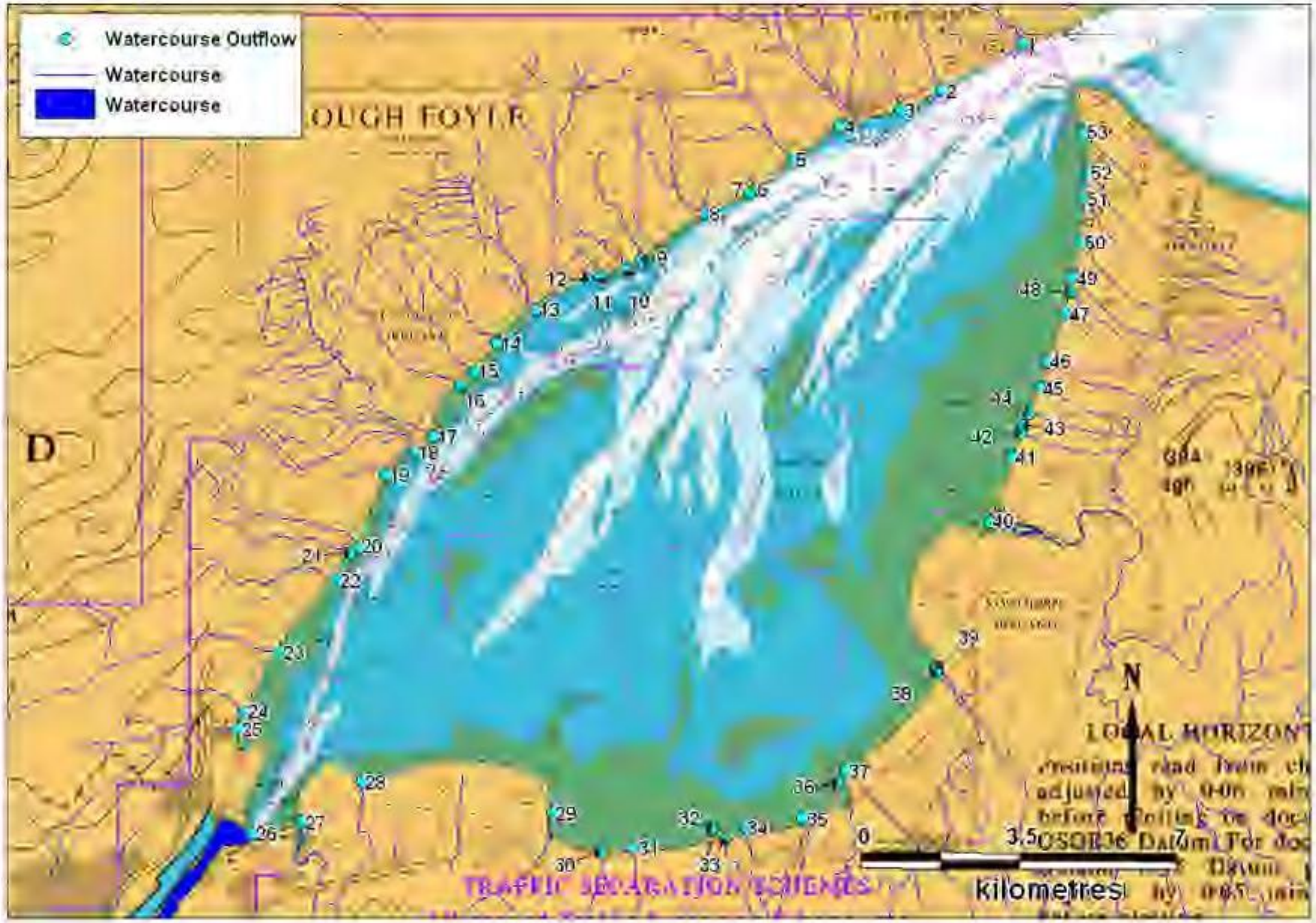

Figure 4.39: Location of all watercourses discharging into Lough Foyle.

Table 4.10: Cross-referenced table for Figure 4-39 Watercourses.

Map ID	River Name	Map ID	River Name	Map ID	River Name
1	Greencastle	19	Unnamed	37	Ballykelly
2	Unnamed	20	Aught	38	Unnamed
3	Unnamed	21	Unnamed	39	Burnfoot/Bessbrook
4	Bredagh	22	Unnamed	40	Roe
5	Glebe Bridge	23	Burnfoot	41	Unnamed
6	Unnamed	24	Unnamed	42	Unnamed
7	Unnamed	25	Unnamed	43	Unnamed
8	Clare	26	Foyle	44	Unnamed
9	Unnamed	27	Faughan	45	Unnamed
10	Redcastle	28	Unnamed	46	Unnamed
11	Unnamed	29	Muff	47	Unnamed
12	Unnamed	30	Unnamed	48	Unnamed
13	Drung	31	Unnamed	49	Big Drain
14	Unnamed	32	Faughanvale	50	Big Drain
15	Roosky	33	Unnamed	51	Unnamed
16	Mearingland	34	Unnamed	52	Unnamed
17	Cabry	35	Unnamed	53	Unnamed
18	Bogstown	36	Unnamed		

Figure 4.40: Location of all WWTW and Continuous Discharges into Lough Foyle and its tributaries.

Table 4.11: Cross-referenced table for Figure 4-40 WWTW and Continuous Discharges.

WWTW Map Code	Name	Discharge Map Code	Treatment	Receiving Water Body
1	Drumavally	1A	Primary treated waste water	Lough Foyle
2	Aughil (WWTW)	2A	Secondary treated effluent	Trib. Of L. Foyle
3	Benone (WWTW)	3A	Unknown	To Sea
4	Glack (WWTW)	4A	Good secondary treated effluent with nitrification	Trib. Of Ballykelly River
5	Drumsurn (WWTW)	5A	Primary treated waste water	Castle River
6	Ballyquin (WWTW)	6A	Secondary treated effluent	Trib of R. Roe
7	Ballymacallion (WWTW)	7A	Good secondary treated effluent with nitrification	River Gelvin
8	Bonnanaboigh	8A	Secondary treated waste water	Bovevagh River
9	Largy (WWTW)	9A	Secondary treated effluent	Trib. Of R. Roe
10	Gortnahey (WWTW)	10A	Secondary treated waste water	Trib. Of Wood Burn
11	Ballymonie	11A	Secondary treated waste water	Trib of Woodburn
12	Feeny	12A	Secondary treated waste water	Trib of Altcattan Water
13	Dernaflaw	13A	Secondary treated waste water	Owenbeg River
14	Owenbeg (WWTW)	14A	Secondary treated effluent	Owenbeg River
15	Dungiven	15A	Secondary treated waste water	River Roe
16	Caugh Hill (WWTW)	16A	Good secondary treated effluent with nitirification	Trib. Of Owenrigh River
17	Crebarkey	17A	Good secondary treated effluent with nitirification	Trib. Of R. Roe
18	Carnanbane	18A	Secondary treated effluent	Owenrigh River
19	Fincarn	19A	Good secondary treated effluent with nitirification	Altcattan River
20	Limavady	20A	Secondary treated wate water	River Roe
21	Ardgarvan (WWTW)	21A	Secondary treated effluent	River Roe
22	Dromore Highlands	22A	Secondary treated effluent	Bessbrook River

WWTW Map Code	Name	Discharge Map Code	Treatment	Receiving Water Body
23	Drumraighland	23A	Good secondary treated effluent with nitirification	Trib. Of Burnfoot
24	Edenmore Road	24A	Good secondary treated effluent with nitrification	Trib. Of Castle River
25	Lisnakilly	25A	Secondary treated effluent	River Roe
26	Drummond	26A	Secondary treated effluent	Castle River
27	Bolea (WWTW)	27A	Secondary treated effluent	Curly River
28	Myroe (WWTW)	28A	Secondary treated effluent	River Roe
29	Aghanloo (WWTW)	29A	Secondary Treated Water	River Roe
30	Aghanloo (WWTW)	30A	Balanced pre-treated water water	River Roe
31	Ballykelly (WWTW)	31A	Secondary treated waste water	Ballykelly River
32	Longfield (Eglinton)	32A	Good secondary treated effluent with nitrification	Trib. Of Foyle
33	Greysteel (Gortgare) (WWTW)	33A	Secondary treated waste water	Lough Foyle
34	Ervey Road (WWTW)	34A	Good secondary treated effluent with nitrification	Crunkin River
35	Killylane (WWTW)	35A	Good secondary treated effluent with nitrification	Trib. Of Muff River
36	Park (WWTW)	36A	Secondary treated waste water	River Faughan
37	Gortscreagan	37A	Good secondary treated effluent with nitrification	Trib. Of R. Faughan
38	Killaloo	38A	Treated waste water effluent to ground water via a subsoil irrigation system	Groundwater
39	Kinculbrack	39A	Secondary treated effluent	River Faughan
40	Claudy	40A	Secondary Treated waste water	River Faughan
41	Mulderg (WWTW)	41A	Secondary treated effluent	Foreglen River
42	Clagan (Claudy)	42A	Good secondary treated effluent with nitrification	Trib. Of R. Faughan
43	Legaghory	43A	Secondary treated effluent	Trib. Of R. Faughan
44	Gosheden (1)	44A	Secondary treated effluent	Trib. Of R. Faughan
45	Gosheden (2)	45A	Secondary treated effluent	River Faughan

WWTW Map Code	Name	Discharge Map Code	Treatment	Receiving Water Body
46	Ardground	46A	Secondary Treated Effluent	Trib. Of R. Faughan
47	Knockbrack	47A	Secondary treated effluent	River Faughan
48	Moneycanon	48A	Secondary treated effluent	Altinaghree Burn
49	Carmoney WWTW	49A	Unknown	R. Faughan or Trib of R. Faughan
50	Donnybrewer (WWTW)	50A	Secondary treated waste water	Lough Foyle
51	Culmore (WWTW)	51A	Secondary treated waste water	Lough Foyle
52	Strathfoyle (SPS)	52A	Unknown	R. Foyle or Trib of R. Foyle
53	Donemana (WWTW)	53A	Secondary treated waste water	Burn Dennet
54	Mountcastle	54A	Good secondary treated effluent with nitrification	Trib. Of Burn Dennet
55	Tamnaherin	55A	Secondary treated effluent	Muff Glen River
56	Oghill	56A	Good secondary treated effluent with nitirfication	Trib. Of R. Faughan
57	Drumahoe (WWTW)	57A	Tertiary treated waste water	River Faughan
58	Nixons Corner (WWTW)	58A	Good secondary treated effluent with nitrification	Trib. Of R. Foyle
59	Molenan	59A	Unknown	R. Foyle or Trib or R. Foyle
60	Magheramason	60A	Secondary treated waste water	River Foyle
61	Creaghcor	61A	Secondary treated effluent	River Foyle
62	Cullion (Bready)	62A	Secondary treated effluent	Burngibbagh River
63	Donagheady (WWTW)	63A	Secondary treated effluent	Trib. Of R. Foyle
64	Milltown (Burndennet)	64A	Secondary treated effluent	Burn Dennet
65	Bready (WWTW)	65A	Secondary treated effluent	Trib of R. Foyle
66	Faughan	66A	Secondary treated effluent	River Faughan
	Moville Domestic Wastewater	67A	Unknown	Bredagh River
	Moville Domestic Wastewater	68A	Unknown	Bredagh River
	Moville Domestic Wastewater	69A	Unknown	Lough Foyle

WWTW Map Code	Name	Discharge Map Code	Treatment	Receiving Water Body
	Moville Domestic Wastewater	70A	Unknown	Bredagh River
	Moville Domestic Wastewater	71A	Unknown	Bredagh River
	Moville Domestic Wastewater	72A	Unknown	Bredagh River
	Moville Domestic Wastewater	73A	Unknown	Bredagh River

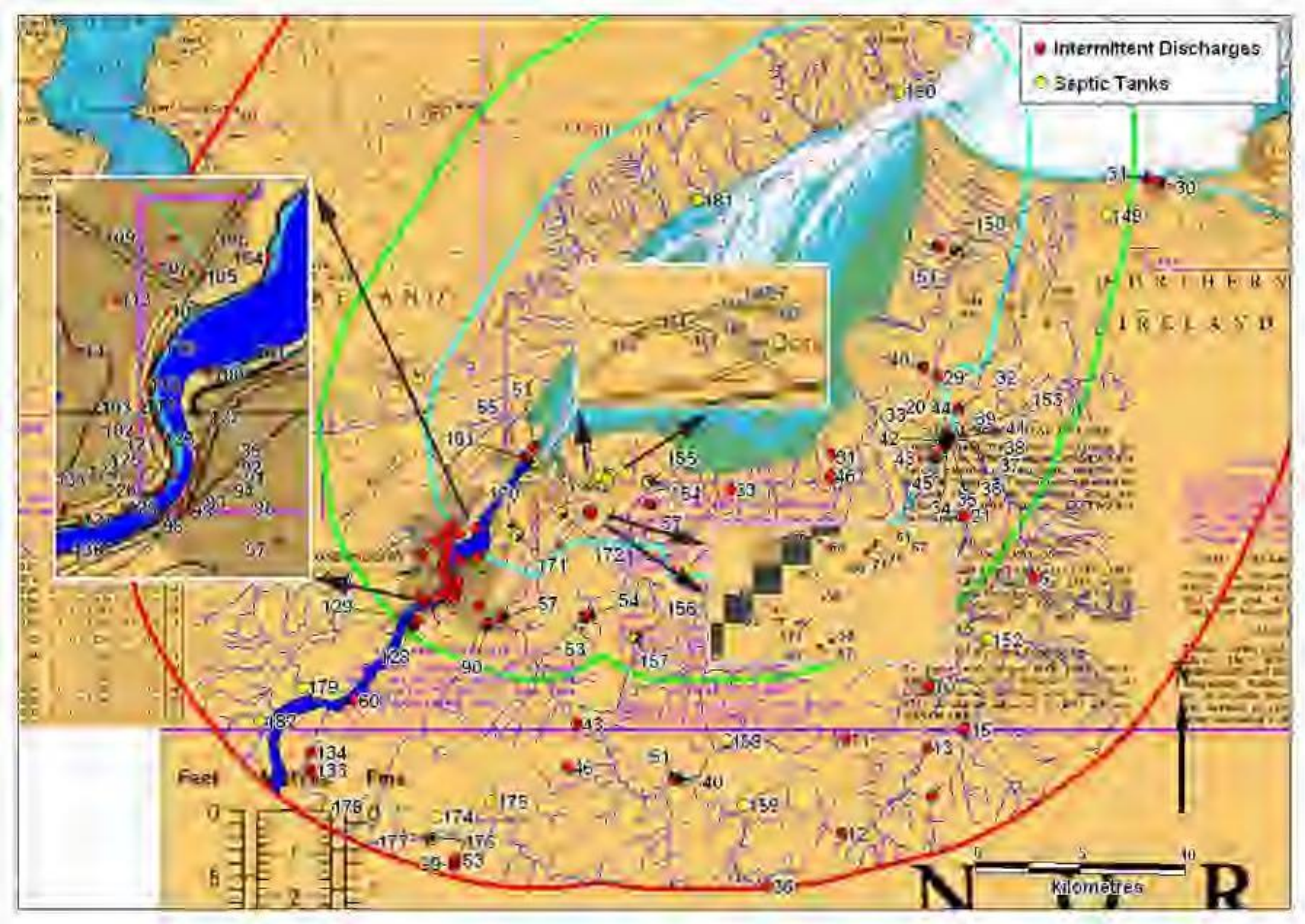
Intermittent Discharges
Septic Tanks
Kilometres

Figure 4.41: Location of all Intermittent Discharges and Septic Tanks discharging into Lough Foyle and its tributaries.

Table 4.12: Cross-referenced table for Figure 4-41 Intermittent Discharges.

Map Code	Location	Discharge Type	Water Body
11	Ballymonie WWTW	B: Settled storm water, C: Screened storm water	Trib of Woodburn
15	Dungiven WWTW	C: Screened storm waster water, D: Settled waste water, E: Temporary secondary treated waste water discharge	River Roe
20	Limavady WWTW	B: Settled storm waste water, C: Screened storm waste water	River Roe
33	Greysteel (Gortgare) WWTW	B: Settled screened storm waste water, C: Screened storm waste water	Stream to Lough Foyle
36	Park WWTW	B: Settled storm waste water, C: Screened storm sewage	River Faughan
40	Claudy WWTW	B: Screened storm waste water, C: Screened settled storm waste water	River Faughan
43	Legaghory WWTW	B: Screened unsettled storm waste water, C: Screened unsettled storm waste water	Trib. Of R. Faughan
46	Ardground WWTW	B: Screened unsettled storm waste water, C: Screened unsettled storm waste water	Trib. Of R. Faughan
51	Culmore WWTW	B: Settled storm waste water, C: Screened storm waste water	Lough Foyle
57	Drumahoe WWTW	B: Settled storm waste water, C: Screened storm waste water	River Faughan
53	Donemana WWTW	B: Settled storm sewage	Burn Dennet
60	Magheramason WWTW	B: Settled screened storm waste water	River Foyle
18	Carnanbane WWTW	B: Screened storm waste water	Owenrigh River
21	Ardgarvan WWTW	B: Screened storm waste water	River Roe
29	Aghanloo WWTW	B: Screened Storm Sewage	River Roe
31	Ballykelly WWTW	B: Screened storm waste water	Ballykelly River
1	Drumavally WWTW	B: Untreated storm sewage	Trib. Of Lough Foyle
5	Drumsurn WWTW	B: Settled storm waste water	Castle River
10	Gortnahey WWTW	B: Screened storm waste water	Trib. Of Wood Burn
12	Feeny WWTW	B: Screened storm waste water	Trib of Altcattan Water
13	Dernaflaw WWTW	B: Screened storm waste water	Owenbeg River
32	Unknown	Surface	Unknown
33	Unknown	Final Effluent	Unknown

Map Code	Location	Discharge Type	Water Body
34	Unknown	Final Effluent	Unknown
35	Unknown	Unknown	Unknown
36	Unknown	Combined	Unknown
37	Unknown	Combined	Unknown
38	Unknown	Combined	Unknown
39	Alexander Road	Combined	Unknown
40	Unknown	Foul	Unknown
41	Unknown	Foul	Unknown
42	Unknown	Foul	Unknown
43	Unknown	Surface	Unknown
44	Ballyclose Street	Final Effluent	Unknown
45	Roemill Road	Combined	Unknown
46	Glasvey Drive	Foul	Unknown
51	Pinewood Cresent	Combined	Unknown
53	Lettershendony	Foul	Unknown
54	Lettershendoney Avenue	Foul	Unknown
55	DLR/JW 17/7/99 X REF WAS PUMP	Foul	Unknown
56	Unknown	Unknown	Unknown
57	Killylane Road	Final Effluent	Unknown
58	Unknown	Unknown	Unknown
59	Unknown	Unknown	Unknown
60	Unknown	Unknown	Unknown
61	Unknown	Unknown	Unknown
62	Unknown	Unknown	Unknown
63	Unknown	Unknown	Unknown

Map Code	Location	Discharge Type	Water Body
64	Unknown	Unknown	Unknown
65	Unknown	Unknown	Unknown
66	Unknown	Unknown	Unknown
67	Unknown	Unknown	Unknown
68	Unknown	Unknown	Unknown
69	Unknown	Unknown	Unknown
70	Unknown	Unknown	Unknown
71	Unknown	Unknown	Unknown
89	King Street	Final Effluent	Unknown
90	Unknown	Foul	Unknown
91	Duke Street Roundabout	Combined	Unknown
92	Bonds Hill	Combined	Unknown
93	Emergency Overflow	Combined	Unknown
94	Fountain Hill	Combined	Unknown
95	Top of the Hill Dunfield Terrace	Combined	Unknown
96	Victoria Road	Combined	Unknown
97	Unknown	Combined	Unknown
98	Unknown	Foul	Unknown
99	Donemana	Combined	Unknown
100	St. Columbs Park	Foul	Unknown
101	Caw Park	Combined	Unknown
102	Victoria Market No 2	Combined	Unknown
103	Victoria Market No 1	Combined	Unknown
104	Pennyburn Interceptor	Combined	Unknown
105	Culmore Road	Combined	Unknown
106	Unknown	Combined	Unknown

Map Code	Location	Discharge Type	Water Body
107	Racecourse Road No.1	Combined	Unknown
108	Duncreggan Road	Combined	Unknown
109	Belmont CSO	Combined	Unknown
110	Rock Road	Combined	Unknown
111	Clarendon Street	Combined	Unknown
112	Lawrence Hill	Final Effluent	Unknown
113	Pennyburn Industrial Estate	Combined	Unknown
114	Glen Road	Surface	Unknown
120	Moat Street	Combined	Unknown
121	Bridge Street	Combined	Unknown
122	Orchard Street	Combined	Unknown
123	Union Hall Place	Combined	Unknown
124	Foyle Road	Combined	Unknown
125	John Street	Combined	Unknown
126	Lower Bennett Street	Combined	Unknown
127	Coshowen	Combined	Unknown
128	Sunningdale Drive	Combined	Unknown
129	Prehen Park	Combined	Unknown
130	Lone Moor Road 1	Combined	Unknown
131	Lone Moor Road 2	Combined	Unknown
133	Unknown	Foul	Unknown
134	Unknown	Foul	Unknown

Table 4.13: Cross-referenced table for Figure 4-41 Septic Tanks.

Map Code	Name	Ownership
149	Ballyhacket (WWTW)	Water Service
150	Limestone Road (2)	NIHE
151	Limestone Road (1)	NIHE
152	Drumneechy	Water Service
153	Roeside	Water Service
154	Airfield	Water Service
155	Meat Plant	Water Service
156	Ervey Road (Septic Tank 1)	NIHE
157	Ervey Road (Septic Tank 2)	Water Service
158	Mulderg (WWTW Original)	Water Service
159	Killycor	Water Service
160	McLean Road (2)	NIHE
161	Culmore Point (WWTW)	Private
162	Donnybrewer Road 88	NIHE
163	97-99 Donnybrewer Road	NIHE
164	98-100 Donnybrewer Road	NIHE
165	Donnybrewer Road 101a	NIHE
166	Donnybrewer Road 101b	NIHE
167	Donnybrewer Road 101	NIHE
168	Donnybrewer Road 103a	NIHE
169	McLean Road (1)	NIHE
170	Gransha (Septic Tank)	Water Service
171	Stradreagh (Septic Tank)	Water Service
172	Faughan (WWTW)	Water Service
173	Carmoney (WTW)	Water Service
174	Castlemellan Upper	Water Service
175	Glenagoorland	Water Service
176	Castlemellan Lower	Water Service
177	Tullyard (Donemana)	Water Service
178	Willow Road	Unadopted
179	Carrigans	Unknown
180	Greencastle (Housing Scheme)	Unknown
181	Redcastle (Housing Scheme)	Unknown
182	St. Johnston (Housing Scheme)	Unknown

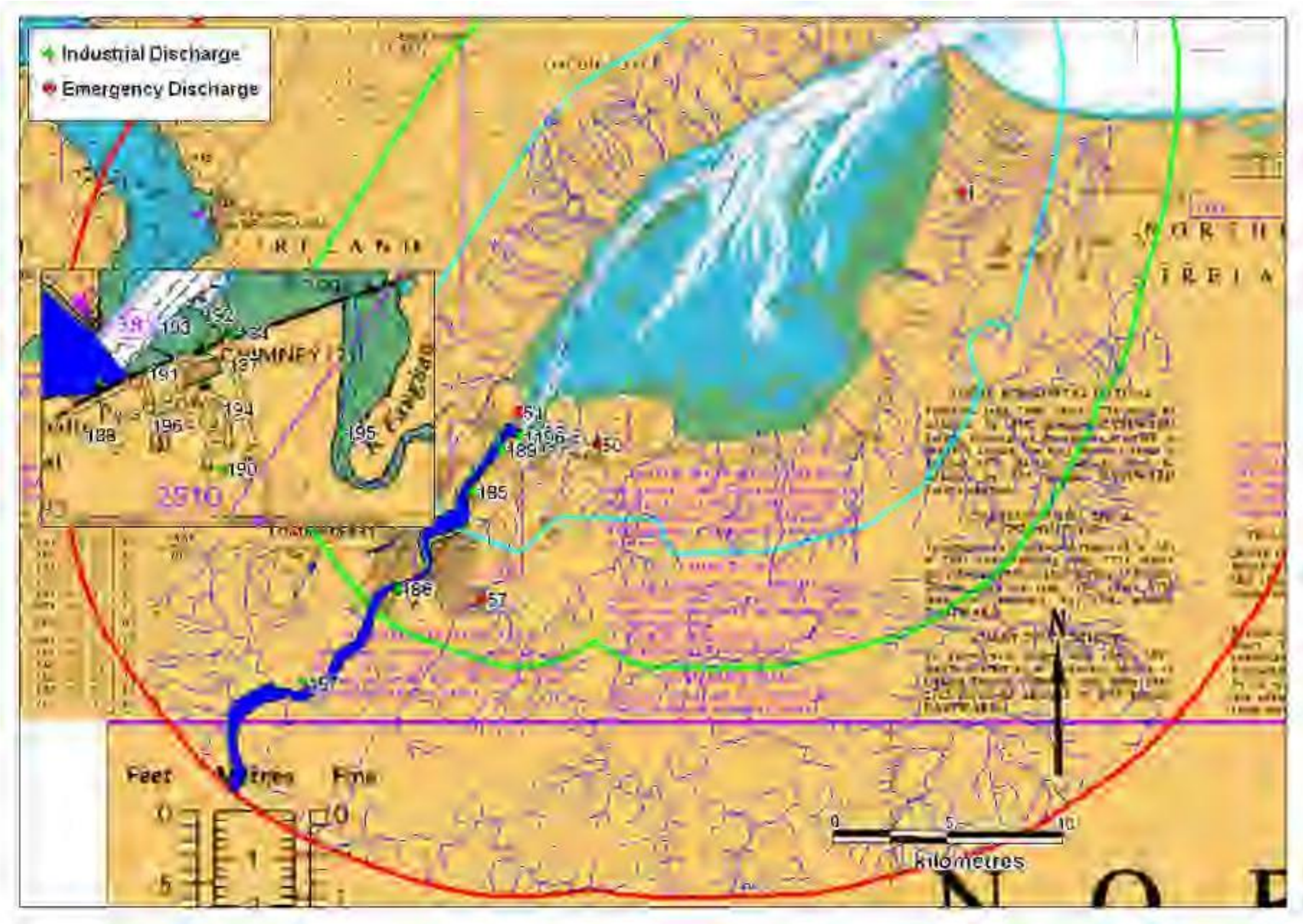
Industrial Discharge
Emergency Discharge
CHIMNEY
2510
kilometres
0
5
10
N
Feet
Metres
Fms

Figure 4.42: Location of all Emergency and Industrial Discharges into Lough Foyle and its tributaries.

Table 4.14: Cross-referenced tables for Figure 4-42 Emergency and Industrial Discharges.

Map Code	Discharge	Type
183	Industrial	Site Drainage
184	Industrial	Site Drainage
185	Industrial	Site Drainage
186	Industrial	Fish Processing
187	Industrial	Waste Disposal Site
188	Industrial	Site Drainage
189	Industrial	Site Drainage
190	Industrial	Waste Disposal Site
191	Industrial	Private Sewage:
192	Industrial	Private Sewage
193	Industrial	Textiles
194	Industrial	Cooling Water
195	Industrial	Private Sewage
196	Industrial	Cooling Water
197	Industrial	Donegal Meat Processors
51	Emergency	Culmore (WWTW): Screened waste water in emergency
57	Emergency	Drumahoe (WWTW): Screened waste water in emergency
1	Emergency	Drumavally: Primary treated waste waster in emergency
50	Emergency	Donnybrewer (WWTW): Secondary treated effluent in emergency

5. Sampling Information

5.1. Sampling Points

Ten shellfish sampling points were sampled on the 10th and 11th of February and 50 water sampling points were sampled within Lough Foyle on the 10th February 2010. The weather on the sampling days was fine and dry with little cloud cover. Predicted neap tide high water level on the 10th February was 2.2m at 5:38am at Lisahally and the predicted low water was 0.9m at 11:59am. Predicted neap tide high water level on the 11th February was 2.4m at 5:20am at Lisahally and the predicted low water was 0.8m at 12:39am. The weather conditions for the 2 week period preceding the sampling was as follows: average rainfall: 2.24mm, Maximum Temperature: 7.05°C, Minimum Temperature: 3.35°C and average wind speed was 14.26 knots (Met Eireann, 2010b).

An additional 7 shellfish sampling sites were sampled on the 11th March 2010. Following analysis of the initial 10 shellfish samples, it was decided to sample an additional 7 sites to allow a greater understanding of *E. coli* levels throughout the entire Lough with particular emphasis on the highest shellfish production area. High tide on the sampling day was 2.1m at 5:00am and the predicted low water was 0.8m at approximately 11:30am. The weather conditions for the 2 week period preceding the sampling was as follows: average rainfall: 3.15mm, Maximum Temperature: 7.14°C, Minimum Temperature: 0.24°C and average wind speed was 11.47 knots (Met Eireann, 2010b). The samples were taken a month apart, however weather conditions remained stable between both sampling times (Average monthly weather preceding the February sampling – Rainfall: 2.43mm, Maximum Temperature 7.19°C, Minimum Temperature: 3.19°C, Wind speed: 15.59 knots; Average monthly weather preceding the March sampling – Rainfall: 2.6mm, Maximum Temperature: 6.46°C, Minimum Temperature: 0.13°, Wind speed: 10.9 knots [Met Eireann, 2010b)) and results from FSANI shellfish sampling in the intervening period indicated no appreciable change in levels from the initial sampling date.

The 17 shellfish sampling points were made up of 10 mussel sites, 5 oyster sites and 2 Pacific oyster sites (unfortunately a sample could not be retrieved from Site S9). Ten of the 50 water samples were taken at the same locations as the initial 10 shellfish sampling sites, 32 were spaced approximately 1.5km apart along the full length of the coastline, 2 were located at discharge sites and the remaining 6 were randomly spaced throughout the centre of the Lough. All water samples were collected on the same day (10/2/2010) in just under 4 hours. The predicted neap tide high water level on this day was 2.2m at 5:38am at Lisahally and the predicted low water was 0.9m at 11:59am. Sampling began at Station W27 at 9:15am and finished at Station WD2 at 12:48pm. All samples were taken on the ebbing tide. Figure 5-1 shows the shellfish sampling sites and Figure 5-2 shows the water sampling sites. The coordinates of these stations can be seen in Tables 5-1 and 5-2.

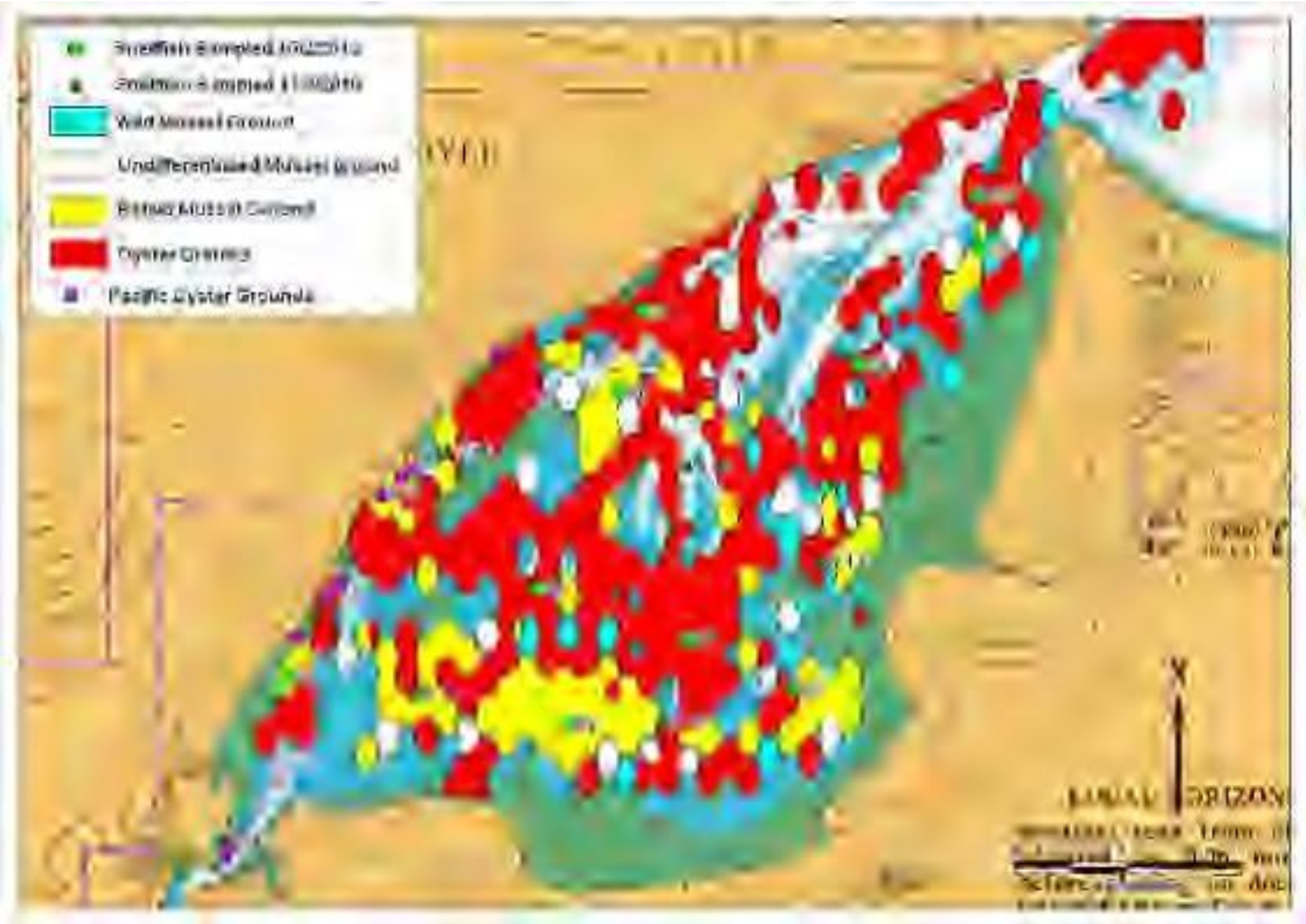
Wild Mussel Ground
Undifferentiated Mussel Ground
Pacific Oyster Grounds

Figure 5.1: Location of shellfish sampling stations.

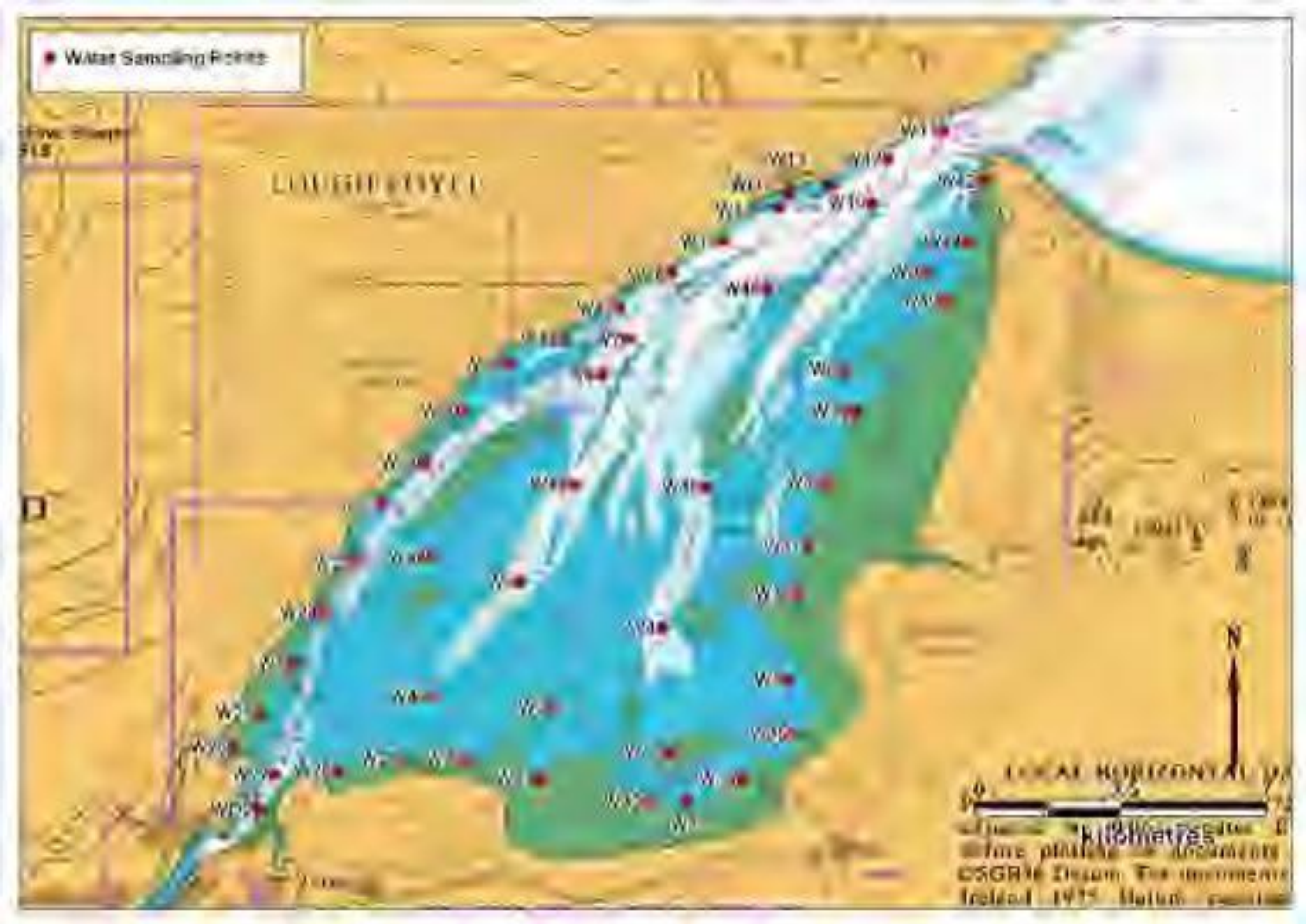
Water Sampling Points
N
Kilometres

Figure 5.2: Location of all water sampling sites.

Table 5.1: Shellfish sample coordinates with date of sampling.

Station	Longitude (DD)	Latitude (DD)	Easting (ING)	Northing (ING)	Date
S1	-7.23036	55.0842	249201.6	426596.1	10/2/2010
S2	-7.13305	55.0754	255427.4	425688.6	10/2/2010
S3	-7.05467	55.0825	260423.2	426541.7	10/2/2010
S4	-7.09176	55.0919	258040.9	427561.4	10/2/2010
S5	-7.14375	55.1023	254707.4	428671.2	10/2/2010
S6	-7.11451	55.1412	256518.9	433028.6	11/2/2010
S7	-7.10727	55.1572	256958.2	434817.4	11/2/2010
S8	-7.03186	55.1466	261781.3	433701.5	11/2/2010
S9	-6.98976	55.1693	264428.7	436260.6	11/2/2010
S10	-6.99142	55.18	264305.6	437456	11/2/2010
S11	-7.18550	55.08133	252011.9	426307	11/3/2010
S12	-7.10015	55.07600	257468.7	425779.1	11/3/2010
S13	-7.04550	55.10750	260911.6	429332.2	11/3/2010
S14	-7.09153	55.12653	257947.9	431411.9	11/3/2010
S15	-7.17443	55.12913	252656.4	431634.5	11/3/2010
S16	-7.25043	55.05182	247901.2	422974.4	11/3/2010
S17	-7.19735	55.12083	251204.2	430693.2	11/3/2010

Table 5.2: Water sample coordinates

Station	Longitude	Latitude	Easting	Northing
W1	-7.23036	55.0842	249143.9	426592.81
W2	-7.13134	55.075	255479.2	425642.89
W3	-7.04203	55.0806	261174.5	426340.78
W4	-7.08938	55.092	258134.4	427569.28
W5	-7.14321	55.1019	254684.4	428627.79
W6	-7.11243	55.1468	256585.4	433650.19
W7	-7.10284	55.1547	257185.5	434537.37
W8	-7.02092	55.1482	262417.1	433884.01
W9	-6.98976	55.1693	264369.5	436260.97
W10	-7.01031	55.1843	263036.5	437911.87
W11	-6.98306	55.2	264746.6	439684.41
W12	-7.00423	55.1938	263408.6	438974.84
W13	-7.02562	55.1881	262055.4	438321.13
W14	-7.04585	55.1831	260774.7	437746.77
W15	-7.06654	55.176	259467.5	436938.64
W16	-7.08582	55.1689	258249.6	436132.07
W17	-7.1058	55.1614	256987.2	435280.73
W18	-7.1267	55.1546	255664.8	434506.94
W19	-7.14806	55.1494	254310.4	433911.31
W20	-7.16476	55.1391	253259.5	432751.93
W21	-7.18006	55.1281	252298.3	431515.93
W22	-7.19581	55.1186	251305.9	430446.79

Station	Longitude	Latitude	Easting	Northing
W23	-7.20553	55.1063	250701.4	429070.55
W24	-7.21848	55.0955	249888.4	427859.06
W25	-7.24252	55.0734	248380.5	425382.17
W26	-7.25269	55.066	247739.8	424551.46
W27	-7.23668	55.0601	248769.7	423905.78
W28	-7.21305	55.0609	250278.4	424011.58
W29	-7.18781	55.0636	251887.5	424330.57
W30	-7.16278	55.0636	253486.5	424349.43
W31	-7.13625	55.05931	255187.2	423892.54
W32	-7.09561	55.05413	257791.2	423348.8
W33	-7.08087	55.05413	258733.1	423361.09
W34	-7.05949	55.05917	260091.7	423940.27
W35	-7.04022	55.06911	261307.7	425063.41
W36	-7.03853	55.09972	261368.7	428472.09
W37	-7.03472	55.10979	261596.4	429596.33
W38	-7.02662	55.12395	262091.3	431179.66
W39	-7.01639	55.13906	262720.2	432870.7
W40	-6.98235	55.16315	264851.6	435583.27
W41	-6.97378	55.17595	265376.7	437016.04
W42	-6.96868	55.1892	265679.8	438495.69
W43	-7.17618	55.0773	252612.5	425864.22
W44	-7.17711	55.1077	252513.2	429247.38
W45	-7.07305	55.1226	259131.7	430989.09
W46	-7.04982	55.1657	260548.2	435806.5
W47	-7.08699	55.065	258326.2	424565.9
W48	-7.12322	55.1231	255930.6	431003.42
WD1	-7.04117	55.18647	261067.6	438125.98
WD2	-7.24309	55.05265	248369.1	423072.07

The shellfish samples were collected using a hand dredge. Only individuals within the normal commercial size range were selected. All samples were stored in food grade plastic bags and stored in a cool box (containing freezer packs) and delivered to AQUALAB within 24hrs of collection. All water samples were collected in sterile plastic water bottles supplied by Northern Ireland Water. These samples were stored in a cool box until delivery to Northern Ireland Water (within 24hrs of collection). *E. coli* analysis was carried out on both the shellfish and water samples (AQUALAB: ISO 16649-3; NI Water: Colilert method). AQUALAB is an INAB (Irish National Accreditation Board) certified laboratory and Northern Ireland Water is a UKAS (United Kingdom Accreditation Service) certified laboratory.

5.2. *Microbial Analysis Results*

Despite the fact that a number of the shellfish samples were taken a month after the initial set, weather conditions remained stable and results from FSANI (Foods Standards Agency of Northern Ireland) shellfish sampling indicated no appreciable changes since the initial sampling period. However, the results are shown below on two different charts in order to differentiate between them. Tables 5-3 and 5-4 show the results of the shellfish analysis results from the 10th and 11th February 2010 and the 11th March 2010 respectively (Refer to Appendix 3 for individual result certificates). Table 5-4 shows the water sample analysis results (Refer to Appendix 4 for result certificate). Figures 5-3 to 5-5 show in graphical form the *E. coli* results from across the Lough.

Table 5.3: Shellfish *E. coli* results for Lough Foyle (sampled on 10th and 11th February 2010).

Station	Species	MPN/100g
S1	Mussel	230
S2	Mussel	130
S3	Mussel	220
S4	Oyster	130
S5	Oyster	170
S6	Mussel	130
S7	Oyster	50
S8	Oyster	170
S9	-	No sample collected
S10	Oyster	20

Table 5.4: Shellfish *E. coli* results for Lough Foyle (sampled on 11th March 2010).

Station	Species	MPN/100g
S11	Mussel	790
S12	Mussel	230
S13	Mussel	50
S14	Mussels	70
S15	Mussels	20
S16	Pacific Oyster	490
S17	Pacific Oyster	<20

Table 5.5: Water *E. coli* results for Lough Foyle (sampled 9th February 2010).

Station	*E. coli* MPN/100ml	Station	*E. coli* MPN/100ml
W1	44	**W26**	43
W2	17	**W27**	91
W3	4	**W28**	52
W4	10	**W29**	113
W5	9	**W30**	26
W6	5	**W31**	148
W7	5	**W32**	13
W8	7	**W33**	12
W9	8	**W34**	15
W10	<1	**W35**	8
W11	<1	**W36**	9
W12	<1	**W37**	4
W13	<1	**W38**	154
W14	<1	**W39**	4
W15	4	**W40**	1
W16	1	**W41**	<1
W17	12	**W42**	<1
W18	12	**W43**	32
W19	10	**W44**	70
W20	13	**W45**	3
W21	30	**W46**	3
W22	24	**W47**	16
W23	16	**W48**	13
W24	39	**WD1**	488000
W25	32	**WD2**	140

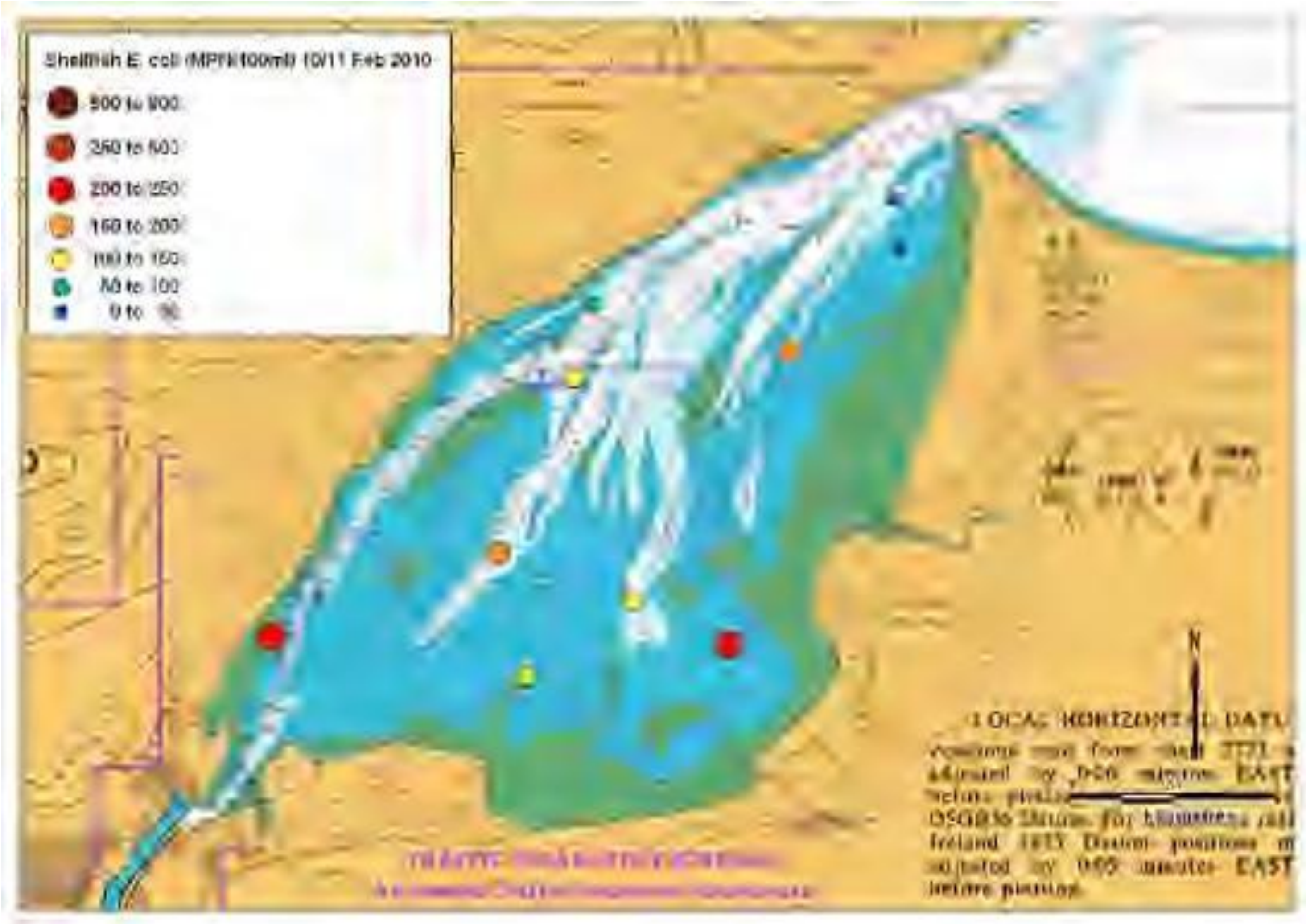

Figure 5.3: Shellfish *E. coli* results from Lough Foyle (sampled on 10th and 11th February 2010).

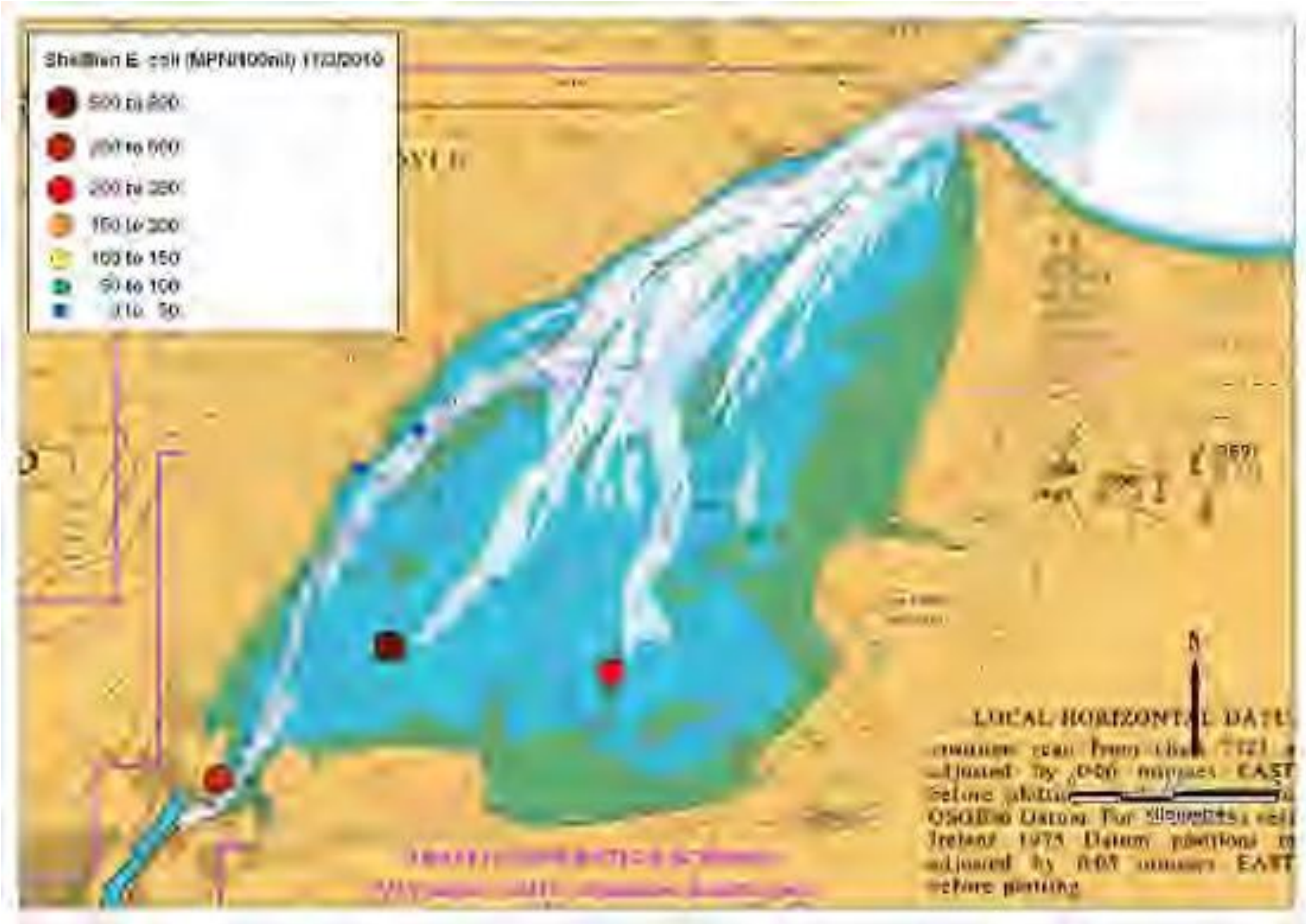
100 to 150
LOCAL HORIZONTAL

Figure 5.4: Shellfish *E. coli* results from Lough Foyle (sampled on 11th March 2010).

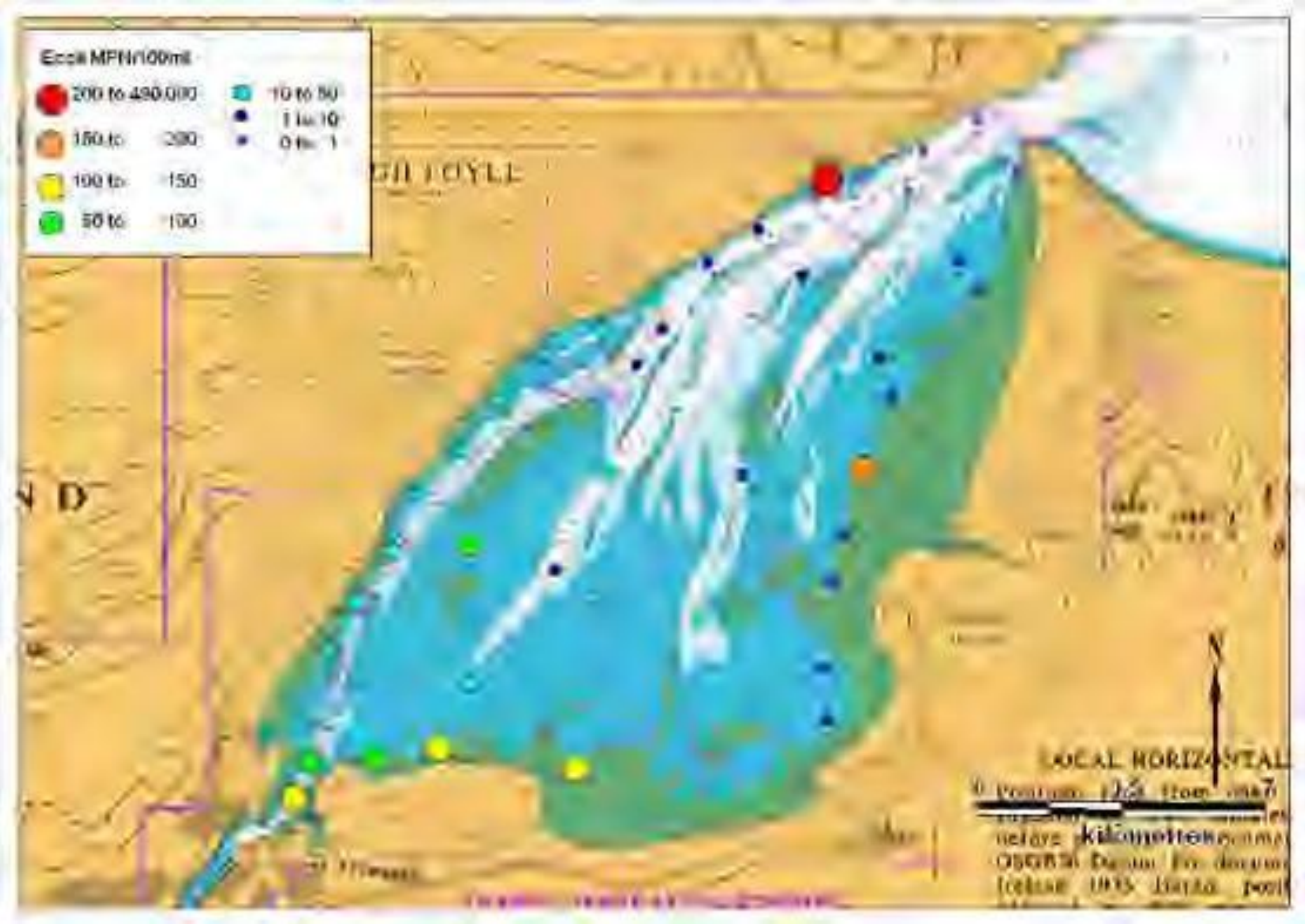

Figure 5.5: Water *E. coli* results from across Lough Foyle (sampled on the 10th February 2010).

5.3. Historical Data

5.3.1. Shellfish Water Quality

Northern Ireland Environment Agency (NIEA) Water Management Unit collects water samples for analysis from various locations around Lough Foyle (See Figure 5-6). These water samples are analysed routinely for pH, temperature, suspended solids, salinity, dissolved oxygen, faecal coliforms (*E. coli*), heavy metals, organochlorides, Polychlorionated Biphenyls (PCB), Polycyclic Aromatic Hydrocarbons (PAHs), Pentachlorophenol (PCP) and Tributyl Tin Oxide (TBTO). As faecal coliforms are the main indicators of sanitation levels in water bodies such as Lough Foyle, these results are shown in Figure 5-7 below for all 10 sampling points from 2000 to 2008. All other parameter results can be seen in Appendix 5. The main sources of *E. coli* are municipal sewage discharges or runoff from failing septic systems, animal feed operations, farms and faeces deposited in woodlands from warm blooded animals. In urban areas, the *E. coli* from the excrement of warm blooded animals (such as pets in a park or on the street) may be washed into creeks, rivers, streams, lakes, or groundwater during rainfalls or snow melts. The contamination in water is often highest immediately following a storm, because of the runoff. In addition, infected bathers can unknowingly contaminate water, or contamination can occur from boaters discharging wastes directly into the water.

It can be seen from Figure 5-7 that increases in faecal coliform contamination increased in the winter months due to increased rainfall and run-off during these times. Figure 5-8 shows an example of the *E. coli* distribution in the Lough during one of these winter periods (December 2001). This figure indicates that the main source of contamination during this period came from along the southern shoreline of the Lough. It could have been due to discharges from a number of WWTW's in the area e.g. Gortgare (Greysteel), Longfield Eglington, Culmore, Killylane, Ballykelly. More recent figures from December 2007 can be seen in Figure 5-9, which show a vast reduction in contamination levels on the 2001 data. Since 2001, *E. coli* levels from the NIEA water sampling sites have never reached as high as the 2001 levels. This may be indicative of improvements to WWTWs (Waste Water Treatment Works) in the area (specific details on each plant are unknown). A summer peak in July 2002 was also evident in the graphs below and can be seen in Figure 5-10. This may have been the result of heavy rainfall during this period (rainfall data from July 2002 are unavailable).

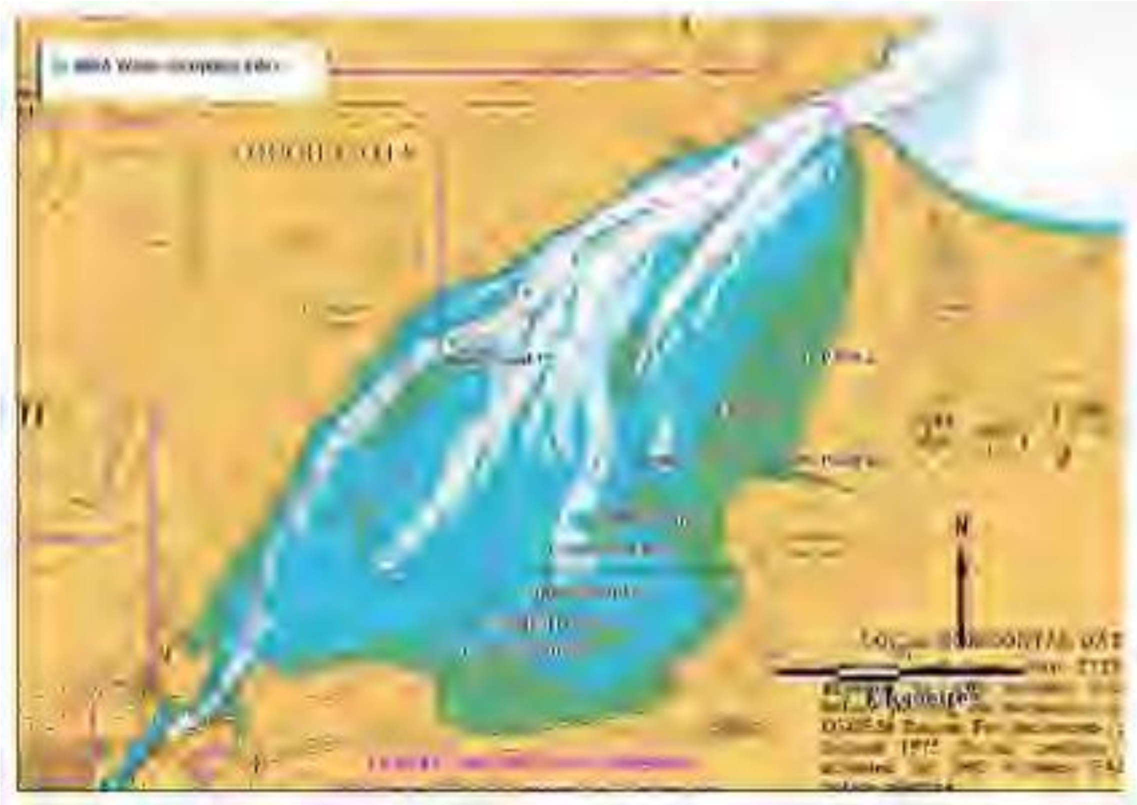

Figure 5.6: Locations of NIEA water sampling points.

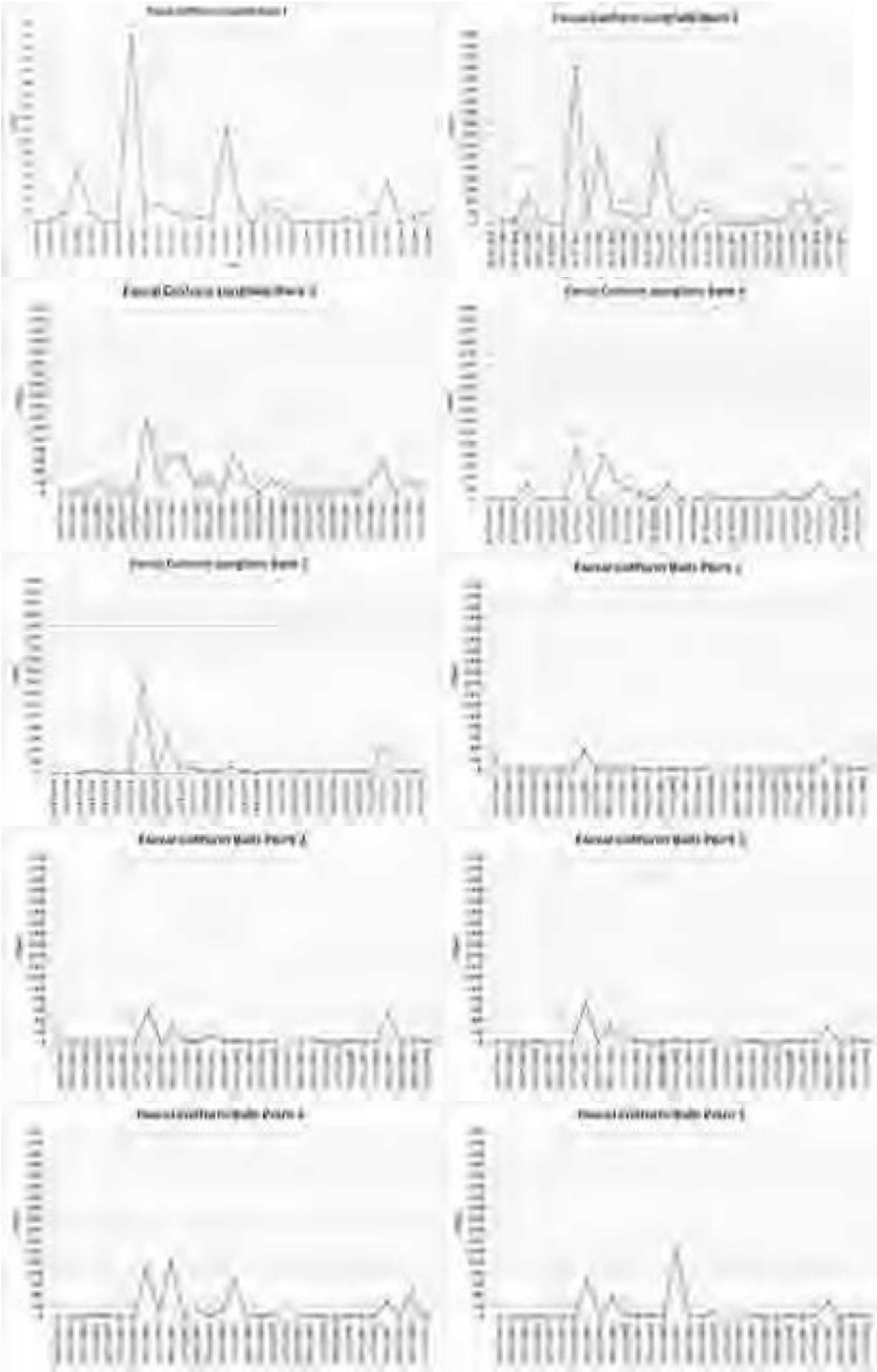

Figure 5.7: *E. coli* levels in Lough Foyle from 2000 to 2008 (Source: NIEA).

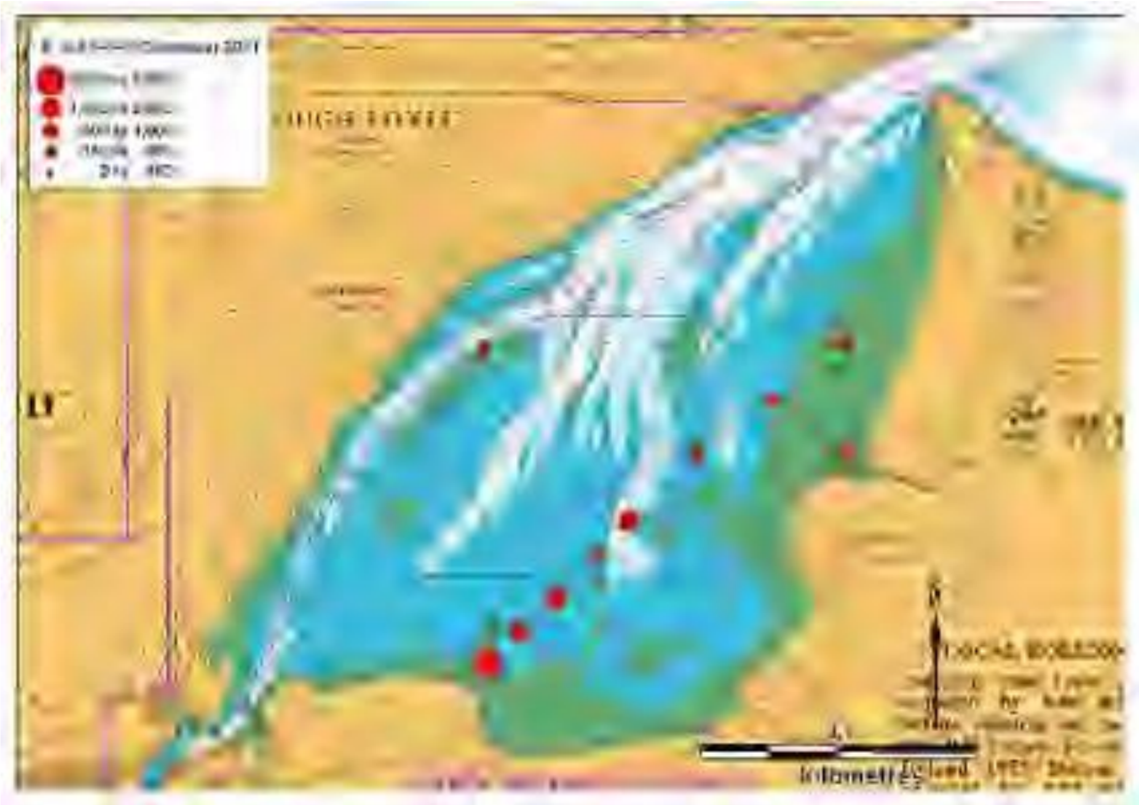

Figure 5.8: ***E. coli*** **levels in Lough Foyle in December 2001 (Source: NIEA).**

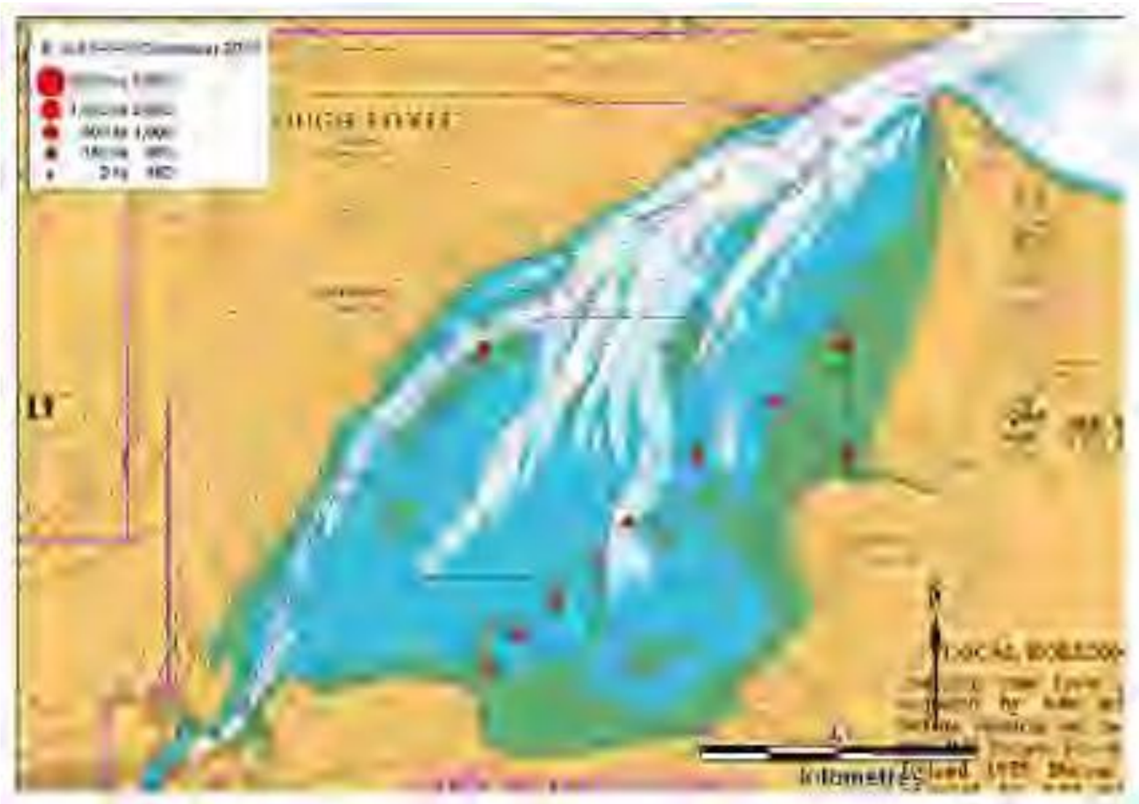

Figure 5.9: ***E. coli*** **levels in Lough Foyle in December 2007 (Source: NIEA).**

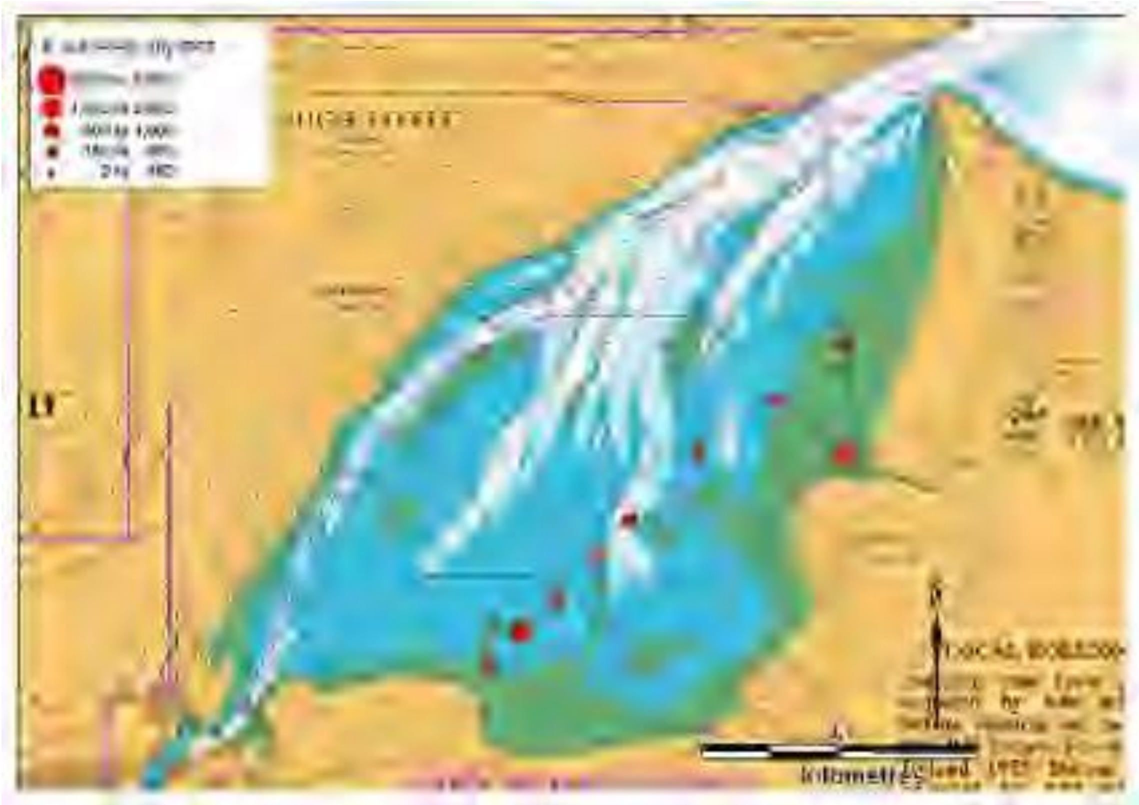

Figure 5.10: ***E. coli*** **levels in Lough Foyle in July 2002 (Source: NIEA).**

5.3.2. Shellfish Flesh Quality

The Food Standards Agency of Northern Ireland (FSANI) and the Sea Fisheries Protection Authority (SFPA) both conduct monitoring in classified harvesting areas in Lough Foyle (See Figure 5-11). Flesh samples are periodically monitored to check the microbiological quality of the shellfish, with *E.coli* being used as an indicator of faecal contamination. Harvesting areas are also monitored for the presence of toxin producing phytoplankton in shellfish waters, including *Alexandrium spp* and *Dinophysis spp.* and for marine biotoxins (including DSP, PSP and ASP) in shellfish flesh.

In addition, heavy metals, organochlorides, polychlorinated biphenyls (PCB), polycyclic aromatic hydrocarbons (PAH), pentachlorophenol (PCP) and Tributyl Tin Oxide (TBTO) are all monitored. These additional parameter results can be seen in Appendix 6.

FSANI sample shellfish flesh at Balls Point, Longfield Bank and at Redcastle Perch. SFPA sample shellfish flesh at Muff, Quigley's Point, Moville, and Greencastle. Figure 5-12 shows the locations of the sampling points.

Figure 5.11: Location of Lough Foyle Designated Shellfish Waters.

Figure 5.12: Locations of FSANI and SFPA shellfish monitoring points.

In accordance with Annex II of the EU Hygiene Regulation 854/2004, FSANI and SFPA are required to establish the location and fix the boundaries of shellfish harvesting areas. The process involves regular sampling of shellfish from each area to be classified in order to establish levels of microbiological contamination which subsequently determines which classification should be awarded for that particular area.

The regulations stipulate that the competent authority must monitor the levels of E.*coli* within the harvesting area and that according to the sample results, must classify the area as being one of three categories; A, B or C.

An A classification allows for the product to be placed directly on the market, whereas a B or C classification requires the product to go through a process of depuration, purification or relaying before it can be placed on the market. Lough Foyle has historically always been classified as a B harvesting area. Table 5-6 summarises this system.

Table 5.6: Classification system for shellfish harvesting areas.

Classification			Permitted Levels	Outcome
	A	<230	Less than 230 *E. coli*100g flesh	May go direct for human consumption if end product standard met.
	B	<4600	Less than 4,600 *E. coli*100g flesh	Must be subject to purification, relaying in Class A area (to meet Category A requirements) or cooked by an approved method.
	C	<46000	Less than 46,000 *E.coli*100g flesh	Must be subject to relaying for a period of at least 2 months or cooked by an approved method.
	Above 46,000 *E.coli*/100g flesh			Prohibited. Harvesting not permitted

Table 5-7 shows the summary statistics for the *E. coli* historical data from the 7 shellfish beds used in this report. It should be noted that only data from 1 mussel sample and 2 oyster samples were available from Moville, therefore comparisons between this site and others could not be made.

The mussel beds at Longfield Bank and Balls Point had the longest historical record (6 years). The geometric mean of *E. coli* levels was highest for oysters at Quigley's Point (2006-2009), followed by mussels at Quigley's Point (2005-2009) and mussels at Longfield Bank (2004-2009).

Of the three sites where both oysters and mussels were sampled and where sufficient data were available, at one sites (Quigley's Point), oysters had a geometric mean 1.5 times higher than mussels.

Table 5-8 shows the variations of the annual geometric means of *E. coli* for the shellfish beds that had at least 5 samples per year from the year 2004. No significant trends were observed over the six year period. In addition, while no seasonal trends were identified using a one-way ANOVA on the historical *E. coli* data (Refer to section 4.2.2 Tourism), there was a significant difference between levels of *E. coli* contamination between oysters and mussels during the winter season at Greencastle. However, there was no significant difference between annual oyster and mussel *E. coli* levels at Greencastle.

Tables 5-9 to 5-17 list the *E. coli* results for mussels and oysters from Balls Point, Longfield Bank, Greencastle, Quigley's Point, Moville, Muff and Redcastle Perch from 2004-2009. Figures 5-13 to 5-20 show these data in graphical form.

Table 5.7: Summary statistics of historical *E. coli* data monitored from 7 shellfish beds in Lough Foyle.

	Balls Point	Longfield Bank	Greencastle		Quigley's Point		Muff	Moville		Redcastle
Species	**Mussels**	**Mussels**	**Mussels**	**Oysters**	**Mussels**	**Oysters**	**Oysters**	**Mussels**	**Oysters**	**Oysters**
Date of 1st Sample	05/01/2004	05/01/2004	05/12/2005	22/02/2006	29/11/2005	07/09/2006	06/12/2005	19/02/2008	26/04/2006	12/01/2009
Date last Sample	17/12/2009	17/12/2009	08/12/2009	30/11/2009	26/11/2009	27/03/2009	16/12/2009	19/02/2008	05/03/2007	17/12/2009
Minimum *E. coli* (MPN/100g)	<20	<20	20	20	40	20	20	20	110	<20
Maximum *E. coli* (MPN/100g)	24000	16000	3500	16000	5400	16000	2400	20	500	750
Median *E. coli* (MPN/100g)	200	310	110	70	220	500	160	20	305	210
Geometric Mean *E. coli* (MPN/100g)	180	273	127	125	293	480	158	20	235	127

Table 5.8: Variation of annual geometric means of *E. coli* from the 7 beds monitored in Lough Foyle (INS – Insufficient data for mean calculation).

	Balls Point	Longfield Bank	Greencastle		Quigley's Point		Muff	Moville		Redcastle
Species	**Mussels**	**Mussels**	**Mussels**	**Oysters**	**Mussels**	**Oysters**	**Oysters**	**Mussels**	**Oysters**	**Oysters**
2004	326.87	258.77	INS	INS	INS	INS	INS	INS	INS	INS
2005	93.83	289.50	INS	INS	INS	INS	INS	INS	INS	INS
2006	257.76	193.84	62.64	140.54	413.95	INS	INS	INS	INS	INS
2007	157.59	319.05	78.96	111.45	INS	INS	INS	INS	INS	INS
2008	173.39	287.58	172.34	149.41	INS	INS	INS	INS	INS	INS
2009	202.92	298.66	288.60	121.89	212.58	INS	INS	INS	INS	127.17

As mentioned earlier, Lough Foyle has historically been classified as a B harvesting area. There was only one instance of a **C** result for the Balls Point mussel harvesting bed in the past six years and this occurred in August 2007, with an *E. coli* count of 24,000 MPN/100g. Since 2004, the Balls Point mussel harvesting bed had an **A** result 60.7% of the time, a **B** result 37.7% of the time and a **C** result 1.6% of the time (See Figure 5-13). The most recent data from Balls Point (December 2009) was a B result.

There were two instances of a C result for the Longfield Bank mussel harvesting bed in the past six years and these occurred in August 2007 (9,100 MPN/100g) and November 2009 (16,000 MPN/100g). Since 2004, the Longfield Bank mussel harvesting bed was had an A result 48.4% of the time, a **B** result 48.4% of the time and a **C** result 3.1% of the time (See Figure 5-14). The most recent data from Longfield Bank (December 2009) was a **B** result.

The oyster harvesting bed at Redcastle Perch varied between an **A** and **B** result throughout 2009, with the most recent results (December 2009) being **A**. Over the 2009 period, Redcastle Perch oyster bed was received an **A** result 75% of the time and a **B** result 25% of the time (See Figure 5-15).

There were no instances of a C result for the Greencastle mussel harvesting bed in the past five years. Since 2005, the Greencastle mussel harvesting bed received an **A** result 74.4% of the time and a **B** result 25.6% of the time (See Figure 5-16). The most recent data from Greencastle (December 2009) was a B result.

There were three instances of a C result for the Greencastle oyster harvesting bed in the past five years and these occurred in September 2006 (9,100 MPN/100g), October 2007 (16,000 MPN/100g) and August 2008 (5,400 MPN/100g). Since 2005, the Greencastle oyster harvesting bed received an A result 67.4% of the time, a **B** result 25.6% of the time and a **C** result 7% of the time (See Figure 5-17). The most recent data from Greencastle (December 2009) was an **A** result.

There were no instances of a C result for the Moville oyster and mussel harvesting beds from 2006-2008. The most recent data from Moville (February 2008) for the mussel beds was an A result and from the oyster beds (March 2007) was an A result.

There was one instance of a **C** result for the Quigley's Point mussel harvesting bed in the past five years and this occurred in September 2006 (5,400 MPN/100g). Since 2005, the Quigley's Point mussel harvesting bed received an **A** result 57.9% of the time, a **B** result 36.8% of the time and a **C** result 5.3% of the time (See Figure 5-18). The most recent data from Quigley's Point (November 2009) was a **B** result.

There were two instances of a **C** result for the Quigley's Point oyster harvesting bed in the past five years and these occurred in July 2007 (5,400 MPN/100g) and August 2008 (16,000 MPN/100g). Since 2006, the Quigley's Point oyster harvesting bed received an **A** result 27.3% of the time, a **B** result 54.6% of the time and a **C** result 18.2% of the time (See Figure 5-19). The most recent data from Quigley's Point (March 2009) was an **A** result.

There were no instances of a **C** result for the Muff oyster harvesting bed in the past five years. Since 2005, the Muff oyster harvesting bed received an **A** result 74.93% of the time and a **B** result 24.9% of the time (See Figure 5-20).

With the exception of August and October 2007, all of the other C results occurred at a time of increased rainfall. The cause of the elevated *E. coli* levels in August and October 2007 is unknown.

Table 5.9: *E. coli* results from Mussels from Balls Point from 2004 to 2009 (Source: FSANI)

Date	E.Coli	Species	Category	Date	E.Coli	Species	Category	Date	E.Coli	Species	Category
05/01/2004	2400	Mussels	**B**	**24-Apr-06**	70	Mussels	**A**	**18-Jun-08**	<20	Mussels	**A**
02/02/2004	750	Mussels	**B**	**22-May-06**	3500	Mussels	**B**	**21-Jul-08**	500	Mussels	**B**
08/03/2004	20	Mussels	**A**	**24-Jul-06**	70	Mussels	**A**	**27-Aug-08**	110	Mussels	**A**
04/05/2004	140	Mussels	**A**	**18-Sep-06**	220	Mussels	**A**	**15-Sep-08**	750	Mussels	**B**
15/06/2004	ND	Mussels	**A**	**24-Oct-06**	220	Mussels	**A**	**27-Oct-08**	1300	Mussels	**B**
11/10/2004	1100	Mussels	**B**	**20-Nov-06**	110	Mussels	**A**	**24-Nov-08**	220	Mussels	**A**
10/11/2004	220	Mussels	**A**	**22-Jan-07**	500	Mussels	**B**	**08-Dec-08**	500	Mussels	**B**
24-Jan-05	160	Mussels	**A**	**19-Jan-07**	90	Mussels	**A**	**12-Jan-09**	70	Mussels	**A**
21-Feb-05	20	Mussels	**A**	**27-Mar-07**	<20	Mussels	**A**	**09-Feb-09**	310	Mussels	**B**
21-Mar-05	ND	Mussels	**A**	**27-Mar-07**	70	Mussels	**A**	**25-Mar-09**	20	Mussels	**A**
18-Apr-05	310	Mussels	**B**	**14-May-07**	200	Mussels	**A**	**27-Apr-09**	400	Mussels	**B**
23-May-05	20	Mussels	**A**	**11-Jun-07**	<20	Mussels	**A**	**11-May-09**	500	Mussels	**B**
20-Jun-05	20	Mussels	**A**	**31-Jul-07**	40	Mussels	**A**	**08-Jun-09**	110	Mussels	**A**
18-Jul-05	40	Mussels	**A**	**14-Aug-07**	24000	Mussels	**C**	**07-Jul-09**	40	Mussels	**A**
19-Sep-05	50	Mussels	**A**	**10-Sep-07**	110	Mussels	**A**	**09-Aug-09**	40	Mussels	**A**
17-Oct-05	430	Mussels	**B**	**11-Oct-07**	200	Mussels	**A**	**07-Sep-09**	200	Mussels	**A**
14-Nov-05	500	Mussels	**B**	**25-Nov-07**	310	Mussels	**B**	**21-Oct-09**	1100	Mussels	**B**
12-Dec-05	310	Mussels	**B**	**08-Jan-08**	500	Mussels	**B**	**04-Nov-09**	2900	Mussels	**B**
09-Jan-06	500	Mussels	**B**	**18-Mar-08**	200	Mussels	**A**	**17-Dec-09**	500	Mussels	**B**
27-Feb-06	50	Mussels	**A**	**22-Apr-08**	<20	Mussels	**A**				
27-Mar-06	2200	Mussels	**B**	**27-May-08**	20	Mussels	**A**				

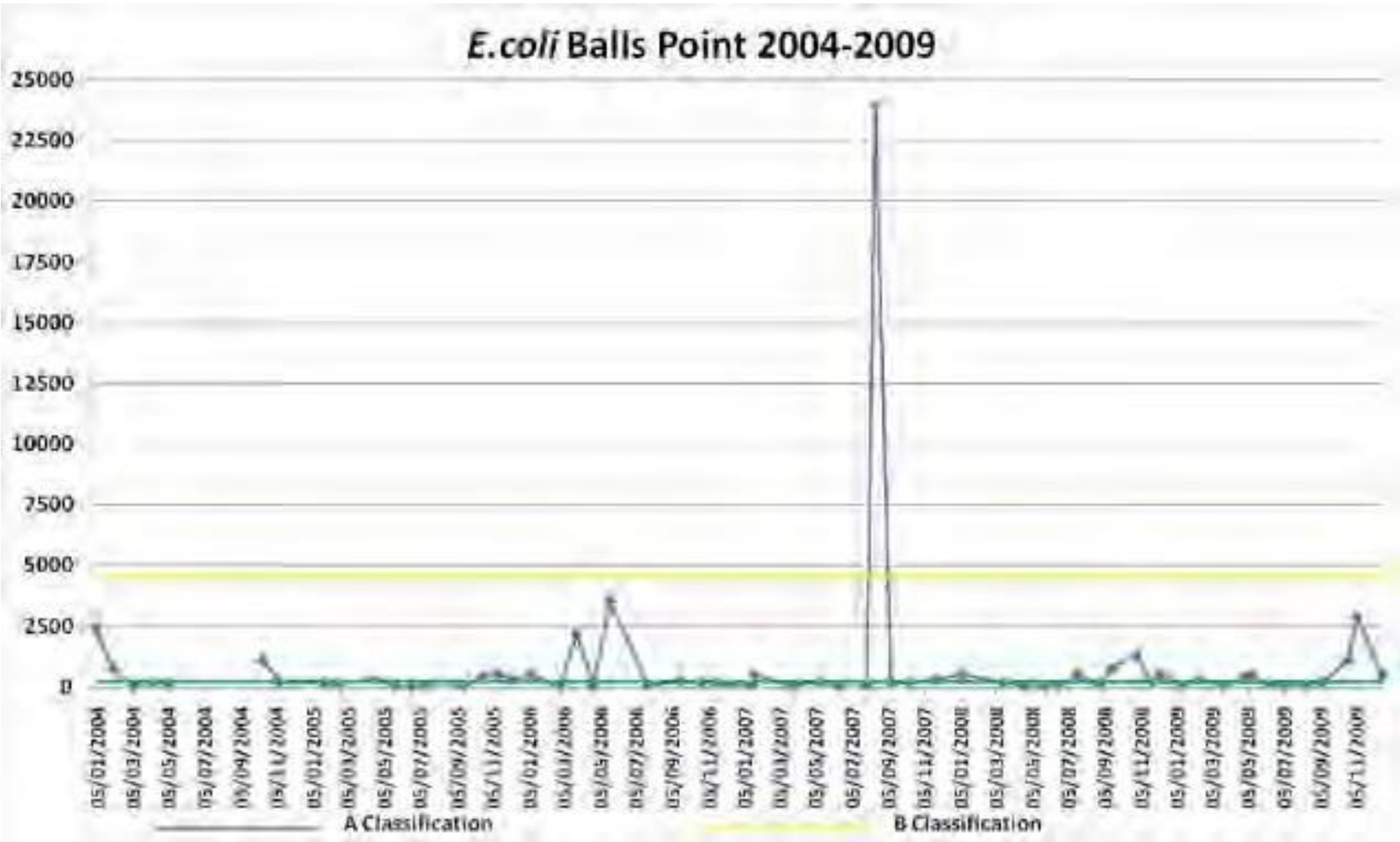

Figure 5.13: ***E. coli*** **results from mussels at Balls Point from 2004-2009.**

Table 5.10: *E. coli* results from Mussels from Longfield Bank from 2004 to 2009 (Source: FSANI)

Date	*E.Coli*	Species	Category	Date	*E.Coli*	Species	Category	Date	*E.Coli*	Species	Category
05/01/2004	1700	Mussels	B	**27-Mar-06**	290	Mussels	B	**02-Jun-08**	<20	Mussels	A
08/03/2004	160	Mussels	A	**24-Apr-06**	20	Mussels	A	**18-Jun-08**	40	Mussels	A
05/04/2004	40	Mussels	A	**22-May-06**	310	Mussels	B	**21-Jul-08**	2400	Mussels	B
16/06/2004	200	Mussels	A	**26-Jun-06**	750	Mussels	B	**27-Aug-08**	750	Mussels	B
26/08/2004	750	Mussels	B	**24-Jul-06**	110	Mussels	A	**15-Sep-08**	110	Mussels	A
11/10/2004	700	Mussels	B	**18-Sep-06**	90	Mussels	A	**27-Oct-08**	1700	Mussels	B
10/11/2004	110	Mussels	A	**24-Oct-06**	220	Mussels	A	**24-Nov-08**	500	Mussels	B
29/11/2004	160	Mussels	A	**20-Nov-06**	1700	Mussels	A	**08-Dec-08**	2800	Mussels	B
24-Jan-05	750	Mussels	B	**22-Jan-07**	1400	Mussels	B	**12-Jan-09**	160	Mussels	A
21-Feb-05	1100	Mussels	B	**19-Feb-07**	500	Mussels	B	**09-Feb-09**	1100	Mussels	B
21-Mar-05	500	Mussels	B	**14-May-07**	<20	Mussels	A	**25-Mar-09**	220	Mussels	A
18-Apr-05	400	Mussels	B	**11-Jun-07**	<20	Mussels	A	**27-Apr-09**	1700	Mussels	B
23-May-05	500	Mussels	B	**31-Jul-07**	500	Mussels	B	**11-May-09**	1300	Mussels	B
20-Jun-05	110	Mussels	A	**14-Aug-07**	9100	Mussels	C	**08-Jun-09**	<20	Mussels	A
18-Jul-05	700	Mussels	A	**10-Sep-07**	310	Mussels	B	**08-Jul-09**	20	Mussels	A
17-Aug-05	110	Mussels	A	**11-Oct-07**	310	Mussels	B	**10-Aug-09**	110	Mussels	A
19-Sep-05	160	Mussels	A	**25-Nov-07**	310	Mussels	B	**07-Sep-09**	110	Mussels	A
17-Oct-05	20	Mussels	A	**08-Jan-08**	1300	Mussels	B	**21-Oct-09**	200	Mussels	A
14-Nov-05	500	Mussels	B	**04-Feb-08**	1300	Mussels	B	**04-Nov-09**	16000	Mussels	C
12-Dec-05	310	Mussels	B	**18-Mar-08**	200	Mussels	A	**17-Dec-09**	400	Mussels	B
09-Jan-06	750	Mussels	B	**22-Apr-08**	40	Mussels	A				
27-Feb-06	20	Mussels	A	**27-May-08**	<20	Mussels	A				

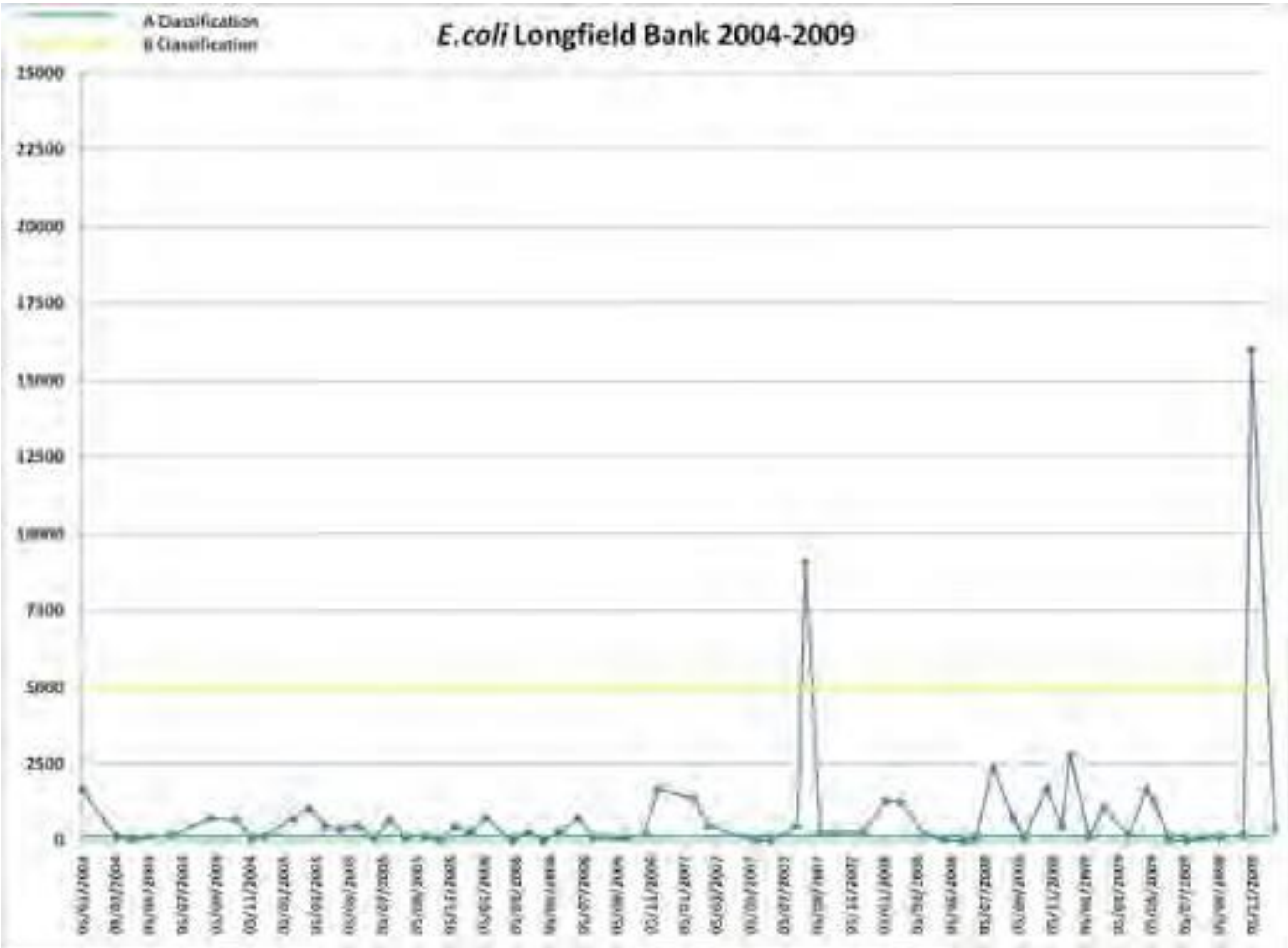
A Classification
B Classification
E.coli Longfield Bank 2004-2009
25000
22500
20000
17500
15000
12500
10000
7500
5000
2500
0

Figure 5.14: *E. coli* levels from mussels at Longfield Bank from 2004-2009.

Table 5.11: *E. coli* results from Oysters from Redcastle Perch from 2009 (Source: FSANI)

Date	Species	Category	E.Coli	Comment
12-Jan-09	Oysters	A	40	
09-Feb-09	Oysters	A	<20	
March	Oysters	No sample		
27-Apr-09	Oysters	B	310	
11-May-09	Oysters	A	220	
June	Oysters	No sample		Bed Not Harvesting
July	Oysters	No sample		Bed Not Harvesting
August	Oysters	No sample		Bed Not Harvesting
07-Sep-09	Oysters	A	220	
21-Oct-09	Oysters	A	40	
04-Nov-09	Oysters	B	750	
17-Dec-09	Oysters	A	200	

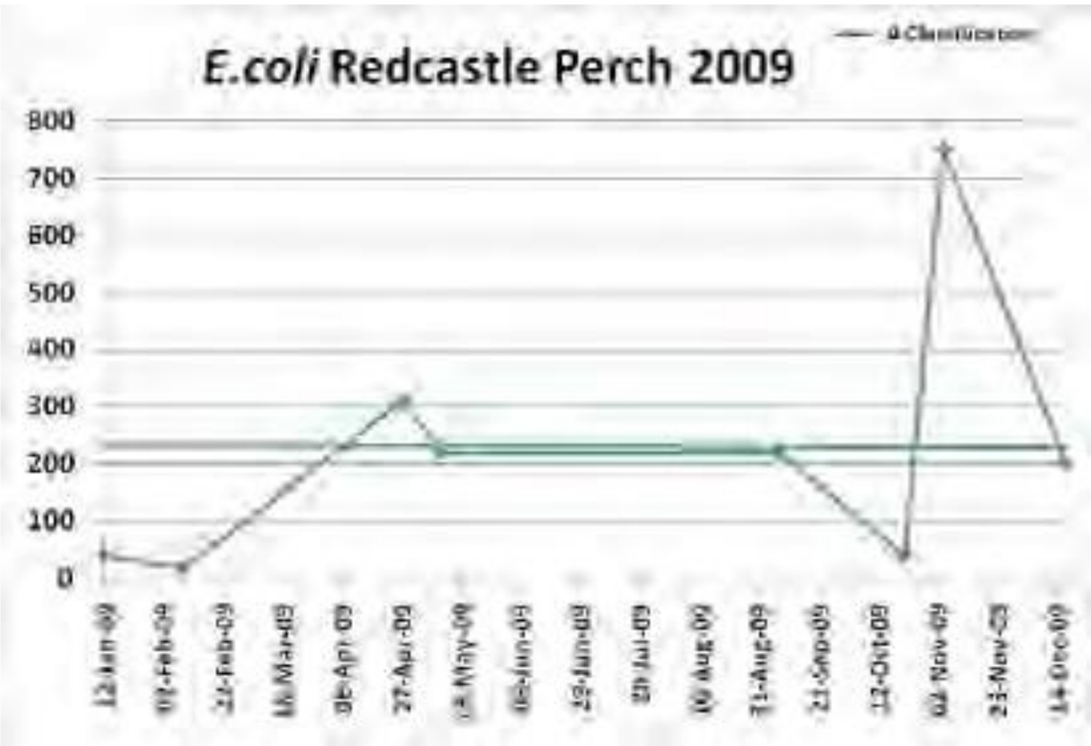

Figure 5.15: *E. coli* levels in Redcastle Perch oysters in 2009.

Table 5.12: ***E. coli*** **results from Mussels from Greencastle from 2005-2009 (Source: SFPA).**

Date	Species	Category	*E.Coli*	Date	Species	Category	*E.Coli*
4-Dec-05	Mussels	B	3500	23-Nov-07	Mussels	A	70
19-Jan-06	Mussels	A	20	11-Dec-07	Mussels	A	220
23-Feb-06	Mussels	A	110	19-Mar-08	Mussels	A	110
23-May-06	Mussels	B	1700	1-Apr-08	Mussels	B	3500
15-Jun-06	Mussels	A	20	9-Apr-08	Mussels	A	20
15-Aug-06	Mussels	A	40	8-May-08	Mussels	A	110
19-Sep-06	Mussels	A	20	19-Jun-08	Mussels	B	310
3-Oct-06	Mussels	A	40	22-Jul-08	Mussels	A	160
14-Nov-06	Mussels	A	20	3-Sep-08	Mussels	A	20
18-Dec-06	Mussels	B	310	15-Oct-08	Mussels	A	50
7-Jan-07	Mussels	B	2200	13-Nov-08	Mussels	B	500
25-Mar-07	Mussels	A	110	16-Dec-08	Mussels	B	1100
19-Apr-07	Mussels	A	20	12-Jan-09	Mussels	A	70
1-May-07	Mussels	A	40	8-Apr-09	Mussels	A	220
28-May-07	Mussels	A	20	8-May-09	Mussels	B	1700
26-Jun-07	Mussels	A	20	8-Jul-09	Mussels	A	20
19-Jul-07	Mussels	A	160	25-Aug-09	Mussels	A	700
14-Aug-07	Mussels	A	70	16-Sep-09	Mussels	A	130
6-Sep-07	Mussels	A	40	8-Dec-09	Mussels	B	3500
9-Oct-07	Mussels	A	110				

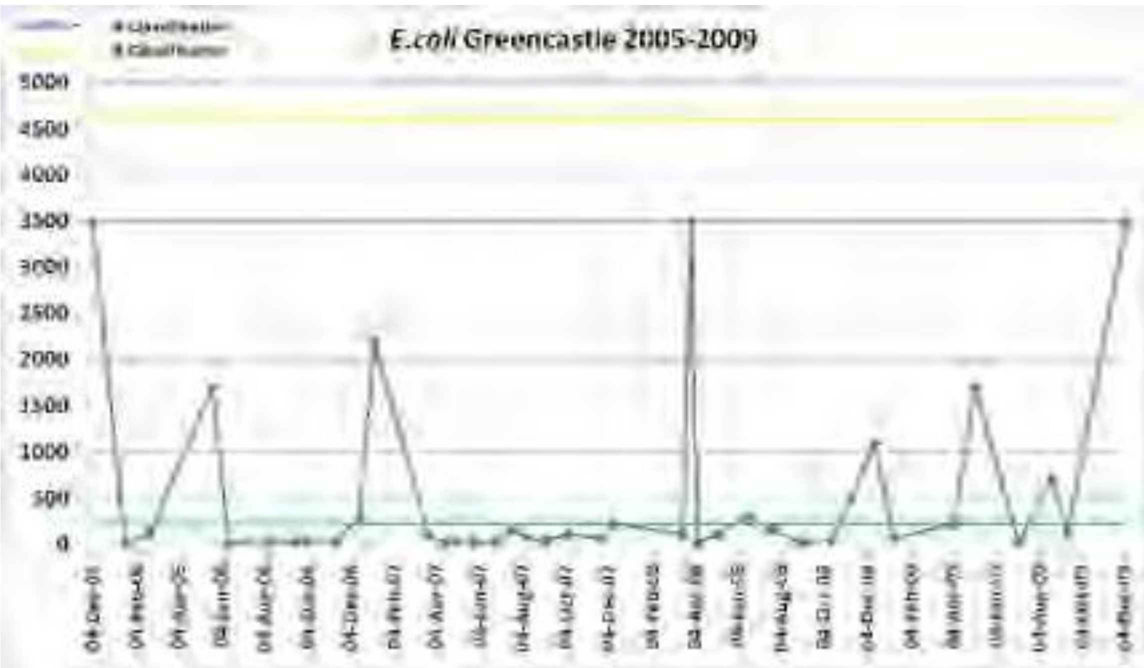

Figure 5.16: ***E. coli*** **levels in mussels from Greencastle from 2005-2009.**

Table 5.13: *E. coli* results from Oysters from Greencastle from 2005-2009 (Source: SFPA).

Date	Species	Category	*E.Coli*	Date	Species	Category	*E.Coli*
29-Nov-05	Oyster	A	20	5-Feb-08	Native Oyster	A	110
20-Jan-06	Oyster	A	70	19-Mar-08	Native Oyster	A	20
22-Feb-06	Native Oyster	A	70	9-Apr-08	Native Oyster	A	20
22-Mar-06	Native Oyster	B	430	27-May-08	Native Oyster	A	40
23-May-06	Native Oyster	A	70	19-Jun-08	Native Oyster	B	750
17-Aug-06	Native Oyster	A	20	22-Jul-08	Native Oyster	B	310
7-Sep-06	Native Oyster	C	9100	14-Aug-08	Native Oyster	C	5400
19-Sep-06	Native Oyster	A	40	3-Sep-08	Native Oyster	B	500
10-Oct-06	Native Oyster	A	70	15-Oct-08	Native Oyster	B	500
14-Nov-06	Pacific Oyster	A	200	13-Nov-08	Native Oyster	A	20
18-Dec-06	Native Oyster	A	200	16-Dec-08	Native Oyster	A	70
29-Jan-07	Native Oyster	A	20	12-Jan-09	Native Oyster	B	310
25-Mar-07	Native Oyster	A	40	12-Feb-09	Native Oyster	A	20
19-Apr-07	Native Oyster	A	20	8-Apr-09	Native Oyster	A	20
1-May-07	Native Oyster	A	20	23-Jun-09	Native Oyster	A	50
15-Jul-07	Native Oyster	B	750	8-Jul-09	Native Oyster	A	20
20-Aug-07	Native Oyster	A	20	25-Aug-09	Native Oyster	B	3500
6-Sep-07	Native Oyster	B	500	16-Sep-09	Native Oyster	A	80
9-Oct-07	Native Oyster	C	16000	26-Nov-09	Native Oyster	B	790
23-Nov-07	Native Oyster	A	110	30-Nov-09	Pacific Oyster	B	330

Date	Species	Category	*E.Coli*	Date	Species	Category	*E.Coli*
11-Dec-07	Native Oyster	A	70	8-Dec-09	Native Oyster	A	80
23-Jan-08	Native Oyster	A	160				

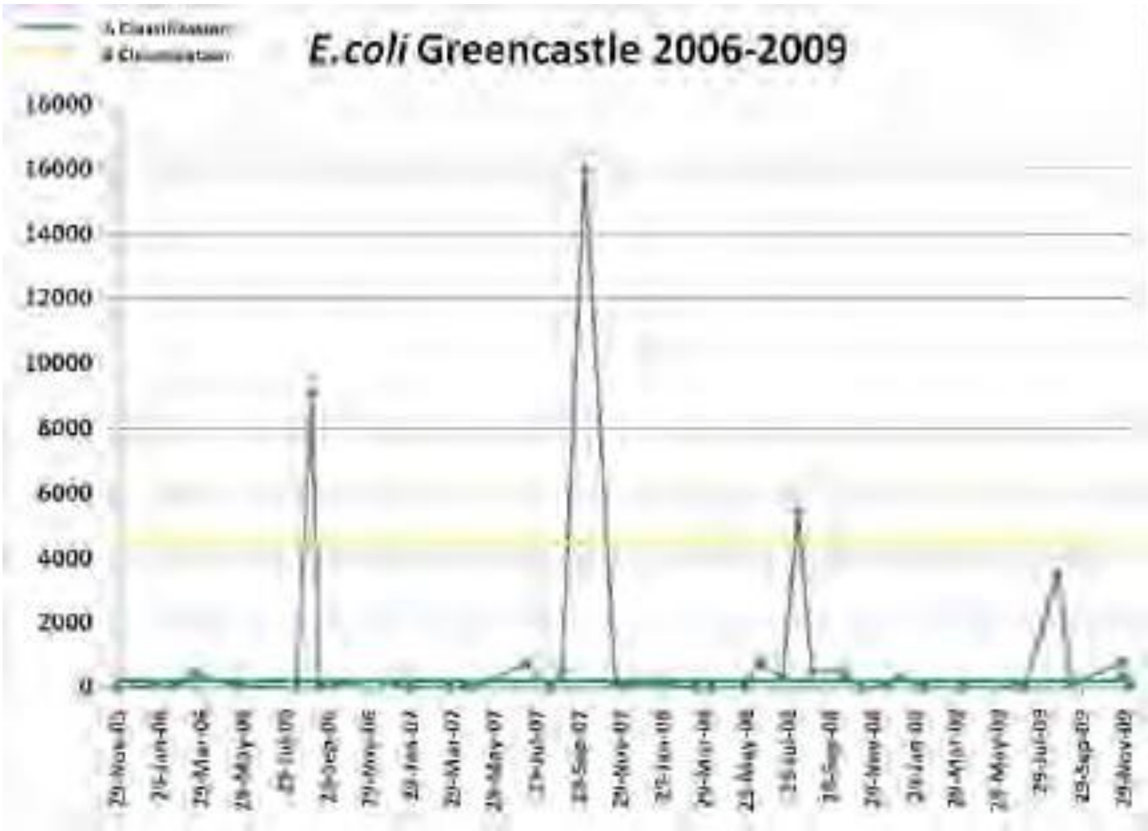

Figure 5.17: *E. coli* levels in oysters from Greencastle from 2006-2009.

Table 5.14: *E. coli* results from Mussels and Oysters from Moville from 2006-2008 (Source: SFPA).

Date	Species	Category	*E. coli*
26-Apr-06	Native Oyster	B	500
5-Mar-07	Native Oyster	A	110
19-Feb-08	Mussels	A	20

Table 5.15: *E. coli* results from Mussels from Quigley's Point from 2005-2009 (Source: SFPA).

Date	Species	Category	*E. coli*	Date	Species	Category	*E. coli*
29-Nov-05	Mussels	A	160	18-Dec-06	Mussels	B	1300
19-Jan-06	Mussels	B	750	13-Feb-07	Mussels	A	90
22-Feb-06	Mussels	B	1700	17-Jul-07	Mussels	B	750
22-Mar-06	Mussels	A	220	23-Jan-08	Mussels	A	110
26-Apr-06	Mussels	A	110	12-Feb-09	Mussels	A	220
27-Jul-06	Mussels	A	40	27-Mar-09	Mussels	A	200
15-Aug-06	Mussels	A	220	16-Jun-09	Mussels	A	130
5-Sep-06	Mussels	C	5400	8-Oct-09	Mussels	A	230
19-Sep-06	Mussels	B	250	26-Nov-09	Mussels	B	330
3-Oct-06	Mussels	B	310				

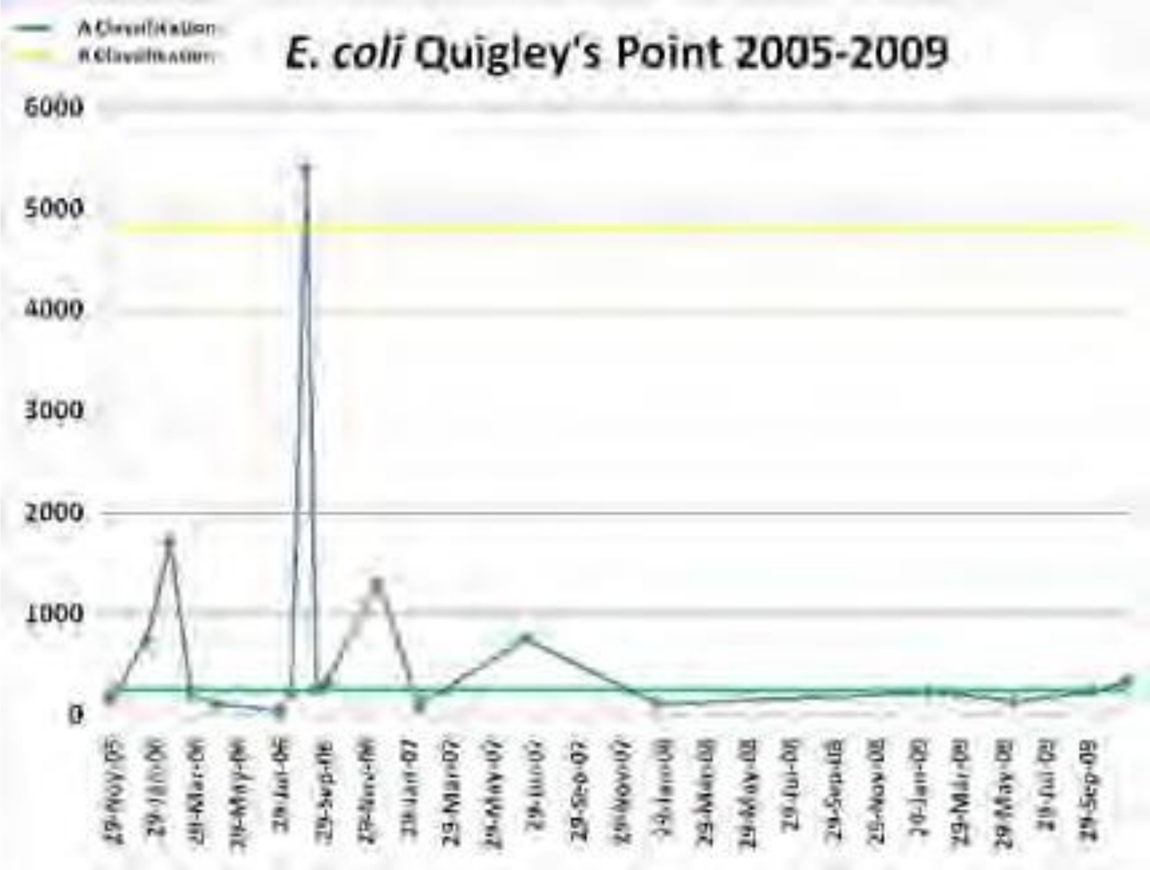

Figure 5.18: ***E. coli*** **levels in mussels from Quigley's Point from 2005-2009.**

Table 5.16: ***E. coli*** **results from Oysters from Quigley's Point from 2005-2009 (Source: SFPA).**

Date	Species	Category	*E. coli*
4-Dec-05	Oyster	B	290
7-Sep-06	Native Oyster	B	750
26-Apr-06	Pacific Oyster	A	110
19-Sep-06	Native Oyster	A	130
1-Nov-06	Native Oyster	B	500
13-Feb-07	Native Oyster	B	750
15-Jul-07	Native Oyster	C	5400
19-Jul-07	Native Oyster	B	500
11-Dec-07	Native Oyster	B	310
14-Aug-08	Native Oyster	C	16000
27-Mar-09	Native Oyster	A	20

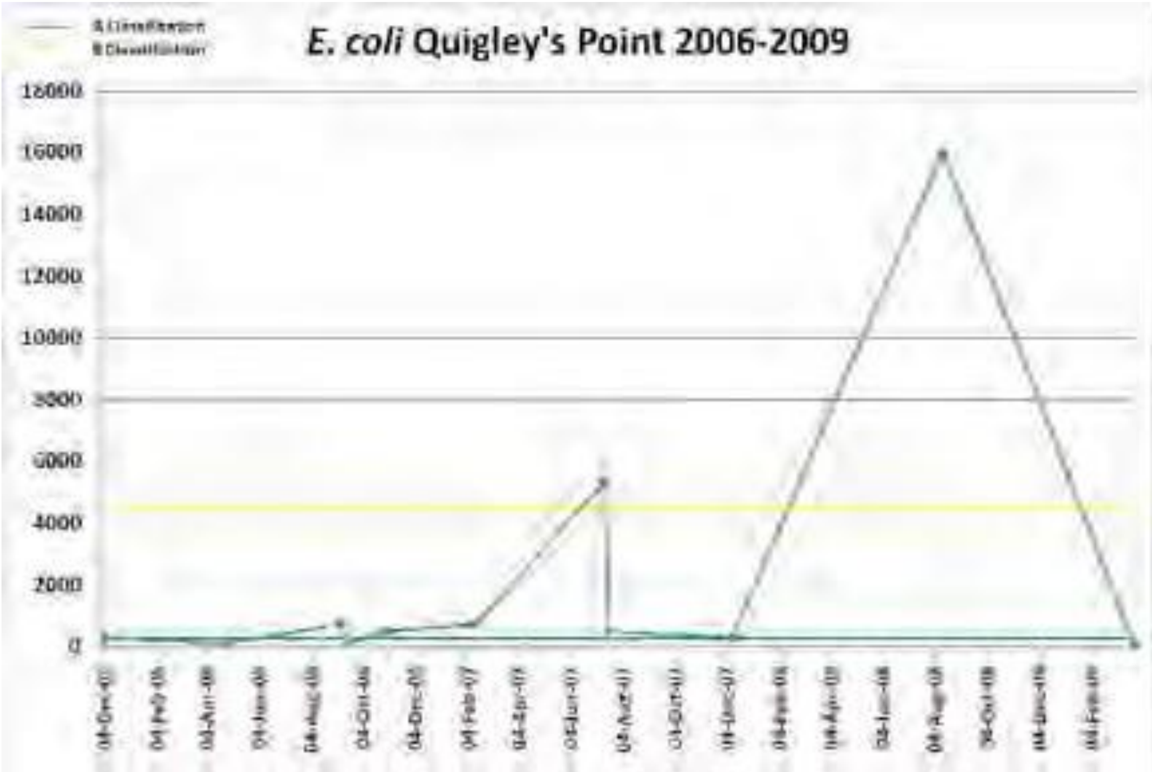

Figure 5.19: ***E. coli*** **levels in oysters from Quigley's Point from 2006-2009.**

Table 5.17: ***E. coli*** **results from Oysters from Muff from 2005-2009 (Source: SFPA).**

Date	Species	Category	*E. coli*
6-Dec-05	Oyster	A	160
7-Sep-06	Pacific Oyster	A	70
19-Sep-06	Pacific Oyster	A	160
29-Nov-07	Pacific Oyster	A	220
10-Dec-07	Pacific Oyster	B	2400
9-Jan-08	Pacific Oyster	A	220
19-Feb-08	Pacific Oyster	A	20
13-Nov-08	Pacific Oyster	B	750
16-Dec-08	Pacific Oyster	B	430
16-Sep-09	Pacific Oyster	A	20
9-Oct-09	Native Oyster	A	80
16-Dec-09	Pacific Oyster	A	110

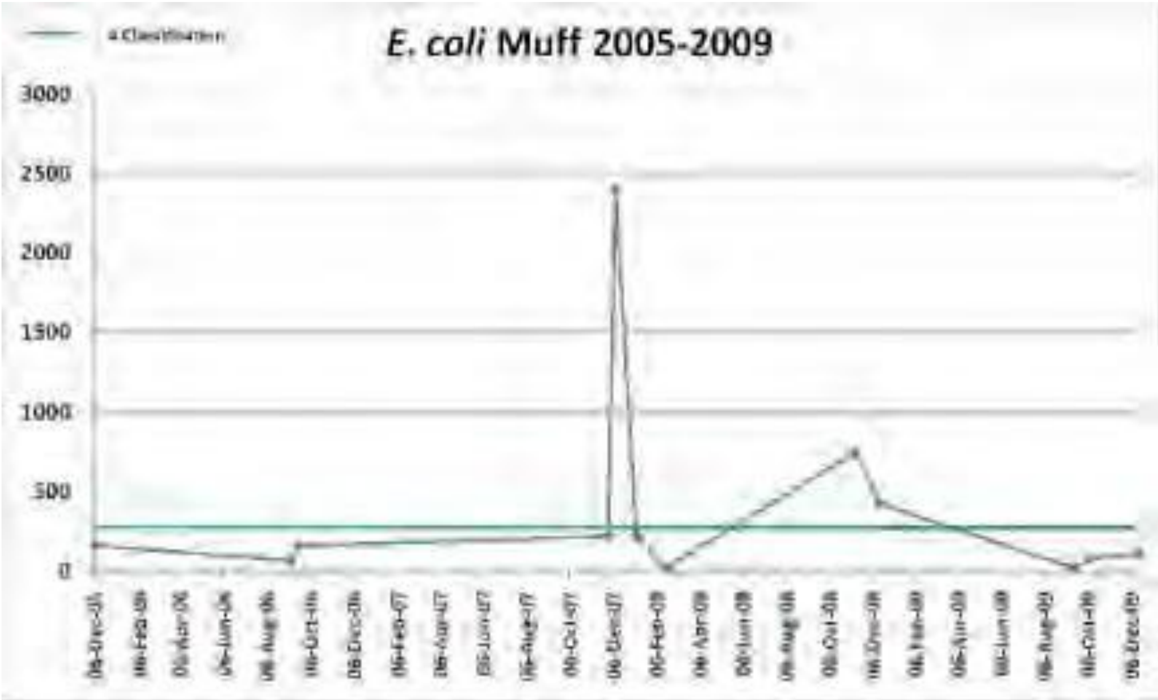

Figure 5.20: ***E. coli*** **levels in osiers from Muff from 2005-2009.**

6. Expert Assessment of the Effect of Contamination on Shellfish

Lough Foyle is located within a predominately rural catchment, mostly used for agricultural purposes. The city of Londonderry has the highest human population, with the remaining surrounds containing smaller towns and villages typical of a rural settlement. While no tourism data was available for the immediate area, it is safe to say that the local population does increase due to tourists mainly in the summer months. The information collated and assessed during the production of this report indicate that the main pollution sources in Lough Foyle come from continuous and intermittent discharges mainly concentrated along the Foyle, Faughan and Roe rivers and their tributaries and from non-point sources associated with agricultural land use, tourism and wildfowl. The Culmore WWTW (Waste Water Treatment Works) located at Culmore Point in the southwestern corner of Lough Foyle has the highest discharge flow into the Lough. The Limavady WWTW, which discharges into the River Roe some 9.5km southeast of the mouth of the River Roe, discharges the 2nd highest amount of wastewater into the Lough.

Sewage has been known to lead to deterioration of water quality, alter floral and faunal assemblages near large outfalls and has been responsible for disease outbreaks attributed to faecal coliforms (Clarke, 2001). Faecal coliforms entering the marine environment from industrial discharges, wastewater and sewage discharges, contaminated freshwater input, agricultural run-off, wild fowl and shipping discharges can accumulate in bivalves that filter organic matter from the water column to feed. Varying levels of faecal coliforms in bivalve flesh determine the classification of shellfish harvesting waters. Lough Foyle has historically been categorised as a B classification for oysters and mussels.

The geometric mean of *E. coli* levels was highest for oysters at Quigley's Point (2006-2009), followed by mussels at Quigley's Point (2005-2009) and mussels at Longfield Bank (2004-2009). Oysters had a geometric mean 1.5 times higher than mussels at Quigley's Point. No seasonal trends were identified using a one-way ANOVA on the historical *E. coli* data however there was a significant difference between levels of *E. coli* contamination between oysters and mussels during the winter season at Greencastle. However, there was no significant difference between annual oyster and mussel *E. coli* levels at Greencastle. The extent and seasonality of contamination can vary according to the species of bivalve, location of shellfish beds relative to the sources of contamination, water movement characteristics and environmental factors. In this assessment, it was not possible to derive strong correlations between environmental factors and the levels of *E. coli* in bivalves. This reflects the complexity of environmental factors involved and/or lack of information in some cases.

Depending on the bathymetric characteristics, current speeds and tidal conditions within different regions of the Lough, the fate of contaminants can vary. In the northwestern section of the Lough, deeper depths and strong current flows favour the physical dispersion and dilution of contaminants. This is evidenced from the results of the water sampling survey carried out in February 2010. A discharge from an outfall pipe was sampled at Moville and had an *E. coli* concentration of 488,000 MPN/100ml whereas two sites sampled 450m downstream and 1km upstream had a concentration of <1 MPN/100ml. Areas along the southeastern shoreline, where depths are shallower (suspended sediment concentrations are higher) and current flows are weaker, have a lower ability to disperse and dilute contaminants and therefore have the potential to accumulation contaminants.

Based on hydrodynamic conditions, suspended sediment levels, freshwater influence and contamination sources the Lough was divided into 4 Production Areas. These are broadly defined as follows: strong currents, high suspended sediments levels and large freshwater influence (Production Area 1), strong currents and low suspended sediment levels in a tidal flushed deep area (Production Area 2), weak currents and high suspended sediment levels in a poorly flushed area (Production Area 3), and weak currents, high suspended sediment levels and relatively high freshwater influence (Production Area 4). Within each of these Production Areas, one sampling site for each species was identified i.e. native oyster, Pacific oyster and blue mussel. In the selection of these sampling points, it was important to maintain as many of the existing monitoring points as possible to continue the long-term datasets. Further details on the Production Areas and the sampling sites can be seen in Section 7 Sampling Plan. This sampling plan is designed to properly reflect the control of the likely risk of pathogen contamination on the shellfish and will ensure that effective monitoring is carried out with respect to the potential polluting impacts and that public health is prioritised.

7. Sampling Plan

7.1. Identification of Production Area Boundaries & RMPs

The proposed production areas were based on hydrographical and spatial features i.e. areas of similar depth, tidal currents, suspended sediment levels and freshwater influence as well as the results from the shellfish and water sampling. Figure 7-1 shows the base data used for the identification of production areas, i.e. the spring tide ebb flow at the surface, the shellfish *E. coli* results and the water *E. coli* results. Please note that the *E. coli* levels shown on the map at Moville as ranging from 500-800 MPN/100ml are referring to a water sample taken from an outfall pipe at Moville and the *E. coli* value was 488,000 MPN/100ml. This scale was not used in the map as it would be unrepresentative of the other sites classified as 500-800 MPN/100ml.

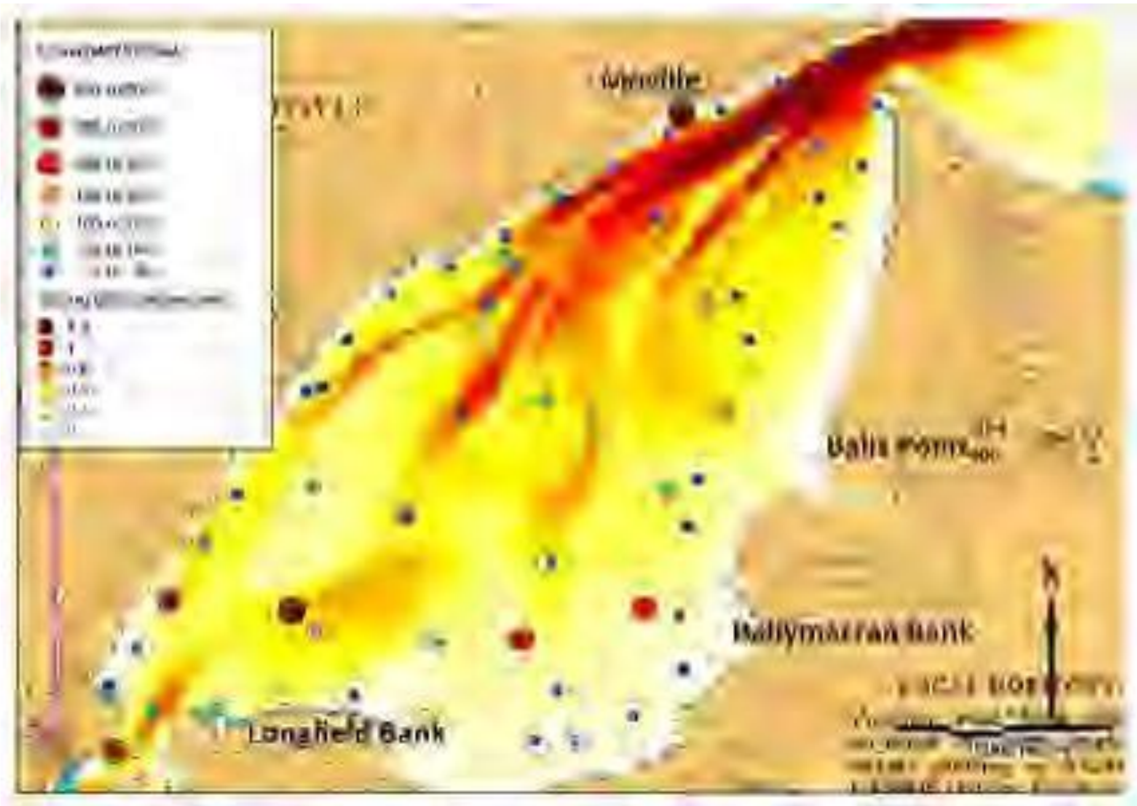

Figure 7.1: Base data used to determine the production area.

Suspended sediment levels are higher in the southern part of the Lough and along the eastern coastline as a result of the inflow from the Foyle, Faughan and Roe Rivers and also the shallow depths between Longfield Bank and Ballymacran Bank. In addition, current speeds are stronger through the entrance channel of the Lough and south of this through the west and east channels. The Lough was divided into 4 production areas based on hydrodynamics and suspended sediment levels. Figures 7-2 and 7-3 show the proposed production areas. Within each production area, a Representative Monitoring Point (RMP) was selected for each species present within the area. These RMPs were selected to best represent the productive shellfish sites within each Production Area. All efforts were made to maintain as many of the existing monitoring sites as possible in order to maintain the long-term datasets for these sites, however as there is no fishery or aquaculture production at Balls Point or Longfield Bank these monitoring points were not retained.

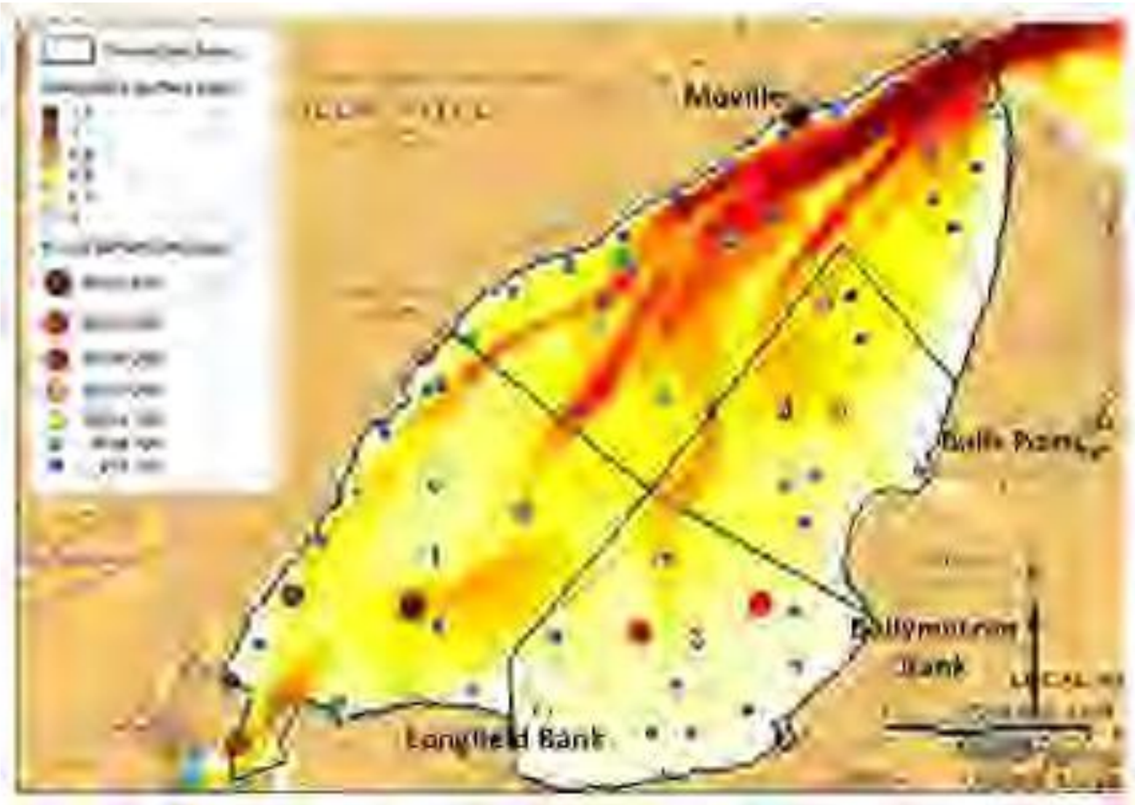

Figure 7.2: Production areas and baseline data.

Figure 7.3: Production areas.

7.1.1. Production Area 1 & RMPs

Production Area 1 is located in the southwestern region of Lough Foyle, from Culmore Point to The Perch. It has the largest freshwater influence (and therefore suspended sediment levels) of all of the production areas and it is subject to current speeds of approximately 0.98m/s at the surface during the ebb flow of a spring tide. This area is also subject to discharges mainly from the Rivers Foyle and Faughan but also from some direct discharges into the Lough (e.g. sewage treatment works at Culmore). This production area covers an area of 52.62km^2. Figure 7-4 shows the production area and Table 7-1 lists the coordinates of the production area.

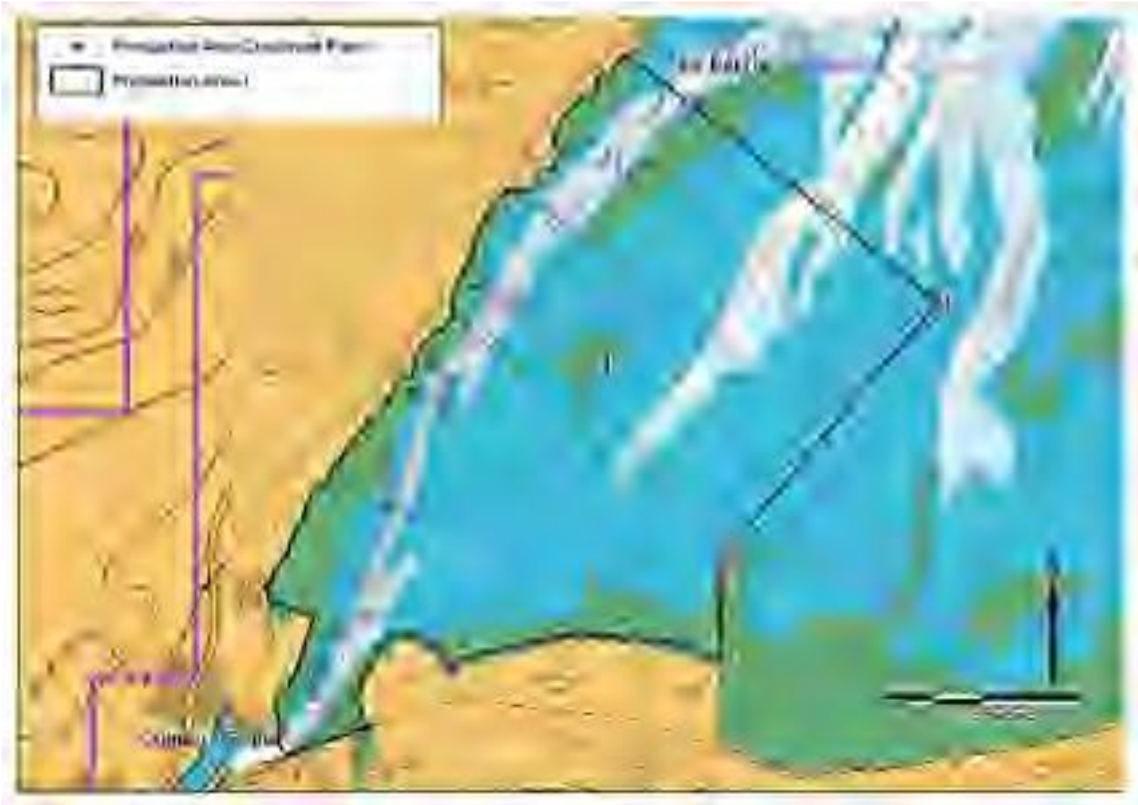

Figure 7.4: Production Area 1 with bounding coordinates.

Table 7.1: Coordinates of Production Area 1.

PA1	Longitude	Latitude	Easting	Northing
1	-7.148	55.0573	254497.5	423654.7
2	-7.14917	55.0692	254406.7	424980.3
3	-7.14635	55.0726	254582.3	425361.9
4	-7.09648	55.1064	257719.1	429169.2
5	-7.17059	55.1403	252944.3	432879.7

The RMP chosen for Production Area 1 can be seen in Figure 7-5 and its coordinates are listed in Table 7-2. Prefix PO indicates Pacific Oyster RMP, M indicates Mussel RMP and prefix O indicates native Oyster RMP. The locations of the RMPs were selected based on areas where commercial activity is centred. All of these RMPs are new.

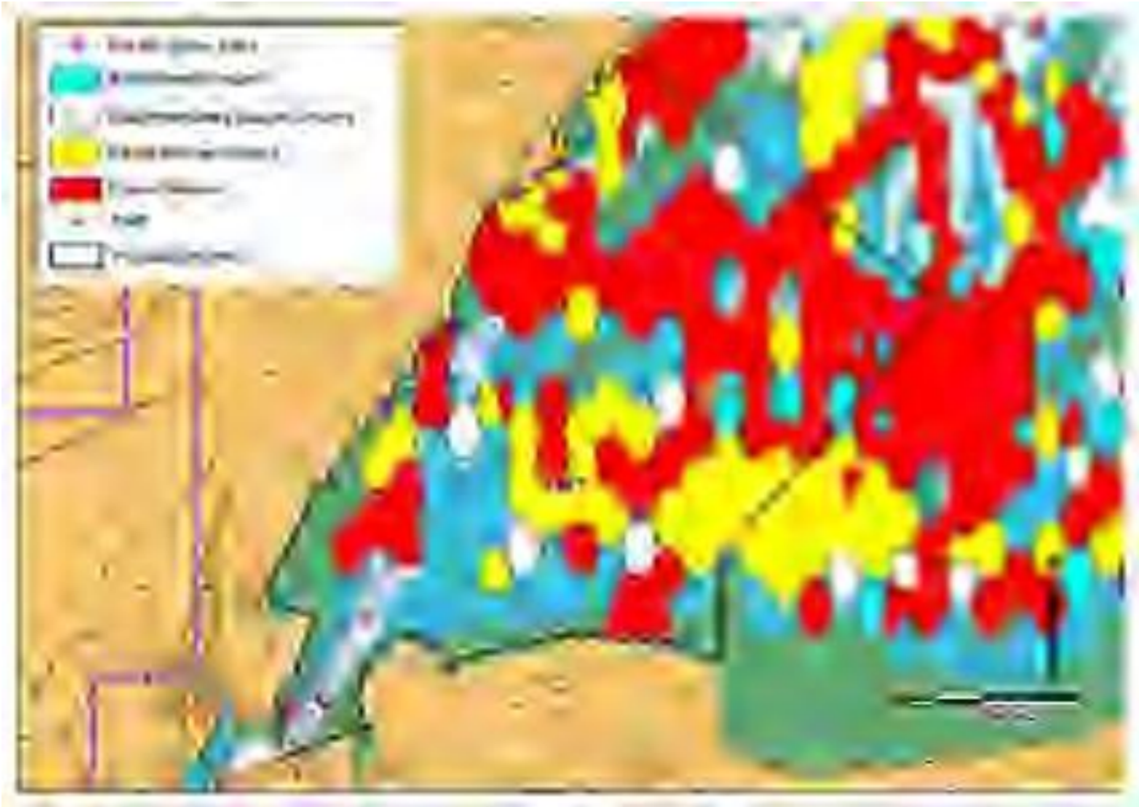

Figure 7.5: Location of Production Area 1 RMPs.

Table 7.2: RMP Coordinates.

RMP	Longitude	Latitude	Easting	Northing
PO1	-7.25043	55.0518	247958	422974.7
M1	-7.18933	55.0814	251825	426315
O1	-7.15416	55.0935	254054.7	427688.5

7.1.2. Production Area 2 & RMPs

Production Area 2 is located north of Production Area 1 and encompasses the northwestern and northeastern sections of the Lough. It stretches from The Perch north to Greencastle and Magilligan. This area typically has the lowest suspended sediment levels and highest current speeds. This is also the deepest part of the Lough and the daily ebbing and flooding tides maintain the well flushed nature of this area. There is no major freshwater influence in this area apart from a number of small streams and rivers entering from the Co. Donegal and Co Derry coastlines. This is the largest production area of those proposed, covering an area of 64.55km^2. Figure 7-6 shows the production area and Table 7-3 lists the coordinates of the production area.

Figure 7.6: Production Area 2 with bounding coordinates.

Table 7.3: Coordinates of Production Area 2.

PA2	Longitude	Latitude	Easting	Northing
1	-7.17059	55.1403	252944.3	432879.7
2	-7.09648	55.1064	257719.1	429169.2
3	-7.02436	55.1594	262239.3	435134.2
4	-6.98148	55.1294	265021.4	431832.4
5	-6.96506	55.1948	265961.2	439121.9
6	-6.97299	55.2051	265439.1	440267

The RMPs chosen for Production Area 2 can be seen in Figure 7-7 and their coordinates are listed in Table 7-4. Prefix M indicates Mussel RMP and prefix O indicates native Oyster RMP. The locations of the RMPs were selected based on areas where commercial activity is centred. RMP O2 is within 800m of the existing Redcastle Perch site, but had been moved northeast into a more productive oyster fishery. RMP M2 is new.

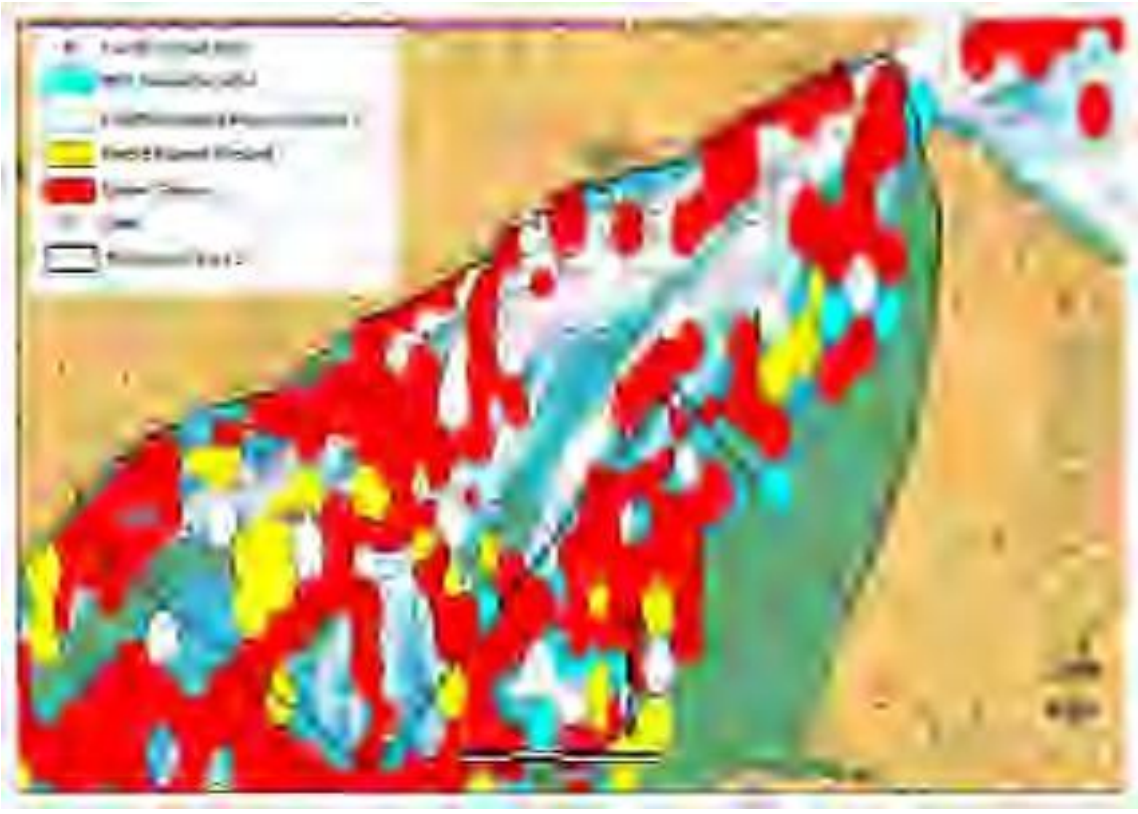

Figure 7.7: Location of Production Area 2 RMPs.

Table 7.4: RMP Coordinates.

RMP	Longitude	Latitude	Easting	Northing
M2	-7.11855	55.1413	256261.5	433039.5
O2	-7.15541	55.141	253911.5	432971.6

7.1.3. Production Area 3 & RMPs

Production Area 3 is located in the southeastern corner of Lough Foyle between Longfield Bank and Ballymacran Bank. This area has low currents speeds but due to the shallowness of the area, suspended sediment levels can be high. There are also a number of streams and outfall pipes which discharge into this area. This production area covers an area of 39.38km^2. Figure 7- 8 shows the production area and Table 7-5 lists the coordinates of the production area.

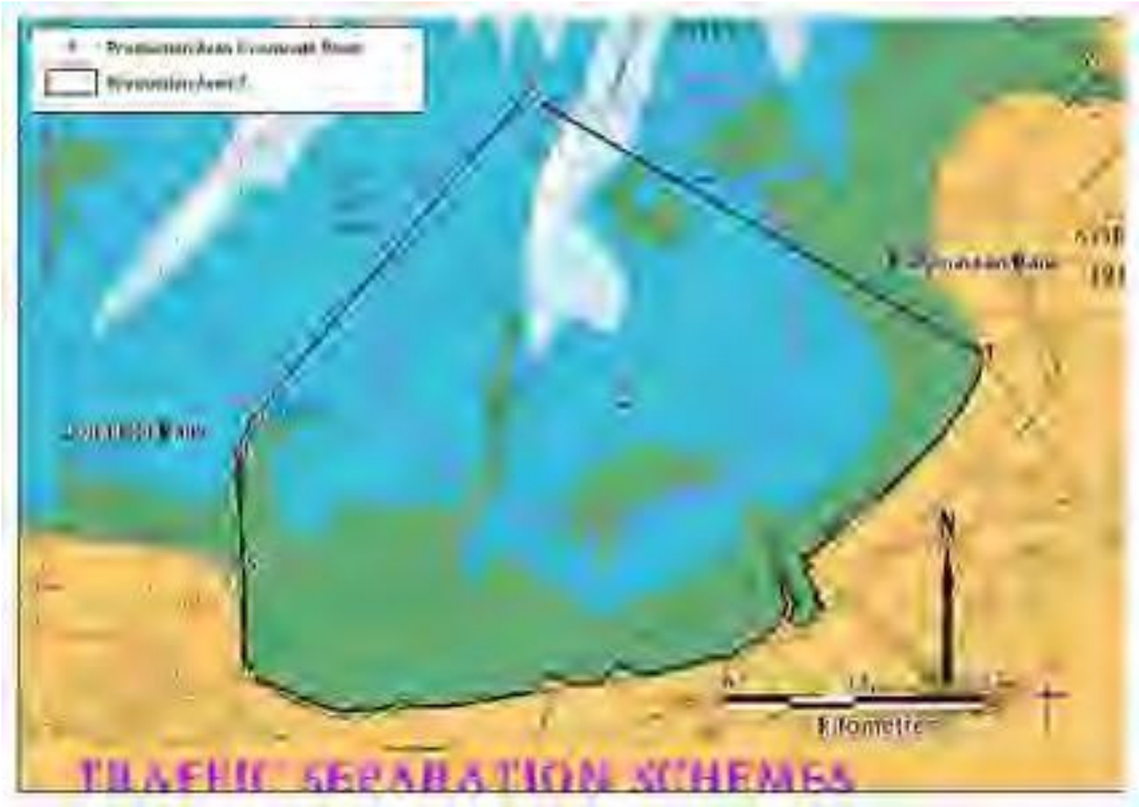

Figure 7.8: Production Area 3 with bounding coordinates.

Table 7.5: Coordinates of Production Area 3.

PA3	Longitude	Latitude	Easting	Northing
1	-7.01354	55.0795	263054.7	426239.2
2	-7.09648	55.1064	257719.1	429169.2
3	-7.14635	55.0726	254582.3	425361.9
4	-7.14917	55.0692	254406.7	424980.3
5	-7.148	55.0573	254497.5	423654.7

The RMPs chosen for Production Area 3 can be seen in Figure 7-9 and their coordinates are listed in Table 7-6. Prefix M indicates Mussel RMP and prefix O indicates native Oyster RMP. RMP M3 is located approximately 1.6km northeast of the existing Longfield Bank site to reflect the fact that there is no fishery or aquaculture production at Longfield Bank. RMP O3 is new.

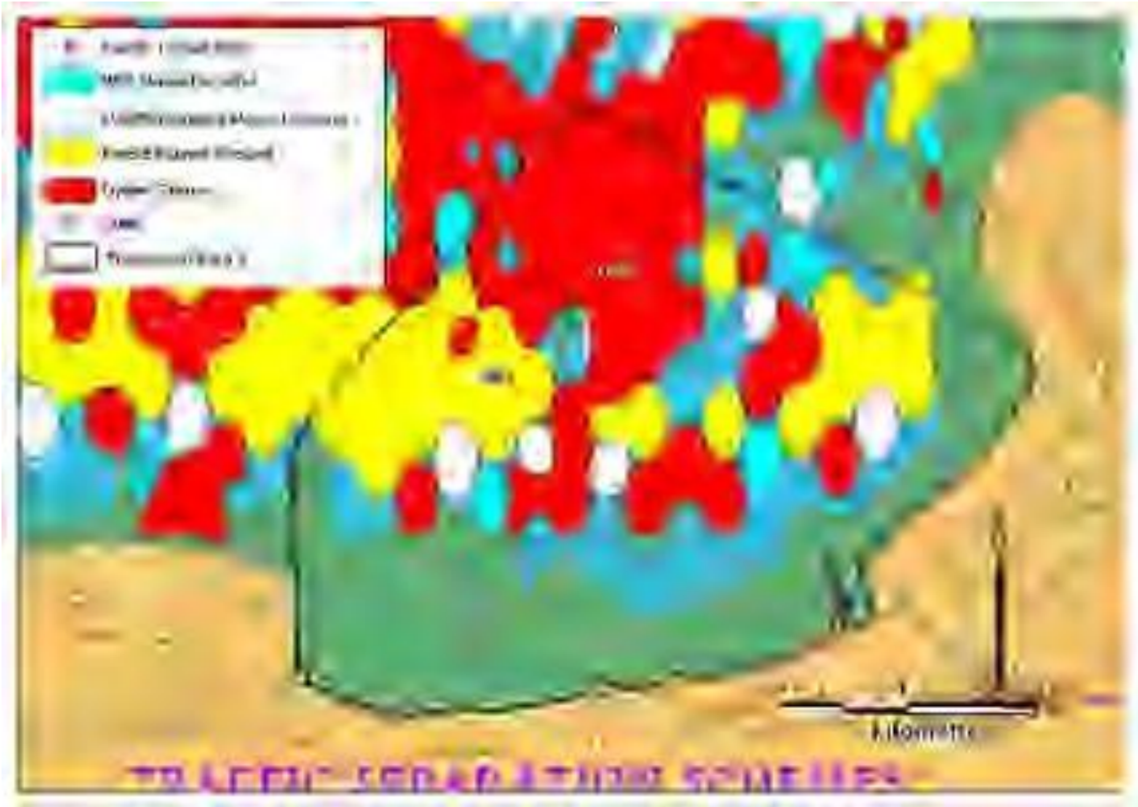

Figure 7.9: Location of Production Area 3 RMP's.

Table 7.6: RMP Coordinates.

RMP	Longitude	Latitude	Easting	Northing
M3	-7.11498	55.0774	256578.8	425924.9
O3	-7.09158	55.0884	258058	427166.4

7.1.4. Production Area 4 & RMPs

Production Area 4 is located in the northeastern section of the Lough between Production Areas 2 and 3. It encompasses Balls Point and the outflow from the River Roe. Suspended sediment levels are high in this area and current speeds are low. In addition to the Roe there are a number of streams and outfall pipes discharging into this area. This production area covers an area of 30.63km^2. Figure 7-10 shows the production area and Table 7-7 lists the coordinates of the production area.

Figure 7.10: Production Area 4 with bounding coordinates.

Table 7.7: Coordinates of Production Area 4.

PA4	Longitude	Latitude	Easting	Northing
1	-6.98148	55.1294	265021.4	431832.4
2	-7.02436	55.1594	262239.3	435134.2
3	-7.09648	55.1064	257719.1	429169.2
4	-7.01354	55.0795	263054.7	426239.2

The RMPs chosen for Production Area 4 can be seen in Figure 7-11 and their coordinates are listed in Table 7-8. Prefix M indicates Mussel RMP and prefix O indicates native Oyster RMP. RMP M4 is located approximately 1.9km southwest of the existing Balls Point site to reflect the fact that there is no fishery or aquaculture production at Balls Point. RMP O4 is new.

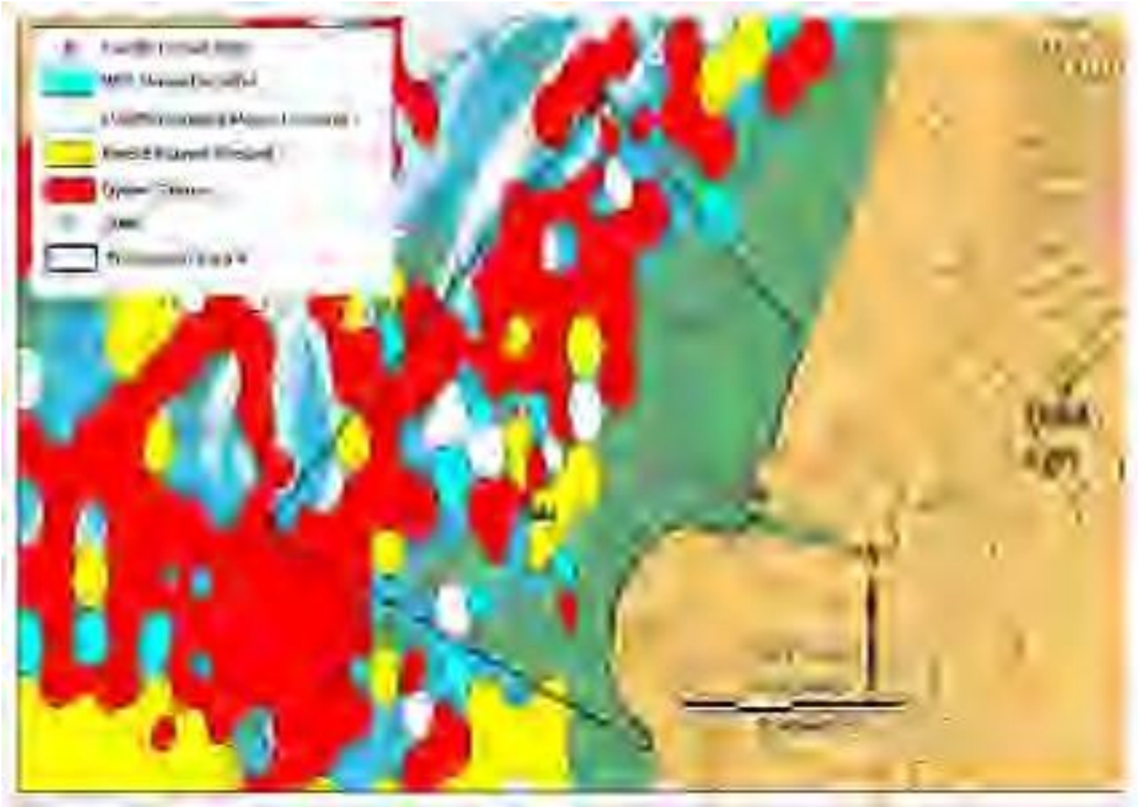

Figure 7.11: Location of Production Area 4 RMP's.

Table 7.8: RMP Coordinates.

RMP	Longitude	Latitude	Easting	Northing
M4	-7.04178	55.1082	261207.5	429416.9
O4	-7.04677	55.1206	260870	430794.9

7.1.5. Sampling Methodology

All sampling should follow the UK NRL (National Reference Laboratory) Microbiological Sampling Protocol, which outlines the following:

7.1.5.1. Time of sampling

Sampling shall be undertaken, where practical, on as random a basis as possible with respect to likely influencing environmental factors e.g. tidal state, rainfall, wind etc so as to avoid introducing any bias to the results.

7.1.5.2. Frequency of Sampling

All sampling should be carried out on a monthly basis.

7.1.5.3. Sampling method

Wherever possible, species shall be sampled by the method normally used for commercial harvesting. The temperature of the surrounding seawater at the time of sampling should be recorded on the sample submission form.

7.1.5.4. Size of individual animals

Samples should only consist of animals that are within the normal commercial size range. In circumstances where less mature stock is being commercially harvested for human consumption then samples of these smaller bivalves may be gathered for analysis.

7.1.5.5. Sample composition

The following sample sizes (in terms of number of individuals by species) are recommended for submission to the laboratory:

Oysters (*Crassostrea gigas and Ostrea edulis*)	12-18
Mussels (*Mytilus* spp.)	18-35

7.1.5.6. Preparation of samples

Any mud and sediment adhering to the shellfish should be removed. This is best achieved by rinsing/scrubbing with clean seawater or fresh water of potable quality. If these are unavailable the seawater from the immediate area of sampling may be used instead. Do not totally re-immerse the shellfish in water. Allow to drain before placing in a food grade plastic bag.

7.1.5.7. Sample transport

A cool box containing freezer packs should be delivered to the laboratory as soon as practicable but the maximum time between collection and commencement of the test should not exceed 24 hours. Samples should not be frozen and freezer packs should not come into direct contact with the samples.

The cool boxes used for such transport should be validated using appropriate temperature probes, to ensure that the recommended temperature is achieved and maintained for the appropriate period. The number and arrangement of freezer packs, and the sample packaging procedure, shown to be effective in the validation procedure should be followed during routine use. Where validation data already exists for a specific type of cool box, there is no need to take a local revalidation.

7.1.5.8. Sample Submission form

Sample point identification name, map co-ordinates, time and date of collection, species sampled, method of collection and seawater temperature should be recorded on the submission form (Refer to Appendix 7). Any other information deemed relevant should also be recorded.

7.1.5.9. Delivery of samples

Samples should be properly labelled and accompanied by a completed sample submission form. Samples should be brought within 24 hours to the chosen accredited laboratory for analysis.

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Appendix 1

Discharge Analysis Data 2006-2009

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43AB	S43ABEFF-06-548065	1/10/06	AUDIT	7.49	13	7.21	13.88	0.53	3.49	23		14.41
S43AB	S43ABEFF-06-571407	3/9/06	AUDIT	2.64	9	7.04	3.5	0.08	1.4	21		3.58
S43AB	S43ABEFF-06-594182	5/2/06	AUDIT	7.88	17	7.38	14.85	0.3	3.56	29		15.15
S43AB	S43ABEFF-06-621980	7/11/06	AUDIT	7.25	20	7.27	23.87	1.28	5.78	28		25.15
S43AB	S43ABEFF-06-640682	9/6/06	AUDIT	3.19	7	7.32	11.64	0.562	2.78	19		12.2
S43AB	S43ABEFF-06-662646	11/1/06	AUDIT	7.16	19	7.37	13.18	0.66	2.83	15		13.85
S43AB	S43ABEFF-07-692498	1/30/07	AUDIT	6.41	21	7.29	17.4	0.53	2.8	30		17.93
S43AB	S43ABEFF-07-722547	4/18/07	AUDIT	14.25	38	7.21	20.66	0.9	5.4	47		21.56
S43AB	S43ABEFF-07-735014	5/23/07	AUDIT	10.14	27	7.04	28	1.17	5.5	21		29.17
S43AB	S43ABEFF-07-755045	7/16/07	AUDIT	6.31	26	7.22	13	1.6	2.6	32		14.6
S43AB	S43ABEFF-07-774312	9/13/07	AUDIT	13.81	24	7.39	18.41	1.44	5.5	18		19.85
S43AB	S43ABEFF-07-796010	11/6/07	AUDIT	9.21	18	7.3	18.65	1.05	3.6	16		19.7
S43AB	S43ABEFF-08-823717	1/16/08	AUDIT	3.83	20	7.3	6.42	0.36	1.3	30		6.77
S43AB	S43ABEFF-08-832641	2/12/08	AUDIT	4.83	20	7.3	12.42	0.36	2.3	16		12.78
S43AB	S43ABEFF-08-843207	3/10/08	AUDIT	0.43	17	7.3	3.84	0.13	1.1	35		3.97
S43AB	S43ABEFF-08-855897	4/11/08	AUDIT	3.12	14	7.3	10.47	0.45	1.6	33		10.92
S43AB	S43ABEFF-08-868427	5/8/08	AUDIT	5.11	24	7.2	16.86	0.53	2.9	25		17.39
S43AB	S43ABEFF-08-882744	6/4/08	AUDIT	5.49	24	7.2	22.99	0.7	4	23		23.7
S43AB	S43ABEFF-08-895626	7/1/08	AUDIT	5.31	26	7.3	17.62	0.92	4.2	19		18.54
S43AB	S43ABEFF-08-910124	7/28/08	AUDIT	2.64	11	7.4	25.2	0.84	4.2	8		26.04
S43AB	S43ABEFF-08-925320	8/29/08	AUDIT	6.38	14	7.2	15.65	1.01	4	4		16.66
S43AB	S43ABEFF-08-936721	9/25/08	AUDIT	6.73	15	7.3	18.91	1.34	4	9		20.24
S43AB	S43ABEFF-08-950853	10/22/08	AUDIT	2.66	14	7.4	14.56	0.36	2	14		14.91
S43AB	S43ABEFF-08-972492	12/4/08	AUDIT	1.01	14	7.6	2.36	0.18	0.6	16		2.55
S43AB	S43ABEFF-09-1007800	1/14/09	AUDIT	4.03	15	7.5	10.16	0.38	2.2	23		10.54
S43AB	S43ABEFF-09-1007806	2/10/09	AUDIT	2.81	12	7.3	7.11	0.29	0.8	20		7.4
S43AB	S43ABEFF-09-1016928	3/9/09	AUDIT	1.28	11	7.5	5.31	0.14	0.7	24		5.45
S43AB	S43ABEFF-09-1031737	4/10/09	AUDIT	1.09	23	7.3	5.27	0.22	0.8	28		5.5
S43AB	S43ABEFF-09-1044846	5/7/09	AUDIT	0.92	8	7.5	3.45	0.1	0.9	15		3.55
S43AB	S43ABEFF-09-1058648	6/3/09	AUDIT	3.94	16	7.6	12.67	0.4	2.4	19		13.08
S43AB	S43ABEFF-09-1072939	6/30/09	AUDIT	2.79	19	7.4	15.93	0.88	3.5	23		16.81
S43AB	S43ABEFF-09-1087967	7/27/09	AUDIT	4.54	27	7.3	11.03	0.53	2.9	26		11.56
S43AB	S43ABEFF-09-1104294	8/28/09	AUDIT	5.38	45	7.6	4.09	0.88	2.4	35		4.97
S43AB	S43ABEFF-09-1119362	9/24/09	AUDIT	1.64	26	7.5	15.05	0.69	3.3	20		15.74

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43AB	S43ABEFF-09-1134765	10/21/09	AUDIT	3.34	18	7.6	7.21	0.9	3	19		8.11
S43AB	S43ABEFF-09-1158484	12/3/09	AUDIT	1.62	19	7.4	6.51	0.24	0.9	21		6.75
S43AB	S43ABEFF-10-1184933	1/13/10	AUDIT	1.01	15	7.3	2.55	0.19	0.8	14		2.74
S43AB	S43ABEFF-10-1192793	2/9/10	AUDIT	1.65	9	7.5	5.09	0.23	1.2	13		5.31
S43AB	S43ABEFF-10-1206878	3/8/10	AUDIT	2.32	12	7.3	10.48	0.25	2.2	8		10.73
S43AJ	S43AJEFF-06-547628	1/4/06	AUDIT	2.11	5	7.05	0.78	<0.03	<0.83	6		<0.83
S43AJ	S43AJEFF-06-549443	1/19/06	AUDIT	1.89	1	7	3.83	0.06	<0.83	1		3.89
S43AJ	S43AJEFF-06-556119	1/30/06	AUDIT	<1.30	4	7.04	2.97	<0.03	1.53	2		2.97
S43AJ	S43AJEFF-06-562187	2/17/06	AUDIT	2.68	1	7.02	6.68	0.07	<0.83	4		6.76
S43AJ	S43AJEFF-06-568018	3/1/06	AUDIT	2.94	2	6.78	15.98	0.06	2.06	2		16.04
S43AJ	S43AJEFF-06-573944	3/14/06	AUDIT	1.86	1	7.28	6.4	<0.03	<0.83	1		6.41
S43AJ	S43AJEFF-06-580117	3/29/06	AUDIT	9.02	8	7.19	1.09	0.09	2.88	15		1.18
S43AJ	S43AJEFF-06-586669	4/14/06	AUDIT	10.77	17	7.2	3.02	<0.03	<0.83	18		3.03
S43AJ	S43AJEFF-06-591986	4/27/06	AUDIT	16.46	45	7.22	0.28	0.04	1.44	42		<0.83
S43AJ	S43AJEFF-06-597008	5/10/06	AUDIT	6.62	22	7.15	20.38	1.73	4.94	34		22.11
S43AJ	S43AJEFF-06-602774	5/24/06	AUDIT	13.17	3	7.3	0.51	0.48	<0.83	1		0.99
S43AJ	S43AJEFF-06-608168	6/7/06	AUDIT	6.96	4	7.24	0.28	0.08	<0.83	17		<0.83
S43AJ	S43AJEFF-06-613913	6/22/06	AUDIT	1.41	4	7.19	1.89	<0.03	<0.83	4		1.89
S43AJ	S43AJEFF-06-619391	7/5/06	AUDIT	7.92	2	7.34	0	<0.03	<0.83	11		<0.83
S43AJ	S43AJEFF-06-623890	7/20/06	AUDIT	17.88	32	7.22	0.65	0.027	30.19	42		0.68
S43AJ	S43AJEFF-06-627211	8/1/06	AUDIT	1.82	4	7.2	1.21	<0.0003	0.57	8		1.21
S43AJ	S43AJEFF-06-632672	8/17/06	AUDIT	8.5	3	7.26	0.99	0.07	1.31	6		1.06
S43AJ	S43AJEFF-06-639840	8/31/06	AUDIT	4.67	1.3	7.22	0.73	0.017	2.87	8		0.75
S43AJ	S43AJEFF-06-643107	9/12/06	AUDIT	0.39	2	7.12	0.34	0.011	0.59	5		0.35
S43AJ	S43AJEFF-06-649054	9/28/06	AUDIT	0.19	1	7.27	2.06	0.03	<0.15	9		2.09
S43AJ	S43AJEFF-06-654285	10/10/06	AUDIT	<0.09	2	7.11	7.82	<0.0003	1.68	11		7.82
S43AJ	S43AJEFF-06-657613	10/23/06	AUDIT	0.11	2	7.02	3.75	0.06	3.76	6		3.81
S43AJ	S43AJEFF-06-665147	11/7/06	AUDIT	<0.09	2	6.89	13.8	0.04	2.5	18		13.83
S43AJ	S43AJEFF-06-665793	11/10/06	AUDIT	0.32	3	6.87	17.6	0.09	1.59	11		17.69
S43AJ	S43AJEFF-06-671060	11/23/06	AUDIT	<0.09	5	7.08	8.5	0.02	0.2	8		8.53
S43AJ	S43AJEFF-06-676006	12/6/06	AUDIT	<0.09	3	7.21	8.94	0.04	1.5	5		8.98
S43AJ	S43AJEFF-07-688641	1/19/07	AUDIT	0.68	2	7.02	6.75	0.1	0.6	5		6.85
S43AJ	S43AJEFF-07-692333	1/30/07	AUDIT	0.11	1	6.99	13.14	0.04	1.3	9		13.18
S43AJ	S43AJEFF-07-697832	2/15/07	AUDIT	0.11	3	7.05	11.59	0.07	<0.2	11		11.66

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43AJ	S43AJEFF-07-702364	2/26/07	AUDIT	0.12	2	7.14	0	<0.00	0.5	5		<0.15
S43AJ	S43AJEFF-07-705180	3/6/07	AUDIT	<0.09	2	7.08	7.35	0.16	0.3	6		7.51
S43AJ	S43AJEFF-07-711462	3/22/07	AUDIT	0.45	2	7.06	7.67	0.21	1.1	6		7.87
S43AJ	S43AJEFF-07-716754	4/2/07	AUDIT	0.35	2	7.13	1.1	0.09	4.3	6		1.2
S43AJ	S43AJEFF-07-722559	4/18/07	AUDIT	3.89	4	7.15	0.02	<0.00	8.8	5		<0.15
S43AJ	S43AJEFF-07-728017	5/4/07	AUDIT	4.03	2	7.16	0.18	<0.00	1	3		0.16
S43AJ	S43AJEFF-07-732427	5/15/07	AUDIT	0.12	7	7.15	0.22	<0.00	4.4	3		0.23
S43AJ	S43AJEFF-07-737796	5/31/07	AUDIT	<0.09	1	7.12	0.89	0.01	1.7	5		0.9
S43AJ	S43AJEFF-07-742098	6/11/07	AUDIT	1.75	5	7.18	0	0.02	5	12		<0.153
S43AJ	S43AJEFF-07-747835	6/27/07	AUDIT	<0.094	1	7.08	4.82	0.02	2.7	4		4.84
S43AJ	S43AJEFF-07-752665	7/9/07	AUDIT	<0.094	2	7.04	4.99	0.04	<0.153	3		5.03
S43AJ	S43AJEFF-07-757855	7/24/07	AUDIT	<0.094	1	7.18	0.08	0.01	0.6	2		<0.153
S43AJ	S43AJEFF-07-762783	8/9/07	AUDIT	<0.094	1	7.19	<0.100	<0.100	0.9	1		<0.153
S43AJ	S43AJEFF-07-765643	8/20/07	AUDIT	0.1	2	6.98	9.65	0.1	4.4	3		9.75
S43AJ	S43AJEFF-07-771318	9/5/07	AUDIT	<0.094	3	7.07	9.91	0.05	3.5	11		9.97
S43AJ	S43AJEFF-07-777048	9/21/07	AUDIT	<0.094	2	7	11.08	0.03	1.4	2		11.11
S43AJ	S43AJEFF-07-781520	10/2/07	AUDIT	<0.094	2	7.16	2.78	0.1	2	6		2.88
S43AJ	S43AJEFF-07-787443	10/18/07	AUDIT	<0.094	2	7.03	8.71	0.03	1.7	<4.195		8.74
S43AJ	S43AJEFF-07-792696	10/29/07	AUDIT	<0.094	2	6.95	5.91	0.03	1.3	8		5.93
S43AJ	S43AJEFF-07-799193	11/14/07	AUDIT	0.13	3	6.9	17.15	0.02	2.1	3		17.16
S43AJ	S43AJEFF-07-805237	11/30/07	AUDIT	<0.094	2	7.1	11.87	0.01	1.1	7		11.89
S43AJ	S43AJEFF-08-826104	1/28/08	AUDIT	0.98	3	7.1	5.93	0.26	1.1	3		6.19
S43AJ	S43AJEFF-08-826741	2/1/08	AUDIT	<0.094	3	7.1	4.65	0.02	0.4	3		4.67
S43AJ	S43AJEFF-08-838028	2/28/08	AUDIT	<0.094	3	7.1	8.1	0.09	0.4	1		8.19
S43AJ	S43AJEFF-08-843434	3/11/08	AUDIT	<0.094	2	7.2	3.15	0.07	2.2	2		3.21
S43AJ	S43AJEFF-08-860947	4/22/08	AUDIT	0.1	2	7	16.79	0.08	1.8	4		16.86
S43AJ	S43AJEFF-08-875120	5/19/08	AUDIT	0.16	2	7.1	6.77	0.18	3.6	3		6.94
S43AJ	S43AJEFF-08-903316	7/17/08	AUDIT	0.15	1	7	10.82	0.02	1.7	4		10.84
S43AJ	S43AJEFF-08-917549	8/13/08	AUDIT	<0.094	1	7.3	5.07	<0.003	0.6	4		5.06
S43AJ	S43AJEFF-08-931688	9/9/08	AUDIT	0.14	6	7.1	7.96	1.26	1	5		9.22
S43AJ	S43AJEFF-08-940071	10/6/08	AUDIT	9.96	7	7.4	0.92	0.48	0.6	9		1.4
S43AJ	S43AJEFF-08-958518	11/7/08	AUDIT	12.47	15	7.4	2.02	0.03	1.6	21		2.05
S43AJ	S43AJEFF-08-972493	12/4/08	AUDIT	8.6	19	7.3	<0.100	<0.003	0.6	24		<0.196
S43AJ	S43AJEFF-09-999305	1/26/09	AUDIT	2.68	3	7.1	1.49	2.5	<0.153	4		3.99

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43AJ	S43AJEFF-09-1010703	2/26/09	AUDIT	<0.094	2	7.1	0.76	0.04	0.2	4		0.79
S43AJ	S43AJEFF-09-1024361	3/25/09	AUDIT	1.02	2	7.2	6.12	0.08	1.5	4		6.2
S43AJ	S43AJEFF-09-1038130	4/21/09	AUDIT	1.22	8	7.1	8.68	0.24	0.4	12		8.92
S43AJ	S43AJEFF-09-1000001	5/18/09	AUDIT	20.23	51	7.4	0.19	0.15	4	55		0.34
S43AJ	S43AJEFF-09-1066227	6/19/09	AUDIT	20.61	57	7.3	1.57	0.77	2.1	62		2.34
S43AJ	S43AJEFF-09-1080742	7/16/09	AUDIT	28.91	63	7.3	<0.100	<0.003	7.8	68		<0.196
S43AJ	S43AJEFF-09-1096542	8/12/09	AUDIT	30.52	27	7.7	0.15	0.12	1.2	57		0.27
S43AJ	S43AJEFF-09-1111303	9/8/09	AUDIT	23.77	55	7.5	0.22	0.04	1.5	244		0.27
S43AJ	S43AJEFF-09-1126571	10/5/09	AUDIT	23.68	5	7.4	0.38	0.01	0.2	11		0.4
S43AJ	S43AJEFF-09-1142963	11/6/09	AUDIT	1.06	3	7.2	4.01	0.81	0.5	4		4.82
S43AJ	S43AJEFF-09-1158467	12/3/09	AUDIT	9.33	5	7.4	1.88	0.02	<0.153	10		1.9
S43AJ	S43AJEFF-10-1189638	1/29/10	AUDIT	7.54	7	7.5	4.36	0.1	0.8	10		4.45
S43AJ	S43AJEFF-10-1192881	2/9/10	AUDIT	14.38	16	7.5	0.82	0.03	<0.153	21		0.85
S43BA	S43BAEFF-06-562157	2/17/06	AUDIT	4.91	4	6.87	6.05	0.31	<0.83	5		6.37
S43BA	S43BAEFF-06-586655	4/14/06	AUDIT	5.91	4	6.86	11.53	0.21	1.44	3		11.74
S43BA	S43BAEFF-06-608156	6/7/06	AUDIT	6.37	5	7.15	1.36	0.24	4.7	11		1.6
S43BA	S43BAEFF-06-627176	8/1/06	AUDIT	0.93	6	6.32	14.08	0.796	2.66	24		24.87
S43BA	S43BAEFF-06-649039	9/28/06	AUDIT	0.55	2	6.82	8.23	0.08	1.31	3		8.32
S43BA	S43BAEFF-06-671034	11/23/06	AUDIT	0.29	7	6.55	10.29	0.05	1.3	13		10.34
S43BA	S43BAEFF-07-692365	3/13/07	AUDIT	2.33	7	6.26	22.31	0.3	1.2	22		22.61
S43BA	S43BAEFF-07-722543	4/18/07	AUDIT	2.18	13	6.32	21.4	0.22	5.2	20		21.62
S43BA	S43BAEFF-07-742076	6/11/07	AUDIT	1	6	5.77	28.1	0.17	4.1	4		28.28
S43BA	S43BAEFF-07-762775	8/9/07	AUDIT	0.84	3	5.92	26.11	<0.100	1.7	5		26.18
S43BA	S43BAEFF-07-781506	10/2/07	AUDIT	1.97	5	5.4	29.42	0.13	3.1	21		29.56
S43BA	S43BAEFF-07-805231	11/30/07	AUDIT	0.89	10	6.4	13.87	0.29	1.1	47		14.17
S43BA	S43BAEFF-08-823421	1/8/08	AUDIT	0.7	8	6.5	8.66	0.47	2.4	27		9.13
S43BA	S43BAEFF-08-826916	2/4/08	AUDIT	1.45	80	7.3	14.72	0.53	1.6	62		15.25
S43BA	S43BAEFF-08-841041	3/7/08	AUDIT	5.87	5	6.9	5.84	0.25	4.1	12		6.09
S43BA	S43BAEFF-08-852989	4/3/08	AUDIT	0.36	5	6.1	17.81	0.26	1.9	10		18.06
S43BA	S43BAEFF-08-864691	4/30/08	AUDIT	2.63	9	5.5	25.34	1.87	3.5	12		27.2
S43BA	S43BAEFF-08-878489	5/28/08	AUDIT	3.57	8	4.9	24.24	0.08	4	22		24.32
S43BA	S43BAEFF-08-891633	6/23/08	AUDIT	0.3	3	6.7	6.82	0.07	1.7	7		6.89
S43BA	S43BAEFF-08-907181	7/25/08	AUDIT	0.19	6	6.7	12.56	0.04	3.5	56		12.6
S43BA	S43BAEFF-08-934867	9/17/08	AUDIT	1.12	4	6.1	23.97	0.02	2.5	11		23.98

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43BA	S43BAEFF-08-944012	10/14/08	AUDIT	0.3	3	6.2	24.28	0.04	2.6	4		24.32
S43BA	S43BAEFF-08-958729	11/10/08	AUDIT	1.08	3	6.6	9.21	0.07	0.9	10		9.28
S43BA	S43BAEFF-08-976724	12/12/08	AUDIT	0.74	7	6.3	14.38	0.1	2.1	25		14.48
S43BA	S43BAEFF-09-995907	1/6/09	AUDIT	3.24	5	6	25.87	0.22	3.7	27		26.09
S43BA	S43BAEFF-09-1000227	2/2/09	AUDIT	12.1	85	7.6	0.77	0.05	1.2	55		0.82
S43BA	S43BAEFF-09-1014345	3/6/09	AUDIT	19.91	268	6.7	0.23	0.08	2.2	424		0.31
S43BA	S43BAEFF-09-1028078	4/2/09	AUDIT	12.72	5	7.1	14.2	1.89	3.2	11		16.09
S43BA	S43BAEFF-09-1054888	5/27/09	AUDIT	1.56	12	5.7	23.34	0.83	2.6	38		24.17
S43BA	S43BAEFF-09-1069354	6/22/09	AUDIT	0.31	10	5.7	17.83	0.55	1.8	35		18.39
S43BA	S43BAEFF-09-1084619	7/24/09	AUDIT	0.44	4	5.6	14.64	0.03	2.6	17		14.67
S43BA	S43BAEFF-09-1100260	8/20/09	AUDIT	0.1	5	6.6	5.89	0.02	1	19		5.91
S43BA	S43BAEFF-09-1115423	9/16/09	AUDIT	6.17	19	5.6	17.84	2.65	5.2	81		20.49
S43BA	S43BAEFF-09-1130719	10/13/09	AUDIT	4.56	7	5.6	19.24	0.27	2.9	33		19.51
S43BA	S43BAEFF-09-1146133	11/9/09	AUDIT	0.99	7	6.5	12.96	0.49	1.4	24		13.45
S43BA	S43BAEFF-09-1162779	12/11/09	AUDIT	0.53	14	5.9	17.05	0.3	1.9	60		17.35
S43BA	S43BAEFF-10-1190020	2/1/10	AUDIT	2.04	27	6	12.29	0.29	1.4	44		12.58
S43BA	S43BAEFF-10-1184543	2/10/10	AUDIT	0.28	7	5.8	14.17	0.22	1.4	62		14.4
S43BA	S43BAEFF-10-1206724	3/5/10	AUDIT	3.31	20	5.5	20.47	0.2	2.7	25		20.68
S43BF	S43BFEFF-06-556094	1/30/06	AUDIT	7.69	37	7.2	17.35	0.55	3.47	29		17.9
S43BF	S43BFEFF-06-580106	3/29/06	AUDIT	4.26	26	7.18	10.96	0.35	1.93	30		11.31
S43BF	S43BFEFF-06-602751	5/24/06	AUDIT	7.15	39	7.2	10.95	0.69	2.77	29		11.64
S43BF	S43BFEFF-06-623877	7/20/06	AUDIT	13.15	42	7.48	11.24	2.282	6.3	41		13.52
S43BF	S43BFEFF-06-643096	9/12/06	AUDIT	3.39	13	7	13.61	0.756	3.05	16		14.37
S43BF	S43BFEFF-06-665114	11/7/06	AUDIT	5.59	23	7.26	15.88	1.42	3.08	29		17.3
S43BF	S43BFEFF-07-692367	3/13/07	AUDIT	3.15	22	7.33	12.46	0.32	1.4	21		12.78
S43BF	S43BFEFF-07-716639	4/2/07	AUDIT	7.52	38	7.15	18.16	2.29	3.9	35		20.45
S43BF	S43BFEFF-07-737789	5/31/07	AUDIT	9.91	34	7.16	18.49	4.43	6.6	46		22.92
S43BF	S43BFEFF-07-757834	7/24/07	AUDIT	7.23	25	7.39	13.69	2.75	3.9	23		16.44
S43BF	S43BFEFF-07-777030	9/21/07	AUDIT	4.03	16	7.29	10.47	0.83	2.2	17		11.31
S43BF	S43BFEFF-07-799181	11/14/07	AUDIT	8.27	46	7.4	8.53	0.33	2.3	53		8.86
S43BF	S43BFEFF-08-825755	1/24/08	AUDIT	1.6	16	7.4	4.16	0.19	1	15		4.35
S43BF	S43BFEFF-08-835442	2/20/08	AUDIT	3.71	26	7.1	22.62	0.93	3.2	18		23.55
S43BF	S43BFEFF-08-843422	3/11/08	AUDIT	0.93	8	7.5	4.4	0.13	1	6		4.53
S43BF	S43BFEFF-08-858065	4/14/08	AUDIT	4.22	18	7.3	16.31	0.55	3.2	19		16.86

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43BF	S43BFEFF-08-872184	5/16/08	AUDIT	12.55	84	7.4	22.84	3.18	6.8	44		26.01
S43BF	S43BFEFF-08-885677	6/12/08	AUDIT	17.82	103	7.5	5.58	4.47	8	74		10.06
S43BF	S43BFEFF-08-914091	8/5/08	AUDIT	2.98	10	7.3	9.53	0.4	3.6	3		9.93
S43BF	S43BFEFF-08-923100	8/21/08	AUDIT	2.93	29	7.3	8.65	0.47	1.5	8		9.13
S43BF	S43BFEFF-08-927825	9/1/08	AUDIT	4.84	27	7.2	9.39	1.38	4.4	12		10.76
S43BF	S43BFEFF-08-939854	10/3/08	AUDIT	1.69	12	7.6	5.4	0.2	0.7	8		5.61
S43BF	S43BFEFF-08-954626	10/30/08	AUDIT	0.83	9	7.5	4.72	0.14	0.8	1		4.86
S43BF	S43BFEFF-08-976728	12/12/08	AUDIT	1.46	15	7.4	9.14	0.18	1.6	19		9.32
S43BF	S43BFEFF-09-998306	1/19/09	AUDIT	0.8	6	7.4	5.06	0.08	0.6	13		5.15
S43BF	S43BFEFF-09-998946	2/18/09	AUDIT	2.57	15	7.1	15.56	0.41	3.4	11		15.98
S43BF	S43BFEFF-09-1021108	3/19/09	AUDIT	2.37	11	7	25.76	0.46	3.7	15		26.22
S43BF	S43BFEFF-09-1034686	4/15/09	AUDIT	2.85	18	7.1	12.64	0.59	2.2	32		13.22
S43BF	S43BFEFF-09-1048650	5/15/09	AUDIT	4.01	24	7	17.99	1.02	3.1	20		19.01
S43BF	S43BFEFF-09-1062130	6/11/09	AUDIT	6.94	37	7.3	14.46	1.04	5.1	33		15.5
S43BF	S43BFEFF-09-1076885	7/8/09	AUDIT	9.79	34	7.3	6.96	1.58	5.2	29		8.54
S43BF	S43BFEFF-09-1107444	9/1/09	AUDIT	0.76	12	7.4	5.29	0.2	0.9	19		5.49
S43BF	S43BFEFF-09-1092494	9/16/09	AUDIT	5.75	33	7.3	15.32	1.05	3.9	30		16.37
S43BF	S43BFEFF-09-1123916	10/2/09	AUDIT	10.74	31	7.3	12.05	1.03	4.8	24		13.09
S43BF	S43BFEFF-09-1138831	10/29/09	AUDIT	2.73	12	7.3	12.04	0.37	2	9		12.41
S43BF	S43BFEFF-09-1162781	12/11/09	AUDIT	5.18	22	7.2	11.71	0.43	2.1	21		12.14
S43BF	S43BFEFF-10-1188032	1/18/10	AUDIT	3.03	19	7.3	6.56	0.19	1.3	17		6.75
S43BF	S43BFEFF-10-1203588	2/17/10	AUDIT	3.91	24	7	12.45	0.27	2.1	14		12.72
S43CE	S43CEEFF-06-547607	1/4/06	AUDIT	9.25	48	7.38	4.45	0.12	1.6	31		4.57
S43CE	S43CEEFF-06-549417	1/19/06	AUDIT	6.22	5	7.3	8.02	0.92	1.38	21		8.94
S43CE	S43CEEFF-06-556095	1/30/06	AUDIT	5.72	37	7.35	17.88	2.54	2.49	42		20.42
S43CE	S43CEEFF-06-562159	2/17/06	AUDIT	3.19	9	7.45	6.13	0.17	<0.83	13		6.3
S43CE	S43CEEFF-06-567994	3/1/06	AUDIT	13.03	23	7.33	6.75	0.27	2.33	16		7.02
S43CE	S43CEEFF-06-573915	3/14/06	AUDIT	3.96	9	7.31	5.71	0.25	1.13	16		5.96
S43CE	S43CEEFF-06-580107	3/29/06	AUDIT	4.05	7	7.34	9.11	0.31	1.48	16		9.42
S43CE	S43CEEFF-06-586657	4/14/06	AUDIT	3.8	13	7.35	10.35	0.23	1.42	9		10.78
S43CE	S43CEEFF-06-591966	4/27/06	AUDIT	9.74	26	7.19	14.55	0.43	2.83	26		14.98
S43CE	S43CEEFF-06-596986	5/10/06	AUDIT	7.04	23	7.14	21.31	0.31	4.33	30		21.62
S43CE	S43CEEFF-06-602752	5/24/06	AUDIT	6.53	17	7.22	10.83	0.65	2.21	16		11.48
S43CE	S43CEEFF-06-608158	6/7/06	AUDIT	4.37	19	6.84	27.97	0.59	4.95	34		28.56

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43CE	S43CEEFF-06-613895	6/22/06	AUDIT	6.4	25	7.08	9.3	0.25	1.48	19		9.55
S43CE	S43CEEFF-06-619366	7/5/06	AUDIT	12.58	23	7.07	23.49	0.81	5.59	32		24.3
S43CE	S43CEEFF-06-623878	7/20/06	AUDIT	7.94	38	7.11	22.3	1.086	5.42	27		23.39
S43CE	S43CEEFF-06-627178	8/1/06	AUDIT	7.36	31	7.26	11.76	0.184	3.15	33		11.96
S43CE	S43CEEFF-06-632647	8/17/06	AUDIT	3.77	23	6.97	22.24	0.464	4.42	22		22.7
S43CE	S43CEEFF-06-639820	8/31/06	AUDIT	2.97	11	6.77	16.6	0.293	3.14	8		16.89
S43CE	S43CEEFF-06-643097	9/12/06	AUDIT	4.48	12	6.86	25.67	0.451	5.05	23		26.12
S43CE	S43CEEFF-06-649041	9/28/06	AUDIT	1.91	9	7.1	14.49	0.23	2.27	18		14.73
S43CE	S43CEEFF-06-654256	10/10/06	AUDIT	3.8	11	7.12	15.99	0.44	2.93	24		16.43
S43CE	S43CEEFF-06-657587	10/23/06	AUDIT	5.7	24	7.17	12.54	0.29	2.14	26		12.83
S43CE	S43CEEFF-06-665115	11/7/06	AUDIT	5.28	9	7.1	16.96	0.54	3.58	28		17.5
S43CE	S43CEEFF-06-665795	11/10/06	AUDIT	5.81	24	7.25	15.71	0.38	3.16	29		16.09
S43CE	S43CEEFF-06-671036	11/23/06	AUDIT	2.27	10	7.42	6.88	0.25	1.1	22		7.13
S43CE	S43CEEFF-06-675992	12/6/06	AUDIT	1.78	7	7.33	7.31	0.26	0.9	7		7.57
S43CE	S43CEEFF-07-687032	1/11/07	AUDIT	0.43	5	7.38	5.07	0.16	0.6	13		5.23
S43CE	S43CEEFF-07-689743	1/22/07	AUDIT	1.35	7	7.17	7.85	0.25	0.8	14		8.1
S43CE	S43CEEFF-07-695065	2/7/07	AUDIT	5.25	15	7.37	14.64	0.42	2.3	17		15.06
S43CE	S43CEEFF-07-700353	2/23/07	AUDIT	5.42	26	7.17	13.29	0.37	3.5	42		13.66
S43CE	S43CEEFF-07-705177	3/6/07	AUDIT	0.82	6	7.38	5.78	0.15	0.3	20		5.92
S43CE	S43CEEFF-07-711459	3/22/07	AUDIT	3.54	11	7.24	12	0.31	1.7	18		12.31
S43CE	S43CEEFF-07-716743	4/2/07	AUDIT	5.28	15	7.13	18.68	0.51	3.4	30		19.2
S43CE	S43CEEFF-07-722556	4/18/07	AUDIT	10.16	30	7.04	24.67	0.39	5.7	34		25.06
S43CE	S43CEEFF-07-728014	5/4/07	AUDIT	0.17	5	6.77	22.83	0.11	3.7	13		22.94
S43CE	S43CEEFF-07-732424	5/15/07	AUDIT	<0.09	17	6.73	13.19	0.09	3.1	6		13.28
S43CE	S43CEEFF-07-737795	5/31/07	AUDIT	<0.09	3	6.4	30.75	0.16	3.8	10		30.91
S43CE	S43CEEFF-07-742095	6/11/07	AUDIT	0.51	2	6.79	18.41	0.27	5.2	26		18.68
S43CE	S43CEEFF-07-747833	6/27/07	AUDIT	0.39	6	6.46	18.84	0.33	2	10		19.16
S43CE	S43CEEFF-07-757853	7/24/07	AUDIT	<0.094	6	6.76	17.62	0.13	2.2	8		17.75
S43CE	S43CEEFF-07-762781	8/9/07	AUDIT	<0.094	4	7.01	16.41	0.13	1.2	1		16.55
S43CE	S43CEEFF-07-765639	8/20/07	AUDIT	<0.094	5	6.79	8.33	0.02	4.1	6		8.35
S43CE	S43CEEFF-07-771312	9/5/07	AUDIT	<0.094	4	6.69	21.11	0.29	2.7	8		21.41
S43CE	S43CEEFF-07-777046	9/21/07	AUDIT	0.44	4	6.69	17.1	0.34	1.5	8		17.44
S43CE	S43CEEFF-07-781518	10/2/07	AUDIT	0.32	6	6.58	23.36	0.46	2	21		23.82
S43CE	S43CEEFF-07-787441	10/18/07	AUDIT	1.21	5	6.86	7.57	0.48	1.6	10		8.05

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43CE	S43CEEFF-07-792695	10/29/07	AUDIT	<0.094	4	6.77	10.67	0.28	0.8	37		10.94
S43CE	S43CEEFF-07-799192	11/14/07	AUDIT	0.16	8	6.7	13.25	0.4	1.5	10		13.65
S43CE	S43CEEFF-07-805235	11/30/07	AUDIT	0.48	7	6.7	8.68	0.44	0.7	22		9.13
S43CE	S43CEEFF-07-810684	12/11/07	AUDIT	0.6	4	6.8	7.08	0.61	0.5	6		7.69
S43CE	S43CEEFF-08-825756	1/24/08	AUDIT	0.5	5	6.8	4.62	0.11	0.7	13		4.73
S43CE	S43CEEFF-08-835445	2/20/08	AUDIT	0.9	14	6.6	15.26	0.22	1.9	12		15.49
S43CE	S43CEEFF-08-843423	3/11/08	AUDIT	2.25	8	6.9	4.8	0.23	0.9	15		5.03
S43CE	S43CEEFF-08-858066	4/14/08	AUDIT	9.59	5	7	7.36	0.37	2.3	6		7.74
S43CE	S43CEEFF-08-872182	5/16/08	AUDIT	0.67	5	6.6	22.98	0.38	4.2	7		23.36
S43CE	S43CEEFF-08-885673	6/12/08	AUDIT	0.16	5	6.6	23.35	0.33	4.7	5		23.68
S43CE	S43CEEFF-08-899589	7/9/08	AUDIT	0.17	3	6.8	14.74	0.11	1.9	2		14.85
S43CE	S43CEEFF-08-914086	8/5/08	AUDIT	<0.094	2	6.9	14.41	0.22	1.8	11		14.63
S43CE	S43CEEFF-08-927822	9/1/08	AUDIT	0.52	4	6.7	16.96	0.39	3	1		17.34
S43CE	S43CEEFF-08-939852	10/3/08	AUDIT	1.96	4	7	6.04	0.25	0.7	6		6.29
S43CE	S43CEEFF-08-954621	10/30/08	AUDIT	0.1	3	6.9	4.95	0.05	0.4	6		4.99
S43CE	S43CEEFF-08-976723	12/12/08	AUDIT	0.48	5	6.7	9.24	0.12	1.1	18		9.36
S43CE	S43CEEFF-09-998307	1/19/09	AUDIT	1.78	5	7	3.45	0.12	0.4	14		3.58
S43CE	S43CEEFF-09-1006902	2/18/09	AUDIT	1.38	5	6.6	11.66	0.15	1.7	10		11.81
S43CE	S43CEEFF-09-1021107	3/19/09	AUDIT	1	5	6.6	16.75	0.23	2.2	7		16.98
S43CE	S43CEEFF-09-1034687	4/15/09	AUDIT	0.67	6	6.8	9.65	0.18	1.4	13		9.83
S43CE	S43CEEFF-09-1048651	5/15/09	AUDIT	0.12	6	6.6	14.05	0.2	1.7	8		14.26
S43CE	S43CEEFF-09-1062131	6/11/09	AUDIT	1.8	3	6.5	21.49	0.4	4.1	11		21.89
S43CE	S43CEEFF-09-1076886	7/8/09	AUDIT	0.24	7	6.5	18.03	0.32	2.5	20		18.36
S43CE	S43CEEFF-09-1092495	8/4/09	AUDIT	<0.094	3	6.4	21.19	0.33	2.9	13		21.52
S43CE	S43CEEFF-09-1107445	9/1/09	AUDIT	0.2	5	7	6.04	0.13	0.5	9		6.17
S43CE	S43CEEFF-09-1123917	10/2/09	AUDIT	1.37	10	6.6	19.09	0.71	3.2	16		19.8
S43CE	S43CEEFF-09-1138832	10/29/09	AUDIT	1.09	5	7.1	9.56	0.21	1.3	8		9.77
S43CE	S43CEEFF-09-1162782	12/11/09	AUDIT	0.68	4	6.8	10.25	0.13	1.3	7		10.39
S43CE	S43CEEFF-10-1188033	1/18/10	AUDIT	0.36	4	6.7	4.84	0.1	1.1	7		4.95
S43CE	S43CEEFF-10-1203589	2/17/10	AUDIT	<0.094	6	6.7	6.84	0.02	0.6	10		6.85
S43CI	S43CIEFF-06-547608	1/4/06	AUDIT	2.39	3	6.88	5.06	<0.03	8.45	17		5.06
S43CI	S43CIEFF-06-548058	1/10/06	AUDIT	1.97	1	6.78	6.64	<0.03	13.84	11		6.64
S43CI	S43CIEFF-06-549418	1/19/06	AUDIT	1.83	9	6.82	5.29	<0.03	11.1	6		5.29
S43CI	S43CIEFF-06-553762	1/24/06	AUDIT	2	2	6.88	6.49	<0.03	14.5	6		6.5

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43CI	S43CIEFF-06-556096	1/30/06	AUDIT	<1.30	9	6.87	8.18	<0.03	19.05	8		8.18
S43CI	S43CIEFF-06-558978	2/8/06	AUDIT	2.44	4	6.86	5.89	<0.03	16.46	10		5.91
S43CI	S43CIEFF-06-562160	2/17/06	AUDIT	2.66	1	6.92	5.34	0.06	9.66	6		5.4
S43CI	S43CIEFF-06-564755	2/21/06	AUDIT	2.42	4	6.77	4.99	<0.03	17.29	10		4.99
S43CI	S43CIEFF-06-567995	3/1/06	AUDIT	2.95	12	6.83	6.11	<0.03	15.18	6		6.13
S43CI	S43CIEFF-06-571398	3/9/06	AUDIT	1.77	2	6.92	4.5	<0.03	14.53	8		4.5
S43CI	S43CIEFF-06-573916	3/14/06	AUDIT	2.18	3	6.84	5.89	0.03	9.4	8		5.93
S43CI	S43CIEFF-06-577456	3/23/06	AUDIT	1.74	3	6.85	8.72	0.11	17.2	7		8.83
S43CI	S43CIEFF-06-580108	3/29/06	AUDIT	1.49	3	6.92	6.04	0.08	9.98	9	7.61	6.12
S43CI	S43CIEFF-06-583457	4/6/06	AUDIT	1.77	2	6.94	4.71	0.07	14.36	7	8.14	4.78
S43CI	S43CIEFF-06-586658	4/14/06	AUDIT	5.46	12	7.01	3.29	<0.03	12.02	6	8.76	3.3
S43CI	S43CIEFF-06-589177	4/19/06	AUDIT	3.55	1	6.89	5.56	0.08	12.42	4	9.19	5.64
S43CI	S43CIEFF-06-591967	4/27/06	AUDIT	2.46	5	6.93	4.45	0.07	10.15	7	6.98	4.52
S43CI	S43CIEFF-06-594119	5/2/06	AUDIT	<1.30	1	6.95	6.04	<0.03	20.01	8	7.48	6.04
S43CI	S43CIEFF-06-596987	5/10/06	AUDIT	11.68	6	7.02	3.11	0.05	7.83	12	14.85	3.16
S43CI	S43CIEFF-06-599625	5/16/06	AUDIT	2.98	6	6.81	7.54	0.43	14.42	9	10.95	7.97
S43CI	S43CIEFF-06-602753	5/24/06	AUDIT	3.26	4	6.86	7.15	0.44	14.08	7	10.85	7.59
S43CI	S43CIEFF-06-605306	5/30/06	AUDIT	<1.30	17	6.89	8.47	0.06	14.33	14	11.52	8.53
S43CI	S43CIEFF-06-608159	6/7/06	AUDIT	1.31	2	7.01	8.15	0.08	27.7	14	12.46	8.23
S43CI	S43CIEFF-06-610816	6/13/06	AUDIT	1.35	10	7.02	10.36	0.04	28.14	17	12.04	10.4
S43CI	S43CIEFF-06-613896	6/22/06	AUDIT	1.85	13	6.96	6.61	<0.03	18.57	11	9.39	6.61
S43CI	S43CIEFF-06-616154	6/27/06	AUDIT	<1.30	5	7.04	8.02	<0.03	24.67	10	12.8	8.03
S43CI	S43CIEFF-06-619367	7/5/06	AUDIT	1.48	1	7.03	8.84	0.13	22.59	8	6.36	8.97
S43CI	S43CIEFF-06-621972	7/11/06	AUDIT	3.03	4	7.01	7.62	0.29	17.76	17	8.08	7.91
S43CI	S43CIEFF-06-623879	7/20/06	AUDIT	0.99	6	7.02	8.35	0.168	27.92	17	9.1	8.52
S43CI	S43CIEFF-06-625591	7/26/06	AUDIT	0.13	6	7.09	9.97	0.164	25.25	25	11.24	10.13
S43CI	S43CIEFF-06-627180	8/1/06	AUDIT	<0.09	7	6.93	7.89	0.103	15.59	16	9.42	7.99
S43CI	S43CIEFF-06-629789	8/9/06	AUDIT	1.47	5	7.06	3.74	0.188	16.09	21	5.2	3.93
S43CI	S43CIEFF-06-632648	8/17/06	AUDIT	0.55	2	7.05	6.57	0.23	23.26	15	5.82	6.8
S43CI	S43CIEFF-06-637114	8/25/06	AUDIT	10.32	1.9	7	6.52	0.11	19.86	7	8.58	6.63
S43CI	S43CIEFF-06-639821	8/31/06	AUDIT	0.3	1.1	6.85	8.78	0.075	14.06	7	8.06	8.85
S43CI	S43CIEFF-06-640676	9/6/06	AUDIT	<0.09	0.7	6.84	3.99	<0.0003	11.19	6	3.9	3.99
S43CI	S43CIEFF-06-643098	9/12/06	AUDIT	<0.09	1	6.89	5.42	0.006	19.7	9	6.66	5.43
S43CI	S43CIEFF-06-646251	9/21/06	AUDIT	<0.09	4	6.68	3.98	0.01	12.27	13	5.72	3.99

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43CI	S43CIEFF-06-649042	9/28/06	AUDIT	0.22	2	6.95	4.47	0.02	12.97	17	4.24	4.5
S43CI	S43CIEFF-06-651808	10/4/06	AUDIT	0.81	2	6.98	3.06	0.06	14.27	25	4.31	3.12
S43CI	S43CIEFF-06-654257	10/10/06	AUDIT	0.38	1	6.9	5.4	0.04	15.99	44	4.85	5.44
S43CI	S43CIEFF-06-657197	10/19/06	AUDIT	0.56	1	6.94	3.95	0.04	17.51	13	4.03	3.99
S43CI	S43CIEFF-06-657588	10/23/06	AUDIT	1.18	1	6.92	4.65	0.14	15.29	12	4.78	4.79
S43CI	S43CIEFF-06-662636	11/1/06	AUDIT	<0.09	1	6.88	3.97	0.01	14.43	1	4.8	3.98
S43CI	S43CIEFF-06-665116	11/7/06	AUDIT	0.56	1	6.86	6.3	0.07	15.03	22	6.29	6.37
S43CI	S43CIEFF-06-665794	11/10/06	AUDIT	0.24	2	6.91	7.09	0.06	16.31	17		7.15
S43CI	S43CIEFF-06-668644	11/15/06	AUDIT	<0.09	2	6.91	3.24	0.03	11.8	9	4.2	3.27
S43CI	S43CIEFF-06-671037	11/23/06	AUDIT	0.31	4	6.83	5.07	0.07	5.3	12	6.9	5.14
S43CI	S43CIEFF-06-673139	11/28/06	AUDIT	1.21	2	6.94	4.99	0.05	9.8	10	8	5.04
S43CI	S43CIEFF-06-673694	12/1/06	AUDIT	0.63	4	6.8	6.78	0.03	10	14	6.2	6.81
S43CI	S43CIEFF-06-675993	12/6/06	AUDIT	0.29	5	6.77	7.01	0.08	7.6	11	7.6	7.09
S43CI	S43CIEFF-06-678683	12/14/06	AUDIT	<0.09	3	6.72	6.14	0.01	6.2	8	7.3	6.15
S43CI	S43CIEFF-07-687033	1/11/07	AUDIT	0.12	5	6.79	7.02	0.14	10.2	13	8.34	7.16
S43CI	S43CIEFF-07-688518	1/19/07	AUDIT	<0.09	4	6.63	9.55	0.06	8.2	9	10.35	9.61
S43CI	S43CIEFF-07-689744	1/22/07	AUDIT	0.27	2	7.17	9.29	0.09	9.2	10	10.03	9.38
S43CI	S43CIEFF-07-692338	1/30/07	AUDIT	0.23	3	6.85	13.49	0.11	22.2	11	23.18	13.6
S43CI	S43CIEFF-07-695066	2/7/07	AUDIT	2.15	2	6.91	12.12	0.08	16	7	12.01	12.2
S43CI	S43CIEFF-07-697719	2/15/07	AUDIT	<0.09	3	6.92	7.38	<0.00	19.5	11	4.34	7.38
S43CI	S43CIEFF-07-700354	2/23/07	AUDIT	0.12	4	6.86	5.61	0.06	14.4	9	6.65	5.67
S43CI	S43CIEFF-07-702204	2/26/07	AUDIT	<0.09	3	6.92	5.56	<0.00	18.8	7	6.76	5.54
S43CI	S43CIEFF-07-705178	3/6/07	AUDIT	0.38	2	6.81	5.47	0.08	10.3	18	6.47	5.56
S43CI	S43CIEFF-07-711460	3/22/07	AUDIT	0.62	2	6.81	9.8	0.08	7.2	5	9.44	9.88
S43CI	S43CIEFF-07-714724	3/30/07	AUDIT	0.18	2	6.87	9.92	0.01	9.3	1	9.55	9.93
S43CI	S43CIEFF-07-716744	4/2/07	AUDIT	0.25	3	6.9	8.68	0.03	18.5	6	9.58	8.71
S43CI	S43CIEFF-07-719755	4/11/07	AUDIT	<0.09	2	6.94	8.47	0.01	28.3	3	9.32	8.48
S43CI	S43CIEFF-07-722557	4/18/07	AUDIT	<0.09	4	6.88	6.23	0.02	67.6	10	7.44	6.25
S43CI	S43CIEFF-07-725069	4/26/07	AUDIT	<0.09	4	6.89	4.08	<0.00	14.3	7	4.77	4.08
S43CI	S43CIEFF-07-728015	5/4/07	AUDIT	0.52	4	7.04	3.82	<0.00	26.7	8	5.53	3.82
S43CI	S43CIEFF-07-729679	5/10/07	AUDIT	<0.09	2	6.96	5.59	0.04	50.9	1	6.68	5.62
S43CI	S43CIEFF-07-732425	5/15/07	AUDIT	<0.09	9	7.04	4.69	0.02	25.5	9	4.7	4.7
S43CI	S43CIEFF-07-734888	5/23/07	AUDIT	0.14	3	7.03	3.18	0.03	23.4	5	4.44	3.2
S43CI	S43CIEFF-07-737822	5/31/07	AUDIT	<0.09	3	7.06	3.21	0.03	22.8	4	6.27	3.24

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43CI	S43CIEFF-07-740545	6/8/07	AUDIT	<0.094	2	7.1	3.14	0.02	38.6	7	4.77	3.15
S43CI	S43CIEFF-07-742096	6/11/07	AUDIT	0.15	2	7.01	7.65	0.02	31.8	9	9.48	7.67
S43CI	S43CIEFF-07-745040	6/19/07	AUDIT	0.47	2	6.95	4.52	0.02	17.5	17	6.46	4.54
S43CI	S43CIEFF-07-747838	6/27/07	AUDIT	0.35	3	6.87	5.14	0.04	26.5	16	6.96	5.18
S43CI	S43CIEFF-07-750740	7/5/07	AUDIT	<0.094	1	6.95	3.59	0.01	14.1	7	4.18	3.6
S43CI	S43CIEFF-07-752667	7/9/07	AUDIT	0.61	2	7	2.96	<0.000	13	3	4.54	2.97
S43CI	S43CIEFF-07-755072	7/16/07	AUDIT	<0.094	1	6.91	6.68	<0.000	12.9	5	7.35	6.68
S43CI	S43CIEFF-07-757859	7/24/07	AUDIT	<0.094	2	7.03	2.25	<0.000	15.9	10	3.63	2.25
S43CI	S43CIEFF-07-760088	8/1/07	AUDIT	8.88	5	6.91	4.6	<0.100	17	18	13.39	4.65
S43CI	S43CIEFF-07-762785	8/9/07	AUDIT	<0.094	3	6.92	3.64	<0.100	21.3	12	4.81	3.69
S43CI	S43CIEFF-07-765381	8/17/07	AUDIT	<0.094	3	6.9	5.24	<0.000	12.7	3	6.83	5.24
S43CI	S43CIEFF-07-768286	8/28/07	AUDIT	<0.094	10	6.86	6.25	0.04	18.7	46	7.42	6.28
S43CI	S43CIEFF-07-771316	9/5/07	AUDIT	<0.094	5	6.96	3.77	0.03	19.7	25	6.24	3.8
S43CI	S43CIEFF-07-774322	9/13/07	AUDIT	0.61	11	7	2.15	0.04	20	30	7.18	2.19
S43CI	S43CIEFF-07-777049	9/21/07	AUDIT	7.35	3	7.09	0.9	0.04	18.7	7	9.9	0.94
S43CI	S43CIEFF-07-778766	9/24/07	AUDIT	7.15	2	6.9	1.8	0.02	17.6	35	10.71	1.82
S43CI	S43CIEFF-07-781522	10/2/07	AUDIT	10.2	4	7.07	1.22	0.12	15.7	27	14.32	1.33
S43CI	S43CIEFF-07-784521	10/10/07	AUDIT	1.58	5	6.96	1.63	0.14	5.7	14	5.06	1.77
S43CI	S43CIEFF-07-787444	10/18/07	AUDIT	5.21	6	7.1	0.85	0.1	16	19	7.89	0.95
S43CI	S43CIEFF-07-790385	10/26/07	AUDIT	6.37	19	7.04	0.9	0.17	4	90	10.79	1.07
S43CI	S43CIEFF-07-793148	11/1/07	AUDIT	11.2	4	7.15	0.2	0.03	9.4	7	11.98	0.23
S43CI	S43CIEFF-07-796023	11/6/07	AUDIT	10.35	2	7.1	1	0.06	8.5	8	12.81	1.05
S43CI	S43CIEFF-07-801688	11/14/07	AUDIT	0.23	2	7	0.42	0.02	9.3	3	1.89	0.43
S43CI	S43CIEFF-07-802372	11/22/07	AUDIT	0.17	3	7	2.23	0.05	7.5	11	4.02	2.27
S43CI	S43CIEFF-07-805238	11/30/07	AUDIT	0.11	8	7.3	0.84	0.02	3.4	29	4.09	0.86
S43CI	S43CIEFF-07-807541	12/3/07	AUDIT	0.11	2	7	3.92	0.04	9.8	14	4.51	3.97
S43CI	S43CIEFF-07-810687	12/11/07	AUDIT	0.21	2	7	3.4	0.14	7.9	7	5.01	3.54
S43CI	S43CIEFF-07-813850	12/19/07	AUDIT	0.1	2	7	2.35	0.02	17.1	6	3.69	2.37
S43CI	S43CIEFF-08-823439	1/8/08	AUDIT	0.29	3	6.9	3.08	0.07	9.6	18	3.99	3.15
S43CI	S43CIEFF-08-823711	1/16/08	AUDIT	1.55	5	6.9	3.73	0.12	7.4	12	6.31	3.85
S43CI	S43CIEFF-08-825759	1/24/08	AUDIT	<0.094	15	6.9	3.65	0.09	7.7	32	3.87	3.74
S43CI	S43CIEFF-08-830788	2/1/08	AUDIT	<0.094	6	6.9	3.55	0.02	7.2	9	4.78	3.56
S43CI	S43CIEFF-08-826923	2/4/08	AUDIT	0.21	2	6.9	3.73	0.03	7.6	2	4.04	3.75
S43CI	S43CIEFF-08-832634	2/12/08	AUDIT	0.19	3	7	3.87	0.03	12.9	4	4.27	3.89

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43CI	S43CIEFF-08-835446	2/20/08	AUDIT	0.24	4	6.9	5.11	0.02	16.6	1	5.83	5.13
S43CI	S43CIEFF-08-838022	2/28/08	AUDIT	<0.094	4	7	5.04	0.05	13.9	6	4.79	5.08
S43CI	S43CIEFF-08-841047	3/7/08	AUDIT	0.12	2	6.9	3.85	0.03	13.1	3	4.7	3.88
S43CI	S43CIEFF-08-843200	3/10/08	AUDIT	<0.094	4	6.8	3.5	0.01	2.9	13	3.2	3.51
S43CI	S43CIEFF-08-843433	3/11/08	AUDIT	<0.094	3	6.9	2.77	0.04	2.9	6	4.18	2.81
S43CI	S43CIEFF-08-846188	3/18/08	AUDIT	<0.094	3	6.9	4.86	0.04	11.6	4	7.7	4.9
S43CI	S43CIEFF-08-852991	4/3/08	AUDIT	0.16	3	7	2.33	0.05	13	2	5.39	2.38
S43CI	S43CIEFF-08-855890	4/11/08	AUDIT	1.91	3	7	2.25	0.08	11.5	7	6.34	2.33
S43CI	S43CIEFF-08-858067	4/14/08	AUDIT	0.24	4	6.9	3.84	0.03	16.4	7	5.21	3.87
S43CI	S43CIEFF-08-860943	4/22/08	AUDIT	1.15	3	6.9	3.73	0.05	12.1	10	9.16	3.79
S43CI	S43CIEFF-08-868417	5/8/08	AUDIT	0.94	2	7.1	<0.100	0.14	13	7	4.66	0.22
S43CI	S43CIEFF-08-872183	5/16/08	AUDIT	0.16	7	6.9	6.55	0.06	15.4	22	6.57	6.61
S43CI	S43CIEFF-08-875111	5/19/08	AUDIT	0.18	3	6.9	5.7	0.01	13.5	17	7.04	5.71
S43CI	S43CIEFF-08-878490	5/28/08	AUDIT	0.23	7	7	2.84	0.03	18.8	19	5.41	2.87
S43CI	S43CIEFF-08-882734	6/4/08	AUDIT	0.95	5	7	1.77	0.05	17.4	38	5.55	1.82
S43CI	S43CIEFF-08-885674	6/12/08	AUDIT	0.13	9	7.2	2.73	0.02	18.5	24	5.02	2.76
S43CI	S43CIEFF-08-888838	6/20/08	AUDIT	0.4	23	7	2.69	0.03	14.4	86	3.24	2.72
S43CI	S43CIEFF-08-891635	6/23/08	AUDIT	<0.094	4	6.9	2.86	0.02	11	18	3.96	2.88
S43CI	S43CIEFF-08-895606	7/1/08	AUDIT	1.07	6	7	2.03	0.05	17.4	14	7.56	2.07
S43CI	S43CIEFF-08-899591	7/9/08	AUDIT	0.2	4	7	1.96	0.02	13.5	27	3.75	1.98
S43CI	S43CIEFF-08-903302	7/17/08	AUDIT	0.23	23	6.8	2.9	0.04	5.5	103	12.45	2.93
S43CI	S43CIEFF-08-907183	7/25/08	AUDIT	0.3	4	7	1.72	0.06	8.5	18	3.3	1.78
S43CI	S43CIEFF-08-914088	8/5/08	AUDIT	0.11	4	7	3.08	0.05	12	17	4.1	3.13
S43CI	S43CIEFF-08-917536	8/13/08	AUDIT	<0.094	4	6.9	3.84	0.02	3.5	12	5.06	3.86
S43CI	S43CIEFF-08-922463	8/21/08	AUDIT	<0.094	9	6.9	4.67	0.09	6.3	13	6.27	4.76
S43CI	S43CIEFF-08-925312	8/29/08	AUDIT	<0.094	7	7	3.83	0.09	10.2	6	5.14	3.92
S43CI	S43CIEFF-08-927824	9/1/08	AUDIT	<0.094	12	7	5.84	0.07	8	15	7.88	5.91
S43CI	S43CIEFF-08-931677	9/9/08	AUDIT	<0.094	4	7.1	2.74	0.02	10.6	11	3.86	2.76
S43CI	S43CIEFF-08-934869	9/17/08	AUDIT	<0.094	5	6.9	3.26	0.03	7.1	11	4.64	3.29
S43CI	S43CIEFF-08-936716	9/25/08	AUDIT	0.44	4	7	3.19	0.02	10.7	9	5.35	3.22
S43CI	S43CIEFF-08-939853	10/3/08	AUDIT	<0.094	3	6.9	2.31	<0.003	2.2	4	3.99	2.31
S43CI	S43CIEFF-08-940059	10/6/08	AUDIT	<0.094	2	6.9	4.39	<0.003	1.5	6	5.31	4.38
S43CI	S43CIEFF-08-944010	10/14/08	AUDIT	<0.094	8	7	2.72	0.02	2.2	8	3.6	2.74
S43CI	S43CIEFF-08-954622	10/30/08	AUDIT	0.15	3	6.9	4.69	0.01	1.3	5	6.18	4.7

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43CI	S43CIEFF-08-958508	11/7/08	AUDIT	0.67	3	7	3.69	0.05	2.9	12	6.32	3.74
S43CI	S43CIEFF-08-958731	11/10/08	AUDIT	<0.094	5	6.8	2.77	0.02	0.6	8	4.55	2.78
S43CI	S43CIEFF-08-962531	11/18/08	AUDIT	0.23	5	6.9	3.53	0.08	1.7	16	4.73	3.61
S43CI	S43CIEFF-08-968808	11/26/08	AUDIT	0.37	6	6.9	4.94	0.14	1.8	8	6.16	5.07
S43CI	S43CIEFF-08-972480	12/4/08	AUDIT	0.69	26	6.8	3.47	0.23	1.4	88	11.86	3.71
S43CI	S43CIEFF-08-976726	12/12/08	AUDIT	0.34	6	6.9	5.44	0.18	1.9	17	5.37	5.62
S43CI	S43CIEFF-08-976966	12/15/08	AUDIT	<0.094	3	6.8	3.34	0.03	1	7	4.66	3.37
S43CI	S43CIEFF-08-980180	12/17/08	AUDIT	0.15	17	6.8	2.83	0.09	1.6	20	5.15	2.92
S43CI	S43CIEFF-09-995909	1/6/09	AUDIT	0.19	4	6.9	6.5	0.08	3.2	19	7.52	6.58
S43CI	S43CIEFF-09-996199	1/14/09	AUDIT	<0.094	6	6.9	3.93	0.03	2.5	20	6.59	3.97
S43CI	S43CIEFF-09-998947	1/22/09	AUDIT	0.25	13	6.8	7.31	0.02	1	28	11.52	7.34
S43CI	S43CIEFF-09-1000007	1/30/09	AUDIT	0.2	6	6.8	4.85	0.07	1.8	14	6.38	4.92
S43CI	S43CIEFF-09-1000229	2/2/09	AUDIT	<0.094	5	6.8	7.14	0.01	1.1	7	7.99	7.16
S43CI	S43CIEFF-09-1003051	2/10/09	AUDIT	<0.094	7	6.8	5.45	0.01	1.6	8	6.46	5.46
S43CI	S43CIEFF-09-1006776	2/18/09	AUDIT	<0.094	5	6.9	1.6	<0.003	2.5	7	2.87	1.6
S43CI	S43CIEFF-09-1010709	2/26/09	AUDIT	0.1	3	6.9	2.31	0.01	3.1	9	3.61	2.32
S43CI	S43CIEFF-09-1014347	3/6/09	AUDIT	<0.094	4	6.9	2.1	0.02	2.2	8	3.66	2.12
S43CI	S43CIEFF-09-1016919	3/9/09	AUDIT	<0.094	8	6.8	3.23	0.02	1.3	20	5.81	3.25
S43CI	S43CIEFF-09-1021103	3/19/09	AUDIT	0.34	4	6.7	0.82	0.07	2.6	4	2.43	0.89
S43CI	S43CIEFF-09-1024369	3/25/09	AUDIT	0.2	6	7.2	2.81	0.02	3.1	4	4.86	2.84
S43CI	S43CIEFF-09-1028080	4/2/09	AUDIT	2.96	3	7	4.03	0.42	3.7	17	3.45	4.45
S43CI	S43CIEFF-09-1031704	4/10/09	AUDIT	<0.094	6	6.8	2.2	0.03	1.9	12	3.34	2.23
S43CI	S43CIEFF-09-1034688	4/15/09	AUDIT	0.18	3	6.9	4.99	0.06	2.2	5	5.71	5.05
S43CI	S43CIEFF-09-1038138	4/21/09	AUDIT	0.1	3	6.9	2.74	0.05	3.8	8	4.61	2.79
S43CI	S43CIEFF-09-1044820	5/7/09	AUDIT	0.2	24	6.9	4.86	0.09	1.6	64	6.5	4.95
S43CI	S43CIEFF-09-1048652	5/15/09	AUDIT	0.23	5	6.9	2.05	0.05	2.8	5	3.74	2.1
S43CI	S43CIEFF-09-1051107	5/18/09	AUDIT	<0.094	3	6.8	3.21	0.03	1.7	3	4.79	3.24
S43CI	S43CIEFF-09-1054889	5/27/09	AUDIT	0.2	5	7	2.53	0.03	2.6	9	4.85	2.56
S43CI	S43CIEFF-09-1058641	6/3/09	AUDIT	0.22	4	6.9	2.84	0.02	3.9	10	5.02	2.86
S43CI	S43CIEFF-09-1062132	6/11/09	AUDIT	0.28	26	6.9	5.17	0.06	3.5	71	7.82	5.23
S43CI	S43CIEFF-09-1066233	6/19/09	AUDIT	<0.094	41	6.8	2.05	<0.003	2	124	7.59	2.06
S43CI	S43CIEFF-09-1069356	6/22/09	AUDIT	<0.094	2	6.8	2.51	0.01	2.9	20	3.75	2.52
S43CI	S43CIEFF-09-1073094	7/1/09	AUDIT	<0.094	3	7	2.1	0.01	3.1	12	3.48	2.11
S43CI	S43CIEFF-09-1076887	7/8/09	AUDIT	<0.094	2	7.2	0.91	<0.003	0.3	4	1.64	0.91

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43CI	S43CIEFF-09-1080748	7/16/09	AUDIT	<0.094	3	7.1	2.63	0.02	3	16	4.26	2.64
S43CI	S43CIEFF-09-1087956	7/27/09	AUDIT	<0.094	5	6.9	4.34	0.02	2.3	15	5.2	4.35
S43CI	S43CIEFF-09-1092496	8/4/09	AUDIT	0.14	3	7	5.47	0.01	3.3	20	6.45	5.48
S43CI	S43CIEFF-09-1096548	8/12/09	AUDIT	<0.094	4	7	3.77	0.01	3.1	21	5.46	3.78
S43CI	S43CIEFF-09-1100273	8/20/09	AUDIT	<0.094	8	6.9	4.04	<0.003	2.5	35	6.9	4.04
S43CI	S43CIEFF-09-1104287	8/28/09	AUDIT	<0.094	6	6.9	4.19	0.01	1.8	13	5.58	4.19
S43CI	S43CIEFF-09-1107446	9/1/09	AUDIT	<0.094	5	6.9	4.26	<0.003	1.4	8	5.39	4.26
S43CI	S43CIEFF-09-1111311	9/8/09	AUDIT	<0.094	5	7	5.48	0.01	2.2	15	6.71	5.48
S43CI	S43CIEFF-09-1115425	9/16/09	AUDIT	<0.094	7	6.8	3.64	0.01	2.9	21	5.64	3.65
S43CI	S43CIEFF-09-1119355	9/24/09	AUDIT	<0.094	4	7	4.84	0.02	3.3	25	6.78	4.86
S43CI	S43CIEFF-09-1123918	10/2/09	AUDIT	0.3	4	6.9	5.8	0.08	3.4	15	6.5	5.89
S43CI	S43CIEFF-09-1126582	10/5/09	AUDIT	<0.094	7	7.1	3.85	0.02	2.5	29	4.89	3.88
S43CI	S43CIEFF-09-1134758	10/21/09	AUDIT	2	3	7.1	3.14	0.06	3	55	8.04	3.2
S43CI	S43CIEFF-09-1138833	10/29/09	AUDIT	0.1	5	7.1	1.63	<0.003	2.1	12	3.94	1.62
S43CI	S43CIEFF-09-1142971	11/6/09	AUDIT	<0.094	3	6.9	4.97	<0.003	0.9	8	6.63	4.98
S43CI	S43CIEFF-09-1146135	11/9/09	AUDIT	<0.094	5	7	4.7	<0.003	1	18	7.3	4.69
S43CI	S43CIEFF-09-1150329	11/17/09	AUDIT	0.13	3	6.8	3	0.01	0.7	7	4.3	3.01
S43CI	S43CIEFF-09-1154062	11/25/09	AUDIT	<0.094	2	6.9	4.53	<0.003	0.9	5	5.7	4.53
S43CI	S43CIEFF-09-1158474	12/3/09	AUDIT	0.93	6	6.9	5.04	0.08	1.6	5	7.24	5.12
S43CI	S43CIEFF-09-1162783	12/11/09	AUDIT	<0.094	5	6.9	2.97	0.03	1.3	10	4.58	3
S43CI	S43CIEFF-09-1165756	12/14/09	AUDIT	<0.094	5	6.9	1.46	0.02	0.8	14	2.74	1.48
S43CI	S43CIEFF-09-1169810	12/22/09	AUDIT	0.64	4	6.9	3.3	0.05	1.2	7	4.64	3.35
S43CI	S43CIEFF-10-1184546	1/5/10	AUDIT	7.99	14	7.2	1.14	0.08	0.9	19	10.68	1.22
S43CI	S43CIEFF-10-1184944	1/13/10	AUDIT	6.42	5	7.4	1.18	<0.003	1	10	10.66	1.17
S43CI	S43CIEFF-10-1188551	1/21/10	AUDIT	0.8	1	7.3	0.71	<0.003	0.5	1	2.18	0.7
S43CI	S43CIEFF-10-1190022	2/1/10	AUDIT	4.06	2	7.5	0.48	<0.003	0.4	5	5.37	0.48
S43CI	S43CIEFF-10-1192898	2/9/10	AUDIT	13.89	6	7.3	0.33	0.03	1.3	14	16.31	0.36
S43CI	S43CIEFF-10-1203723	2/17/10	AUDIT	11.14	8	7.2	0.24	<0.003	1.1	19	12.61	0.24
S43CI	S43CIEFF-10-1205582	2/25/10	AUDIT	0.74	3	7.7	0.32	<0.003	<0.153	17	1.93	0.32
S43CI	S43CIEFF-10-1206727	3/5/10	AUDIT	8.53	14	7.3	0.92	0.03	1	26	10.48	0.95
S43CI	S43CIEFF-10-1206999	3/8/10	AUDIT	18.49	38	7.1	0.38	0.06	<0.153	77	20.57	0.44
S43DA	S43DAEFF-06-562161	2/17/06	AUDIT	4.05	5	7.15	9.67	0.06	0.83	11		9.73
S43DA	S43DAEFF-06-586659	4/14/06	AUDIT	2.21	8	7.31	12.54	0.07	0.96	22		12.61
S43DA	S43DAEFF-06-608160	6/7/06	AUDIT	1.83	6	7.08	19.81	0.2	2.07	20		20.01

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DA	S43DAEFF-06-627181	8/1/06	AUDIT	0.49	6	7.26	15.55	0.057	2.12	17		15.61
S43DA	S43DAEFF-06-649043	9/28/06	AUDIT	0.17	5	7.4	15.92	0.03	2.74	15		15.96
S43DA	S43DAEFF-06-671038	11/23/06	AUDIT	1.57	8	7.57	8.27	0.13	1.5	13		8.4
S43DA	S43DAEFF-07-692370	3/13/07	AUDIT	1.39	8	7.55	13.52	0.16	1	17		13.68
S43DA	S43DAEFF-07-722545	4/18/07	AUDIT	0.36	9	7.16	22.51	0.1	2.6	25		22.6
S43DA	S43DAEFF-07-742075	6/11/07	AUDIT	9.44	37	7.5	8.26	0.22	2.7	31		8.47
S43DA	S43DAEFF-07-762773	8/9/07	AUDIT	0.42	11	7.14	19.95	0.18	1.5	24		20.13
S43DA	S43DAEFF-07-781507	10/2/07	AUDIT	0.38	3	7.12	18.13	0.13	1.5	10		18.26
S43DA	S43DAEFF-07-805229	11/30/07	AUDIT	1.38	16	7.1	3.27	0.12	0.8	16		3.39
S43DA	S43DAEFF-08-823442	1/8/08	AUDIT	3.86	7	7.3	4.83	0.16	2.2	5		4.99
S43DA	S43DAEFF-08-826924	2/4/08	AUDIT	3.44	10	7.5	6.64	0.17	1.4	5		6.82
S43DA	S43DAEFF-08-841048	3/7/08	AUDIT	2.23	6	7.6	7.96	0.16	1.3	16		8.12
S43DA	S43DAEFF-08-852993	4/3/08	AUDIT	3.28	13	7.3	9.63	0.2	1.5	28		9.82
S43DA	S43DAEFF-08-864694	4/30/08	AUDIT	2.34	13	7.2	<0.100	0.16	1.9	36		<0.196
S43DA	S43DAEFF-08-878491	5/28/08	AUDIT	2.26	8	7.3	11.86	0.18	5.2	27		12.03
S43DA	S43DAEFF-08-891636	6/23/08	AUDIT	0.81	8	7.2	12.2	0.17	3	24		12.37
S43DA	S43DAEFF-08-907184	7/25/08	AUDIT	8.05	63	7.5	11.07	0.31	3.5	31		11.38
S43DA	S43DAEFF-08-934870	9/17/08	AUDIT	0.21	3	7	14.32	0.04	1.7	12		14.36
S43DA	S43DAEFF-08-944014	10/14/08	AUDIT	0.46	1	7.2	15.95	0.05	2.2	8		16
S43DA	S43DAEFF-08-958732	11/10/08	AUDIT	1.21	5	7.7	10.89	0.12	0.9	58		11
S43DA	S43DAEFF-08-976727	12/12/08	AUDIT	0.26	4	7.5	11.7	0.07	1.4	16		11.76
S43DA	S43DAEFF-09-995910	1/6/09	AUDIT	1.57	5	7.3	10.83	0.11	2.1	14		10.94
S43DA	S43DAEFF-09-1000230	2/2/09	AUDIT	0.95	4	7.5	9.69	0.05	0.9	9		9.74
S43DA	S43DAEFF-09-1014348	3/6/09	AUDIT	0.4	6	7.4	13.12	0.06	1.6	20		13.18
S43DA	S43DAEFF-09-1028081	4/2/09	AUDIT	4.21	72	7.4	8.56	0.13	2.7	45		8.69
S43DA	S43DAEFF-09-1054891	5/27/09	AUDIT	5.65	11	7.4	16.83	0.39	2.3	29		17.22
S43DA	S43DAEFF-09-1069357	6/22/09	AUDIT	0.11	3	7.2	16.7	0.06	2	14		16.76
S43DA	S43DAEFF-09-1084621	7/24/09	AUDIT	1.47	20	7.2	14.18	0.11	1.6	158		14.29
S43DA	S43DAEFF-09-1100261	8/20/09	AUDIT	1.11	12	7.4	5.83	0.08	0.8	14		5.91
S43DA	S43DAEFF-09-1115426	9/16/09	AUDIT	1.02	13	7.2	13.44	0.04	2.4	43		13.48
S43DA	S43DAEFF-09-1130721	10/13/09	AUDIT	1.3	8	6.9	24.36	0.12	2.8	15		24.48
S43DA	S43DAEFF-09-1146136	11/9/09	AUDIT	0.63	6	7.3	15.77	0.12	1.1	7		15.89
S43DA	S43DAEFF-09-1162784	12/11/09	AUDIT	0.27	6	7.4	10.27	0.11	1.2	15		10.38
S43DA	S43DAEFF-10-1184547	1/5/10	AUDIT	1.38	9	7.1	12.85	0.13	1.6	14		12.98

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DA	S43DAEFF-10-1190024	2/1/10	AUDIT	0.73	5	7.2	10.78	0.09	1	14		10.87
S43DA	S43DAEFF-10-1206728	3/5/10	AUDIT	0.31	8	6.8	16.06	0.11	1.6	19		16.17
S45DB	S45DBEFF-06-547716	1/5/06	AUDIT	2.52	8	7.35	5.84	0.1	1.41	19		5.94
S45DB	S45DBEFF-06-549096	1/17/06	AUDIT	3.34	10	6.81	3.9	0.08	0.85	28		3.98
S45DB	S45DBEFF-06-556378	2/1/06	AUDIT	4.7	21	7.42	8.46	0.17	2.18	27		8.63
S45DB	S45DBEFF-06-561622	2/14/06	AUDIT	4.34	8	7.3	5.17	0.21	1.91	22		5.38
S45DB	S45DBEFF-06-568172	3/2/06	AUDIT	4.12	11	7.27	4.83	0.09	0.91	14		4.92
S45DB	S45DBEFF-06-574179	3/15/06	AUDIT	2.46	9	7.11	5.78	0.07	1.03	14		5.85
S45DB	S45DBEFF-06-579529	3/27/06	AUDIT	<1.30	4	7.28	5.38	0.14	1.1	24		5.52
S45DB	S45DBEFF-06-586327	4/12/06	AUDIT	1.39	6	6.71	12.29	<0.03	0.93	16		12.3
S45DB	S45DBEFF-06-591605	4/25/06	AUDIT	2.42	7	7.09	16.08	0.08	1.71	11		16.16
S45DB	S45DBEFF-06-597155	5/11/06	AUDIT	1.52	11	7.07	16.35	0.03	2.77	15		16.38
S45DB	S45DBEFF-06-602951	5/25/06	AUDIT	1.78	8	7.07	14.94	0.19	1.73	15		15.13
S45DB	S45DBEFF-06-607985	6/6/06	AUDIT	1.35	7	7	19.09	0.15	2.45	12		19.24
S45DB	S45DBEFF-06-613733	6/21/06	AUDIT	1.69	7	7.07	13.39	0.12	1.31	16		13.51
S45DB	S45DBEFF-06-618963	7/3/06	AUDIT	<1.30	7	7.03	25.2	0.31	3.39	16		25.51
S45DB	S45DBEFF-06-623537	7/18/06	AUDIT	0.63	5.9	7.04	21.96	0.263	3.08	14		22.22
S45DB	S45DBEFF-06-627417	8/2/06	AUDIT	3.65	14	7.08	8.13	0.272	1.98	16		8.4
S45DB	S45DBEFF-06-630446	8/14/06	AUDIT	3.14	11	7.07	19.21	0.546	4.51	19		19.76
S45DB	S45DBEFF-06-632858	8/18/06	AUDIT	1.01	16	7.17	4.14	0.266	2.43	13		4.41
S45DB	S45DBEFF-06-637524	8/29/06	AUDIT	2.2	9	7.07	10.9	0.489	2.65	25		11.39
S45DB	S45DBEFF-06-641289	9/11/06	AUDIT	2.27	6	7.17	19.82	0.809	3.55	24		20.63
S45DB	S45DBEFF-06-646665	9/25/06	AUDIT	4.71	9	7.07	14.17	0.81	2.55	17		14.96
S45DB	S45DBEFF-06-654482	10/11/06	AUDIT	1.06	14	7.19	3.89	0.21	1.37	50		4.1
S45DB	S45DBEFF-06-660163	10/27/06	AUDIT	4.04	21	7.3	9.45	0.36	1.43	41		9.81
S45DB	S45DBEFF-06-665577	11/9/06	AUDIT	1.87	14	7.15	10.16	0.36	2.22	17		10.52
S45DB	S45DBEFF-06-671225	11/24/06	AUDIT	2.28	14	7.49	5.31	0.2	1.4	21		5.5
S45DB	S45DBEFF-06-675817	12/5/06	AUDIT	0.72	9	7.47	5.47	0.14	1.2	23		5.61
S45DB	S45DBEFF-07-687974	1/15/07	AUDIT	0.57	8	7.52	6.9	0.1	1.3	24		7
S45DB	S45DBEFF-07-692652	1/31/07	AUDIT	0.65	4	7.25	6.92	0.08	1.2	15		7
S45DB	S45DBEFF-07-697979	2/16/07	AUDIT	0.98	12	7.55	6.41	0.09	0.9	21		6.5
S45DB	S45DBEFF-07-702525	2/27/07	AUDIT	0.98	11	7.39	3.79	0.11	1.3	14		3.9
S45DB	S45DBEFF-07-705352	3/7/07	AUDIT	1.05	9	7.16	5.6	0.08	1.2	18		5.68
S45DB	S45DBEFF-07-711627	3/23/07	AUDIT	0.98	8	7.12	8.53	0.11	1.6	17		8.64

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S45DB	S45DBEFF-07-716979	4/3/07	AUDIT	1.23	6	7.02	11.26	0.14	2.4	22		11.4
S45DB	S45DBEFF-07-722712	4/19/07	AUDIT	1.39	13	7.09	13.51	0.19	3.3	25		13.7
S45DB	S45DBEFF-07-726986	4/30/07	AUDIT	1.51	14	7.15	22.25	0.31	3.4	15		22.56
S45DB	S45DBEFF-07-732601	5/16/07	AUDIT	3.23	26	6.88	12.7	0.36	3.2	49		13.06
S45DB	S45DBEFF-07-737947	6/1/07	AUDIT	2.85	34	7.19	16.87	0.61	2.7	27		17.48
S45DB	S45DBEFF-07-742328	6/12/07	AUDIT	0.96	10	6.78	11.61	0.31	1.1	16		11.93
S45DB	S45DBEFF-07-747987	6/28/07	AUDIT	2.37	15	7.38	14.09	0.62	3	18		14.72
S45DB	S45DBEFF-07-758035	7/25/07	AUDIT	1.05	17	7.4	10.17	0.35	1.9	13		10.52
S45DB	S45DBEFF-07-762922	8/10/07	AUDIT	1.28	14	7.35	11.75	0.38	3.6	24		12.13
S45DB	S45DBEFF-07-765825	8/21/07	AUDIT	0.47	11	7.39	5.76	0.38	1.3	18		6.14
S45DB	S45DBEFF-07-771479	9/6/07	AUDIT	1.51	10	6.96	12.52	0.39	3.3	16		12.9
S45DB	S45DBEFF-07-775841	9/17/07	AUDIT	0.43	6	7.3	8.64	0.2	1.1	16		8.84
S45DB	S45DBEFF-07-781689	10/3/07	AUDIT	3.61	21	7.39	10.07	0.5	2.4	16		10.57
S45DB	S45DBEFF-07-787600	10/19/07	AUDIT	2.91	20	7.51	13.05	0.51	3.5	28		13.56
S45DB	S45DBEFF-07-792859	10/30/07	AUDIT	0.78	10	7.19	10.95	0.31	2.2	8		11.26
S45DB	S45DBEFF-07-799352	11/15/07	AUDIT	1.43	11	7.2	8.18	0.28	2.6	12		8.46
S45DB	S45DBEFF-07-804570	11/26/07	AUDIT	2.43	11	6.9	11.86	0.33	2.2	16		12.19
S45DB	S45DBEFF-07-810861	12/12/07	AUDIT	1.24	13	7.6	5.81	0.22	1.4	18		6.04
S45DB	S45DBEFF-08-823616	1/14/08	AUDIT	0.99	7	7.2	7.33	0.14	1.8	11		7.47
S45DB	S45DBEFF-08-833101	2/15/08	AUDIT	1.3	8	7.3	6.74	0.11	1.6	9		6.85
S45DB	S45DBEFF-08-843789	3/13/08	AUDIT	0.55	6	7.2	6.71	0.07	1.6	7		6.78
S45DB	S45DBEFF-08-855581	4/9/08	AUDIT	0.95	12	7.2	6.29	0.14	2	17		6.44
S45DB	S45DBEFF-08-867981	5/6/08	AUDIT	3.19	17	7.3	9.42	0.28	3.6	18		9.71
S45DB	S45DBEFF-08-882219	6/2/08	AUDIT	2.29	18	7.3	12.43	0.37	3.6	21		12.8
S45DB	S45DBEFF-08-895263	6/30/08	AUDIT	3.2	21	7.2	21.16	0.6	4.1	20		21.77
S45DB	S45DBEFF-08-910598	7/31/08	AUDIT	1.21	13	7	9.85	0.38	2.1	16		10.22
S45DB	S45DBEFF-08-925239	8/27/08	AUDIT	0.92	8	7.3	15.68	0.47	2.2	5		16.16
S45DB	S45DBEFF-08-936610	9/23/08	AUDIT	1.21	15	7.4	13.96	0.51	3	20		14.47
S45DB	S45DBEFF-08-947771	10/20/08	AUDIT	1.89	17	7.5	9.59	0.46	1.9	23		10.04
S45DB	S45DBEFF-08-969653	12/2/08	AUDIT	1.07	12	7.3	6.39	0.13	1.4	20		6.52
S45DB	S45DBEFF-09-996096	1/12/09	AUDIT	1.33	8	7.5	8.79	0.22	1.6	12		9.01
S45DB	S45DBEFF-09-1003542	2/13/09	AUDIT	0.58	5	7	7.68	0.09	1	9		7.77
S45DB	S45DBEFF-09-1017460	3/12/09	AUDIT	1.43	10	7.3	5.61	0.14	1.6	11		5.74
S45DB	S45DBEFF-09-1031349	4/8/09	AUDIT	0.66	11	7.1	3.98	0.08	1.1	16		4.07

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S45DB	S45DBEFF-09-1044361	5/5/09	AUDIT	1.03	17	7.1	8.31	0.16	1.5	32		8.47
S45DB	S45DBEFF-09-1058122	6/1/09	AUDIT	1.61	12	7.3	10.77	0.24	2.4	17		11.01
S45DB	S45DBEFF-09-1088487	7/30/09	AUDIT	2.19	16	7.2	8.79	0.5	2.1	12		9.29
S45DB	S45DBEFF-09-1104011	8/26/09	AUDIT	0.86	10	7.5	6.47	0.26	1	18		6.73
S45DB	S45DBEFF-09-1119012	9/22/09	AUDIT	2.27	12	7.2	11.73	0.48	1.6	17		12.21
S45DB	S45DBEFF-09-1134353	10/19/09	AUDIT	1.91	24	7.1	11.6	0.62	2.8	24		12.22
S45DB	S45DBEFF-09-1153689	11/23/09	AUDIT	0.18	4	7.2	4.31	0.05	0.4	7		4.36
S45DB	S45DBEFF-09-1161854	12/7/09	AUDIT	0.32	8	7.5	6.37	0.09	0.6	6		6.46
S45DB	S45DBEFF-10-1184810	1/11/10	AUDIT	2.21	14	7.3	11.29	0.28	1.4	10		11.57
S45DB	S45DBEFF-10-1193362	2/12/10	AUDIT	0.51	4	7.3	9.39	0.1	1.2	12		9.48
S45DB	S45DBEFF-10-1209248	3/11/10	AUDIT	1.05		7.3	11.78	0.13	1.6	8		11.9
S43DB	S43DBEFF-06-548059	1/10/06	AUDIT	27.7	27	7.19	0.36	<0.03	2.18	54		<0.83
S43DB	S43DBEFF-06-553763	1/24/06	AUDIT	19.75	3	7.28	0.34	0.04	2.55	20		<0.83
S43DB	S43DBEFF-06-558979	2/8/06	AUDIT	19.59	19	7.23	1.03	<0.03	2.83	38		1.03
S43DB	S43DBEFF-06-564756	2/21/06	AUDIT	24.84	9	7.17	0.18	<0.03	3.92	14		<0.83
S43DB	S43DBEFF-06-571399	3/9/06	AUDIT	12.49	17	7.29	0.99	<0.03	2.22	38		1.09
S43DB	S43DBEFF-06-577457	3/23/06	AUDIT	25.52	28	7.23	1.21	0.05	5.07	46		1.26
S43DB	S43DBEFF-06-583471	4/6/06	AUDIT	20.57	38	7.33	0.77	<0.03	1.82	84		<0.83
S43DB	S43DBEFF-06-589181	4/19/06	AUDIT	17.26	33	7.19	1.41	<0.03	5.19	57		1.41
S43DB	S43DBEFF-06-594128	5/2/06	AUDIT	19.96	32	7.29	0.51	<0.03	5.04	60		<0.83
S43DB	S43DBEFF-06-599626	5/16/06	AUDIT	20.91	61	7.21	0.3	0.4	2.5	83		<0.83
S43DB	S43DBEFF-06-610817	6/13/06	AUDIT	2.59	31	6.89	24.86	1.18	4.99	69		26.04
S43DB	S43DBEFF-06-616155	6/27/06	AUDIT	14.72	12	6.98	17.52	2.06	6.84	17		19.57
S43DB	S43DBEFF-06-621973	7/11/06	AUDIT	<1.30	11	6.97	19.25	1.03	6.75	81		20.28
S43DB	S43DBEFF-06-625593	7/26/06	AUDIT	0.6	6	6.91	21.9	0.718	9.23	16		22.62
S43DB	S43DBEFF-06-629791	8/9/06	AUDIT	3.13	16	6.95	18.53	1.12	6.05	39		19.65
S43DB	S43DBEFF-06-637115	8/25/06	AUDIT	3.8	13.4	7	13.48	1.135	4.95	35		14.61
S43DB	S43DBEFF-06-640677	9/6/06	AUDIT	<0.09	1.9	6.84	12.57	0.251	3.39	9		12.82
S43DB	S43DBEFF-06-646252	9/21/06	AUDIT	<0.09	6	6.91	11.29	0.11	1.11	2		11.4
S43DB	S43DBEFF-06-651809	10/4/06	AUDIT	0.24	10	6.96	14.47	0.43	4.51	2		14.9
S43DB	S43DBEFF-06-657198	10/19/06	AUDIT	4.97	7	6.91	12.22	1.1	5.02	14		13.32
S43DB	S43DBEFF-06-662315	10/23/06	AUDIT	5.04	10	6.95	17.01	1.36	3.1	14		18.37
S43DB	S43DBEFF-06-662637	11/1/06	AUDIT	2.39	7	6.82	17.29	1.67	3.66	6		18.96
S43DB	S43DBEFF-06-668645	11/15/06	AUDIT	<0.09	4	7.03	15.13	0.21	2.9	13		15.34

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DB	S43DBEFF-06-673140	11/28/06	AUDIT	0.46	5	7.01	14.41	0.49	3.4	12		14.9
S43DB	S43DBEFF-06-673685	12/1/06	AUDIT	1.06	8	6.95	11.22	0.61	2.1	16		11.83
S43DB	S43DBEFF-06-678684	12/14/06	AUDIT	0.17	1	6.94	6.26	<0.00	1.4	4		6.24
S43DB	S43DBEFF-07-687035	1/11/07	AUDIT	0.38	5	6.87	6.41	0.12	2.3	18		6.53
S43DB	S43DBEFF-07-689748	1/22/07	AUDIT	<0.09	4	7.49	9.62	0.01	1.9	16		9.63
S43DB	S43DBEFF-07-695069	2/7/07	AUDIT	1.35	15	6.71	20.48	0.6	2.8	30		21.07
S43DB	S43DBEFF-07-700357	2/23/07	AUDIT	0.18	9	6.76	15.8	0.35	3	29		16.15
S43DB	S43DBEFF-07-708380	3/14/07	AUDIT	1.93	6	6.71	16.97	0.16	2	12		17.13
S43DB	S43DBEFF-07-714727	3/30/07	AUDIT	0.46	6	6.68	18.59	0.2	4	7		18.79
S43DB	S43DBEFF-07-719765	4/11/07	AUDIT	4.74	3	7.03	2.79	0.18	4.5	6		2.97
S43DB	S43DBEFF-07-725072	4/26/07	AUDIT	<0.09	3	6.88	9.54	0.04	1.9	9		9.58
S43DB	S43DBEFF-07-729685	5/10/07	AUDIT	0.17	6	6.94	4.76	0.12	3.8	47		4.88
S43DB	S43DBEFF-07-734891	5/23/07	AUDIT	0.36	8	6.98	5.85	0.47	3	17		6.32
S43DB	S43DBEFF-07-740549	6/8/07	AUDIT	4.31	4	7.36	<0.10	0.02	2.7	6		<0.153
S43DB	S43DBEFF-07-745042	6/19/07	AUDIT	5.73	4	7.12	0.14	0.04	4.2	16		0.19
S43DB	S43DBEFF-07-750742	7/5/07	AUDIT	0.47	5	7.08	0.63	0.08	1.7	4		0.71
S43DB	S43DBEFF-07-755074	7/16/07	AUDIT	1.03	4	7.05	1.02	0.11	2.6	10		1.13
S43DB	S43DBEFF-07-760067	8/1/07	AUDIT	0.79	5	7.04	5.82	0.7	4.4	8		6.52
S43DB	S43DBEFF-07-765359	8/17/07	AUDIT	0.17	9	6.82	14.33	0.34	4.3	15		14.67
S43DB	S43DBEFF-07-768248	8/28/07	AUDIT	1.02	8	7.07	0.97	0.18	5	8		1.15
S43DB	S43DBEFF-07-774304	9/13/07	AUDIT	1.61	3	7.18	1.58	0.24	3.7	11		1.82
S43DB	S43DBEFF-07-778736	9/24/07	AUDIT	3.76	4	6.98	0.64	0.2	3.1	13		0.85
S43DB	S43DBEFF-07-784491	10/10/07	AUDIT	0.22	3	7.04	2.23	0.46	2.3	3		2.69
S43DB	S43DBEFF-07-790363	10/26/07	AUDIT	1	7	7.03	4.97	0.8	5.6	13		5.77
S43DB	S43DBEFF-07-795995	11/6/07	AUDIT	1	5	6.9	8.12	0.49	5.1	9		8.61
S43DB	S43DBEFF-07-802348	11/22/07	AUDIT	0.96	12	6.9	8.92	0.39	0.2	22		9.31
S43DB	S43DBEFF-07-807460	12/3/07	AUDIT	<0.094	9	6.8	9.01	0.03	0.6	43		9.03
S43DB	S43DBEFF-08-823713	1/16/08	AUDIT	3.4	17	7	3.74	0.4	<0.153	33		4.13
S43DB	S43DBEFF-08-832635	2/12/08	AUDIT	<0.094	3	6.9	12.32	0.05	3.6	5		12.37
S43DB	S43DBEFF-08-843201	3/10/08	AUDIT	<0.094	8	7	6.23	0.01	0.6	19		6.25
S43DB	S43DBEFF-08-855892	4/11/08	AUDIT	1.66	8	7	11.04	0.26	3.9	27		11.29
S43DB	S43DBEFF-08-868418	5/8/08	AUDIT	18.71	7	7.3	0.28	0.03	1.9	18		0.3
S43DB	S43DBEFF-08-882735	6/4/08	AUDIT	26.01	17	7.4	<0.100	0.01	1.2	37		<0.196
S43DB	S43DBEFF-08-895607	7/1/08	AUDIT	29.3	11	7.4	<0.100	0.01	2.5	19		<0.196

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DB	S43DBEFF-08-910113	7/28/08	AUDIT	27.55	9	7.4	0.27	0.01	3.5	11		0.28
S43DB	S43DBEFF-08-925313	8/29/08	AUDIT	11.28	10	7.2	0.68	0.63	6.4	11		1.32
S43DB	S43DBEFF-08-936717	9/25/08	AUDIT	23.55	4	7.3	0.3	0.04	1.7	11		0.34
S43DB	S43DBEFF-08-950844	10/22/08	AUDIT	1.75	5	6.9	0.15	2.32	<0.153	10		2.46
S43DB	S43DBEFF-08-972481	12/4/08	AUDIT	0.42	4	6.9	4.64	0.17	<0.153	16		4.81
S43DB	S43DBEFF-09-996200	1/14/09	AUDIT	8.96	5	7	2.25	0.18	1	10		2.44
S43DB	S43DBEFF-09-1003052	2/10/09	AUDIT	0.64	5	6.8	5.39	0.08	1.5	10		5.47
S43DB	S43DBEFF-09-1016920	3/9/09	AUDIT	4.1	5	6.9	1.51	0.13	0.3	8		1.64
S43DB	S43DBEFF-09-1031705	4/10/09	AUDIT	8.31	8	7	2.78	0.24	1.4	19		3.02
S43DB	S43DBEFF-09-1044821	5/7/09	AUDIT	3.78	6	7.1	0.35	0.05	0.4	13		0.39
S43DB	S43DBEFF-09-1058642	6/3/09	AUDIT	23.14	7	7.3	0.82	0.01	1.6	11		0.83
S43DB	S43DBEFF-09-1072922	6/30/09	AUDIT	32.52	12	7.3	0.56	0.01	3.9	17		0.57
S43DB	S43DBEFF-09-1087957	7/27/09	AUDIT	26.97	9	7.3	1.1	<0.003	2.2	14		1.1
S43DB	S43DBEFF-09-1104288	8/28/09	AUDIT	14.94	7	7.1	0.96	0.01	1.9	12		0.97
S43DB	S43DBEFF-09-1119356	9/24/09	AUDIT	29.56	11	7.3	0.4	0.06	1.1	16		0.46
S43DB	S43DBEFF-09-1134759	10/21/09	AUDIT	28.53	15	7.3	0.44	0.06	2.5	99		0.5
S43DB	S43DBEFF-09-1158475	12/3/09	AUDIT	2.78	4	6.7	12.23	0.21	0.6	24		12.43
S43DB	S43DBEFF-10-1184945	1/13/10	AUDIT	2.15	9	6.6	19.54	0.27	3.5	16		19.81
S43DB	S43DBEFF-10-1189652	1/29/10	AUDIT	5.26	8	6.8	7.49	0.17	1.4	4		7.66
S43DB	S43DBEFF-10-1192900	2/9/10	AUDIT	0.33	11	6.8	16.97	0.18	1.5	61		17.16
S43DB	S43DBEFF-10-1207001	3/8/10	AUDIT	7.71	5	6.8	21.17	0.34	4.6	10		21.52
S43DD	S43DDEFF-06-547640	1/4/06	AUDIT	6.45	12	6.95	20.23	0.25	3.13	22		20.48
S43DD	S43DDEFF-06-548116	1/10/06	AUDIT	6.66	18	6.96	19.4	0.42	4	19		19.82
S43DD	S43DDEFF-06-549550	1/19/06	AUDIT	4.65	18	6.95	16.08	0.31	2.56	15		16.39
S43DD	S43DDEFF-06-553861	1/24/06	AUDIT	4.01	9	6.96	19.14	0.63	3.46	23		19.77
S43DD	S43DDEFF-06-556144	1/30/06	AUDIT	3.11	12	6.97	22.92	0.26	3.85	15		23.18
S43DD	S43DDEFF-06-559079	2/8/06	AUDIT	5.22	10	7.23	16.67	0.49	3.64	15		17.16
S43DD	S43DDEFF-06-562256	2/17/06	AUDIT	2.96	5	7.11	13.21	0.26	1.64	14		13.47
S43DD	S43DDEFF-06-564844	2/21/06	AUDIT	3.97	9	6.72	22.09	0.38	3.5	14		22.47
S43DD	S43DDEFF-06-568082	3/1/06	AUDIT	4.89	17	7.05	18.36	0.35	3.06	12		19.21
S43DD	S43DDEFF-06-571473	3/9/06	AUDIT	3.43	11	7.04	14.91	0.36	2.55	17		15.27
S43DD	S43DDEFF-06-574032	3/14/06	AUDIT	3.11	7	7.11	12.11	0.25	2.03	17		12.36
S43DD	S43DDEFF-06-577536	3/23/06	AUDIT	3.48	11	7.1	17.9	0.92	2.93	9		18.82
S43DD	S43DDEFF-06-580150	3/29/06	AUDIT	3.54	10	7.16	15.54	0.33	2.26	11		15.87

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DD	S43DDEFF-06-583509	4/6/06	AUDIT	3.42	28	7.1	13.58	0.43	3.02	62		13.95
S43DD	S43DDEFF-06-586698	4/14/06	AUDIT	4.39	23	6.96	17.97	0.3	2.66	17		18.27
S43DD	S43DDEFF-06-589301	4/19/06	AUDIT	4.31	8	6.9	17.39	1.37	3.13	7		18.76
S43DD	S43DDEFF-06-592036	4/27/06	AUDIT	7.88	18	6.94	18	0.59	3.49	12		18.59
S43DD	S43DDEFF-06-594292	5/2/06	AUDIT	5.08	24	7.14	15.45	0.37	3.65	30		15.82
S43DD	S43DDEFF-06-597049	5/10/06	AUDIT	5.8	30	7.07	17.11	0.58	4.6	42		17.69
S43DD	S43DDEFF-06-599695	5/16/06	AUDIT	5.65	30	6.97	14.52	0.85	3.62	26		15.37
S43DD	S43DDEFF-06-602818	5/24/06	AUDIT	6.7	16	7.11	12.05	0.66	3.13	12		12.71
S43DD	S43DDEFF-06-605380	5/30/06	AUDIT	6.66	29	7.11	16.12	0.61	3.95	29		16.73
S43DD	S43DDEFF-06-608195	6/7/06	AUDIT	6.8	20	7.17	17.73	0.95	5.45	19		18.68
S43DD	S43DDEFF-06-610892	6/13/06	AUDIT	5.84	21	7.24	20.74	1	4.85	19		21.74
S43DD	S43DDEFF-06-613949	6/22/06	AUDIT	5.08	29	7.11	16.97	0.3	3.13	24		17.27
S43DD	S43DDEFF-06-616236	6/27/06	AUDIT	3.65	20	7.02	21.98	0.84	4.98	23		22.82
S43DD	S43DDEFF-06-619455	7/5/06	AUDIT	3.58	11	6.97	24.94	1.22	5.64	23		26.16
S43DD	S43DDEFF-06-622054	7/11/06	AUDIT	4.77	7	7.18	14.78	0.38	4.65	8		15.15
S43DD	S43DDEFF-06-623918	7/20/06	AUDIT	5.85	14	7.12	21.62	0.447	9.17	9		22.07
S43DD	S43DDEFF-06-625669	7/26/06	AUDIT	3.82	6	7.11	21.06	0.413	5.71	14		21.47
S43DD	S43DDEFF-06-627281	8/1/06	AUDIT	3.78	12	7.16	13.88	0.287	3.86	12		14.16
S43DD	S43DDEFF-06-629877	8/9/06	AUDIT	3.79	5	7.2	9.82	0.288	4.58	27		10.11
S43DD	S43DDEFF-06-632738	8/17/06	AUDIT	3.42	9	7.08	19.07	0.459	5.42	13		19.53
S43DD	S43DDEFF-06-637200	8/25/06	AUDIT	5.35	12	7.16	16.39	0.385	5.15	13		16.77
S43DD	S43DDEFF-06-639883	8/31/06	AUDIT	2.95	4	7.1	10.32	0.306	4.13	12		10.63
S43DD	S43DDEFF-06-640743	9/6/06	AUDIT	2.65	5	7.05	12.85	0.214	3.54	11		13.06
S43DD	S43DDEFF-06-643147	9/12/06	AUDIT	2.34	0.1	6.96	16.71	0.314	4.83	6		17.02
S43DD	S43DDEFF-06-646340	9/21/06	AUDIT	1.1	8	7.09	8.05	0.23	1.52	10		8.28
S43DD	S43DDEFF-06-649078	9/28/06	AUDIT	1.65	4	7.13	11.3	0.29	3.1	8		11.59
S43DD	S43DDEFF-06-651893	10/4/06	AUDIT	2.63	11	7.03	14.1	0.37	3.49	36		14.46
S43DD	S43DDEFF-06-654354	10/10/06	AUDIT	2.05	5	7.05	16.74	0.29	3.97	15		17.03
S43DD	S43DDEFF-06-657263	10/19/06	AUDIT	2.72	3	7.04	14.44	0.32	3.7	9		14.76
S43DD	S43DDEFF-06-657684	10/23/06	AUDIT	1.59	13	6.97	16.12	0.42	3.17	20		16.54
S43DD	S43DDEFF-06-662702	11/1/06	AUDIT	2.15	13	7.1	17.44	0.41	3.04	8		17.85
S43DD	S43DDEFF-06-665194	11/7/06	AUDIT	2	4	7.03	18.88	0.41	4.03	15		19.29
S43DD	S43DDEFF-06-665791	11/10/06	AUDIT	2.33	10	7.03	20.71	0.41	4.03	17		21.12
S43DD	S43DDEFF-06-668716	11/15/06	AUDIT	3.98	11	7.13	15.5	0.33	3.1	14		15.83

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DD	S43DDEFF-06-671109	11/23/06	AUDIT	1.12	9	7.25	10.18	0.24	1.5	18		10.43
S43DD	S43DDEFF-06-673194	11/28/06	AUDIT	2.76	8	7.37	12.6	0.32	2.5	9		12.92
S43DD	S43DDEFF-06-673688	12/1/06	AUDIT	1.92	7	7.16	10.72	0.65	2.1	13		11.37
S43DD	S43DDEFF-06-676050	12/6/06	AUDIT	0.98	10	7.24	11.25	0.22	1.6	18		11.47
S43DD	S43DDEFF-06-678750	12/14/06	AUDIT	0.16	1	7.1	6.54	<0.00	1.5	6		6.52
S43DD	S43DDEFF-07-687164	1/11/07	AUDIT	0.84	9	7.21	9.8	0.22	1.6	13		10.02
S43DD	S43DDEFF-07-688647	1/19/07	AUDIT	0.71	8	7.13	9.86	0.17	1.4	21		10.03
S43DD	S43DDEFF-07-690112	1/22/07	AUDIT	0.69	9	7.85	12.15	0.16	2.7	17		12.32
S43DD	S43DDEFF-07-692334	1/30/07	AUDIT	1.4	12	7.03	16.48	0.25	2.8	18		16.73
S43DD	S43DDEFF-07-695206	2/7/07	AUDIT	6.72	49	7.26	17.25	0.27	3.9	51		17.52
S43DD	S43DDEFF-07-697837	2/15/07	AUDIT	4.35	30	7.14	19.39	0.37	3.7	37		19.76
S43DD	S43DDEFF-07-700469	2/23/07	AUDIT	4.66	33	7.01	18.9	0.51	3.8	39		19.41
S43DD	S43DDEFF-07-702370	2/26/07	AUDIT	4.81	26	7.13	14.53	0.26	7.8	24		14.79
S43DD	S43DDEFF-07-705329	3/6/07	AUDIT	4.54	16	7.18	11.6	0.28	2.9	30		11.88
S43DD	S43DDEFF-07-711603	3/22/07	AUDIT	3.05	16	7.08	12.97	0.22	3.1	18		13.19
S43DD	S43DDEFF-07-714849	3/30/07	AUDIT	3.88	6	7.06	15.57	0.15	4.4	5		15.72
S43DD	S43DDEFF-07-716945	4/2/07	AUDIT	4.07	4	7.05	17.86	0.11	5.1	3		17.97
S43DD	S43DDEFF-07-719998	4/11/07	AUDIT	3.26	15	6.86	26.9	0.36	5.5	25		27.26
S43DD	S43DDEFF-07-722692	4/18/07	AUDIT	3.29	26	6.91	25.15	0.36	5.8	35		25.51
S43DD	S43DDEFF-07-725191	4/26/07	AUDIT	2.18	21	6.83	21.53	0.21	3.4	6		21.75
S43DD	S43DDEFF-07-728133	5/4/07	AUDIT	3.99	9	7.09	15.39	0.4	16	9		15.79
S43DD	S43DDEFF-07-729863	5/10/07	AUDIT	3.3	6	7.08	9.3	0.26	4.1	1		9.56
S43DD	S43DDEFF-07-732570	5/15/07	AUDIT	4.14	10	7.13	15.3	0.34	5	10		15.64
S43DD	S43DDEFF-07-735025	5/23/07	AUDIT	4.56	15	7.07	17.62	0.38	4.4	15		17.99
S43DD	S43DDEFF-07-737823	5/31/07	AUDIT	4.32	17	7.11	13.2	0.39	5.3	16		13.59
S43DD	S43DDEFF-07-740672	6/8/07	AUDIT	3.98	13	6.93	24.57	0.54	6.7	24		25.11
S43DD	S43DDEFF-07-742286	6/11/07	AUDIT	4.36	14	6.96	21.03	0.47	6.3	25		21.5
S43DD	S43DDEFF-07-745173	6/19/07	AUDIT	2.71	12	7.04	15.25	0.41	3.6	19		15.66
S43DD	S43DDEFF-07-747963	6/27/07	AUDIT	3.19	16	7.08	16.74	0.35	6.4	22		17.09
S43DD	S43DDEFF-07-750861	7/5/07	AUDIT	0.96	3	6.93	14.36	0.31	3.9	6		14.67
S43DD	S43DDEFF-07-752834	7/9/07	AUDIT	1.86	15	6.92	17.65	0.33	2.8	16		17.98
S43DD	S43DDEFF-07-755256	7/16/07	AUDIT	1.71	13	7.02	14.66	0.32	2.3	15		14.97
S43DD	S43DDEFF-07-757994	7/24/07	AUDIT	0.81	2	6.9	14.63	0.3	3.7	6		14.94
S43DD	S43DDEFF-07-760217	8/1/07	AUDIT	2.41	14	7	17.6	0.35	6.4	19		17.95

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DD	S43DDEFF-07-762902	8/9/07	AUDIT	1.24	4	6.97	17.2	0.41	4.4	2		17.61
S43DD	S43DDEFF-07-765508	8/17/07	AUDIT	1.71	9	7.01	15.52	0.32	3.6	6		15.83
S43DD	S43DDEFF-07-768448	8/28/07	AUDIT	2.45	14	6.92	22.18	0.45	4.7	14		22.63
S43DD	S43DDEFF-07-771457	9/5/07	AUDIT	1.82	5	6.97	18.01	0.42	5.3	11		18.43
S43DD	S43DDEFF-07-774454	9/13/07	AUDIT	2.75	10	6.96	17.69	0.47	5.4	11		18.16
S43DD	S43DDEFF-07-777170	9/21/07	AUDIT	2.44	16	7.07	15.41	0.51	3.9	8		15.92
S43DD	S43DDEFF-07-778925	9/24/07	AUDIT	2.64	12	6.99	17.12	0.38	4.3	19		17.49
S43DD	S43DDEFF-07-781666	10/2/07	AUDIT	3.75	18	6.96	24.12	0.8	5.7	21		24.92
S43DD	S43DDEFF-07-784657	10/10/07	AUDIT	2.47	17	6.92	18.02	0.39	3.9	35		18.41
S43DD	S43DDEFF-07-787575	10/18/07	AUDIT	3.36	14	6.98	22.03	0.42	4.9	13		22.45
S43DD	S43DDEFF-07-790493	10/26/07	AUDIT	2.84	7	7.11	19.43	0.36	4.6	9		19.79
S43DD	S43DDEFF-07-793281	11/1/07	AUDIT	3.05	12	6.98	20.73	0.43	4	16		21.16
S43DD	S43DDEFF-07-796163	11/6/07	AUDIT	2.63	13	6.9	19.72	0.43	4.1	11		20.15
S43DD	S43DDEFF-07-801689	11/14/07	AUDIT	3.06	21	7.1	16.18	0.33	4.9	18		16.51
S43DD	S43DDEFF-07-802498	11/22/07	AUDIT	2.26	14	7.1	16.94	0.38	3.6	13		17.32
S43DD	S43DDEFF-07-805352	11/30/07	AUDIT	1.82	35	7.1	12.55	0.36	2.5	31		12.91
S43DD	S43DDEFF-07-807724	12/3/07	AUDIT	1.5	11	7.2	9.32	0.28	1.6	9		9.6
S43DD	S43DDEFF-07-810833	12/11/07	AUDIT	1.87	4	7.3	9.23	0.3	1.8	11		9.53
S43DD	S43DDEFF-07-813977	12/19/07	AUDIT	4.52	12	7.3	12.08	0.43	3.4	10		12.51
S43DD	S43DDEFF-08-823418	1/8/08	AUDIT	1.56	7	7.1	11.75	0.26	4.5	10		12.01
S43DD	S43DDEFF-08-825745	1/24/08	AUDIT	0.78	13	6.9	7.33	0.11	1.1	26		7.44
S43DD	S43DDEFF-08-826905	2/4/08	AUDIT	2.73	8	7.1	7.66	0.21	1.9	4		7.87
S43DD	S43DDEFF-08-835432	2/20/08	AUDIT	2.77	19	7.1	16.26	0.33	2.6	16		16.59
S43DD	S43DDEFF-08-841034	3/7/08	AUDIT	2.49	11	7.1	10.3	0.3	2.4	10		10.6
S43DD	S43DDEFF-08-846171	3/18/08	AUDIT	2.53	19	7.1	13.28	0.29	3	15		13.56
S43DD	S43DDEFF-08-852978	4/3/08	AUDIT	3.25	21	7	16.5	0.34	2.9	28		16.85
S43DD	S43DDEFF-08-858058	4/14/08	AUDIT	6.46	19	7.1	13.67	0.57	3.6	19		14.24
S43DD	S43DDEFF-08-864683	4/30/08	AUDIT	3.21	18	7	21.39	0.33	3.6	5		21.71
S43DD	S43DDEFF-08-872314	5/16/08	AUDIT	5	10	7.1	14.9	0.7	4.9	5		15.6
S43DD	S43DDEFF-08-878620	5/28/08	AUDIT	5.04	27	7.1	20.21	1.36	5.4	24		21.57
S43DD	S43DDEFF-08-891845	6/23/08	AUDIT	3.39	7	7	12.29	0.4	4	9		12.69
S43DD	S43DDEFF-08-899758	7/9/08	AUDIT	3.92	16	7	20.75	0.41	4.9	17		21.16
S43DD	S43DDEFF-08-907308	7/25/08	AUDIT	3.72	15	7.1	15.94	0.8	5.8	25		16.75
S43DD	S43DDEFF-08-914247	8/5/08	AUDIT	4.21	16	7.1	16.06	0.92	4.3	25		16.98

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DD	S43DDEFF-08-922469	8/21/08	AUDIT	2.06	7	7.2	10	0.37	3.6	7		10.37
S43DD	S43DDEFF-08-928182	9/1/08	AUDIT	3.76	16	7.2	15.19	0.62	4.5	22		15.81
S43DD	S43DDEFF-08-935016	9/17/08	AUDIT	2.31	11	7	14.45	0.34	3.5	10		14.78
S43DD	S43DDEFF-08-939982	10/3/08	AUDIT	1.35	8	7.2	11.64	0.22	1.9	10		11.86
S43DD	S43DDEFF-08-944170	10/14/08	AUDIT	2.06	15	7.2	14.89	0.41	2.8	18		15.3
S43DD	S43DDEFF-08-954770	10/30/08	AUDIT	0.96	8	7.4	8.94	0.17	1.1	12		9.11
S43DD	S43DDEFF-08-958964	11/10/08	AUDIT	1.19	10	7.3	7.31	0.19	1	25		7.49
S43DG	S43DGEFF-06-564847	3/9/06	AUDIT	2.24	5	6.95	12.05	0.11	2.1	5		12.16
S43DG	S43DGEFF-06-589305	4/19/06	AUDIT	2.57	5	6.72	21.36	0.41	3.19	9		21.77
S43DG	S43DGEFF-06-610895	6/13/06	AUDIT	2.5	17	6.84	32.28	0.47	6.5	15		32.75
S43DG	S43DGEFF-06-629880	8/9/06	AUDIT	1.32	11	6.86	20.73	0.248	4.14	14		20.98
S43DG	S43DGEFF-06-651897	10/4/06	AUDIT	0.77	5.4	7.4	8.71	0.25	1.78	11		8.96
S43DG	S43DGEFF-06-673195	11/28/06	AUDIT	1.29	6	7.56	12	0.33	1.6	10		12.33
S43DG	S43DGEFF-07-692506	3/13/07	AUDIT	0.42	7	7.42	12.99	0.18	1.6	11		13.17
S43DG	S43DGEFF-07-725063	4/26/07	AUDIT	1.9	21	7.08	18.7	0.52	2.7	23		19.22
S43DG	S43DGEFF-07-737821	5/31/07	AUDIT	0.48	11	7.2	25.4	0.36	3.8	17		25.76
S43DG	S43DGEFF-07-745028	6/19/07	AUDIT	0.6	8	7.27	20.59	0.24	2.9	10		20.83
S43DG	S43DGEFF-07-765367	8/17/07	AUDIT	0.31	4	7.41	13.59	0.16	1.7	7		13.75
S43DG	S43DGEFF-07-784504	10/10/07	AUDIT	0.27	3	7.18	12.99	0.13	1.4	5		13.12
S43DG	S43DGEFF-08-826086	1/28/08	AUDIT	<0.094	4	7.3	14.17	0.11	1.9	6		14.28
S43DG	S43DGEFF-08-826726	2/1/08	AUDIT	0.28	4	7.5	9.91	0.07	1.7	7		9.98
S43DG	S43DGEFF-08-838014	2/28/08	AUDIT	1.1	12	7.2	16.96	0.26	3	9		17.22
S43DG	S43DGEFF-08-843430	3/11/08	AUDIT	0.55	3	7.3	6.34	0.12	2.5	3		6.45
S43DG	S43DGEFF-08-860933	4/22/08	AUDIT	0.43	5	7.2	24.35	0.15	3	9		24.5
S43DG	S43DGEFF-08-875106	5/19/08	AUDIT	0.75	11	7	27.21	0.22	4.5	22		27.43
S43DG	S43DGEFF-08-903298	7/17/08	AUDIT	0.34	5	7.1	8.97	0.1	1.9	6		9.07
S43DG	S43DGEFF-08-917531	8/13/08	AUDIT	0.26	4	7.3	9.91	0.1	0.9	13		10.01
S43DG	S43DGEFF-08-931669	9/9/08	AUDIT	2.29	7	7.3	17.39	0.26	2.7	8		17.65
S43DG	S43DGEFF-08-940050	10/6/08	AUDIT	0.81	7	7.3	14.34	0.26	1.5	12		14.6
S43DG	S43DGEFF-08-958500	11/7/08	AUDIT	0.79	12	7.3	14.13	0.2	2.6	18		14.34
S43DG	S43DGEFF-08-972472	12/4/08	AUDIT	1.54	10	7.3	9.23	0.24	1.7	18		9.46
S43DG	S43DGEFF-09-999307	1/26/09	AUDIT	1.09	9	7	8.64	0.2	1.3	24		8.83
S43DG	S43DGEFF-09-1010705	2/26/09	AUDIT	1.95	13	6.9	18.95	0.43	3.4	19		19.38
S43DG	S43DGEFF-09-1024363	3/25/09	AUDIT	1.07	18	7	22.83	0.17	3.4	30		23

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DG	S43DGEFF-09-1038132	4/21/09	AUDIT	1.24	21	6.9	23.12	0.28	3.6	23		23.4
S43DG	S43DGEFF-09-1000003	5/18/09	AUDIT	0.88	15	7.1	19.86	0.35	3	23		20.2
S43DG	S43DGEFF-09-1066229	6/19/09	AUDIT	2.61	10	7	15.99	0.31	2.4	10		16.3
S43DG	S43DGEFF-09-1080743	7/16/09	AUDIT	0.74	8	6.7	19.38	0.27	3	6		19.65
S43DG	S43DGEFF-09-1096543	8/12/09	AUDIT	5.01	19	7	21.72	1.26	4.5	15		22.97
S43DG	S43DGEFF-09-1111304	9/8/09	AUDIT	2.2	22	7.3	10.41	0.76	2.4	65		11.18
S43DG	S43DGEFF-09-1126572	10/5/09	AUDIT	5.92	42	7.2	16.6	2.2	3.9	35		18.8
S43DG	S43DGEFF-09-1142964	11/6/09	AUDIT	0.56	4	7.2	8.65	0.12	0.7	5		8.77
S43DG	S43DGEFF-09-1158468	12/3/09	AUDIT	2.68	9	7.1	5.75	0.19	1.2	7		5.93
S43DG	S43DGEFF-10-1189636	1/29/10	AUDIT	0.31	4	6.9	8.73	0.11	1.5	4		8.85
S43DG	S43DGEFF-10-1192880	2/9/10	AUDIT	0.32	4	7.1	17.64	0.1	1.8	8		17.74
S43DH	S43DHEFF-06-548120	1/10/06	AUDIT	59.07	417	7.46	1.65	0.33	9.06	154		1.98
S43DH	S43DHEFF-06-571474	3/9/06	AUDIT	39.24	297	7.6	0.58	<0.03	5.87	120		<0.83
S43DH	S43DHEFF-06-594294	5/2/06	AUDIT	50.28	368	7.69	4.06	<0.03	8.77	146		4.06
S43DH	S43DHEFF-06-616239	6/27/06	AUDIT	52.36	181	7.5	0.82	0.03	9.29	153		0.85
S43DH	S43DHEFF-06-637203	8/25/06	AUDIT	57.22	452	7.07	0	0.035	9.22	157		<0.15
S43DH	S43DHEFF-06-657265	10/19/06	AUDIT	38.4	307	7.19	1.07	0.01	6.86	121		1.08
S43DH	S43DHEFF-07-692507	1/30/07	AUDIT	38.41	211	7.65	2.38	0.05	8	175		2.44
S43DH	S43DHEFF-07-708370	3/14/07	AUDIT	38.88	324	7.56	1.95	<0.00	6.6	140		1.95
S43DH	S43DHEFF-07-735027	5/23/07	AUDIT	67.98	334	7.44	0	0.01	10.8	139		<0.15
S43DH	S43DHEFF-07-750732	7/5/07	AUDIT	43.33	202	7.16	1.98	0.05	8.2	114		2.02
S43DH	S43DHEFF-07-778617	9/13/07	AUDIT	58.52	438	7.37	0.31	<0.000	10.5	161		0.31
S43DH	S43DHEFF-07-790376	10/26/07	AUDIT	42.04	163	7.37	0.2	<0.003	7.3	91		0.2
S43DH	S43DHEFF-08-823701	1/16/08	AUDIT	13.22	120	7.5	0.77	0.03	2.4	60		0.8
S43DH	S43DHEFF-08-832627	2/12/08	AUDIT	47.38	337	7.8	<0.100	0.01	7.5	120		<0.196
S43DH	S43DHEFF-08-843191	3/10/08	AUDIT	8.26	110	7.4	1.33	0.05	2.3	46		1.37
S43DH	S43DHEFF-08-876012	5/1/08	AUDIT	0.35	18	7.4	20.49	0.12	4.1	22		20.61
S43DH	S43DHEFF-08-868409	5/8/08	AUDIT	58.91	249	7.6	0.21	0.01	9.5	109		0.22
S43DH	S43DHEFF-08-882728	6/4/08	AUDIT	65.85	334	7.6	<0.100	<0.003	10.8	114		<0.196
S43DH	S43DHEFF-08-895601	7/1/08	AUDIT	55.17	427	7.2	1.93	0.02	16	101		1.94
S43DH	S43DHEFF-08-910109	7/28/08	AUDIT	59.86	444	7	<0.100	<0.003	8.8	100		<0.196
S43DH	S43DHEFF-08-925309	8/29/08	AUDIT	51.79	320	7.5	0.2	<0.003	7.6	90		0.2
S43DH	S43DHEFF-08-936706	9/25/08	AUDIT	56.6	422	7.1	0.3	<0.003	8.8	107		0.29
S43DH	S43DHEFF-08-950838	10/22/08	AUDIT	31.74	212	7.6	<0.100	<0.003	4.7	89		<0.196

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DH	S43DHEFF-08-972473	12/4/08	AUDIT	38.95	220	7.3	0.1	<0.003	6.5	80		<0.196
S43DH	S43DHEFF-09-996195	1/14/09	AUDIT	62.35	325	7.4	0.25	0.01	9.7	148		0.25
S43DH	S43DHEFF-09-1003047	2/10/09	AUDIT	57.4	430	7.7	0.36	0.01	7.6	147		0.37
S43DH	S43DHEFF-09-1016918	3/9/09	AUDIT	48.21	375	7.7	0.35	<0.003	7.4	125		0.36
S43DH	S43DHEFF-09-1031700	4/10/09	AUDIT	27.81	166	7.5	0.51	0.04	3.9	78		0.55
S43DH	S43DHEFF-09-1044816	5/7/09	AUDIT	39.01	575	6.9	0.32	<0.003	6	91		0.32
S43DH	S43DHEFF-09-1058639	6/3/09	AUDIT	68.67	497	7.4	0.5	0.17	10.7	155		0.67
S43DH	S43DHEFF-09-1072920	6/30/09	AUDIT	59	354	6.8	0.26	<0.003	8.6	139		0.25
S43DH	S43DHEFF-09-1087954	7/27/09	AUDIT	59.19	248	7	0.78	0.02	9.2	127		0.8
S43DH	S43DHEFF-09-1104286	8/28/09	AUDIT	32.37	319	7.1	0.96	0.2	4.9	98		1.17
S43DH	S43DHEFF-09-1119351	9/24/09	AUDIT	57.74	470	7.2	0.46	0.01	8.6	125		0.46
S43DH	S43DHEFF-09-1134754	10/21/09	AUDIT	66.39	442	7.3	0.32	<0.003	9.1	144		0.31
S43DH	S43DHEFF-09-1158469	12/3/09	AUDIT	27.61	82	7.4	1.91	0.05	4.2	147		1.96
S43DH	S43DHEFF-10-1184936	1/13/10	AUDIT	28.76	84	7.3	0.96	0.01	4.8	256		0.97
S43DH	S43DHEFF-10-1192891	2/9/10	AUDIT	42.11	282	7.6	<0.100	0.03	6.1	124		<0.196
S43DH	S43DHEFF-10-1206991	3/8/10	AUDIT	54.47	255	7.5	<0.100	0.05	7.7	150		<0.196
S43DJ	S43DJEFF-06-547644	1/4/06	AUDIT	8.3	11	7.09	15.25	0.26	2.55	20		15.51
S43DJ	S43DJEFF-06-549552	1/19/06	AUDIT	5.83	15	7.07	9.22	0.36	1.95	20		9.58
S43DJ	S43DJEFF-06-556145	1/30/06	AUDIT	7.39	18	7.18	15.43	0.4	3.92	20		15.83
S43DJ	S43DJEFF-06-562258	2/17/06	AUDIT	4.39	8	7.04	9.5	0.35	1.78	15		9.85
S43DJ	S43DJEFF-06-568086	3/1/06	AUDIT	8.62	24	7.06	13.73	0.35	3.34	18		14.08
S43DJ	S43DJEFF-06-574036	3/14/06	AUDIT	3.62	8	7.1	5.76	0.19	1.26	21		5.94
S43DJ	S43DJEFF-06-580154	3/29/06	AUDIT	4.84	6	7.24	8.81	0.34	2.03	19		9.15
S43DJ	S43DJEFF-06-586700	4/14/06	AUDIT	4.69	10	7.02	12.41	0.34	2.63	14		12.75
S43DJ	S43DJEFF-06-592041	4/27/06	AUDIT	8.92	17	6.96	12.07	0.47	4.26	22		12.54
S43DJ	S43DJEFF-06-597051	5/10/06	AUDIT	5.46	18	7.02	16.79	0.48	4.33	34		17.27
S43DJ	S43DJEFF-06-602824	5/24/06	AUDIT	4.74	11	6.99	12.92	0.6	2.57	18		13.52
S43DJ	S43DJEFF-06-608199	6/7/06	AUDIT	5.57	15	6.78	26.57	0.44	5.51	22		27.01
S43DJ	S43DJEFF-06-613952	6/22/06	AUDIT	4.13	16	6.97	15.41	0.27	2.42	12		15.68
S43DJ	S43DJEFF-06-619463	7/5/06	AUDIT	4.36	11	6.77	27.74	0.47	5.71	18		28.2
S43DJ	S43DJEFF-06-623921	7/20/06	AUDIT	3.48	10	6.91	24.69	0.406	5.97	12		25.1
S43DJ	S43DJEFF-06-627288	8/1/06	AUDIT	3.66	13	7.1	16.9	0.209	16.49	14		17.1
S43DJ	S43DJEFF-06-632740	8/17/06	AUDIT	3.51	12	7.03	22.06	0.273	5.55	16		22.33
S43DJ	S43DJEFF-06-639884	8/31/06	AUDIT	2.04	4.7	6.88	14.09	0.209	3.86	7		14.3

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DJ	S43DJEFF-06-643153	9/12/06	AUDIT	3.2	7	6.82	16.66	0.289	4.59	10		16.95
S43DJ	S43DJEFF-06-649080	9/28/06	AUDIT	2.14	7	7.15	13.11	0.27	2.21	14		13.39
S43DJ	S43DJEFF-06-654358	10/10/06	AUDIT	3.46	10	7.14	19.57	0.3	4.08	17		19.88
S43DJ	S43DJEFF-06-657697	10/23/06	AUDIT	3.98	17	6.96	18.89	0.36	2.97	18		19.26
S43DJ	S43DJEFF-06-665198	11/7/06	AUDIT	3.42	7	6.84	24.96	0.38	4.35	22		25.34
S43DJ	S43DJEFF-06-665790	11/10/06	AUDIT	4.14	17	6.98	25.63	0.37	4.44	28		26
S43DJ	S43DJEFF-06-671111	11/23/06	AUDIT	1.05	6	7.22	8.64	0.22	1.6	19		8.86
S43DJ	S43DJEFF-06-676053	12/6/06	AUDIT	1.88	7	7.21	9.7	0.27	1.6	11		9.98
S43DJ	S43DJEFF-07-688649	1/19/07	AUDIT	2.16	9	7.12	8.68	0.32	1.5	19		9
S43DJ	S43DJEFF-07-697838	2/15/07	AUDIT	4.7	16	7.2	14.84	0.47	3.4	30		15.32
S43DJ	S43DJEFF-07-702372	2/26/07	AUDIT	4.53	11	7.02	13.06	0.51	3.1	17		13.57
S43DJ	S43DJEFF-07-705184	3/6/07	AUDIT	1.52	9	7.15	7.73	0.26	1	17		7.99
S43DJ	S43DJEFF-07-692335	3/13/07	AUDIT	3.76	13	7.2	12.48	0.44	2.1	19		12.92
S43DJ	S43DJEFF-07-711465	3/22/07	AUDIT	2.9	9	7	10.73	0.41	2	23		11.14
S43DJ	S43DJEFF-07-716765	4/2/07	AUDIT	5.89	21	7.06	18.91	0.57	4.8	35		19.48
S43DJ	S43DJEFF-07-722562	4/18/07	AUDIT	7.5	23	6.96	26.86	0.49	7.6	29		27.35
S43DJ	S43DJEFF-07-728020	5/4/07	AUDIT	7.56	21	6.88	34.47	0.37	6.8	36		34.84
S43DJ	S43DJEFF-07-732430	5/15/07	AUDIT	3.33	18	6.82	22.14	0.21	4.5	26		22.35
S43DJ	S43DJEFF-07-737798	5/31/07	AUDIT	4.99	18	6.96	28.91	0.33	6.4	23		29.24
S43DJ	S43DJEFF-07-742103	6/11/07	AUDIT	5.66	13	6.94	28.98	0.41	8.1	29		29.39
S43DJ	S43DJEFF-07-747840	6/27/07	AUDIT	2.36	13	6.9	18.51	0.18	11.3	16		18.69
S43DJ	S43DJEFF-07-752669	7/9/07	AUDIT	2	8	7.01	16.36	0.16	1.5	7		16.52
S43DJ	S43DJEFF-07-757861	7/24/07	AUDIT	3.72	14	7.03	25.47	0.38	5.5	15		25.85
S43DJ	S43DJEFF-07-762787	8/9/07	AUDIT	5.22	25	7.25	16.71	0.62	3.2	28		17.33
S43DJ	S43DJEFF-07-765647	8/20/07	AUDIT	1.44	10	6.98	11.14	0.15	5.2	13		11.29
S43DJ	S43DJEFF-07-771289	9/5/07	AUDIT	4.63	18	6.89	25.49	0.45	6.5	23		25.94
S43DJ	S43DJEFF-07-777052	9/21/07	AUDIT	5.92	20	7.17	17.72	0.28	4.6	23		18
S43DJ	S43DJEFF-07-781525	10/2/07	AUDIT	4.92	20	7.13	21.32	0.43	5.5	18		21.75
S43DJ	S43DJEFF-07-787447	10/18/07	AUDIT	4.4	14	7.08	26.24	0.36	6	18		26.6
S43DJ	S43DJEFF-07-792698	10/29/07	AUDIT	2.87	13	7.09	16.16	0.27	3.6	13		16.43
S43DJ	S43DJEFF-07-799195	11/14/07	AUDIT	5.5	21	7.2	11.68	0.33	3.4	24		12
S43DJ	S43DJEFF-07-805241	11/30/07	AUDIT	2.63	16	7.3	9.31	0.29	2.7	26		9.6
S43DJ	S43DJEFF-08-823419	1/8/08	AUDIT	4.61	19	7.3	7.8	0.21	3.3	23		8.01
S43DJ	S43DJEFF-08-826906	2/4/08	AUDIT	3.09	16	7.3	9.75	0.34	2.3	19		10.1

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43DJ	S43DJEFF-08-841035	3/7/08	AUDIT	2.27	12	7.1	11.63	0.38	2.8	19		12.01
S43DJ	S43DJEFF-08-852979	4/3/08	AUDIT	4.04	16	7	13.11	0.65	3.2	14		13.77
S43DJ	S43DJEFF-08-864684	4/30/08	AUDIT	4.95	25	7	22.36	0.45	4.9	22		22.81
S43DJ	S43DJEFF-08-878488	5/28/08	AUDIT	7.12	35	7	25.21	0.7	6.7	31		25.92
S43DJ	S43DJEFF-08-891627	6/23/08	AUDIT	4.36	21	7	12.24	0.38	2.9	16		12.62
S43DJ	S43DJEFF-08-907172	7/25/08	AUDIT	4.2	19	7.1	18.71	0.85	5.4	15		19.57
S43DJ	S43DJEFF-08-934863	9/17/08	AUDIT	2.5	18	7	12.57	0.27	2.9	18		12.85
S43DJ	S43DJEFF-08-944005	10/14/08	AUDIT	3.69	14	7.2	16.89	0.45	3.9	9		17.34
S43DJ	S43DJEFF-08-958725	11/10/08	AUDIT	1.3	8	7.1	10.3	0.19	1.6	8		10.49
S43DJ	S43DJEFF-08-976715	12/12/08	AUDIT	7.63	33	7.3	10.48	0.28	2.6	33		10.76
S43DJ	S43DJEFF-09-995901	1/6/09	AUDIT	8.03	17	7.2	20.35	0.49	4.8	27		20.84
S43DJ	S43DJEFF-09-1000198	2/2/09	AUDIT	1.97	11	7.1	15.74	0.15	1.9	11		15.89
S43DJ	S43DJEFF-09-1014339	3/6/09	AUDIT	3.35	16	7	20.95	0.27	3.9	22		21.22
S43DJ	S43DJEFF-09-1028074	4/2/09	AUDIT	6.39	23	7.2	15.48	0.34	4	30		15.82
S43DJ	S43DJEFF-09-1054893	5/27/09	AUDIT	6.19	39	7.1	19.38	0.71	4.4	39		20.09
S43DJ	S43DJEFF-09-1069348	6/22/09	AUDIT	5.8	34	7	16.32	0.69	4.5	37		17.01
S43DJ	S43DJEFF-09-1084614	7/24/09	AUDIT	6.63	18	7.1	9.53	1.05	3.6	24		10.58
S43DJ	S43DJEFF-09-1100259	8/20/09	AUDIT	0.85	7	6.7	5.64	0.14	1.7	11		5.78
S43DJ	S43DJEFF-09-1115419	9/16/09	AUDIT	20.25	92	7.3	2.71	3.01	4.8	57		5.72
S43DJ	S43DJEFF-09-1130715	10/13/09	AUDIT	19.93	48	7.3	9.82	0.62	5.7	49		10.43
S43DJ	S43DJEFF-09-1146126	11/9/09	AUDIT	7.28	16	7.2	10.21	0.53	2.6	13		10.74
S43DJ	S43DJEFF-09-1162770	12/11/09	AUDIT	8.28	18	7.1	11.64	0.55	3.2	19		12.18
S43DJ	S43DJEFF-10-1188536	1/21/10	AUDIT	5.89	14	7	4.19	0.28	1.8	17		4.47
S43DJ	S43DJEFF-10-1189995	2/1/10	AUDIT	9.8	21	7.1	5.09	0.26	2.1	17		5.35
S43DJ	S43DJEFF-10-1206715	3/5/10	AUDIT	10.89	30	7.1	11.25	0.41	4	24		11.67
S43EE	S43EEEFF-06-574041	3/14/06	AUDIT	2.66	7	7.22	6.54	0.14	0.83	11		6.68
S43EE	S43EEEFF-06-597054	5/10/06	AUDIT	3.56	9	7.35	16.48	0.57	3.04	11		17.05
S43EE	S43EEEFF-06-619465	7/5/06	AUDIT	3.72	5	7.32	22.06	0.88	4.49	13		22.93
S43EE	S43EEEFF-06-639886	8/31/06	AUDIT	2.68	7	7.31	12.07	0.617	3.29	11		12.69
S43EE	S43EEEFF-06-657699	10/23/06	AUDIT	3.35	8	7.25	14.65	0.62	2.44	13		15.27
S43EE	S43EEEFF-06-673632	12/1/06	AUDIT	1.33	7	6.96	9.61	0.28	1.1	8		9.89
S43EE	S43EEEFF-07-690117	1/22/07	AUDIT	0.61	6	7.72	8.54	0.14	1	9		8.69
S43EE	S43EEEFF-07-711607	3/22/07	AUDIT	0.81	5	7.15	10.76	0.22	0.9	12		10.98
S43EE	S43EEEFF-07-732573	5/15/07	AUDIT	3.44	14	7.31	21.77	0.64	4.2	14		22.4

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43EE	S43EEEFF-07-758000	7/24/07	AUDIT	2.3	7	7.36	23.29	0.55	3.4	9		23.84
S43EE	S43EEEFF-07-771295	9/5/07	AUDIT	2.07	8	7.29	21.85	0.51	3.4	12		22.36
S43EE	S43EEEFF-07-792682	10/29/07	AUDIT	1.6	6	7.08	15.29	0.32	1.7	9		15.62
S43EE	S43EEEFF-08-825746	1/24/08	AUDIT	0.9	6	7.1	6.26	0.17	1	53		6.43
S43EE	S43EEEFF-08-835433	2/20/08	AUDIT	4.01	17	7.4	15.57	0.29	2.6	11		15.86
S43EE	S43EEEFF-08-843421	3/11/08	AUDIT	0.62	6	7.3	8.37	0.14	1.1	10		8.5
S43EE	S43EEEFF-08-858059	4/14/08	AUDIT	3.07	10	7.3	17.51	0.32	2.3	10		17.83
S43EE	S43EEEFF-08-872181	5/16/08	AUDIT	3.13	21	7.2	24.9	0.52	4.1	16		25.42
S43EE	S43EEEFF-08-885672	6/12/08	AUDIT	4.86	19	7.2	22.44	0.83	6	13		23.27
S43EE	S43EEEFF-08-899585	7/9/08	AUDIT	2.89	11	7.2	15.9	0.51	2.9	7		16.4
S43EE	S43EEEFF-08-914080	8/5/08	AUDIT	1.61	6	7.1	19.12	0.5	2.9	13		19.62
S43EE	S43EEEFF-08-927820	9/1/08	AUDIT	2.08	11	7.3	17.43	0.57	3.4	15		18.01
S43EE	S43EEEFF-08-939849	10/3/08	AUDIT	1.38	6	7.1	7.83	0.12	1	5		7.94
S43EE	S43EEEFF-08-954619	10/30/08	AUDIT	0.33	4	7	6.01	0.11	0.7	4		6.13
S43EE	S43EEEFF-08-976716	12/12/08	AUDIT	2.4	7	7.4	10.13	0.18	1.9	16		10.31
S43EE	S43EEEFF-09-998286	1/19/09	AUDIT	0.57	4	7.1	4.88	0.08	0.7	8		4.96
S43EE	S43EEEFF-09-998941	2/18/09	AUDIT	1.87	10	7.2	14.56	0.28	2.7	25		14.84
S43EE	S43EEEFF-09-1021106	3/19/09	AUDIT	2.01	12	7.3	20.1	0.35	3.1	24		20.45
S43EE	S43EEEFF-09-1034679	4/15/09	AUDIT	2.49	10	7.1	17.24	0.4	2.2	21		17.65
S43EE	S43EEEFF-09-1048647	5/15/09	AUDIT	2.43	15	7.3	20.8	0.39	2.5	11		21.19
S43EE	S43EEEFF-09-1062125	6/11/09	AUDIT	7.89	31	7.3	19.47	1.27	4	34		20.75
S43EE	S43EEEFF-09-1076880	7/8/09	AUDIT	6.29	25	7.3	18.84	0.87	3.4	19		19.71
S43EE	S43EEEFF-09-1092489	8/4/09	AUDIT	11.14	28	7.5	16.21	2.43	3.7	32		18.65
S43EE	S43EEEFF-09-1107407	9/1/09	AUDIT	0.7	5	7.2	8.32	0.35	1.1	8		8.67
S43EE	S43EEEFF-09-1123913	10/2/09	AUDIT	3.17	11	7.3	19.54	0.94	3.4	7		20.48
S43EE	S43EEEFF-09-1138828	10/29/09	AUDIT	1.2	9	7.3	14.58	0.34	1.8	10		14.92
S43EE	S43EEEFF-09-1162771	12/11/09	AUDIT	2.78	13	7.3	10.08	0.4	1.8	13		10.49
S43EE	S43EEEFF-10-1203707	2/17/10	AUDIT	1.87	8	7.1	9.05	0.16	1.5	10		9.21
S43EJ	S43EJEFF-06-556146	1/30/06	AUDIT	6.63	14	7.28	17.48	0.13	2.41	8		17.61
S43EJ	S43EJEFF-06-580155	3/29/06	AUDIT	1.84	28	7.33	13.23	0.21	1.37	8		13.44
S43EJ	S43EJEFF-06-602827	5/24/06	AUDIT	5.75	23	7.26	13.42	0.61	1.76	27		14.03
S43EJ	S43EJEFF-06-623922	7/20/06	AUDIT	7.03	30	7.23	16.67	0.956	3.57	34		17.63
S43EJ	S43EJEFF-06-643154	9/12/06	AUDIT	1.16	5	7.03	13.05	0.234	2.28	10		13.28
S43EJ	S43EJEFF-06-665199	11/7/06	AUDIT	1.56	8	7	22.39	0.26	2.67	16		22.65

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43EJ	S43EJEFF-07-692510	3/13/07	AUDIT	0.53	12	7.45	12.94	0.15	0.9	28		13.09
S43EJ	S43EJEFF-07-716640	4/2/07	AUDIT	1.99	14	6.93	14.27	0.19	1.7	24		14.46
S43EJ	S43EJEFF-07-737788	5/31/07	AUDIT	6.81	12	7.11	19.66	0.42	3.9	14		20.08
S43EJ	S43EJEFF-07-757835	7/24/07	AUDIT	3.81	13	7.17	21.06	0.32	2.2	8		21.38
S43EJ	S43EJEFF-07-777029	9/21/07	AUDIT	0.92	8	7.22	13.08	0.2	1.2	18		13.28
S43EJ	S43EJEFF-07-799182	11/14/07	AUDIT	5.12	17	7.4	10.19	0.18	1.6	20		10.37
S43EJ	S43EJEFF-08-823420	1/8/08	AUDIT	0.42	5	7.4	6.38	0.09	2.2	16		6.47
S43EJ	S43EJEFF-08-826907	2/4/08	AUDIT	0.72	7	7.4	10.47	0.1	1.3	9		10.57
S43EJ	S43EJEFF-08-841036	3/7/08	AUDIT	0.55	9	7.3	6.78	0.14	1.1	25		6.92
S43EJ	S43EJEFF-08-852980	4/3/08	AUDIT	0.55	8	7.2	14.08	0.15	1.5	13		14.24
S43EJ	S43EJEFF-08-864685	4/30/08	AUDIT	0.78	10	7.1	17.69	0.22	1.9	8		17.91
S43EJ	S43EJEFF-08-878493	5/28/08	AUDIT	6.15	16	6.9	25.6	0.48	4.4	14		26.08
S43EJ	S43EJEFF-08-891628	6/23/08	AUDIT	2.46	12	6.9	12.62	0.27	2	13		12.89
S43EJ	S43EJEFF-08-907173	7/25/08	AUDIT	3.48	10	7.1	20.39	0.55	3.7	11		20.94
S43EJ	S43EJEFF-08-934864	9/17/08	AUDIT	0.19	5	7.5	9.93	0.11	1	10		10.04
S43EJ	S43EJEFF-08-944006	10/14/08	AUDIT	0.37	8	7.3	14.17	0.14	1.2	12		14.31
S43EJ	S43EJEFF-08-958726	11/10/08	AUDIT	0.71	9	7.5	5.54	0.08	0.5	17		5.62
S43EJ	S43EJEFF-08-976717	12/12/08	AUDIT	3.29	12	7.4	10.21	0.21	1.3	16		10.42
S43EJ	S43EJEFF-09-995902	1/6/09	AUDIT	8.75	7	7.3	18.76	0.28	2.8	10		19.04
S43EJ	S43EJEFF-09-1000199	2/2/09	AUDIT	0.66	5	7.1	18.28	0.13	1.3	6		18.41
S43EJ	S43EJEFF-09-1014340	3/6/09	AUDIT	3.26	10	7	22.12	0.23	2.4	15		22.35
S43EJ	S43EJEFF-09-1028075	4/2/09	AUDIT	4.03	12	7.2	19.97	1.01	2.3	23		20.97
S43EJ	S43EJEFF-09-1054887	5/27/09	AUDIT	5.78	22	7	18.32	0.7	2.9	26		19.02
S43EJ	S43EJEFF-09-1069349	6/22/09	AUDIT	24.24	86	7.4	0.3	<0.003	2.9	55		0.29
S43EJ	S43EJEFF-09-1084615	7/24/09	AUDIT	5.61	10	7.1	15.26	0.68	3.1	12		15.94
S43EJ	S43EJEFF-09-1100264	8/20/09	AUDIT	0.79	6	7.3	4.12	0.11	0.9	12		4.23
S43EJ	S43EJEFF-09-1115420	9/16/09	AUDIT	2.99	8	7	18.14	0.63	2.4	30		18.77
S43EJ	S43EJEFF-09-1130716	10/13/09	AUDIT	4.07	15	6.6	13.12	0.35	2.2	26		13.47
S43EJ	S43EJEFF-09-1146127	11/9/09	AUDIT	2.04	8	7.3	10.37	0.22	0.8	15		10.58
S43EJ	S43EJEFF-09-1162772	12/11/09	AUDIT	3.5	10	7.2	15.45	0.37	1.6	12		15.82
S43EJ	S43EJEFF-10-1184538	1/5/10	AUDIT	7.94	26	7.3	6.68	0.21	1.3	20		6.89
S43EJ	S43EJEFF-10-1189997	2/1/10	AUDIT	8.86	35	7.4	1.79	0.11	1	20		1.9
S43EJ	S43EJEFF-10-1206717	3/5/10	AUDIT	10.78	10	7.3	8.4	0.2	1.8	10		8.6
S43FF	S43FFEFF-06-548123	1/10/06	AUDIT	2.99	11	6.81	14.54	0.18	2.6	22		14.72

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43FF	S43FFEFF-06-553868	1/24/06	AUDIT	2.74	3	6.95	12.49	0.19	2.26	9		12.68
S43FF	S43FFEFF-06-559085	2/8/06	AUDIT	3.31	6	6.83	11.96	0.22	2.05	7		12.18
S43FF	S43FFEFF-06-564850	2/21/06	AUDIT	3.92	4	6.67	14.44	0.26	2.74	8		14.7
S43FF	S43FFEFF-06-571479	3/9/06	AUDIT	3.75	8	6.96	9.7	0.17	1.62	9		9.87
S43FF	S43FFEFF-06-577541	3/23/06	AUDIT	4.22	7	6.92	13.31	0.42	2.66	10		13.73
S43FF	S43FFEFF-06-583513	4/6/06	AUDIT	2.46	8	6.95	11.52	0.26	2.33	8		11.78
S43FF	S43FFEFF-06-589316	4/19/06	AUDIT	2.77	2	6.44	15.75	0.38	2.83	5		16.13
S43FF	S43FFEFF-06-594305	5/2/06	AUDIT	9.6	12	7.11	10.15	0.52	3	14		10.67
S43FF	S43FFEFF-06-599709	5/16/06	AUDIT	4.54	9	6.89	9.85	0.62	2.72	6		10.47
S43FF	S43FFEFF-06-605393	5/30/06	AUDIT	<1.30	18	6.74	24.02	0.17	3.45	12		24.19
S43FF	S43FFEFF-06-610901	6/13/06	AUDIT	3.86	19	7	19.98	0.9	2.63	19		20.88
S43FF	S43FFEFF-06-616247	6/27/06	AUDIT	1.85	9	6.83	24.19	0.51	5.21	10		24.7
S43FF	S43FFEFF-06-622068	7/11/06	AUDIT	2.67	15	6.92	16.75	0.59	4.08	16		17.34
S43FF	S43FFEFF-06-625677	7/26/06	AUDIT	0.47	4	6.77	25.19	0.233	4.82	16		25.42
S43FF	S43FFEFF-06-629886	8/9/06	AUDIT	3	10	6.89	19.98	0.801	4.27	16		20.78
S43FF	S43FFEFF-06-637207	8/25/06	AUDIT	2.19	7	6.62	24.12	0.533	5.07	13		24.65
S43FF	S43FFEFF-06-640752	9/6/06	AUDIT	0.45	0.8	7.08	10.42	0.155	1.97	8		10.57
S43FF	S43FFEFF-06-646344	9/21/06	AUDIT	0.22	3	7.2	6.89	0.1	<0.15	6		6.99
S43FF	S43FFEFF-06-651899	10/4/06	AUDIT	0.75	6	7.19	7.16	0.16	1.89	9		7.33
S43FF	S43FFEFF-06-657272	10/19/06	AUDIT	1.45	5	6.88	16.24	0.32	3.24	11		16.56
S43FF	S43FFEFF-06-662709	11/1/06	AUDIT	0.61	6	7	15.33	0.22	2.29	1		15.55
S43FF	S43FFEFF-06-668725	11/15/06	AUDIT	0.53	4	7.14	8.25	0.14	1.3	6		8.39
S43FF	S43FFEFF-06-673202	11/28/06	AUDIT	0.65	10	7.38	9.47	0.14	1.4	16		9.61
S43FF	S43FFEFF-06-673689	12/1/06	AUDIT	0.34	4	7.29	6.29	0.07	1	8		6.36
S43FF	S43FFEFF-06-678752	12/14/06	AUDIT	<0.09	3	7.56	5.19	0.01	0.9	3		5.2
S43FF	S43FFEFF-07-687175	1/11/07	AUDIT	0.26	3	7.25	5.16	0.06	1	6		5.22
S43FF	S43FFEFF-07-690123	1/22/07	AUDIT	0.29	5	7.68	8.48	0.06	1.2	11		8.54
S43FF	S43FFEFF-07-695214	2/7/07	AUDIT	0.67	4	6.95	13.53	0.11	2.2	11		13.63
S43FF	S43FFEFF-07-700474	2/23/07	AUDIT	1.07	6	6.93	11.82	0.17	2.3	7		11.79
S43FF	S43FFEFF-07-708367	3/14/07	AUDIT	0.31	5	7.04	12.25	0.08	1.6	4		12.33
S43FF	S43FFEFF-07-714709	3/30/07	AUDIT	1.08	5	6.82	12.63	0.16	4.9	5		12.78
S43FF	S43FFEFF-07-719687	4/11/07	AUDIT	2.19	6	6.67	17.46	0.3	10.4	6		17.77
S43FF	S43FFEFF-07-725049	4/26/07	AUDIT	0.98	9	6.91	10.87	0.18	1	7		11.05
S43FF	S43FFEFF-07-729623	5/10/07	AUDIT	1.17	5	6.74	13.82	0.22	2.4	3		14.04

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43FF	S43FFEFF-07-734862	5/23/07	AUDIT	0.45	13	6.77	20.06	0.26	2.5	13		20.32
S43FF	S43FFEFF-07-740524	6/8/07	AUDIT	0.62	9	6.57	23.64	0.29	4.7	11		23.94
S43FF	S43FFEFF-07-745014	6/19/07	AUDIT	0.61	15	6.82	16.26	0.2	2.1	16		16.46
S43FF	S43FFEFF-07-750720	7/5/07	AUDIT	0.14	6	7.14	14.66	0.1	2	9		14.76
S43FF	S43FFEFF-07-755032	7/16/07	AUDIT	<0.094	5	7.05	11.47	0.09	0.4	11		11.56
S43FF	S43FFEFF-07-760069	8/1/07	AUDIT	0.3	8	6.94	18.17	0.31	3.4	8		18.48
S43FF	S43FFEFF-07-765361	8/17/07	AUDIT	0.46	6	7.02	12.65	0.22	2.1	14		12.87
S43FF	S43FFEFF-07-768250	8/28/07	AUDIT	0.52	6	6.73	20.74	0.32	3.2	11		21.06
S43FF	S43FFEFF-07-774306	9/13/07	AUDIT	0.71	5	6.9	17.84	0.3	3.5	3		18.13
S43FF	S43FFEFF-07-778745	9/24/07	AUDIT	1.04	9	7.08	8.27	0.16	1.4	10		8.43
S43FF	S43FFEFF-07-784498	10/10/07	AUDIT	0.59	8	6.9	10.53	0.2	1.1	11		10.73
S43FF	S43FFEFF-07-790370	10/26/07	AUDIT	1.08	13	6.78	20.86	0.36	3.4	16		21.22
S43FF	S43FFEFF-07-796004	11/6/07	AUDIT	1.08	7	6.7	19.12	0.28	2.7	11		19.41
S43FF	S43FFEFF-07-802357	11/22/07	AUDIT	0.89	10	7	10.5	0.25	1	17		10.75
S43FF	S43FFEFF-07-807477	12/3/07	AUDIT	0.3	5	7.3	9.22	0.09	0.8	12		9.32
S43FF	S43FFEFF-08-826087	1/28/08	AUDIT	<0.094	3	7	23.38	0.08	2.4	2		23.46
S43FF	S43FFEFF-08-826727	2/1/08	AUDIT	<0.094	4	7.5	8.35	0.02	0.8	8		8.37
S43FF	S43FFEFF-08-838015	2/28/08	AUDIT	0.55	6	7	12.87	0.21	2	8		13.08
S43FF	S43FFEFF-08-843431	3/11/08	AUDIT	0.1	3	7.3	5.4	0.06	2.1	6		5.46
S43FF	S43FFEFF-08-860934	4/22/08	AUDIT	2.11	6	6.8	17.55	0.29	3.3	11		17.84
S43FF	S43FFEFF-08-875107	5/19/08	AUDIT	1.35	7	6.5	25.77	0.3	9.7	4		26.07
S43FF	S43FFEFF-08-903299	7/17/08	AUDIT	1.03	12	6.8	8.33	0.2	1.6	7		8.53
S43FF	S43FFEFF-08-931670	9/9/08	AUDIT	2.72	14	6.7	21.73	1.27	3.7	12		23
S43FF	S43FFEFF-08-917532	9/17/08	AUDIT	1.53	13	6.9	13.36	0.31	2.1	14		13.67
S43FF	S43FFEFF-08-940051	10/6/08	AUDIT	3.08	26	7.1	12.24	0.24	1.8	49		12.49
S43FF	S43FFEFF-08-958501	11/7/08	AUDIT	0.35	5	7.2	15	0.16	2.4	14		15.16
S43FF	S43FFEFF-08-972474	12/4/08	AUDIT	0.18	11	7.4	3.93	0.04	0.6	9		3.96
S43FF	S43FFEFF-09-999308	1/26/09	AUDIT	0.23	5	7.1	7.11	0.06	1.1	6		7.16
S43FF	S43FFEFF-09-1010706	2/26/09	AUDIT	5.86	27	6.9	11.66	0.38	2.6	19		12.04
S43FF	S43FFEFF-09-1024364	3/25/09	AUDIT	5.69	15	7	8.55	0.3	2.1	15		8.84
S43FF	S43FFEFF-09-1038133	4/21/09	AUDIT	6.37	15	6.9	7.78	0.31	2.2	12		8.09
S43FF	S43FFEFF-09-1000004	5/18/09	AUDIT	4.32	14	6.9	5.54	0.23	1.4	9		5.77
S43FF	S43FFEFF-09-1066230	6/19/09	AUDIT	0.49	7	6.8	12.79	0.15	1.9	3		12.93
S43FF	S43FFEFF-09-1080745	7/16/09	AUDIT	1.81	6	6.7	17.28	0.47	3.3	6		17.75

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43FF	S43FFEFF-09-1096545	8/12/09	AUDIT	0.82	8	6.7	18.1	0.34	3.1	9		18.45
S43FF	S43FFEFF-09-1111306	9/8/09	AUDIT	1.08	19	7.1	5.99	0.26	1.3	21		6.25
S43FF	S43FFEFF-09-1126574	10/5/09	AUDIT	2.74	18	6.8	16.74	0.44	3.3	10		17.18
S43FF	S43FFEFF-09-1142966	11/6/09	AUDIT	1.69	12	7.1	4.06	0.17	0.7	8		4.24
S43FF	S43FFEFF-09-1158471	12/3/09	AUDIT	1.32	7	6.9	7.88	0.18	1.1	12		8.06
S43FF	S43FFEFF-10-1189641	1/29/10	AUDIT	10.9	6	7	2.2	0.03	<0.153	8		2.22
S43FF	S43FFEFF-10-1192886	2/9/10	AUDIT	2.82	11	7.1	8.58	0.2	1.3	13		8.78
S43GI	S43GIEFF-06-547646	1/4/06	AUDIT	11.21	10	6.47	24.48	0.33	5.51	21		24.81
S43GI	S43GIEFF-06-548125	1/10/06	AUDIT	13.24	10	6.82	21.87	0.47	5.75	17		22.33
S43GI	S43GIEFF-06-549560	1/19/06	AUDIT	8.65	6	6.81	19.31	0.44	4.68	20		19.75
S43GI	S43GIEFF-06-553872	1/24/06	AUDIT	9.45	13	6.78	26.06	0.48	5.36	8		26.54
S43GI	S43GIEFF-06-556147	1/30/06	AUDIT	12	16	6.47	23.74	0.29	6.11	25		24.03
S43GI	S43GIEFF-06-559088	2/8/06	AUDIT	11.71	14	6.92	17.9	0.38	4.99	21		18.28
S43GI	S43GIEFF-06-562260	2/17/06	AUDIT	9.08	10	6.82	15.53	0.36	3.77	16		15.89
S43GI	S43GIEFF-06-564854	2/21/06	AUDIT	12.11	10	6.59	24.43	0.3	5.74	13		24.73
S43GI	S43GIEFF-06-568091	3/1/06	AUDIT	13.1	16	6.89	20.99	0.37	5.36	11		21.36
S43GI	S43GIEFF-06-571480	3/9/06	AUDIT	7.28	8	6.56	16.33	0.33	3.89	15		16.66
S43GI	S43GIEFF-06-574046	3/14/06	AUDIT	6.82	7	6.89	16.01	0.34	3.65	22		16.35
S43GI	S43GIEFF-06-577542	3/23/06	AUDIT	11.02	10	6.81	22.09	0.45	6.04	20		22.54
S43GI	S43GIEFF-06-580157	3/29/06	AUDIT	7.49	6	6.93	19.28	0.38	3.71	12		19.66
S43GI	S43GIEFF-06-583516	4/6/06	AUDIT	12.86	16	7.07	14.23	0.4	4.82	39		14.63
S43GI	S43GIEFF-06-586703	4/14/06	AUDIT	8.79	11	6.89	20.32	0.37	4.53	27		20.69
S43GI	S43GIEFF-06-589322	4/19/06	AUDIT	10.98	7	6.81	20.93	0.37	5.41	16		21.3
S43GI	S43GIEFF-06-592045	4/27/06	AUDIT	12	17	6.56	21.46	0.46	6.41	21		21.92
S43GI	S43GIEFF-06-594309	5/2/06	AUDIT	9.2	15	6.85	19.64	0.25	4.56	25		19.89
S43GI	S43GIEFF-06-597059	5/10/06	AUDIT	11.18	12	6.53	19.87	0.29	8.14	20		20.16
S43GI	S43GIEFF-06-599714	5/16/06	AUDIT	11.82	18	6.68	14.49	0.62	2.17	24		15.1
S43GI	S43GIEFF-06-602830	5/24/06	AUDIT	9.67	12	6.82	23.84	0.65	5.51	12		24.49
S43GI	S43GIEFF-06-605397	5/30/06	AUDIT	11.62	16	7	18.83	1.48	5.85	33		20.31
S43GI	S43GIEFF-06-608204	6/7/06	AUDIT	9.86	9	6.46	29.85	0.36	8.44	35		30.21
S43GI	S43GIEFF-06-610904	6/13/06	AUDIT	9.57	15	6.87	29.14	0.43	5.15	28		29.57
S43GI	S43GIEFF-06-613957	6/22/06	AUDIT	8.32	16	6.99	18.25	0.32	4.02	21		18.57
S43GI	S43GIEFF-06-616249	6/27/06	AUDIT	7.78	11	6.44	29.66	0.33	7.54	18		29.99
S43GI	S43GIEFF-06-619471	7/5/06	AUDIT	9.01	1	6.21	28.14	0.28	7.97	20		28.42

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43GI	S43GIEFF-06-622071	7/11/06	AUDIT	8.21	12	6.83	21.79	0.31	5.98	17		22.1
S43GI	S43GIEFF-06-623924	7/20/06	AUDIT	12.81	18	6.77	16.48	0.3	6.58	21		16.78
S43GI	S43GIEFF-06-625680	7/26/06	AUDIT	8.56	10	6.38	30.19	0.236	7.89	27		30.43
S43GI	S43GIEFF-06-627299	8/1/06	AUDIT	7.55	16	6.88	18.55	0.25	3.41	28		19.8
S43GI	S43GIEFF-06-629888	8/9/06	AUDIT	9.48	10	6.91	22.32	0.345	5.86	25		22.66
S43GI	S43GIEFF-06-632745	8/17/06	AUDIT	10.03	12	6.61	24.25	0.294	6.82	15		24.54
S43GI	S43GIEFF-06-637208	8/25/06	AUDIT	8.31	10	6.66	24.43	0.311	6.44	21		24.74
S43GI	S43GIEFF-06-639893	8/31/06	AUDIT	4.72	4	6.37	28.62	0.186	5.72	44		28.81
S43GI	S43GIEFF-06-640756	9/6/06	AUDIT	5.61	2	6.51	26.23	0.738	5.89	20		26.97
S43GI	S43GIEFF-06-643160	9/12/06	AUDIT	11.57	7	6.73	16.23	0.269	5.49	16		16.5
S43GI	S43GIEFF-06-646346	9/21/06	AUDIT	5.83	8	6.47	12.6	0.26	3.44	10		12.86
S43GI	S43GIEFF-06-649082	9/28/06	AUDIT	5.61	10	6.94	22.12	0.32	4.49	19		22.44
S43GI	S43GIEFF-06-651903	10/4/06	AUDIT	6.03	15	6.9	14.41	0.33	4.49	13		14.74
S43GI	S43GIEFF-06-654364	10/10/06	AUDIT	7.42	13	6.61	25.11	0.4	6.25	40		25.51
S43GI	S43GIEFF-06-657276	10/19/06	AUDIT	7.53	13	6.44	23.09	0.33	6.05	31		23.42
S43GI	S43GIEFF-06-657709	10/23/06	AUDIT	9.82	13	6.52	19.05	0.37	5.23	22		19.42
S43GI	S43GIEFF-06-662712	11/1/06	AUDIT	5.82	12	6.71	25.14	0.44	5.39	11		25.58
S43GI	S43GIEFF-06-665207	11/7/06	AUDIT	7.74	13	6.54	27.47	0.44	6.58	22		27.92
S43GI	S43GIEFF-06-665789	11/10/06	AUDIT	6.25	12	6.51	27.52	0.33	6.1	20		27.85
S43GI	S43GIEFF-06-668727	11/15/06	AUDIT	6.17	12	6.82	17.27	0.38	4.1	19		17.65
S43GI	S43GIEFF-06-671113	11/23/06	AUDIT	1.68	6	6.47	21.29	0.17	3.4	17		21.46
S43GI	S43GIEFF-06-673205	11/28/06	AUDIT	2.83	8	6.44	22.56	0.16	3.7	14		22.72
S43GI	S43GIEFF-06-673690	12/1/06	AUDIT	3.87	14	6.66	19.62	0.14	3.9	22		19.76
S43GI	S43GIEFF-06-676056	12/6/06	AUDIT	3.86	10	6.88	18.51	0.29	3.1	18		18.8
S43GI	S43GIEFF-06-678754	12/14/06	AUDIT	2.67	8	7.2	11.9	0.37	2.6	9		12.27
S43GI	S43GIEFF-07-687176	1/11/07	AUDIT	3.94	11	7	13.52	0.49	2.8	31		14
S43GI	S43GIEFF-07-688654	1/19/07	AUDIT	2.81	11	6.96	11.75	0.47	2.6	16		12.21
S43GI	S43GIEFF-07-690124	1/22/07	AUDIT	3.74	11	7.56	16.71	0.5	3.4	22		17.21
S43GI	S43GIEFF-07-692336	1/30/07	AUDIT	6.01	21	6.63	22.44	0.56	6.1	30		23
S43GI	S43GIEFF-07-695215	2/7/07	AUDIT	8.6	18	6.44	17.64	0.39	4.8	30		18.03
S43GI	S43GIEFF-07-697840	2/15/07	AUDIT	7.72	19	6.92	21.11	0.54	5.2	32		21.65
S43GI	S43GIEFF-07-700475	2/23/07	AUDIT	7.37	12	6.73	16.72	0.55	5.2	15		22.27
S43GI	S43GIEFF-07-702374	2/26/07	AUDIT	9.05	12	6.79	23.51	0.56	6.1	17		24.07
S43GI	S43GIEFF-07-705336	3/6/07	AUDIT	5.62	13	6.91	12.94	0.45	3.6	30		13.39

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43GI	S43GIEFF-07-711611	3/22/07	AUDIT	4.41	11	6.64	16.04	0.41	3.3	30		16.45
S43GI	S43GIEFF-07-714851	3/30/07	AUDIT	8.59	12	6.68	21.27	0.43	6.2	8		21.7
S43GI	S43GIEFF-07-716953	4/2/07	AUDIT	9.77	18	6.5	23.72	0.7	7.2	41		24.41
S43GI	S43GIEFF-07-720012	4/11/07	AUDIT	13	14	6.69	26.94	0.62	7.8	15		27.56
S43GI	S43GIEFF-07-722697	4/18/07	AUDIT	13.81	16	6.52	28.09	0.5	7.8	20		28.6
S43GI	S43GIEFF-07-725195	4/26/07	AUDIT	8.4	11	6.34	22.2	0.29	4.4	11		22.49
S43GI	S43GIEFF-07-728138	5/4/07	AUDIT	14.74	11	6.56	28.23	0.39	10.6	18		28.62
S43GI	S43GIEFF-07-729872	5/10/07	AUDIT	9.93	18	6.77	18.33	0.34	5	19		18.67
S43GI	S43GIEFF-07-732577	5/15/07	AUDIT	10.69	23	6.46	22.71	0.43	7.6	24		23.15
S43GI	S43GIEFF-07-735030	5/23/07	AUDIT	7.91	13	6.64	27.41	0.37	6.3	21		27.78
S43GI	S43GIEFF-07-737824	5/31/07	AUDIT	10.17	14	6.69	29.51	0.36	7.8	23		29.87
S43GI	S43GIEFF-07-740678	6/8/07	AUDIT	10.6	13	6.47	25.66	0.42	8.8	34		26.08
S43GI	S43GIEFF-07-742300	6/11/07	AUDIT	10.85	14	6.48	26.96	0.4	8.4	20		27.36
S43GI	S43GIEFF-07-745180	6/19/07	AUDIT	6.44	14	6.55	23.2	0.31	5.7	42		23.51
S43GI	S43GIEFF-07-747970	6/27/07	AUDIT	9.22	13	6.86	21.85	0.37	8.5	16		22.22
S43GI	S43GIEFF-07-750866	7/5/07	AUDIT	5.13	8	6.68	21.47	0.29	5.1	12		21.75
S43GI	S43GIEFF-07-752844	7/9/07	AUDIT	3.9	7	6.42	22.03	0.24	3.5	25		22.27
S43GI	S43GIEFF-07-755268	7/16/07	AUDIT	3.5	9	6.74	20.5	0.3	3.4	24		20.8
S43GI	S43GIEFF-07-758005	7/24/07	AUDIT	7.18	10	6.5	27.22	0.34	7	26		27.56
S43GI	S43GIEFF-07-760222	8/1/07	AUDIT	12.4	24	6.87	15.96	0.41	5.5	35		16.37
S43GI	S43GIEFF-07-762909	8/9/07	AUDIT	5.31	13	6.69	24.09	0.33	4.5	18		24.42
S43GI	S43GIEFF-07-765516	8/17/07	AUDIT	3.83	7	6.74	20.14	0.31	4.7	8		20.45
S43GI	S43GIEFF-07-768461	8/28/07	AUDIT	8.1	15	6.61	28.61	0.4	7.5	25		29
S43GI	S43GIEFF-07-771468	9/5/07	AUDIT	10.65	18	6.68	28.35	0.35	7.9	42		28.7
S43GI	S43GIEFF-07-774463	9/13/07	AUDIT	11.37	12	6.46	29.2	0.33	8.5	15		29.53
S43GI	S43GIEFF-07-777180	9/21/07	AUDIT	8.67	13	6.85	22.37	0.36	4.9	12		22.73
S43GI	S43GIEFF-07-778934	9/24/07	AUDIT	11.71	23	6.89	17.15	0.38	6	37		17.53
S43GI	S43GIEFF-07-781674	10/2/07	AUDIT	10.55	16	6.7	26.12	0.38	7.1	28		26.5
S43GI	S43GIEFF-07-784665	10/10/07	AUDIT	5.55	11	6.31	18.9	0.31	4.1	21		19.2
S43GI	S43GIEFF-07-787587	10/18/07	AUDIT	10.55	15	6.65	28.18	0.38	7.4	21		28.56
S43GI	S43GIEFF-07-790497	10/26/07	AUDIT	11.25	13	6.89	28.11	0.45	7.2	22		28.57
S43GI	S43GIEFF-07-793286	11/1/07	AUDIT	9.24	12	6.77	27.71	0.41	6.6	25		28.12
S43GI	S43GIEFF-07-796169	11/6/07	AUDIT	11.71	13	6.9	25.78	0.42	6.4	19		26.2
S43GI	S43GIEFF-07-801690	11/14/07	AUDIT	20.87	39	7	9.95	0.36	7.8	45		10.31

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43GI	S43GIEFF-07-802505	11/22/07	AUDIT	8.14	14	7.1	10.89	0.46	2.8	22		11.35
S43GI	S43GIEFF-07-805360	11/30/07	AUDIT	9.44	17	6.8	14.24	0.4	4.2	29		14.64
S43GI	S43GIEFF-07-807734	12/3/07	AUDIT	2.63	9	6.7	16.68	0.26	2.6	18		16.95
S43GI	S43GIEFF-07-810845	12/11/07	AUDIT	3.97	11	6.4	18.83	0.33	3.4	13		19.16
S43GI	S43GIEFF-07-813985	12/19/07	AUDIT	11.26	18	6.6	27.37	0.45	7.4	22		27.82
S43GI	S43GIEFF-08-823702	1/16/08	AUDIT	5.31	12	6.7	9.73	0.45	2.4	17		10.18
S43GI	S43GIEFF-08-826096	1/28/08	AUDIT	7.89	19	6.9	20.25	0.56	5	31		20.81
S43GI	S43GIEFF-08-826728	2/1/08	AUDIT	2.67	11	6.9	13.25	0.27	2.1	20		13.53
S43GI	S43GIEFF-08-832628	2/12/08	AUDIT	11.49	22	6.6	22.84	0.56	6.8	24		23.4
S43GI	S43GIEFF-08-838016	2/28/08	AUDIT	9.06	20	6.6	20.01	0.49	5.4	33		20.5
S43GI	S43GIEFF-08-843192	3/10/08	AUDIT	5.69	15	6.9	9.46	0.4	2.8	22		9.87
S43GI	S43GIEFF-08-855881	4/11/08	AUDIT	8.02	11	6.5	21.62	0.41	5.4	14		22.04
S43GI	S43GIEFF-08-860935	4/22/08	AUDIT	10.75	14	6.6	27.21	0.44	7.8	17		27.65
S43GI	S43GIEFF-08-868410	5/8/08	AUDIT	14.36	28	6.8	20.62	0.65	7.3	30		21.27
S43GI	S43GIEFF-08-875108	5/19/08	AUDIT	10.43	12	6.5	24.4	0.44	8	17		24.84
S43GI	S43GIEFF-08-882729	6/4/08	AUDIT	8.82	18	6.6	24.33	0.48	8.5	47		24.82
S43GI	S43GIEFF-08-888837	6/20/08	AUDIT	6.88	11	6.6	24.87	0.42	8.1	19		25.29
S43GI	S43GIEFF-08-895602	7/1/08	AUDIT	10.3	14	6.9	24.81	0.5	9.6	14		25.31
S43GI	S43GIEFF-08-903300	7/17/08	AUDIT	4.96	15	6.7	11.48	0.35	3.6	16		11.82
S43GI	S43GIEFF-08-910110	7/28/08	AUDIT	7.83	10	6.3	30.6	0.33	8.9	32		30.98
S43GI	S43GIEFF-08-917533	8/13/08	AUDIT	2.41	6	6.2	12.51	0.2	2.4	10		12.71
S43GI	S43GIEFF-08-931671	9/9/08	AUDIT	7.98	14	6.9	22.11	0.6	5.5	19		22.71
S43GI	S43GIEFF-08-936707	9/25/08	AUDIT	12.79	16	6.7	23.76	0.41	7.1	49		24.17
S43GI	S43GIEFF-08-940052	10/6/08	AUDIT	7.56	16	6.7	18.02	0.43	4.1	23		18.46
S43GI	S43GIEFF-08-950839	10/22/08	AUDIT	5.43	13	6.8	12.16	0.39	2.7	19		12.55
S43GI	S43GIEFF-08-958502	11/7/08	AUDIT	7.56	14	6.9	21.57	0.52	4.9	30		22.09
S43GI	S43GIEFF-08-962526	11/18/08	AUDIT	2.14	7	7	14.08	0.42	2.4	15		14.5
S43GI	S43GIEFF-08-972475	12/4/08	AUDIT	0.51	15	7.1	17.02	0.06	2.6	62		17.08
S43GI	S43GIEFF-08-976960	12/15/08	AUDIT	0.15	5	7.3	14.35	0.06	2.6	19		14.41
S43GI	S43GIEFF-09-996196	1/14/09	AUDIT	1.19	10	7.2	11.84	0.05	5	20		11.89
S43GI	S43GIEFF-09-999356	1/26/09	AUDIT	0.52	5	7.4	4.28	0.02	2.9	11		4.3
S43GI	S43GIEFF-09-1000005	1/30/09	AUDIT	0.29	4	7.6	3.88	0.02	2	14		3.9
S43GI	S43GIEFF-09-1003048	2/10/09	AUDIT	0.33	3	7.4	4.03	0.02	1.1	9		4.05
S43GI	S43GIEFF-09-1010707	2/26/09	AUDIT	0.25	3	6.9	0.8	0.01	0.2	8		0.8

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43GI	S43GIEFF-09-1024365	3/25/09	AUDIT	0.96	5	7.1	5.67	0.04	0.3	7		5.7
S43GI	S43GIEFF-09-1031701	4/10/09	AUDIT	1.86	4	6.8	3.36	0.08	2.6	7		3.44
S43GI	S43GIEFF-09-1038134	4/21/09	AUDIT	1.19	3	6.8	2.91	0.05	0.4	7		2.96
S43GI	S43GIEFF-09-1044817	5/7/09	AUDIT	0.22	3	6.8	0.85	0.02	0.7	4		0.87
S43GI	S43GIEFF-09-1051104	5/18/09	AUDIT	0.19	3	6.8	2.35	<0.003	1	4		2.35
S43GI	S43GIEFF-09-1058640	6/3/09	AUDIT	0.2	3	6.9	2.17	<0.003	3.5	1		2.17
S43GI	S43GIEFF-09-1066231	6/19/09	AUDIT	<0.094	3	6.7	6.16	0.02	1.8	5		6.18
S43GI	S43GIEFF-09-1072921	6/30/09	AUDIT	<0.094	1	6.8	9.22	0.01	5.1	4		9.23
S43GI	S43GIEFF-09-1080746	7/16/09	AUDIT	<0.094	2	6.6	10.14	0.01	5.7	4		10.15
S43GI	S43GIEFF-09-1087955	7/27/09	AUDIT	<0.094	6	6.3	13.25	0.01	4.9	13		13.26
S43GI	S43GIEFF-09-1096546	8/12/09	AUDIT	<0.094	2	6.6	11.06	0.01	5.1	5		11.07
S43GI	S43GIEFF-09-1111307	9/8/09	AUDIT	<0.094	3	6.6	11.81	0.02	4.1	7		11.83
S43GI	S43GIEFF-09-1119352	9/24/09	AUDIT	0.14	1	6.6	11.82	0.02	4	3		11.84
S43GI	S43GIEFF-09-1126575	10/5/09	AUDIT	0.13	3	6.8	9.08	0.03	3.9	2		9.11
S43GI	S43GIEFF-09-1134755	10/21/09	AUDIT	0.15	2	6.9	11.65	<0.003	3.6	3		11.65
S43GI	S43GIEFF-09-1142967	11/6/09	AUDIT	<0.094	3	6.6	4.07	<0.003	0.7	3		4.06
S43GI	S43GIEFF-09-1150328	11/17/09	AUDIT	0.12	3	6.7	4.42	0.02	1.3	3		4.44
S43GI	S43GIEFF-09-1158472	12/3/09	AUDIT	0.37	4	6.5	10.83	0.05	2.1	6		10.88
S43GI	S43GIEFF-09-1165743	12/14/09	AUDIT	0.11	5	6.8	10.6	0.03	2.8	6		10.63
S43GI	S43GIEFF-10-1184937	1/13/10	AUDIT	<0.094	8	6.5	12.06	0.04	1.9	11		12.11
S43GI	S43GIEFF-10-1189644	1/29/10	AUDIT	0.2	6	6.6	9.59	0.16	2.1	8		9.75
S43GI	S43GIEFF-10-1192892	2/9/10	AUDIT	0.6	5	6.8	6.16	0.72	2.4	9		6.89
S43GI	S43GIEFF-10-1205483	2/25/10	AUDIT	<0.094	4	6.6	8.53	0.02	2.3	8		8.55
S43GI	S43GIEFF-10-1206992	3/8/10	AUDIT	<0.094	4	6.5	10.23	0.06	3.5	9		10.29
S17DG	S17DGEFF-06-547705	1/5/06	AUDIT	2.06	3	7.06	15.65	0.06	1.87	10		15.71
S17DG	S17DGEFF-06-548917	1/16/06	AUDIT	2.23	3	7.11	17.57	<0.03	2.02	9		17.57
S17DG	S17DGEFF-06-556440	2/1/06	AUDIT	2.17	5	7.03	21.44	<0.03	2.51	8		21.44
S17DG	S17DGEFF-06-562241	2/17/06	AUDIT	2.62	2	7.61	15.27	0.03	1.74	7		15.3
S17DG	S17DGEFF-06-567886	2/28/06	AUDIT	3.13	4	7.14	19.89	<0.03	2.55	8		19.89
S17DG	S17DGEFF-06-574442	3/16/06	AUDIT	1.5	1	7.39	10.22	<0.03	<0.83	7		10.22
S17DG	S17DGEFF-06-579548	3/27/06	AUDIT	<1.30	3	7.15	14.56	0.19	1.46	14		14.75
S17DG	S17DGEFF-06-586378	4/12/06	AUDIT	2.18	1	7.22	11.99	0.08	1.28	2		12.07
S17DG	S17DGEFF-06-592188	4/28/06	AUDIT	2.13	3	7.2	17.45	0.05	2.83	7		17.5
S17DG	S17DGEFF-06-596860	5/9/06	AUDIT	3.36	1	7.35	12.48	0.06	2.67	2		12.64

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S17DG	S17DGEFF-06-602994	5/25/06	AUDIT	1.42	7	7.22	18.35	0.2	2.2	3		18.55
S17DG	S17DGEFF-06-607791	6/5/06	AUDIT	4.69	5	7.51	0.21	<0.03	3.58	20		<0.83
S17DG	S17DGEFF-06-613775	6/21/06	AUDIT	1.44	2	7.53	4.51	<0.03	1	3		4.51
S17DG	S17DGEFF-06-619802	7/7/06	AUDIT	2.25	2	7.63	2.13	0.15	4.09	5		2.28
S17DG	S17DGEFF-06-623577	7/18/06	AUDIT	1.7	1.2	7.3	26.23	0.293	4.54	20		26.52
S17DG	S17DGEFF-06-627636	8/3/06	AUDIT	0.12	2	7.36	17.23	0.038	3.66	14		17.61
S17DG	S17DGEFF-06-630429	8/14/06	AUDIT	0.71	1.6	7.44	13.3	0.011	3.96	8		13.31
S17DG	S17DGEFF-06-637821	8/30/06	AUDIT	<0.09	2	7.33	13.23	0.014	3.66	13		13.24
S17DG	S17DGEFF-06-643694	9/15/06	AUDIT	1.7	2	7.3	14.02	0.01	3.45	14		14.03
S17DG	S17DGEFF-06-648754	9/26/06	AUDIT	<0.09	3	7.28	14.18	<0.0003	1.64	9		14.18
S17DG	S17DGEFF-06-654717	10/12/06	AUDIT	<0.09	1	7.37	11.75	0.02	1.43	14		11.77
S17DG	S17DGEFF-06-657664	10/23/06	AUDIT	0.14	4	7.3	9.54	<0.0003	0.65	8		9.54
S17DG	S17DGEFF-06-659858	10/25/06	AUDIT	0.55	1	7.38	10.06	0.03	0.8	2		10.09
S17DG	S17DGEFF-06-665407	11/8/06	AUDIT	3.96	20	7.34	11.64	1.2	1.96	13		12.83
S17DG	S17DGEFF-06-671266	11/24/06	AUDIT	<0.09	1	7.36	8.86	<0.00	0.7	6		8.85
S17DG	S17DGEFF-06-675855	12/5/06	AUDIT	0.36	2	7.33	7.8	0.01	0.6	8		7.81
S17DG	S17DGEFF-07-690804	1/26/07	AUDIT	0.8	1	7.33	9.48	0.09	0.8	4		9.56
S17DG	S17DGEFF-07-711420	3/21/07	AUDIT	<0.09	1	6.87	13.04	0.09	1.3	4		13.13
S17DG	S17DGEFF-07-732380	5/14/07	AUDIT	0.2	15	7.4	6.78	0.09	5.4	15		6.86
S17DG	S17DGEFF-07-757796	7/23/07	AUDIT	<0.094	1	7.3	17.85	0.05	1.6	1		17.9
S17DG	S17DGEFF-07-777008	9/20/07	AUDIT	<0.094	1	7.09	18.44	0.01	1.7	1		18.45
S17DG	S17DGEFF-07-799162	11/13/07	AUDIT	1.03	2	7.3	6.19	0.07	3.2	11		6.26
S17DG	S17DGEFF-08-823512	1/10/08	AUDIT	0.23	2	7.2	9.16	<0.003	0.9	4		9.15
S17DG	S17DGEFF-08-830145	2/6/08	AUDIT	<0.094	3	7.3	9.26	<0.003	0.8	3		9.27
S17DG	S17DGEFF-08-840566	3/4/08	AUDIT	6.33	22	7.3	8.71	0.07	2.3	22		8.78
S17DG	S17DGEFF-08-852306	3/31/08	AUDIT	<0.094	1	7.2	13.37	0.03	2	2		13.4
S17DG	S17DGEFF-08-865017	5/2/08	AUDIT	0.24	1	7.1	15.83	0.2	3.1	2		16.02
S17DG	S17DGEFF-08-878640	5/29/08	AUDIT	0.12	1	6.8	33.1	0.02	4.8	1		33.16
S17DG	S17DGEFF-08-892069	6/25/08	AUDIT	1.52	6	6.7	28.86	0.5	4.8	66		29.36
S17DG	S17DGEFF-08-906686	7/22/08	AUDIT	0.1	1	7	28.96	0.04	4.3	3		29
S17DG	S17DGEFF-08-935216	9/19/08	AUDIT	<0.094	1	7.2	15.52	<0.003	1.8	4		15.5
S17DG	S17DGEFF-08-947415	10/16/08	AUDIT	<0.094	1	7.4	15.62	0.04	1.8	2		15.66
S17DG	S17DGEFF-08-961721	11/12/08	AUDIT	<0.094	1	7.2	11.49	<0.003	1.2	6		11.5
S17DG	S17DGEFF-08-973141	12/9/08	AUDIT	<0.094	1	7.2	14.96	<0.003	1.7	1		14.94

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S17DG	S17DGEFF-09-996002	1/8/09	AUDIT	<0.094	8	7.1	19.87	<0.003	3	8		19.87
S17DG	S17DGEFF-09-1000782	2/4/09	AUDIT	<0.094	3	7.2	14.16	<0.003	1.1	4		14.16
S17DG	S17DGEFF-09-1013824	3/3/09	AUDIT	<0.094	7	6.9	23.92	0.01	3.1	19		23.93
S17DG	S17DGEFF-09-1027401	3/30/09	AUDIT	0.76	2	7.1	20.09	0.25	2.8	5		20.34
S17DG	S17DGEFF-09-1055055	5/28/09	AUDIT	<0.094	1	7.2	21.38	0.01	3.2	2		21.38
S17DG	S17DGEFF-09-1069740	6/24/09	AUDIT	<0.094	3	7.1	22.11	0.01	3.1	8		22.12
S17DG	S17DGEFF-09-1084075	7/21/09	AUDIT	0.64	1	7.5	9.77	0.27	4.1	5		10.04
S17DG	S17DGEFF-09-1099851	8/17/09	AUDIT	<0.094	1	7.2	23.13	<0.003	3.7	1		23.12
S17DG	S17DGEFF-09-1115752	9/18/09	AUDIT	<0.094	1	7.2	22.99	<0.003	2.6	3		22.98
S17DG	S17DGEFF-09-1131073	10/15/09	AUDIT	<0.094	2	6.6	31.8	0.06	4.3	3		31.85
S17DG	S17DGEFF-09-1146543	11/11/09	AUDIT	<0.094	1	7.3	11.71	0.03	1.1	4		11.74
S17DG	S17DGEFF-09-1154416	11/27/09	AUDIT	<0.094	2	7.3	10.63	<0.003	0.8	8		10.62
S17DG	S17DGEFF-10-1190413	2/3/10	AUDIT	<0.094	8	7.2	9.86	0.02	0.8	14		9.88
S17DG	S17DGEFF-10-1206275	3/2/10	AUDIT	<0.094	8	7.2	16.82	0.01	1.7	11		16.83
S45HA	S45HAEFF-06-554039	1/25/06	AUDIT	1.44	6	6.87	10.88	<0.03	1.27	9		10.88
S45HA	S45HAEFF-06-577157	3/21/06	AUDIT	1.58	10	7.19	10.25	0.11	0.99	15		10.36
S45HA	S45HAEFF-06-600081	5/18/06	AUDIT	2.77	4	7.22	6.22	0.45	1.28	20		6.67
S45HA	S45HAEFF-06-623284	7/17/06	AUDIT	1.01	6	6.99	18.83	0.373	4.81	13		19.2
S45HA	S45HAEFF-06-640563	9/5/06	AUDIT	1.32	9	6.83	6.1	0.141	2.07	23		6.24
S45HA	S45HAEFF-06-662867	11/2/06	AUDIT	0.68	15	7.1	7.96	0.07	1.44	17		8.03
S45HA	S45HAEFF-07-692821	2/22/07	AUDIT	0.78	13	7.1	10.11	0.16	2.2	36		10.27
S45HA	S45HAEFF-07-714356	3/27/07	AUDIT	5.46	12	7.02	5.89	0.11	1	20		6
S45HA	S45HAEFF-07-735297	5/25/07	AUDIT	0.47	2	7.01	15.25	0.12	4.6	14		15.38
S45HA	S45HAEFF-07-755523	7/18/07	AUDIT	2.63	13	6.94	13.51	0.36	1.2	16		13.88
S45HA	S45HAEFF-07-773787	9/10/07	AUDIT	3.24	30	6.93	14.85	0.52	3.8	58		15.37
S45HA	S45HAEFF-07-796389	11/8/07	AUDIT	3.08	12	7	26.25	0.56	4.1	13		26.8
S45HA	S45HAEFF-08-823641	1/15/08	AUDIT	8.63	26	7.1	8.97	0.32	1.4	31		9.29
S45HA	S45HAEFF-08-832402	2/11/08	AUDIT	8.53	21	7.1	10.28	0.44	2.4	25		10.72
S45HA	S45HAEFF-08-843916	3/14/08	AUDIT	6.77	12	7.1	7.8	0.52	2	23		8.32
S45HA	S45HAEFF-08-855720	4/10/08	AUDIT	14.65	17	7.2	7.15	0.29	2.7	44		7.44
S45HA	S45HAEFF-08-868221	5/7/08	AUDIT	14.83	17	7.3	11.23	0.52	3.7	16		11.75
S45HA	S45HAEFF-08-882551	6/3/08	AUDIT	5.67	40	6.9	9.39	0.48	2.8	31		9.87
S45HA	S45HAEFF-08-892051	6/25/08	AUDIT	6.73	10	7.2	12.19	0.42	3.5	11		12.61
S45HA	S45HAEFF-08-910733	8/1/08	AUDIT	0.85	10	6.8	15.11	0.24	3.5	14		15.35

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S45HA	S45HAEFF-08-925273	8/28/08	AUDIT	0.19	5	7.2	13.84	0.12	2.9	3		13.96
S45HA	S45HAEFF-08-936655	9/24/08	AUDIT	1.18	8	7.2	16.58	0.3	3.3	12		16.88
S45HA	S45HAEFF-08-947996	10/21/08	AUDIT	2.97	7	7.2	10.43	0.3	1.3	9		10.73
S45HA	S45HAEFF-08-972285	12/3/08	AUDIT	3.99	6	6.9	11.99	0.41	2.2	5		12.41
S45HA	S45HAEFF-09-996133	1/13/09	AUDIT	1.53	6	7	10.2	0.2	2.1	8		10.4
S45HA	S45HAEFF-09-1002810	2/9/09	AUDIT	8.34	51	7	6.17	0.16	2.7	21		6.33
S45HA	S45HAEFF-09-1017590	3/13/09	AUDIT	<0.094	4	7.2	11.94	0.04	2.1	6		11.98
S45HA	S45HAEFF-09-1031516	4/9/09	AUDIT	7.9	17	7.3	4.45	0.47	1.6	6		4.92
S45HA	S45HAEFF-09-1044617	5/6/09	AUDIT	6.38	43	6.9	9.32	0.37	1.6	14		9.69
S45HA	S45HAEFF-09-1058462	6/2/09	AUDIT	1.83	11	6.9	13.78	0.4	2.8	12		14.18
S45HA	S45HAEFF-09-1088623	7/31/09	AUDIT	1.13	19	7.1	10.31	0.51	2	18		10.82
S45HA	S45HAEFF-09-1104157	8/27/09	AUDIT	0.29	5	7.2	9.17	0.12	1.6	6		9.29
S45HA	S45HAEFF-09-1119181	9/23/09	AUDIT	1.39	11	7.1	16.7	0.41	3.3	18		17.11
S45HA	S45HAEFF-09-1134569	10/20/09	AUDIT	1.05	23	7	16.13	0.27	4.5	28		16.41
S45HA	S45HAEFF-09-1150077	11/16/09	AUDIT	4.25	18	7	4.97	0.38	1.4	15		5.36
S45HA	S45HAEFF-09-1158256	12/2/09	AUDIT	2.58	6	7.1	9.98	0.4	1.5	9		10.38
S45HA	S45HAEFF-10-1192685	2/8/10	AUDIT	4.31	5	7.2	9.46	0.31	1.3	2		9.76
S45HA	S45HAEFF-10-1184873	2/24/10	AUDIT	4.67	7	6.9	10.11	0.36	1.8	11		10.47
S45HA	S45HAEFF-10-1209397	3/12/10	AUDIT	1.54		7	11.76	0.25	2	6		12
S43IJ	S43IJEFF-06-547635	1/4/06	AUDIT	5.5	9	6.82	5.64	0.13	1.31	19		5.77
S43IJ	S43IJEFF-06-568036	3/1/06	AUDIT	9.57	22	6.72	6.23	0.19	1.96	27		6.42
S43IJ	S43IJEFF-06-592004	4/27/06	AUDIT	9.57	26	6.77	6.57	0.27	1.57	31		6.84
S43IJ	S43IJEFF-06-613927	6/22/06	AUDIT	5.12	26	6.82	11.62	0.21	2.14	47		11.83
S43IJ	S43IJEFF-06-632699	8/17/06	AUDIT	5.62	19	6.35	17.84	0.365	4.07	34		18.2
S43IJ	S43IJEFF-06-654309	10/10/06	AUDIT	4.07	17	6.63	14.69	0.31	3.11	53		14.99
S43IJ	S43IJEFF-07-705161	3/6/07	AUDIT	4.09	7	6.47	5.6	0.18	1	27		5.78
S43IJ	S43IJEFF-07-692492	3/13/07	AUDIT	2.07	6	6.31	8.65	0.12	1	9		8.77
S43IJ	S43IJEFF-07-728008	5/4/07	AUDIT	9.74	18	6.55	13.02	0.28	3.4	38		13.3
S43IJ	S43IJEFF-07-747824	6/27/07	AUDIT	8.29	29	6.45	11.54	0.19	2.3	53		11.72
S43IJ	S43IJEFF-07-765603	8/20/07	AUDIT	1.12	8	6.25	6.18	0.12	4.6	27		6.3
S43IJ	S43IJEFF-07-787433	10/18/07	AUDIT	4.36	17	6.41	14.35	0.15	2.3	30		14.49
S43IJ	S43IJEFF-08-825753	1/24/08	AUDIT	2.15	9	6.5	5.21	0.17	0.9	14		5.38
S43IJ	S43IJEFF-08-835440	2/20/08	AUDIT	9.72	22	6.5	5.15	0.14	1.9	21		5.29
S43IJ	S43IJEFF-08-843424	3/11/08	AUDIT	6.57	13	6.5	1.98	0.13	1.3	16		2.11

Site Code	Sample	Date	Reason	NH4 mg/l	BOD (ATU) mg/l O2	pH	NH3 mg/l	NH2 mg/l	P (SRP) mg/l	SS mg/l	Total N mg/l	Total Oxidised N mg/l as N
S43IJ	S43IJEFF-08-872704	4/30/08	AUDIT	7.69	46	6.5	6.46	0.23	2	83		6.69
S43IJ	S43IJEFF-08-872192	5/16/08	AUDIT	4.67	26	6.5	15.43	0.23	3	45		15.66
S43IJ	S43IJEFF-08-885683	6/12/08	AUDIT	4.8	27	6.4	17.21	0.23	3.5	56		17.44
S43IJ	S43IJEFF-08-899622	7/9/08	AUDIT	2.97	19	6.4	22.4	0.23	3.4	41		22.63
S43IJ	S43IJEFF-08-914099	8/5/08	AUDIT	2.48	15	6.3	15.35	0.18	2.5	23		15.52
S43IJ	S43IJEFF-08-927835	9/1/08	AUDIT	1.83	13	6.4	9.88	0.16	1.9	15		10.04
S43IJ	S43IJEFF-08-960539	10/22/08	AUDIT	2.02	5	7.6	6.41	0.22	1.6	5		6.64
S43IJ	S43IJEFF-08-954635	10/30/08	AUDIT	0.45	6	7.3	2.73	0.02	0.7	5		2.75
S43IJ	S43IJEFF-08-976743	12/12/08	AUDIT	0.75	7	7.1	6.43	0.07	0.9	16		6.5
S43IJ	S43IJEFF-09-998291	1/19/09	AUDIT	1.19	5	7	3.74	0.07	0.6	9		3.81
S43IJ	S43IJEFF-09-998942	2/18/09	AUDIT	1.13	6	6.7	7.68	0.05	1.6	6		7.73
S43IJ	S43IJEFF-09-1021104	3/19/09	AUDIT	0.72	6	6.7	7.52	0.08	2	5		7.6
S43IJ	S43IJEFF-09-1034683	4/15/09	AUDIT	0.87	3	6.9	10.89	0.16	1.6	8		11.05
S43IJ	S43IJEFF-09-1048648	5/15/09	AUDIT	1.78	10	7	15.04	0.44	2.2	11		15.47
S43IJ	S43IJEFF-09-1062126	6/11/09	AUDIT	2.25	6	6.9	18.08	0.45	3.7	10		18.53
S43IJ	S43IJEFF-09-1076881	7/8/09	AUDIT	0.33	8	7.1	14.44	0.25	3.4	10		14.69
S43IJ	S43IJEFF-09-1092490	8/4/09	AUDIT	0.33	7	7	18.74	0.15	4.1	13		18.89
S43IJ	S43IJEFF-09-1107421	9/1/09	AUDIT	<0.094	5	7.4	7.69	0.14	1.1	8		7.83
S43IJ	S43IJEFF-09-1123914	10/2/09	AUDIT	0.55	5	7	17.23	0.22	3.5	7		17.45
S43IJ	S43IJEFF-09-1138829	10/29/09	AUDIT	0.18	4	7.2	13.32	0.1	2.2	6		13.42
S43IJ	S43IJEFF-09-1162773	12/11/09	AUDIT	0.6	7	7.2	9.2	0.09	1.2	13		9.29
S43IJ	S43IJEFF-10-1188003	1/18/10	AUDIT	0.26	5	7.1	7.33	0.03	1	9		7.36
S43IJ	S43IJEFF-10-1203709	2/17/10	AUDIT	<0.094	5	6.8	11.5	<0.003	1.6	9		11.5

NH_4 Ammonium, NO_3 Nitrate, NO_2 Nitrite, NOx Nitrogen oxides, P Phosphorus, BOD Biochemical Oxygen Demand, SS Suspended Solids

Appendix 2

Pollution Incident Report 2004-2009

Date:	Incident No:	Incident Title:	Location	Easting	Northing	Source	Category	Cause	Severity	IstFishkill
07/01/04	1/04/202	OIL IN CONSENTED DISCHARGE FROM NICHOLL FUEL OILS LTD, GREYSTEEL	Faughan-Roe Lough Foyle South	256800	421100	Industry	Oil	Equipment Failure	Low	None
20/02/04	1/04/224	SEWAGE EFFLUENT OVERFLOWING FROM THE COMMUNAL NIHE SEPTIC TANK FACILITY AT EDENREAGH ROAD.	Faughan-Roe Lough Foyle South	251700	416700	Domestic	Sewage	Inadequate Equipment	Low	None
05/02/04	1/04/214	BROCKAGH PS OVERFLOWING TO THE ADJACENT STREAM, BROCKAGH, EGLINTON.	Faughan-Roe Lough Foyle South	252200	416600	Water Service	Sewage	Inadequate Equipment	Low	None
08/03/04	1/04/233	DUMPING OF LIQUID WASTE AT CARROWCLARE, LIMAVADY	Faughan-Roe Lough Foyle South	263800	425400	Industry	Non Agri. Water Dis	Deliberate Dumping	Low	None
09/03/04	1/04/235	SEWAGE FUNGUS IN THE CARNAMUFF BURN, BALLYKELLY.	Faughan-Roe Lough Foyle South	260000	420700	Farm	Agriculture	Poor Working Practice	Low	None
12/03/04	1/04/237	OIL IN THE CAMPSIE BURN, CAMPSIE, DERRY.	Faughan-Roe Lough Foyle South	251000	221700	Industry	Oil (Diesel-Red)	Unknown	Medium	None
15/03/04	1/04/239	OIL IN STORM DRAIN AT CAMPSIE INDUSTRIAL ESTATE	Faughan-Roe Lough Foyle South	251500	421200	Industry	Domestic Heating Oil	Poor Working Practice	Low	None
26/03/04	1/04/246	VEHICLE WASHING AT MCHUGHS Transport CARMONEY, EGLINTON	Faughan-Roe Lough Foyle South	249500	419500	Transport	Chemical	Poor Working Practice	Low	None
05/07/06	1/06/283	SAND WASHINGS IN THE MUFF RIVER AT MUFF GLEN	Faughan-Roe Lough Foyle South	252400	418600	Other	Other	Poor Working Practice	Low	None
11/08/06	1/06/310	SEWAGE FUNGUS IN SHESKIN RIVER AT SHESKIN ROAD	Faughan-Roe Lough Foyle South	256000	418200	Farm	Agriculture	Poor Working Practice	Low	None
02/06/04	1/04/289	SEWAGE ENTERING MUFF RIVER AT RIVERVIEW GLEN, EGLINTON	Faughan-Roe Lough Foyle South	252400	419600	Domestic	Sewage	Accident/ Emergency	Low	None
23/06/04	1/04/297	SURFACE RUN-OFF FROM GAS PIPELINE ENTERING WATERCOURSE	Faughan-Roe Lough Foyle South	262700	420000	Industry	Other	Poor Working Practice	Low	None
19/04/07	1/07/14	LOW BIOTIC SCORE UMBRA STREAM UMBRA BRIDGE	Faughan-Roe Lough Foyle South	272500	435500	Water Service	Sewage	Equipment Failure	Low	None
02/07/04	1/04/304	SEWAGE FUNGUS GROWTHS IN THE DUNCRUN BURN.	Faughan-Roe Lough Foyle South	268600	432200	Farm	Agriculture	Neglilgence	Low	None
14/11/08	1/08/360	SEPTIC TANK OVERFLOWING AT 80 BARANAILT ROAD LIMAVADY	Faughan-Roe Lough Foyle South	265100	420700	Domestic	Sewage	Unknown	Low	None
22/12/08	1/08/376	EFFLUENT LEAKING INTO DRAIN FROM SILAGE BALES	Faughan-Roe Lough Foyle South	254600	419400	Farm	Agriculture	Neglilgence	Low	None
01/09/09	1/09/352	SILT IN THE MUFF RIVER BELOW EGLINTON VILLAGE.	Faughan-Roe Lough Foyle South	253900	421200	Industry	Other	Weather	Low	None
04/08/04	1/04/13	OIL IN CASTLE RIVER, EGLINTON	Faughan-Roe Lough Foyle South	252900	420200	Domestic	Domestic Heating Oil	Accident/ Emergency	Low	None
17/09/09	1/09/379	SEPTIC TANK EFFLUENT DISCHARGING TO DRY DITCH AT 90 DONNYBREWER ROAD, CAMPSIE.	Faughan-Roe Lough Foyle South	250600	421700	Domestic	Sewage	Poor Working Practice	Low	None
01/09/09	1/09/354	SILTY COLOUR IN STREAM AT CAMPSIE REAL ESTATE	Faughan-Roe Lough Foyle South	251800	421100	Other	Other	Poor Working Practice	Low	None
20/07/04	1/04/311	BREACH OF CONSENT AT CAMPSIE FUELS LTD, DONNYBREWER RD, CAMPSIE	Faughan-Roe Lough Foyle South	249700	421500	Industry	Breach of Consent	Breach of Consent	Low	None
20/08/04	1/04/333	SILT IN THE TULLYBRISLAND BURN, GREYSTEEL.	Faughan-Roe Lough Foyle South	255800	421400	Industry	Non Agri. Water Dis	Weather	Low	None
24/08/04	1/04/15	MANDATORY FAILURE @ DOWNHILL BEACH	Faughan-Roe Lough Foyle South	275500	436200	Other	Other	Unknown	Low	None
01/04/04	1/04/1011	LIMAVADY LAUNDRY SERVICE	Faughan-Roe Lough Foyle South	266500	425000	Industry	Chemical	Inadequate	Medium	None

Date:	Incident No:	Incident Title:	Location	Easting	Northing	Source	Category	Cause	Severity	IstFishkill
								Equipment		
26/07/04	1/04/343	HISTORIC OIL SPILAGES AT MAGILLIGAN PRISON, CO LONDONDERRY	Faughan-Roe Lough Foyle South	267000	437300	Other	Domestic Heating Oil	Neglilgence	Medium	None
08/11/04	1/04/376	BLACK DISCHARGE FROM EGLINTON FLYING CLUB TO ADJ INDUSTRIAL PREMISES	Faughan-Roe Lough Foyle South	253100	421500	Industry	Sewage	Unknown	Low	None
15/11/04	1/04/382	SEPTIC TANK EFFLUENT PONDED IN FIELD AT 38 VALE ROAD, GREYSTEEL.	Faughan-Roe Lough Foyle South	256800	419600	Domestic	Sewage	Poor Working Practice	Low	None
08/12/04	1/04/398	SEWAGE FUNGUS IN UNNAMED WATERCOURSE AT CAMPSIE REAL ESTATE	Faughan-Roe Lough Foyle South	251300	421500	Water Service	Sewage	Unknown	Low	None
01/12/04	1/04/391	DISCHARGE FROM GREYSTEEL STW TO AN UNNAMED WATERCOURSE	Faughan-Roe Lough Foyle South	257300	421200	Water Service	Sewage	Accident/ Emergency	Low	None
14/12/04	1/04/395	SILT IN BALYKELLY RIVER	Faughan-Roe Lough Foyle South	262600	422200	Other	Other	Poor Working Practice	Low	None
14/01/05	1/05/202	SEWAGE FUNGUS IN UNNAMED WATERCOURSE AT CARNAMUFF ROAD BALLYKELLY	Faughan-Roe Lough Foyle South	260000	420700	Farm	Agriculture	Weather	Low	None
01/02/05	1/05/209	OVERFLOW FROM THE PUMP STATION AT FAUGHANVALE DISCHARGING TO THE ADJACENT RIVER.	Faughan-Roe Lough Foyle South	257900	421500	Water Service	Sewage	Accident/ Emergency	Low	None
09/02/05	1/05/216	OVERFLOW FROM FAUGHANVALE PS DISCHARGING TO THE ADJACENT RIVER, GREYSTEEL, LIMAVADY.	Faughan-Roe Lough Foyle South	257900	421400	Water Service	Sewage	Unknown	Low	None
16/02/05	1/05/218	SUSPECTED RUNOFF FROM FIELDS AT LOUGHERMORE ROAD, BALLYKELLY, DISCHARGING TO THE BALLYKELLY RIVER.	Faughan-Roe Lough Foyle South	262700	422000	Farm	Agriculture	Poor Working Practice	Low	None
30/03/05	1/05/245	DIESEL SPILL IN MUFF RIVER, EGLINTON	Faughan-Roe Lough Foyle South	252500	419600	Industry	Oil (Diesel-Red)	Neglilgence	Low	None
08/04/05	1/05/12	SEWAGE RELATED DEBRIS IN BALLYKELLY RIVER, BALYKELLY	Faughan-Roe Lough Foyle South	262600	422400	Water Service	Sewage	Unknown	Low	None
06/04/05	1/05/552	TRIBUTARY OF BALLYKELLY RIVER FOAMING AND DISCOLOURED	Faughan-Roe Lough Foyle South	264600	417600	Other	Other	Weather	Low	None
10/05/05	1/05/273	DEAD SHEEP IN WATERCOURSE ADJACENT TO STATION ROAD EGLINTON	Faughan-Roe Lough Foyle South	251400	423200	Farm	Agriculture	Deliberate Dumping	Low	None
06/05/05	1/05/270	POOR INVERTEBRATE COMMUNITY IN THE BALLYKELLY RIVER EAST	Faughan-Roe Lough Foyle South	262900	420900	Other	Other	Unknown	Low	None
12/05/05	1/05/274	ASBESTOS DUMPED AT THE BALLYKELLY RIVER, STATION ROAD, BALLYKELLY.	Faughan-Roe Lough Foyle South	262500	422400	Other	Other	Deliberate Dumping	Low	None
14/06/05	1/05/302	DIRTY WATER IN THE MUFF RIVER	Faughan-Roe Lough Foyle South	252600	420500	Water Service	Sewage	Weather	Low	None
14/06/05	1/05/300	MAINTENANCE WORK ON THE MUFF RIVER	Faughan-Roe Lough Foyle South	254300	421900	Other	Other	Other	Low	None
07/07/05	1/05/316	PAINT IN UNNAMED WATERCOURSE AT FOYLE AVENUE GREYSTEEL	Faughan-Roe Lough Foyle South	256700	421400	Industry	Other	Deliberate Dumping	Low	None
14/07/05	1/05/322	SEWAGE FUNGUS IN UNNAMED WATERCOURSE AT FOYLE AVENUE GREYSTEEL	Faughan-Roe Lough Foyle South	256800	421400	Domestic	Sewage	Poor Working Practice	Low	None
14/07/05	1/05/323	OIL IN UNNAMED WATERCOURSE AT FOYLE AVENUE GREYSTEEL	Faughan-Roe Lough Foyle South	256800	421400	Industry	Domestic Heating Oil	Poor Working Practice	Low	None
04/08/05	1/05/330	SEWAGE IN THE FAUGHANVALE RIVER AT CLOONEY ROAD GREYSTEEL	Faughan-Roe Lough Foyle South	257800	421300	Water Service	Sewage	Equipment Failure	Low	None
30/08/05	1/05/340	POTATO LIQUOR OVERFLOWING FROM LAGOON ONTO ROAD AND FIELD	Faughan-Roe Lough Foyle South	260100	422400	Farm	Agriculture	Poor Working Practice	Low	None

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11/09/05	2/05/608	POLLUTION IN STREAM AT ARTIDILLON ROAD, CASTLEROCK	Faughan-Roe Lough Foyle South	276200	433100	Farm	Agriculture	Neglilgence	Medium	None
20/09/05	1/05/358	SULLAGE WATER DISCHARGING TO AN UNNAMED WATERCOURSE AT MONNABOY ROAD	Faughan-Roe Lough Foyle South	252800	417900	Domestic	Sewage	Poor Working Practice	Low	None
07/11/05	1/05/378	HIGH SUSPENDED SOLIDS CONTENT IN DISCHARGE FROM MCMULLAN TRACTORS	Faughan-Roe Lough Foyle South	265000	423000	Industry	Breach of Consent	Breach of Consent	Low	None
20/09/05	1/05/361	SEWAGE FUNGUS IN UNNAMED WATERCOURSE AT MONNABOY ROAD EGLINTON	Faughan-Roe Lough Foyle South	252800	418000	Farm	Agriculture	Unknown	Low	None
05/10/05	1/05/364	DIRTY WATER DISCHARGING TO AN UNNAMED WATERCOURSE AT MONNABOY ROAD	Faughan-Roe Lough Foyle South	252700	418000	Industry	Other	Neglilgence	Low	None
20/12/05	1/05/402	SULLAGE WATER IN UNNAMED WATERCOURSE AT DRUMAVALLEY	Faughan-Roe Lough Foyle South	267100	433000	Domestic	Sewage	Poor Working Practice	Low	None
09/01/06	1/06/204	RED DERV IN CONSENTED DISCHARG POINT AT CITY OF DERRY AIRPORT	Faughan-Roe Lough Foyle South	253900	422500	Transport	Oil (Diesel –Red)	Unknown	Medium	None
21/12/05	1/05/403	SILTY WATER IN BESSBROOK RIVER	Faughan-Roe Lough Foyle South	265000	423000	Other	Other	Weather	Low	None
11/11/05	1/05/384	VEHICLE WASHING AT CITY OF DERRY AIRPORT ADJ TO CONSENTED DISCHARGE PT	Faughan-Roe Lough Foyle South	254100	421700	Transport	Breach of Consent	Breach of Consent	Low	None
10/01/06	1/06/203	SEWAGE FUNGUS IN WATERCOURSE AT CARRICKHUGH	Faughan-Roe Lough Foyle South	259800	421800	Farm	Agriculture	Poor Working Practice	High	None
28/08/07	1/07/320	REMOVAL OF GRAVEL BEDS FROM THE BALLYKELLY RIVER IN THE VILLAGE OF BALLYKELLY.	Faughan-Roe Lough Foyle South	262600	422200	Other	Other	Other	Low	None
07/02/06	1/06/217	FARM EFFLUENT DISCHARGING TO A WATERCOURSE	Faughan-Roe Lough Foyle South	260400	418300	Farm	Agriculture	Poor Working Practice	Low	None
25/03/06	1/06/510	SEWAGE AT COOLAFINNY ROAD, EGLINTON	Faughan-Roe Lough Foyle South	252500	420300	Water Service	Sewage	Equipment Failure	Low	None
13/04/06	1/06/247	SEWAGE FUNGUS IN UNNAMED WATERCOURSE AT MONNABOY ROAD	Faughan-Roe Lough Foyle South	252800	417900	Industry	Other	Inadequate Equipment	Low	None
13/04/06	1/06/248	SEWAGE FUNGUS IN UNNAMED WATERCOURSE AT MONNABOY ROAD, EGLINTON	Faughan-Roe Lough Foyle South	252800	417900	Farm	Agriculture	Poor Working Practice	Low	None
24/04/06	1/06/254	OIL IN TRIBUTARY OF THE BESSBROOK RIVER	Faughan-Roe Lough Foyle South	265900	418500	Industry	Oil	Poor Working Practice	Low	None
03/10/06	1/06/322	SEWAGE FUNGUS IN THE CARRICKHUGH BURN, CARNAMUFF ROAD, BALLYKELLY.	Faughan-Roe Lough Foyle South	260000	420900	Farm	Agriculture	Poor Working Practice	Low	None
08/10/06	1/06/555	SEWAGE ENTERING MUFF RIVER, EGLINTON	Faughan-Roe Lough Foyle South	252600	420500	Water Service	Sewage	Accident/ Emergency	Low	None
10/10/06	1/06/329	OIL PRESENT IN DISCHARGE FROM NICHOLLS GREYSTEEL	Faughan-Roe Lough Foyle South	256700	421000	Industry	Domestic Heating Oil	Neglilgence	Low	None
22/06/06	1/06/20	PIPE DISCHARGING INTO RIVER AT CAMPSIE BRIDGE, LIMAVADY ROAD	Faughan-Roe Lough Foyle South	250300	422900	Water Service	Other	Unknown	Low	None
18/07/06	1/06/286	SMELL FROM ROAD DRAIN AT BARANAILT ROAD LIMAVADY	Faughan-Roe Lough Foyle South	265100	420700	Domestic	Sewage	Unknown	Low	None
17/08/06	1/06/308	GRASS AND CHAIRS DUMPED IN THE FAUGHANVALE RIVER AT SHORE ROAD	Faughan-Roe Lough Foyle South	258000	422200	Domestic	Other	Deliberate Dumping	Low	None
11/08/06	1/06/306	SILAGE EFFLUENT DISCHARGING AT MONNABOY ROAD EGLINTON	Faughan-Roe Lough Foyle South	252800	417900	Farm	Agriculture	Equipment Failure	Medium	None

Date:	Incident No:	Incident Title:	Location	Easting	Northing	Source	Category	Cause	Severity	IstFishkill
15/08/06	1/06/501	OIL COMING FROM DISCHARGE PIPE BELOW THE FORD AT MILL PATH GOING INTO CASTLE RIVER	Faughan-Roe Lough Foyle South	252900	419700	Other	Oil	Unknown	Low	None
12/09/06	1/06/315	SEWAGE MANHOLE OVERFLOWING TO THE GLACK STREAM, GLACK, LIMAVADY.	Faughan-Roe Lough Foyle South	262000	418600	Water Service	Sewage	Accident/ Emergency	Low	None
18/09/06	1/06/316	FAUGHANVALE PUMP STATION STORMING TO THE FAUGHANVALE RIVER, GREYSTEEL.	Faughan-Roe Lough Foyle South	257800	421300	Water Service	Sewage	Weather	Low	None
27/09/06	1/06/319	SEWAGE FUNGUS GROWTHS IN THE BALLYGUDDEN STREAM EGLINTON.	Faughan-Roe Lough Foyle South	253300	418700	Farm	Agriculture	Neglilgence	Low	None
28/09/06	1/06/318	OIL IN MUFF RIVER	Faughan-Roe Lough Foyle South	254100	421600	Industry	Oil (Derv – White Diesel)	Poor Working Practice	Low	None
07/09/06	1/06/313	FISH DYING AT DONNYBREWER FISHERIES	Faughan-Roe Lough Foyle South	252300	423900	Other	Other	Other	Medium	Moderate
06/11/06	1/06/349	SEPTIC TANK EFFLUENT IN UNNAMED TRIBUTARY OF THE BURNFOOT RIVER	Faughan-Roe Lough Foyle South	265100	423200	Industry	Sewage	Neglilgence	Low	None
02/11/06	1/06/347	SEWAGE FUNGUS GROWTHS IN THE DUNCRUN BURN, LIMAVADY.	Faughan-Roe Lough Foyle South	268300	432000	Farm	Agriculture	Poor Working Practice	Low	None
15/11/06	1/06/366	DIRTY WATER DISCHARGING TO AN UNNAMED WATERCOURSE AT FOYLE AVENUE	Faughan-Roe Lough Foyle South	256800	421400	Farm	Agriculture	Poor Working Practice	Low	None
03/11/06	1/06/350	BREACH OF CONSENT AT NICHOLL FUEL OILS GREYSTEEL	Faughan-Roe Lough Foyle South	256700	421100	Industry	Breach of Consent	Unknown	Low	None
03/01/07	1/07/201	RED DERV IN DERRY CITY AIRPORT CONSENTED DISCHARGE	Faughan-Roe Lough Foyle South	253900	422500	Transport	Oil (Diesel – Red)	Unknown	Low	None
22/03/04	1/04/243	OIL IN CONSENTED DISCHARGE FROM NICHOLL FUELS, GREYSTEEL	Faughan-Roe Lough Foyle South	256700	421000	Industry	Breach of Consent	Neglilgence	Low	None
06/02/07	1/07/224	SEPTIC TANK OUTFALL FROM 2 LOUGHERMORE ROAD, BALLYKELLY.	Faughan-Roe Lough Foyle South	262600	422200	Domestic	Sewage	Poor Working Practice	Low	None
19/02/07	2/07/210	SEWAGE FROM NEIGHBOURS SEPTIC TANK IS ENTERING HIS PROPERTY	Faughan-Roe Lough Foyle South	275400	432500	Domestic	Sewage	Inadequate Equipment	Low	None
14/03/07	1/07/240	DIRTY WATER IN A TRIBUTARY OF THE BESSBROOK RIVER	Faughan-Roe Lough Foyle South	265200	418700	Farm	Agriculture	Poor Working Practice	Low	None
13/03/07	1/07/247	DIRTY WATER DISCHARGING FROM CAMPSIE REAL ESTATE	Faughan-Roe Lough Foyle South	251300	421500	Industry	Other	Unknown	Low	None
03/04/07	1/07/252	OVER FLOWING SEPTIC TANK AT LIMAVADY GEAR COMPANY	Faughan-Roe Lough Foyle South	265100	423200	Industry	Sewage	Neglilgence	Low	None
25/03/07	1/07/250	STATION BAR CESSPOOL OVERFLOWING TO THE ADJACENT WATERCOURSE	Faughan-Roe Lough Foyle South	252100	422800	Other	Sewage	Neglilgence	Low	None
11/04/07	1/07/259	SCUM AND FLOATING MATTER (SEWAGE) ON RIVER ROAE AT SWANS BRIDGE	Faughan-Roe Lough Foyle South	266900	429600	Other	Other	Unknown	Low	None
30/03/07	1/07/502	POLLUTION IN STREAM DOWNHILL FOREST CASTLEROCK	Faughan-Roe Lough Foyle South	275700	433900	Farm	Agriculture	Neglilgence	Low	None
12/04/07	1/07/262	SEPTIC TANK EFFLUENT IN UNNAMED WATERCOURSE AT CARROWCLARE ROAD LIMAVADY	Faughan-Roe Lough Foyle South	266100	427800	Domestic	Sewage	Neglilgence	Low	None
16/04/07	1/07/10	SEWAGE AT SPALLAN ROAD BALLYKELLY	Faughan-Roe Lough Foyle South	263800	424000	Water Service	Sewage	Unknown	Low	None
30/04/07	1/07/273	DOMESTIC CONSENT BREACH AT SEACOAST ROAD BELLARENA	Faughan-Roe Lough Foyle South	266400	430900	Domestic	Breach of Consent	Breach of Consent	Low	None
01/05/07	1/07/272	POOR DISCHARGE FROM KILLYLANE STW CRAIGBRACK RD	Faughan-Roe Lough Foyle South	254300	421200	Water Service	Sewage	Other	Low	None
15/05/07	1/07/280	SEWAGE DISCHARGING FROM CAMPSIE REAL ESTATE	Faughan-Roe Lough Foyle South	251300	421500	Industry	Sewage	Unknown	Low	None

Date:	Incident No:	Incident Title:	Location	Easting	Northing	Source	Category	Cause	Severity	IstFishkill
05/06/07	1/07/296	WHITE LIQUID IN UMBRA BURN	Faughan-Roe Lough Foyle South	269700	433500	Farm	Agriculture	Poor Working Practice	Medium	None
05/07/07	1/07/303	OIL IN BURNFOOT RIVER AT RUSH HALL BRIDGE	Faughan-Roe Lough Foyle South	264700	423900	Industry	Oil	Unknown	Low	None
31/07/07	1/07/314	SMELL FROM DRAIN AT BARANAILT ROAD	Faughan-Roe Lough Foyle South	265200	420700	Domestic	Sewage	Unknown	Low	None
05/09/07	1/07/324	DIRTY DISCHARGE FROM SEPTIC TANK AT 35 WHITEHILL ROAD EGLINTON	Faughan-Roe Lough Foyle South	251600	418600	Domestic	Sewage	Inadequate Equipment	Low	None
10/10/07	1/07/328	BREACH OF CONSENT AT 20 VALE ROAD GREYSTEEL	Faughan-Roe Lough Foyle South	257200	419900	Domestic	Sewage	Breach of Consent	Low	None
13/02/08	1/08/218	DIRTY DISCHARGE FROM MAGILLIGAN PRISON	Faughan-Roe Lough Foyle South	266600	437400	Other	Sewage	Poor Working Practice	Low	None
14/03/08	1/08/229	SILT IN THE CAMPSIE BURN AT THE CONSENTED DISCHARGE POINT OF CAMPSIE REAL LTD., EGLINTON.	Faughan-Roe Lough Foyle South	251300	421500	Industry	Other	Neglilgence	Low	None
09/05/08	1/08/263	POOR DISCHRGE FROM SEPTIC TANK TO WATERWAY ON TIRMACOY ROAD	Faughan-Roe Lough Foyle South	259900	420900	Domestic	Breach of Consent	Breach of Consent	Low	None
31/03/08	1/08/238	SEWAGE FUNGUS IN UNNAMED WATERCOURSE AT TIRMACOY ROAD	Faughan-Roe Lough Foyle South	260000	420900	Farm	Agriculture	Unknown	Low	None
28/03/08	1/08/256	SEWAGE FUNGUS IN UNNAMED WATERCOURSE AT DUNLADE ROAD	Faughan-Roe Lough Foyle South	257300	418800	Farm	Agriculture	Unknown	Low	None
01/05/08	1/08/15	SEWAGE AND OIL IN WATERCOURSE, BALLYKELLY RIVER	Faughan-Roe Lough Foyle South	262600	422300	Domestic	Sewage	Poor Working Practice	Low	None
09/05/08	1/08/262	SEWAGE FUNGUS IN UNNAMED STREAM AT CARNAMUFF / TIRMACOY ROAD JUNCTION	Faughan-Roe Lough Foyle South	260000	420700	Farm	Agriculture	Poor Working Practice	Low	None
01/12/05	1/05/396	AVIATION FUEL SPILLAGE AT FUEL FARM AT CITY OF DERRY AIRPORT	Faughan-Roe Lough Foyle South	253800	421600	Transport	Oil	Unknown	Low	None
09/05/08	1/08/264	SEWAGE FUNGUS IN PIPED STREAM AT JUNCTION OF CARNAMUFF AN TIRMACOY RD	Faughan-Roe Lough Foyle South	259800	420900	Domestic	Breach of Consent	Breach of Consent	Low	None
01/06/09	1/09/291	SEWAGE FUNGUS IN STREAM AT CARNAMUFF ROAD	Faughan-Roe Lough Foyle South	259800	420900	Domestic	Sewage	Unknown	Low	None
01/08/08	1/08/311	MUFF RIVER AT BRISLAND ROAD HEAVILY SILTED	Faughan-Roe Lough Foyle South	255000	416700	Farm	Agriculture	Poor Working Practice	Low	None
11/08/08	1/08/314	SILT FROM ROADWORKS ENTERING BALLYKELLY RIVER	Faughan-Roe Lough Foyle South	262600	422300	Other	Other	Poor Working Practice	Low	None
16/06/08	1/08/292	SILT IN THE BALLYKELLY RIVER, BALLYKELLY VILLAGE.	Faughan-Roe Lough Foyle South	262600	422200	Industry	Other	Poor Working Practice	Low	None
02/07/08	1/08/25	SEWAGE FUNGUS DISCHARGE PIPE AT GREYSTEEL UPM	Faughan-Roe Lough Foyle South	257800	421300	Domestic	Sewage	Unknown	Low	None
04/12/08	1/08/367	OIL IN STREAM AT FOYLE AVENUE GREYSTEEL	Faughan-Roe Lough Foyle South	256700	421100	Industry	Oil	Poor Working Practice	Low	None
27/08/08	1/08/321	SEWAGE FUNGUS IN WATERCOURSE BELOW 29 TARTNAKILLY ROAD	Faughan-Roe Lough Foyle South	262600	419600	Domestic	Sewage	Unknown	Low	None
07/11/08	1/08/353	SEWAGE IN STREAM BELOW GREYSTEEL WWTW	Faughan-Roe Lough Foyle South	[Redacted]	[Redacted]	Water Service	Sewage	Unknown	Medium	None
04/11/08	1/08/350	SILTY WATER DISCHARGING INTO BESSBROOK STREAM	Faughan-Roe Lough Foyle South	265000	422200	Industry	Other	Other	Low	None
20/11/08	1/08/362	OIL IN STREAM AT FOYLE AVENUE GREYSTEEL	Faughan-Roe Lough Foyle South	256800	421400	Industry	Oil	Unknown	Low	None
24/11/08	1/08/364	POOR DISCHARGE INTO DRAIN AT FOYLE AVENUE	Faughan-Roe Lough Foyle South	256700	421100	Domestic	Breach of Consent	Breach of Consent	Low	None

Date:	Incident No:	Incident Title:	Location	Easting	Northing	Source	Category	Cause	Severity	IstFishkill
02/01/09	1/09/201	SEWAGE OVERFLOWING FROM GLACK WWTWS	Faughan-Roe Lough Foyle South	[Redacted]	[Redacted]	Water Service	Sewage	Equipment Failure	Low	None
23/12/08	1/08/379	OILY DICHARGE FROM NICHOLLS FUEL OIL SITE, GREYSTEEL	Faughan-Roe Lough Foyle South	256800	421400	Industry	Oil	Breach of Consent	Low	None
19/03/09	1/09/236	DISCHARGE OF POOR QUALITY SEWAGE EFFLUENT FROM 58 TULLY ROAD, BALLYKELLY.	Faughan-Roe Lough Foyle South	264400	422100	Domestic	Sewage	Poor Working Practice	Low	None
16/04/09	1/09/260	FUNGUS IN OPEN DRAIN IN FIELD AT JUNCTION OF LOUGHERMORE AND TARTNAKILLY RDS	Faughan-Roe Lough Foyle South	261200	419000	Domestic	Sewage	Breach of Consent	Low	None
26/05/09	1/09/17	SPREADING OF SEWAGE SLUDGE GLENHEAD ROAD, LIMAVADY	Faughan-Roe Lough Foyle South	264000	419200	Farm	Sewage	Poor Working Practice	Low	None
10/06/09	1/09/20	GREY WATER IN CASTLE RIVER	Faughan-Roe Lough Foyle South	255000	416700	Farm	Other	Poor Working Practice	Low	None
10/06/09	1/09/296	SILTY DISCHARGE TO MUFF RIVER FROM DERRY CITY COUNCIL AIRPORT	Faughan-Roe Lough Foyle South	254100	421700	Other	Other	Poor Working Practice	Low	None
21/08/09	1/09/30	MANDATORY BATHING WATER FAILURE	Faughan-Roe Lough Foyle South	275100	436100	Other	Other	Unknown	Low	None
05/10/09	1/09/420	FIRE AT TYRE DEPOT IN CAMPSIE	Faughan-Roe Lough Foyle South	251500	421300	Industry	Chemical	Other	High	None
03/11/09	1/09/403	SILT IN RIVER AT BURNFOOT RUSH HALL	Faughan-Roe Lough Foyle South	264700	424000	Other	Other	Unknown	Low	None
23/11/09	1/09/416	DIRTY WATER IN THE STREAM AT CAMPSIE	Faughan-Roe Lough Foyle South	251900	420900	Industry	Other	Unknown	Low	None
23/10/09	1/09/401	POOR STREAM BELOW CARRIAGE COURT DEVELOPMENT	Faughan-Roe Lough Foyle South	267100	433000	Industry	Sewage	Unknown	Low	None
15/12/09	1/09/436	SILTY RUNOFF FROM A2 ROADWORKS TO UNNAMED STREAM, CAMPSIE	Faughan-Roe Lough Foyle South	251700	421100	Industry	Other	Weather	Low	None
04/12/09	1/09/429	DIRTY WATER IN AN UNNAMED STREAM AT CAMPSIE	Faughan-Roe Lough Foyle South	251900	420900	Other	Other	Weather	Low	None
08/12/09	1/09/431	SEWAGE FUNGUS IN A STREAM AT CARSE ROAD	Faughan-Roe Lough Foyle South	263300	424900	Farm	Agriculture	Unknown	Low	None

Appendix 3

Shellfish Sampling *E. coli* Results

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Aien\l""-*: ,1..QuM0 11111emoo:oria1Sft'IIC:e-$ 8ri11onn O'Connor 12 k:like,rlnPDfl(Lltbawn Co. <:.,,way	Re,pott t:,10 !' 10-01HS- No, Of $1mple.s • i At-elp\llnU 0111 : i 110!1'2.0HI Ana.')'••• oat• • I1ros,2010 011,l7f tu\lc • H 1owo1a Cont.Id : Brandan O'Connor

Comments
Water temp. -5 C

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Checked by

Quality Manager

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CERTIF/CATE OF ANALYSIS

4'cOIIU1tl• ; Aqu&rite lr,,l!!fOilill)f\ll Se,r vlcl!S BrendllnO'Connor 12KUkerrtn Ptirit Ll•baw11 Co. c.atway	Report o- : lO.OtlTI N .o, s•tnP1h ▪ , A.ct111pt.11 •0,1,•, ,,01120,0 ,6,fla!ysl• D• 11,os,20,o b11taot lt.!JUtc :,sioir.!o,o cc,1ue1 : Bttn<Je,, O'Oonno,
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Checked By
Jude Cassidy

Quality Manager
Caroline Finn

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CERT/FICATE OF ANALYSIS

.A.::u•u"'• : A.auof1c11111t,n11,iJonaj•se,vi<:e$ Sr'cntlhn O'COnno, 12 POIIC tnn Patll: Usbiwn Co, G:ifW,1y	Reoort No : 10-01178 Ho, Of s.am.rieas ; 1 A"ep IIU·Otllt•' I t!QY.2010 Anal'r•h:O.w. • I1,i(tl,'201D 011,.un.,,u, • I5/0312010 Cont«t : Brendan O'Connor

Comments:
1 x sample hand-picked pacific oysters
Sampled [illegible] by C. McGonagle
Location: [illegible]

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	LlSnawrt	4r1•1V"P• t>t1e	: 11/0lr.ZO G
	Co,G•!WaY	Date of Issue	: 1SIO-S12010
		Contact	: 6ra,i.:14,n O'Cor,r,or

Comments
1 x sample hand picked pacific oysters
Sampled 11/03/10 by G. McGonagle

SAMPLE NO.	SAMPLE TYPE	[illegible]	1,-.W..uwfll	TEST/DESCRIPTION	RESULT/UNITS
10-01179-001	Oysters	517	[illegible]	t ...	<20 MPN/100g

__J.__

Checked By
Julin Cassidy

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&.niun.Rn

Appendix 4

Water Sampling *E. coli* Results

SAMPLE	DATE	REASON_CODE	DESCRIPTION	E_ coli MPN	Total Coliforms MPN
AQUAFT_4S-10-1210846	10/02/2010 09:15	SURVEY	Samples for AquaFact, W27	91	2055
AQUAFT_4S-10-1210847	10/02/2010 09:21	SURVEY	Samples for AquaFact, W28	52	1455
AQUAFT_4S-10-1210848	10/02/2010 09:25	SURVEY	Samples for AquaFact, W29	113	1200
AQUAFT_4S-10-1210849	10/02/2010 09:29	SURVEY	Samples for AquaFact, W30	26	1050
AQUAFT_4S-10-1210850	10/02/2010 09:32	SURVEY	Samples for AquaFact, W45	32	488
AQUAFT_4S-10-1210851	10/02/2010 09:36	SURVEY	Samples for AquaFact, W2	17	250
AQUAFT_4S-10-1210852	10/02/2010 09:41	SURVEY	Samples for AquaFact, W31	148	430
AQUAFT_4S-10-1210853	10/02/2010 09:54	SURVEY	Samples for AquaFact, W33	13	150
AQUAFT_4S-10-1210854	10/02/2010 10:00	SURVEY	Samples for AquaFact, W34	12	167
AQUAFT_4S-10-1210855	10/02/2010 10:04	SURVEY	Samples for AquaFact, W35	15	135
AQUAFT_4S-10-1210856	10/02/2010 10:06	SURVEY	Samples for AquaFact, W49	16	111
AQUAFT_4S-10-1210857	10/02/2010 10:11	SURVEY	Samples for AquaFact, W36	8	56
AQUAFT_4S-10-1210858	10/02/2010 10:13	SURVEY	Samples for AquaFact, W3	4	43
AQUAFT_4S-10-1210859	10/02/2010 10:20	SURVEY	Samples for AquaFact, W4	10	78
AQUAFT_4S-10-1210860	10/02/2010 10:26	SURVEY	Samples for AquaFact, W47	3	19
AQUAFT_4S-10-1210861	10/02/2010 10:31	SURVEY	Samples for AquaFact, W37	9	49
AQUAFT_4S-10-1210862	10/02/2010 10:34	SURVEY	Samples for AquaFact, W38	4	37
AQUAFT_4S-10-1210863	10/02/2010 10:39	SURVEY	Samples for AquaFact, W39	154	810
AQUAFT_4S-10-1210864	10/02/2010 10:46	SURVEY	Samples for AquaFact, W40	4	36
AQUAFT_4S-10-1210865	10/02/2010 10:49	SURVEY	Samples for AquaFact, W8	7	28
AQUAFT_4S-10-1210866	10/02/2010 10:55	SURVEY	Samples for AquaFact, W42	1	16
AQUAFT_4S-10-1210867	10/02/2010 10:58	SURVEY	Samples for AquaFact, W9	8	23
AQUAFT_4S-10-1210868	10/02/2010 11:00	SURVEY	Samples for AquaFact, W43	<1	2
AQUAFT_4S-10-1210869	10/02/2010 11:04	SURVEY	Samples for AquaFact, W44	<1	1
AQUAFT_4S-10-1210870	10/02/2010 11:09	SURVEY	Samples for AquaFact, W11	<1	1
AQUAFT_4S-10-1210871	10/02/2010 11:13	SURVEY	Samples for AquaFact, W12	<1	6
AQUAFT_4S-10-1210872	10/02/2010 11:15	SURVEY	Samples for AquaFact, W10	<1	8
AQUAFT_4S-10-1210873	10/02/2010 11:18	SURVEY	Samples for AquaFact, W13	<1	8
AQUAFT_4S-10-1210874	10/02/2010 11:21	SURVEY	Samples for AquaFact, W14	<1	14
AQUAFT_4S-10-1210875	10/02/2010 11:30	SURVEY	Samples for AquaFact, MD 1	488000	>2420000

SAMPLE	DATE	REASON_CODE	DESCRIPTION	E_ coli MPN	Total Coliforms MPN
AQUAFT_4S-10-1210876	10/02/2010 11:34	SURVEY	Samples for AquaFact, W15	4	28
AQUAFT_4S-10-1210877	10/02/2010 11:37	SURVEY	Samples for AquaFact, W48	3	21
AQUAFT_4S-10-1210878	10/02/2010 11:41	SURVEY	Samples for AquaFact, W16	1	15
AQUAFT_4S-10-1210879	10/02/2010 11:44	SURVEY	Samples for AquaFact, W17	12	58
AQUAFT_4S-10-1210880	10/02/2010 11:46	SURVEY	Samples for AquaFact, W7	5	42
AQUAFT_4S-10-1210881	10/02/2010 11:49	SURVEY	Samples for AquaFact, W6	5	46
AQUAFT_4S-10-1210882	10/02/2010 11:54	SURVEY	Samples for AquaFact, W18	12	98
AQUAFT_4S-10-1210883	10/02/2010 11:57	SURVEY	Samples for AquaFact, W19	10	93
AQUAFT_4S-10-1210884	10/02/2010 12:00	SURVEY	Samples for AquaFact, W20	13	128
AQUAFT_4S-10-1210885	10/02/2010 12:03	SURVEY	Samples for AquaFact, W21	30	117
AQUAFT_4S-10-1210886	10/02/2010 12:06	SURVEY	Samples for AquaFact, W22	24	201
AQUAFT_4S-10-1210887	10/02/2010 12:09	SURVEY	Samples for AquaFact, W23	16	285
AQUAFT_4S-10-1210888	10/02/2010 12:17	SURVEY	Samples for AquaFact, W46	70	1005
AQUAFT_4S-10-1210889	10/02/2010 12:22	SURVEY	Samples for AquaFact, W50	13	104
AQUAFT_4S-10-1210890	10/02/2010 12:25	SURVEY	Samples for AquaFact, W5	9	157
AQUAFT_4S-10-1210891	10/02/2010 12:32	SURVEY	Samples for AquaFact, W24	39	153
AQUAFT_4S-10-1210892	10/02/2010 12:36	SURVEY	Samples for AquaFact, W1	44	735
AQUAFT_4S-10-1210893	10/02/2010 12:40	SURVEY	Samples for AquaFact, W25	32	650
AQUAFT_4S-10-1210894	10/02/2010 12:43	SURVEY	Samples for AquaFact, W26	43	895
AQUAFT_4S-10-1210895	10/02/2010 12:48	SURVEY	Samples for AquaFact, MD 2	140	2175

Appendix 5

Historical Water Sampling Result

Balls Point 1

Date	Temp	Sal	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3									150
07/06/2000							<0.035	0.9									<1
18/09/2000							<0.035	1.4									12
16/01/2001							<0.035	<4.35									12
14/03/2001							<0.035	<0.65									<1
25/06/2001							<0.035	<0.65									<1
24/09/2001							<0.035	<0.65									<1
06/12/2001							<0.035	<0.65									360
20/03/2002							<0.035	<2.5						<2			1
04/07/2002							<0.035	0.92						<2			<1
26/11/2002							<0.035	1.04						<2			80
06/02/2003							0.038	<0.65	<8					<2			19
05/06/2003																	16
28/10/2003							0.058	<0.65	<8					1.1			4
15/12/2003																	35
12/02/2004							<0.035	0.65	<8					<1.1			10
24/05/2004																	<1
19/10/2004							0.058	<0.65	<8					1.1			90
31/01/2005																	
14/06/2005	13.50	27.28	6.55	74.52	1.00	8.02	<0.035	1.10	<8	0.170	0.56	5.80	<0.01	0.69	<50	2	11
03/10/2005	12.60	28.41	7.30	81.64	0.50	8.03	<0.035	0.73	<8	<0.04	0.25	1.40	<0.01	0.81	<50	6	7
21/02/2006	-	-			0.50	8.03	<0.04	1.10	0.2	0.048	0.42	1.90	NR	NR	NR	8	2
14/06/2006	16.01	27.81	9.01	108.31	1.00	8.15										4	<1
29/11/2006	9.47	29.91	9.72	103.05	0.50	7.98	<0.04	0.71	0.1	<0.04	0.45	4.50	NR	NR	NR	14	30

Date	Temp	Sal	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
21/06/2007	13.65	32.59	10.75	126.83	1.00	NR	<0.04	0.54	<0.5	0.216	0.49	1.07	<0.01	<1	<1	<2	1
17/10/2007	13.10	33.50	6.35	72.54	1.00	7.35	<0.04	0.49	<0.5	0.179	0.42	0.87	<0.01	<1	<1	<2	3
03/12/2007	7.20	25.30	7.84	74.4691	1.00	7.84										8	210
14/02/2008	7.80	32.00	6.91	71.47		7.88	<0.04	0.47	<0.5	0.393	0.54	5.15	<0.01	1.50		6	0
04/11/2008	8.10	25.30	9.34	93.18			<0.04	0.52	<0.5	0.120	0.62	0.91	<0.01	1.10			16
17/12/2008	6.60	28.40	10.81	105.06		7.90										6	38

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000								<0.001	<0.001	
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										
12/02/2004								<0.001	<0.001	
24/05/2004										

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	<0.001
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	<0.003	<0.003	<0.003
04/11/2008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000								<0.002	<0.002	
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.001	<0.001
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001
17/12/2008										

Balls Point 2

Date	Temp	Sal	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3									100
07/06/2000							<0.035	<0.65									<1
18/09/2000							<0.035	<0.65									<1
16/01/2001							<0.035	<4.35									11
14/03/2001							<0.035	<0.65									<1
25/06/2001							<0.035	0.83									1
24/09/2001							<0.035	<0.65									<1
06/12/2001							<0.035	1.03									600
20/03/2002							<0.035	<2.5						<2			<1
04/07/2002							<0.035	0.7						<2			290
26/11/2002							<0.035	1.05						<2			26
06/02/2003							<0.035	0.99	<8					<2			28
05/06/2003																	120
28/10/2003							0.036	1.16	<8					0.96			27
15/12/2003																	45
12/02/2004							0.036	0.84	<8					<0.076			<16
24/05/2004																	<1
19/10/2004							0.036	1.16	<8					0.96			50
31/01/2005																	
14/06/2005	13.60	24.31	4.69	52.48	1.00	8.11	<0.035	1.50	<8	0.190	1.1	5.10	<0.01	0.65	<50	11	26
03/10/2005	12.20	27.57	7.50	83.06	0.50	8.00	N/D	N/D	<8	N/D	N/D	N/D	<0.01	0.92	<50	5	67
21/02/2006	-	-			0.50	8.03	<0.04	0.36	0.13	0.120	0.46	7.40	NR	NR	NR	12	1
14/06/2006	16.14	28.74	8.76	106.17	1.00	8.17										4	<1

Date	Temp	Sal	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
29/11/2006	7.30	25.83	10.58	103.95	0.50	7.91	<0.04	0.74	0.027	<0.04	0.47	2.80	NR	NR	NR	40	32
21/06/2007	15.36	29.00	10.03	119.87	1.00	NR	<0.04	0.74	<0.5	0.187	0.76	0.99	<0.01	<1	<1	3	4
17/10/2007	12.10	29.30	6.45	72.77	1.00	7.84	<0.04	0.690	<0.5	0.232	0.610	1.340	0.017	<1	<1	<2	21
03/12/2007	7.40	21.00	7.71	73.725	1.00	7.86										5	500
14/02/2008	7.00	27.80	6.94	68.56		7.88	<0.04	0.70	<0.5	0.208	0.47	3.01	<0.01	1.20		<2	1
04/11/2008	7.80	24.80	9.42	93.02			<0.04	0.69	<0.5	0.148	0.61	1.30	<0.01	<1			51
17/12/2008	6.10	26.70	10.97	104.32		7.92										12	28

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000								<0.001	<0.001	
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
12/02/2004								<0.001	<0.001	
24/05/2004										
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	<0.001
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	<0.003	<0.003	<0.003
04/11/2008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000								<0.002	<0.002	
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.001	<0.001
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001
17/12/2008										

Balls Point 3

Date	Temp	Sal	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3									16
07/06/2000							0.058	0.75									<1
18/09/2000							<0.035	<0.65									<1
16/01/2001							<0.035	<4.35									23
14/03/2001							<0.035	<0.65									2
25/06/2001							<0.035	0.66									<1
24/09/2001							<0.035	<0.65									<1
06/12/2001							<0.035	0.8									740
20/03/2002							<0.035	<2.5						<2			<1
04/07/2002							<0.035	1.22						<2			330
26/11/2002							<0.035	1.1						<2.2			120
06/02/2003							<0.035	0.71	<8					<2			38
05/06/2003																	2
28/10/2003							<0.035	<0.65	<8					1.13			9
15/12/2003																	53
12/02/2004							0.055	0.66	<8					<0.088			23
24/05/2004																	<1
19/10/2004							<0.035	<0.65	<8					1.13			70
31/01/2005																	
14/06/2005	13.73	24.16	7.01	78.62	1	8.07	<0.035	1.300	<8	0.37	0.68	3.40	<0.01	0.56	<50	10	6
03/10/2005	12.3	27.36	7.82	85.553	0.5	7.99	N/D	N/D	<8	N/D	N/D	N/D	<0.01	0.94	<50	6	45
21/02/2006	-	-			0.50	8.02	<0.04	2.60	0.2	0.058	0.44	2.30	NR	NR	NR	5	3
14/06/2006	16.41	30.69	8.91	109.87	1.00	8.13										3	<1

Date	Temp	Sal	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
29/11/2006	NR	NR	NR	NR	0.50	7.92	<0.04	0.73	0.071	<0.04	0.46	4.60	NR	NR	NR	10	29
21/06/2007	15.03	34.21	10.02	122.81	1.00	NR	<0.04	1.94	<0.5	0.251	0.66	1.39	<0.01	<1	<1	3	10
17/10/2007	12.70	30.70	6.16	68.87	1.00	7.90	<0.04	0.650	<0.5	0.222	4.320	1.170	<0.01	<1	<1	<2	13
03/12/2007	7.40	21.30	7.91	76.032	1.00	7.85										4	280
14/02/2008	7.10	27.10	8.43	83.11		7.86	<0.04	0.40	<0.5	0.230	0.55	2.00	<0.01	1.20		<2	6
04/11/2008	8.00	22.80	9.61	94.12			<0.04	1.01	<0.5	0.134	0.66	2.33	<0.01	1.10			69
17/12/2008	5.80	25.20	11.34	103.41		7.92										22	33

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000								<0.001	<0.001	
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
12/02/2004								<0.001	<0.001	
24/05/2004										
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	0.0117
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	<0.003	<0.003	<0.003
04/11/2008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000								<0.002	<0.002	
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.001	<0.001
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001
17/12/2008										

Balls Point 4

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3									<1
07/06/2000							0.046	1									<1
18/09/2000							<0.035	<0.65									<1
16/01/2001							<0.035	<4.35									34
14/03/2001							<0.035	0.8									26
25/06/2001							<0.035	1.26									<1
24/09/2001							<0.035	<0.65									<1
06/12/2001							<0.035	1.25									900
20/03/2002							<0.035	<2.5						<2			90
04/07/2002							<0.035	0.71						<2			1000
26/11/2002							<0.035	0.98						<2			27
06/02/2003							<0.035	1.09	<8					<2			130
05/06/2003																	43
28/10/2003							0.039	1.39	<8					0.9			90
15/12/2003																	690
12/02/2004							<0.035	0.9	<8					<0.074			21
24/05/2004																	<1
19/10/2004							0.039	1.39	<8					0.9			60
31/01/2005																	
14/06/2005	13.32	23.95	6.05	67.17	1.00	8.06	<0.035	3.40	<8	0.063	0.68	3.50	<0.01	0.58	<50	13	2
03/10/2005	12.10	25.06	6.40	70.96	0.50	7.97	N/D	N/D	<8	N/D	N/D	N/D	<0.01	0.86	<50	10	31
21/02/2006	-	-			0.50	8.02	<0.04	3.60	0.034	0.047	0.58	2.60	NR	NR	NR	4	8
14/06/2006	17.71	30.41	7.99	100.89	0.42	8.15										4	<1

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
29/11/2006	7.26	25.94	10.61	104.22	0.50	7.90	<0.04	0.81	0.093	<0.04	0.55	4.10	NR	NR	NR	35	22
21/06/2007	15.03	34.33	10.29	126.21	1.00	NR	<0.04	0.66	<0.5	0.238	0.83	1.42	<0.01	<1	<1	4	13
17/10/2007	12.10	27.20	6.25	70.21	1.00	7.88	<0.04	0.560	<0.5	0.201	0.700	0.990	<0.01	<1	<1	<2	8
03/12/2007	7.40	22.10	7.81	77.339	1.00	7.84										5	270
14/02/2008	6.80	26.10	7.67	74.59		7.84	<0.04	0.97	<0.5	0.386	0.57	5.99	<0.01	1.20		<2	15
04/11/2008	7.70	20.70	9.89	94.89			<0.04	1.34	<0.5	0.171	0.74	1.39	<0.01	1.10			450
17/12/2008	4.90	19.90	11.98	110.94		7.89										44	33

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000								<0.001	<0.001	
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										

Date	**PCB 28**	**PCB 52**	**PCB 101**	**PCB 118**	**PCB 138**	**PCB 153**	**PCB 180**	**HCH-a**	**HCH-b**	**HCH-g**
12/02/2004								<0.001	<0.001	
24/05/2004										
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	<0.001
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	<0.003	<0.003	<0.003
04/11/2008	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000								<0.002	<0.002	
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.001	<0.001
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001
17/12/2008										

Balls Point 5

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3									<1
07/06/2000							0.04	0.75									<1
18/09/2000							<0.035	<0.65									<1
16/01/2001							<0.035	<4.35									24
14/03/2001							<0.035	0.8									<1
25/06/2001							<0.035	<0.65									<1
24/09/2001							<0.035	<0.65									<1
06/12/2001							<0.035	1.98									680
20/03/2002							<0.035	<2.5						<2			1
04/07/2002							<0.035	0.74						<2			340
26/11/2002							<0.035	0.88						<3.1			41
06/02/2003							<0.035	0.78	<8					<2			41
05/06/2003																	42
28/10/2003							<0.035	1.06	<8					1.09			6
15/12/2003																	1250
12/02/2004							<0.035	0.75	<8					<0.88			24
24/05/2004																	<1
19/10/2004							<0.035	1.06	<8					1.09			90
31/01/2005																	
14/06/2005	13.54	25.06	9.26	104.03	1.00	8.06	<0.035	1.70	<8	0.049	0.57	2.60	<0.01	0.59	<50	9	<1
03/10/2005	12.30	27.92	6.04	68.57	0.50	7.98	N/D	N/D	<8	N/D	N/D	N/D	<0.01	0.93	<50	6	21
21/02/2006	-	-			0.50	8.01	<0.04	2.70	0.12	<0.024	0.53	2.10	NR	NR	NR	5	5
14/06/2006	15.92	29.96	8.42	102.36	0.17	8.16										3	<1

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
29/11/2006	7.48	25.78	10.49	103.47	0.50	7.93	<0.04	0.87	0.032	<0.04	0.50	5.10	NR	NR	NR	25	35
21/06/2007	15.32	33.81	10.72	131.83	1.00	NR	<0.04	0.65	<0.5	0.194	0.66	1.44	<0.01	<1	<1	3	4
17/10/2007	12.50	30.00	5.90	68.31	1.00	7.88	<0.04	0.700	<0.5	0.503	0.850	2.820	<0.01	1.26	<1	4	26
03/12/2007	7.30	26.70	7.88	65.485	1.00	7.88										6	270
14/02/2008	6.90	27.20	6.94	68.13		7.88	<0.04	0.58	<0.5	0.293	0.54	4.53	<0.01	1.10		<2	1
04/11/2008	7.90	21.80	9.90	96.11			<0.04	0.77	<0.5	0.156	0.72	1.64	<0.01	<1			35
17/12/2008	5.80	25.60	11.19	89.58		7.90										15	29

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000								<0.001	<0.001	
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
12/02/2004								<0.001	<0.001	
24/05/2004										
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	<0.001
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
04/11/2008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000								<0.002	<0.002	
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001
17/12/2008										

Longfield Bank 1

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3									<1
07/06/2000							<0.035	0.9									61
18/09/2000							<0.035	0.65									150
16/01/2001							<0.035	<4.35									870
14/03/2001							<0.035	0.95									170
25/06/2001							<0.035	0.69									1
24/09/2001							<0.035	<0.65									10
06/12/2001							<0.035	1.45									3200
20/03/2002							<0.035	<2.5						<2			120
04/07/2002							<0.035	1.06						<2			340
26/11/2002							<0.035	0.9						<3.3			170
06/02/2003							<0.035	0.72	<8					<2			130
05/06/2003																	88
28/10/2003							<0.035	0.65	<8					0.96			110
15/12/2003																	1630
12/02/2004							0.037	0.86	<8					<0.74			300
24/05/2004																	<1
19/10/2004							<0.035	0.65	<8					0.96			300
31/01/2005																	200
14/06/2005	13.64	21.91	8.77	96.82	1.00	8.05	<0.035	1.10	<8	0.070	0.74	4.70	<0.01	0.61	<50		<1
03/10/2005	12.40	26.20	8.92	98.07	0.50	7.97	N/D	N/D	<8	N/D	N/D	N/D	0.01	0.93	<50	5	21
21/02/2006	5.50	21.03	6.59	60.08	0.50	7.88	<0.04	0.50	0.23	<0.024	0.50	2.40	NR	NR	NR	35	37
14/06/2006	15.69	29.08	8.56	103.03	2.50	8.12										6	<1

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
29/11/2006	8.08	25.35	7.86	78.28	0.50	7.91	0.012	0.80	0.025	<0.04	0.56	12.00	NR	NR	NR	18	90
21/06/2007	15.40	33.57	10.50	129.15	1.00	NR	<0.04	1.38	2.3	2.000	1.87	6.64	<0.01	<1	<1	43	6
17/10/2007	11.70	26.20	6.77	73.63	1.00	7.88	<0.04	1.210	<0.5	0.297	0.710	1.800	0.015	<1	<1	3	150
03/12/2007	7.30	15.60	7.95	73.691	1.00	7.77										14	700
14/02/2008	6.90	23.00	7.45	71.18		7.76	<0.04	1.23	<0.5	0.331	0.59	4.38	<0.01	1.10		5	7
04/11/2008	7.60	18.40	10.15	95.72			<0.04	1.00	<0.5	1.630	0.79	2.69	<0.01	<1			110
17/12/2008	5.60	20.70	11.7	106.31		7.88										13	190

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000								<0.001	0.001	
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
12/02/2004								<0.001	<0.001	
24/05/2004										
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	<0.001
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	<0.003	<0.003	<0.003
04/11/2008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000								<0.002	<0.002	
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.001	<0.001
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001
17/12/2008										

Longfield Bank 2

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3									<1
07/06/2000							0.038	0.8									43
18/09/2000							<0.035	<0.65									60
16/01/2001							<0.035	<4.35									490
14/03/2001							<0.035	0.9									120
25/06/2001							<0.035	0.83									1
24/09/2001							0.042	1.03									10
06/12/2001							<0.035	1.35									2800
20/03/2002							<0.035	<2.5						<2			170
04/07/2002							<0.035	0.83						<2			1320
26/11/2002							<0.035	1.33						<2			270
06/02/2003							<0.035	0.66	<8					<2			180
05/06/2003																	84
28/10/2003							0.064	1.19	<8					0.9			140
15/12/2003																	1460
12/02/2004							0.066	1.4	<8					<0.7			250
24/05/2004																	1
19/10/2004							0.064	1.19	<8					0.9			260
31/01/2005																	240
14/06/2005	13.70	22.80	14.19	157.76	1.00	8.00	0.16	1.30	<8	0.063	0.69	4.50	<0.01	0.61	<50		<1
03/10/2005	12.30	25.50	8.43	93.30	0.50	7.97	N/D	N/D	<8	N/D	N/D	N/D	<0.01	0.85	<50	11	11
21/02/2006	6.03	22.69	6.97	65.08	0.50	7.96	<0.04	0.73	0.18	<0.024	0.47	4.20	NR	NR	NR	10	24
14/06/2006	16.06	29.96	8.35	101.79	2.50	8.13										<2	2

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
29/11/2006	8.11	25.12	8.32	83.30	0.50	7.94	0.087	0.74	0.082	0.058	0.52	11.00	NR	NR	NR	7	100
21/06/2007	15.30	33.91	8.63	106.14	1.00	NR	0.046	0.86	0.67	0.768	1.03	3.49	<0.01	<1	<1	14	3
17/10/2007	12.00	26.20	6.58	72.39	1.00	7.87	<0.04	1.410	<0.5	0.309	0.700	2.890	<0.01	<1	<1	6	260
03/12/2007	7.40	16.86	7.86	71.924	1.00	7.76										22	500
14/02/2008	6.80	23.20	7.53	71.86		7.81	<0.04	0.72	<0.5	0.270	0.71	2.97	<0.01	1.00		3	8
04/11/2008	7.40	16.30	10.28	95.19			<0.04	1.07	<0.5	0.192	0.78	2.05	<0.01	<1			240
17/12/2008	5.50	20.10	11.53	105.82		7.85										16	270

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000										
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
12/02/2004								<0.001	<0.001	
24/05/2004										
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	<0.001
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	<0.003	<0.003	<0.003
04/11/2008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000										
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.001	<0.001
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001
17/12/2008										

Longfield Bank 3

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3									<1
07/06/2000							<0.035	0.7									17
18/09/2000							<0.035	<0.65									30
16/01/2001							<0.035	<4.35									170
14/03/2001							<0.035	0.85									79
25/06/2001							<0.035	0.73									<1
24/09/2001							<0.035	<0.65									3
06/12/2001							<0.035	0.88									1400
20/03/2002							0.064	<2.5						<2			250
04/07/2002							<0.035	1.06						<2			740
26/11/2002							<0.035	1.38						<2			680
06/02/2003							<0.035	1.8	<8					<2			90
05/06/2003																	320
28/10/2003							<0.035	0.7	<8					1			29
15/12/2003																	730
12/02/2004							0.038	0.8	<8					<0.83			280
24/05/2004																	1
19/10/2004							<0.035	0.7	<8					1			250
31/01/2005																	120
14/06/2005	13.67	23.41	10.94	122.00	1.00	7.99	0.044	1.10	<8	0.067	0.64	4.80	<0.01	0.63	<50		<1
03/10/2005	12.40	26.90	9.40	103.66	0.50	7.98	N/D	N/D	<8	N/D	N/D	N/D	<0.01	0.95	<50	4	11
21/02/2006	6.11	24.83	6.17	58.53	0.50	7.98	<0.04	2.50	0.065	<0.024	0.43	1.90	NR	NR	NR	57	13
14/06/2006	16.05	29.26	8.36	101.46	2.50	8.11										3	3

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
29/11/2006	8.60	25.83	10.56	106.94	0.50	7.97	0.110	1.50	<0.015	0.097	0.52	9.90	NR	NR	NR	5	70
21/06/2007	14.15	23.41	8.73	98.33	1.00	NR	<0.04	1.01	<0.5	0.610	0.79	3.85	<0.01	<1	<1	11	5
17/10/2007	12.10	27.00	6.40	71.45	1.00	7.87	<0.04	0.980	<0.5	0.517	0.660	3.330	0.014	<1	<1	<2	210
03/12/2007	7.50	14.50	7.85	74.132	1.00	7.75										4	600
14/02/2008	6.50	23.20	7.63	72.30		7.80	<0.04	0.87	<0.5	0.466	0.73	7.75	<0.01	1.10		2	15
04/11/2008	7.80	19.80	10.30	98.48			<0.04	0.77	<0.5	0.215	0.74	1.76	<0.01	<1			240
17/12/2008	5.60	22.00	11.42	105.42		7.90										11	130

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000								<0.001	<0.001	
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
12/02/2004								<0.001	<0.001	
24/05/2004										
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	<0.001
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
04/11/2008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000								<0.002	<0.002	
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001

Longfield Bank 4

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3					ALDRN				<1
07/06/2000							0.046	0.69					ug/l				2
18/09/2000							<0.035	<0.65									11
16/01/2001							<0.035	<4.35									280
14/03/2001							<0.035	0.75									12
25/06/2001							<0.035	0.86									<1
24/09/2001							<0.035	<0.65									<1
06/12/2001							<0.035	1									900
20/03/2002							<0.035	<2.5						<2			20
04/07/2002							<0.035	1.02						<2			810
26/11/2002							<0.035	0.99						<5.4			370
06/02/2003							0.184	0.86	<8					<2			210
05/06/2003																	98
28/10/2003							0.273	<0.65	<8					1.07			8
15/12/2003																	270
12/02/2004							<0.035	1	<8					<0.8			<30
24/05/2004																	<1
19/10/2004							0.273	<0.65	<8					1.07			80
31/01/2005																	45
14/06/2005	13.87	24.18	9.26	104.19	1.00	8.01	<0.035	0.92	<8	0.064	0.59	3.20	<0.01	0.68	<50		<1
03/10/2005	12.30	25.97	8.53	95.23	0.50	7.96	N/D	N/D	<8	N/D	N/D	N/D	<0.01	0.91	<50	4	22
21/02/2006	-	-			0.50	8.01	<0.04	2.20	0.14	0.069	0.43	3.00	NR	NR	NR	10	6
14/06/2006	15.52	30.14	8.43	101.77	1.00	8.14										<2	<1

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
29/11/2006	NR	NR	NR	NR	0.50	7.97	<0.04	0.76	0.041	<0.04	0.39	4.10	NR	NR	NR	18	119
21/06/2007	15.10	34.31	10.07	123.67	1.00	NR	<0.04	0.76	<0.5	0.511	0.88	2.32	<0.01	<1	<1	9	3
17/10/2007	12.50	29.00	6.44	72.69	1.00	7.88	<0.04	0.750	<0.5	0.225	0.580	1.360	<0.01	<1	<1	3	76
03/12/2007	7.40	19.00	8.02	75.71	1.00	7.78										3	300
14/02/2008	7.30	25.40	7.20	70.53		7.83	<0.04	0.56	<0.5	0.343	0.62	4.34	<0.01	1.20		5	12
04/11/2008	7.80	19.50	9.86	94.09			<0.04	1.41	<0.5	0.137	0.64	1.53	<0.01	1.10			NR
17/12/2008	5.60	22.50	11.38	106.50		7.89										12	100

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000								<0.001	<0.001	
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
12/02/2004								<0.001	<0.001	
24/05/2004										
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	0.008
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	<0.003	<0.003	<0.003
04/11/2008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000								<0.002	<0.002	
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.001	<0.001
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001
17/12/2008										

Longfield Bank 5

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
10/04/2000							<0.035	<3.3					ALDRN				<1
07/06/2000							0.052	<0.65					ug/l				<1
18/09/2000							<0.035	<0.65									3
16/01/2001							<0.035	<4.35									35
14/03/2001							<0.035	0.8									2
25/06/2001							<0.035	0.92									2
24/09/2001							<0.035	<0.65									<1
06/12/2001							<0.035	0.98									1600
20/03/2002							<0.035	<2.5						<2			3
04/07/2002							<0.035	0.97						<2			570
26/11/2002							<0.035	0.98						<4.13			90
06/02/2003							<0.035	0.67	<8					<2			80
05/06/2003																	5
28/10/2003							<0.039	1.52	<8					1.04			5
15/12/2003																	98
12/02/2004							0.038	0.89	<8					<0.85			28
24/05/2004																	<1
19/10/2004							<0.039	1.52	<8					1.04			50
31/01/2005																	16
14/06/2005	13.95	24.53	7.52	84.92	1.00	8.05	<0.035	0.97	<8	0.100	0.59	7.60	<0.01	0.60	<50		<1
03/10/2005	12.20	28.30	8.24	91.86	0.50	7.97	N/D	N/D	<8	N/D	N/D	N/D	<0.01	0.87	<50	4	14
21/02/2006	-	-			0.50	8.02	<0.04	0.36	0.19	0.400	4.40	42.00	NR	NR	NR	3	4
14/06/2006	16.01	30.47	8.27	101.03	1.00	8.13										<2	<1

Date	Temp	Salinity	DO	% sat	Secchi	pH	Cd	Cu	Cr	Pb	Ni	Zn	Hg	As	Ag	SS	Faecal Coli
29/11/2006	NR	NR	NR	NR	0.50	7.97	<0.04	0.64	0.1	<0.04	0.50	6.60	NR	NR	NR	7	55
21/06/2007	15.40	34.21	10.62	131.13	1.00	NR	<0.04	1.21	<0.5	0.382	0.74	1.74	<0.01	<1	<1	6	4
17/10/2007	12.40	29.40	6.30	72.80	1.00	7.88	<0.04	1.020	<0.5	0.195	0.510	1.270	<0.01	<1	<1	<2	51
03/12/2007	7.40	19.30	7.87	77.23	1.00	7.85										3	400
14/02/2008	7.20	26.60	7.31	72.00		7.83	<0.04	0.61	<0.5	0.583	0.59	6.02	<0.01	1.20		<2	4
04/11/2008	8.10	22.40	9.79	95.86			<0.04	0.71	<0.5	0.116	0.64	3.28	<0.01	1.10			75
17/12/2008	5.80	24.60	11.1	107.02		7.84										12	NR

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
10/04/2000								<0.001	0.001	
07/06/2000								<0.001	0.001	
18/09/2000								<0.001	<0.001	
16/01/2001								<0.001	<0.001	
14/03/2001								<0.001	<0.001	
25/06/2001								<0.001	<0.001	
24/09/2001								<0.001	<0.001	
06/12/2001								<0.001	<0.001	
20/03/2002								<0.001	<0.001	
04/07/2002								<0.001	<0.001	
26/11/2002								<0.001	<0.001	
06/02/2003								<0.001	<0.001	
05/06/2003										
28/10/2003								<0.001	<0.001	
15/12/2003										

Date	PCB 28	PCB 52	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	HCH-a	HCH-b	HCH-g
12/02/2004								<0.001	<0.001	
24/05/2004										
19/10/2004								<0.001	<0.001	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/10/2005	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/02/2006	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	NR	<0.001
14/06/2006										
29/11/2006	<0.002	<2	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	N.R.	<0.001
21/06/2007	<0.002	NR	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17/10/2007	<0.002	<0.002	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
03/12/2007										
14/02/2008	NR	NR	NR	NR	NR	NR	NR	<0.003	<0.003	<0.003
04/11/2008	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003
17/12/2008										

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
10/04/2000								<0.002	<0.002	
07/06/2000								<0.002	<0.002	
18/09/2000								<0.002	<0.002	
16/01/2001								<0.002	<0.002	
14/03/2001								<0.002	<0.002	
25/06/2001								<0.002	<0.002	
24/09/2001								<0.002	<0.002	
06/12/2001								<0.002	<0.002	

Date	opDDT	ppDDT	ppTDE	ppDDE	HCB	HCBD	endrin	dieldrin	aldrin	isodrin
20/03/2002								<0.002	<0.002	
04/07/2002								<0.002	<0.002	
26/11/2002								<0.002	<0.002	
06/02/2003								<0.002	<0.002	
05/06/2003										
28/10/2003								<0.002	<0.002	
15/12/2003										
12/02/2004								<0.002	<0.002	
24/05/2004										
19/10/2004								<0.002	<0.002	
31/01/2005										
14/06/2005	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
03/10/2005	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
21/02/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002
14/06/2006										
29/11/2006	<0.002	<0.002	<0.002	<0.002	<0.001	<2	<0.002	<0.002	<0.002	<0.002
21/06/2007	<0.002	<0.002	<0.002	<0.002	<0.001	NR	<0.002	<0.002	<0.002	<0.002
17/10/2007	<0.002	<0.002	<0.002	<0.002	<0.001	N.R.	<0.002	<0.002	<0.002	<0.002
03/12/2007										
14/02/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.001	<0.001
04/11/2008	<0.003	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.001	<0.001	<0.001
17/12/2008										

Appendix 6

Historical Shellfish Sampling Results

Heavy metal results from mussels from Balls Point and Longfield Bank from 2000 to 2008 (NIEA). All values are in µg/kg (wet weight basis).

Date	Site	As	Ag	Cd	Cr	Cu	Fe	Hg	Ni	Pb	Zn	Se
28/04/2000	Balls Point	2684	153	362	699	1728	73177	25	637	146	14027	/
28/04/2000	Longfield Bank	2734	117	325	586	1470	94453	32	513	115	10241	/
07/03/2001	Balls Point	2295	151	224	468	1289	53950	19	248	144	10700	/
07/03/2001	Longfield Bank	2277	120	236	409	1263	49300	24	285	294	10800	/
23/04/2001	Balls Point	2166	130	266	436	1598	32450	22	591	<140	12350	/
23/04/2001	Longfield Bank	2277	123	250	431	1505	58450	19	374	<140	11450	/
14/05/2002	Balls Point	2418	57	46	264	2250	35040	19	279	662	11850	/
14/05/2002	Longfield Bank	1395	54	61	262	1945	38420	18	356	293	10125	/
18/03/2003	Balls Point		131	269	470	1019	21210		274	<140	12500	/
20/03/2003	Longfield Bank		134	275	496	2191	40727		223	<140	11667	/
11/03/2004	Balls Point	2817	137	231	558	1243	40670	11	413	68	13250	/
11/03/2004	Longfield Bank	2949	73	290	468	1117	45100	19	396	154	14050	/
08/07/2004	Balls Point	3052	172	464	517	1594	12735	24	639	58	74100	/
08/07/2004	Longfield Bank	2741	72	259	399	1285	38130	20	436	82	16800	/
25/01/2005	Balls Point	1965	106	302	531	1542	18400	31	372	142	13250	/
25/01/2005	Longfield Bank	3011	107	310	531	1472	12290	18	319	76	12665	/
19/07/2005	Balls Point	2841	85	285	422	1433	74325	38	472	203	13050	/

Date	**Site**	**As**	**Ag**	**Cd**	**Cr**	**Cu**	**Fe**	**Hg**	**Ni**	**Pb**	**Zn**	**Se**
27/07/2005	Longfield Bank	2802	100	265	407	1564	86095	36	298	323	13850	/
28/03/2006	Balls Point	2242	98	295	607	1325	31345	30	427	76	12850	/
28/03/2006	Longfield Bank	3326	116	304	884	1264	34830	34	398	53	14595	/
28/03/2007	Balls Point	2340	93	324	582	1304	24805	43	563	49	13060	496
29/08/2007	Balls Point	2505	90	277	840	1294	28950	28	494	65	12505	/
23/04/2008	Balls Point	2597	86	319	833	1153	38745	27	445	50	10620	446
22/07/2008	Balls Point	2366	78	323	648	1377	58270	30	522	74	13890	/
29/08/2007	Longfield Bank	2526	98	290	741	1170	44165	28	337	60	12080	/
28/03/2007	Longfield Bank	2407	76	355	425	1053	54000	31	505	82	12870	285
23/04/2008	Longfield Bank	2407	74	309	746	1367	38185	25	492	139	11700	475
22/07/2008	Longfield Bank	2262	89	307	603	1452	46755	29	507	58	14015	/

Organochloride results from mussels from Balls Point and Longfield Bank from 2000 to 2008 (NIEA). All values are in µg/kg (wet weight basis).

Date	Site	HCBD	HCB	α&β HCH	γHCH	Isodrin	Heptachlor	Dieldrin	Endrin	*p,p'*-DDE	*o,p'*-DDT	*p,p'*-TDE	*p,p'*-DDT	Total DDT
22/08/2000	Ball's Point	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	/
28/04/2000	Longfield Bank	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	/
28/04/2000	Ball's Point	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	/
07/03/2001	Ball's Point	<0.1	<0.1	/	<0.1	<0.1	<0.1	0.4	<0.1	0.3	<0.1	0.3	0.2	/
07/03/2001	Longfield Bank	<0.1	<0.1	/	<0.1	<0.1	0.3	0.3	<0.1	0.4	<0.1	0.3	0.2	/
23/04/2001	Ball's Point	<0.1	<0.1	/	<0.1	<0.1	<0.1	0.3	<0.1	0.3	<0.1	0.2	0.3	/
14/05/2002	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.3	<0.1	0.2	<0.1	0.5
14/05/2002	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1	0.2	<0.1	0.2
18/03/2003	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	/	0.4	<0.1	0.4	<0.1	0.4	<0.1	0.8
19/08/2003	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	/	0.3	<0.1	0.3	<0.1	0.2	<0.1	0.5
19/08/2003	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	/	0.1	<0.1	0.2	<0.1	0.2	<0.1	0.4
20/03/2003	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	/	0.4	<0.1	0.4	<0.1	0.4	<0.1	0.8
20/03/2003	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	/	0.2	<0.1	0.3	<0.1	0.3	<0.1	0.6
11/03/2004	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.4	<0.1	0.3	<0.1	0.8
11/03/2004	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.5	<0.1	0.4	<0.1	0.9
08/07/2004	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1
08/07/2004	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	<0.1	0.1	<0.1	0.3
25/01/2005	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1		<0.1	0.4
25/01/2005	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.5	<0.1		<0.1	0.9

Date	Site	HCBD	HCB	α&β HCH	γHCH	Isodrin	Heptachlor	Dieldrin	Endrin	*p,p'*-DDE	*o,p'*-DDT	*p,p'*-TDE	*p,p'*-DDT	Total DDT
19/07/2005	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	<0.1		<0.1	0.3
27/07/2005	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.3	<0.1		<0.1	0.4
28/03/2006	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.4	<0.1	0.3	<0.1	0.6
28/03/2006	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.4	<0.1	0.2	<0.1	0.4
25/07/2006	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	<0.1	0.2	<0.1	0.4
25/07/2006	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.3	<0.1	0.2	<0.1	0.6
28/03/07	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.3	<0.1	0.1	<0.1	0.5
28/03/07	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.4	<0.1	0.2	<0.1	0.6
29/08/07	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.3	<0.1	0.2	<0.1	0.4
29/08/07	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.3	<0.1	0.2	<0.1	0.5
22/07/2008	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.3	<0.1	0.2	<0.1	0.5
22/07/2008	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1	0.2	<0.1	0.4
23/04/2008	Longfield Bank	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.4	<0.1	0.3	<0.1	0.7
23/04/2008	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.4	<0.1	0.3	<0.1	0.6

PCB results from mussels from Balls Point and Longfield Bank from 2000 to 2008 (NIEA). All values are in µg/kg (wet weight basis).

Date	Site	PCB 28	PCB 52	PCB 101	PCB 118	PCB 153	PCB 105	PCB 138	PCB 156	PCB 180
28/04/2000	Ball's Point	<1	<1	<1	<1	<1	<1	<1	<1	<1
28/04/2000	Longfield Bank	<1	<1	<1	<1	<1	<1	<1	<1	<1
07/03/2001	Ball's Point	<0.1	<0.1	<0.1	0.30	0.20	<0.1	0.20	<0.1	<0.1
07/03/2001	Longfield Bank	0.3	<0.1	0.20	0.30	0.30	<0.1	0.30	<0.1	<0.1
23/04/2001	Longfield Bank	<0.1	<0.1	<0.1	0.20	0.20	<0.1	0.20	<0.1	<0.1
23/04/2001	Ball's Point	<0.1	<0.1	<0.1	0.20	0.20	<0.1	0.20	<0.1	<0.1
14/05/2002	Ball's Point	<0.1	<0.1	0.1	0.3	0.4	<0.1	0.3	<0.1	<0.1
14/05/2002	Longfield Bank	<0.1	<0.1	<0.1	0.3	0.4	<0.1	0.2	<0.1	<0.1
18/03/2003	Ball's Point	<0.1	<0.1	<0.1	0.3	0.2	<0.1	0.3	<0.1	<0.1
20/03/2003	Longfield Bank	<0.1	<0.1	<0.1	0.3	0.2	<0.1	0.2	<0.1	<0.1
20/03/2003	Ball's Point	<0.1	<0.1	<0.1	0.3	0.2	<0.1	0.2	<0.1	<0.1
19/08/2003	Longfield Bank	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1	<0.1
19/08/2003	Ball's Point	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	0.2	<0.1	<0.1
11/03/2004	Ball's Point	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	0.3	<0.1	<0.1
11/03/2004	Longfield Bank	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.4	<0.1	<0.1
08/07/2004	Ball's Point	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1
08/07/2004	Longfield Bank	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	<0.1	<0.1
25/01/2005	Ball's Point	<0.1	<0.1	<0.1	<0.1		<0.1		<0.1	<0.1
25/01/2005	Longfield Bank	<0.1	<0.1	<0.1	0.3	0.4	<0.1	0.4	<0.1	<0.1
19/07/2005	Ball's Point	<0.1	<0.1	<0.1	<0.1		<0.1		<0.1	<0.1
27/07/2005	Longfield Bank	<0.1	<0.1	<0.1	<0.1		<0.1		<0.1	<0.1
28/03/2006	Ball's Point	0.1	<0.1	0.1	<0.1	0.5	<0.1	0.3	<0.1	<0.1
28/03/2006	Longfield Bank	<0.1	<0.1	0.1	<0.1	0.4	<0.1	0.2	<0.1	<0.1
25/07/2006	Ball's Point	<0.1	<0.1	<0.1	0.1	0.2	<0.1	0.1	<0.1	<0.1
25/07/2006	Longfield Bank	<0.1	<0.1	0.1	0.2	0.3	<0.1	0.2	<0.1	<0.1
3/28/2007	Ball's Point	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.3	<0.1	<0.1

Date	Site	PCB 28	PCB 52	PCB 101	PCB 118	PCB 153	PCB 105	PCB 138	PCB 156	PCB 180
3/28/2007	Longfield Bank	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	0.4	<0.1	<0.1
8/29/2007	Ball's Point	<0.1	<0.1	0.1	<0.1	0.4	<0.1	0.2	<0.1	<0.1
8/29/2007	Longfield Bank	<0.1	<0.1	0.2			<0.1	0.4	<0.1	<0.1
23/04/2008	Longfield Bank	<0.1	<0.1	0.2	<0.1	0.2	0.4	0.7	<0.1	<0.1
23/04/2008	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.4	<0.1	<0.1
22/07/2008	Longfield Bank	<0.1	<0.1	0.2	<0.1	0.2	0.3	0.6	<0.1	<0.1
22/07/2008	Ball's Point	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.5	<0.1	<0.1

PAH results from mussels from Balls Point and Longfield Bank in 2000 and 2008 (NIEA). All values are in µg/kg (wet weight basis).

Date	Site	NAP	PA	ANT	FLU	PYR	BAA	CHRY/TR	BAP	ICDP	BGHIP
07/03/2001	Ball's Point	1.6	5.7	1.4	3.4	16.7	4.9	5.8	5.2	<1.25	3.7
07/03/2001	Longfield Bank	1.8	4.9	1.6	2.8	21.1	10.5	3.4	6.2	<1.25	4.1
14/05/2002	Ball's Point	3.3	11.1	3.0	18.3	28.2	7.3	14.9	3.4	1.4	2.6
14/05/2005	Longfield Bank	4.1	11.2	3.2	18.1	28.4	7.0	14.6	3.2	1.4	2.2
18/03/2003	Ball's Point	1.6	5.6	1.8	6.9	9.2	3.3	6.3	1.9	1.6	2.1
20/03/2003	Longfield Bank	1.5	3.5	1.5	5.1	7.4	3.8	5.9	2.1	1.7	2.2
20/03/2003	Ball's Point	1.5	3.5	1.2	6.5	7.5	2.7	4.9	1.7	1.5	1.9
19/08/2003	Ball's Point	1.6	2.1	0.6	2.8	4.2	3.3	3.5	3.1	3.9	4.4
19/08/2003	Longfield Bank	4.2	1.8	0.5	1.7	2.2	2.8	2.6	3.1	4.1	4.4
11/03/2004	Ball's Point	1.04	4.35	0.49	7.47	6.87	1.61	5.30	0.78	1.00	1.87
11/03/2004	Longfield Bank	0.96	2.90	0.66	7.11	9.11	3.13	6.75	1.40	1.36	2.66
08/07/2004	Ball's Point	0.29	2.23	0.36	2.72	3.01	1.11	3.23	0.56	1.29	2.54
08/07/2004	Longfield Bank	0.72	2.13	0.41	3.85	5.55	2.08	2.36	0.90	1.49	2.19
25/01/2005	Ball's Point	<0.5	3.6	<0.5	5.7	6.0	2.1	2.4	0.7	1.5	0.9
25/01/2005	Longfield Bank	<0.5	3.6	<0.5	6.4	8.4	3.4	2.9	1.0	1.9	1.0
19/07/2005	Ball's Point	<0.5	0.9	<0.5	1.1	1.3	0.9	0.8	<0.5	1.1	<0.5
27/07/2005	Longfield Bank	<0.5	1.5	<0.5	2.8	4.5	2.3	1.5	0.6	1.5	1.0
28/03/2006	Ball's Point	<0.5	2.8	<0.5	5.4	6.5	2.6	4.7	1	1.2	1.7
28/03/2006	Longfield Bank	<0.5	3.6	<0.5	5.9	6.2	2.2	4.8	0.9	1.1	1.7
25/07/2006	Ball's Point	<0.5	11.2	<0.5	1.3	1.3	1	1.6	<0.5	0.7	0.9

Date	Site	NAP	PA	ANT	FLU	PYR	BAA	CHRY/TR	BAP	ICDP	BGHIP
25/07/2006	Longfield Bank	<0.5	1.6	<0.5	3.3	3.3	2.4	3.2	0.6	1	1.6
3/28/2007	Ball's Point	0.6	3.2	<0.5	5.3	5.1	2.2	4.1	0.8	0.7	1.2
3/28/2007	Longfield Bank	0.8	3.5	<0.5	6.9	8.2	3.8	5.2	1.3	1.0	1.6
8/29/2007	Ball's Point	<0.5	3.9	<0.5	2.0	1.7	0.8	1.1	<0.5	0.6	1.3
8/29/2007	Longfield Bank	<0.5	1.8	<0.5	3.8	5.2	2.9	2.4	0.6	1.3	2.0
23/04/2008	Longfield Bank	<0.5	2.3	0.6	5.3	7.0	2.5	4.1	1.1	2.0	1.4
23/04/2008	Ball's Point	<0.5	1.8	<0.5	3.4	3.2	1.3	2.8	0.8	1.5	1.0
22/07/2008	Longfield Bank	<0.5	1.2	<0.5	4.4	4.3	1.8	2.2	1.0	1.7	1.2
22/07/2008	Ball's Point	<0.5	1.4	<0.5	5.4	2.1	1.1	1.5	0.7	1.4	0.9

PCP and TBTO mussels from Balls Point and Longfield Bank from 2000 to 2008 (NIEA). All values are in µg/kg (wet weight basis).

Date	Site	PCP	TBTO	Date	Site	PCP	TBTO
28/04/2000	Balls Point	/	<10	25/01/2005	Ball's Point	/	<10
28/04/2000	Longfield Bank	/	<10	25/01/2005	Longfield Bank	/	<10
07/03/2001	Balls Point	10	<10	19/07/2005	Ball's Point	/	<10
07/03/2001	Longfield Bank	10	<10	27/07/2005	Longfield Bank	/	<10
23/04/2001	Balls Point	/	10	28/03/2006	Ball's Point	<0.1	
23/04/2001	Longfield Bank	/	<10	28/03/2006	Longfield Bank	<0.1	
14/05/2002	Balls Point	/	206	25/07/2006	Ball's Point	<0.1	
14/05/2002	Longfield Bank	/	226	25/07/2006	Longfield Bank	<0.1	
18/03/2003	Balls Point	<10.00	20.00	28/03/2007	Ball's Point	<1	<5
20/03/2003	Balls Point	<10.00	<10.00	28/03/0207	Longfield Bank	<1	<5
20/03/2003	Longfield Bank	<10.00	20.00	29/08/0207	Ball's Point	<1	<5
19/08/2003	Balls Point	<10.00	16.00	29/08/0207	Longfield Bank	<1	<5
19/08/2003	Longfield Bank	<10.00	<10.00	23/04/2008	Ball's Point	<1	<5
11/03/2004	Ball's Point	<10.00	/	23/04/2008	Longfield Bank	<1	<5
11/03/2004	Longfield Bank	<10.00	/	22/07/2008	Ball's Point	<1	<5
08/07/2004	Ball's Point	<10.00	/	22/07/2008	Longfield Bank	<1	<5
08/07/2004	Longfield Bank	<10.00	/				

Biotoxin results for Balls Point mussel beds from 2008-2009 (FSANI).

Date of Sampling	Shellfish Species	DSP (must not be present)	ASP (20µg/g)	PSP (80µg/100g)
09/01/2008	Mussels	NEG	<A.L	NEG
19/03/2008	Mussels	NEG	<A.L.	NEG
23/04/2008	Mussels	NEG	<0.3	NEG
28/05/2008	Mussels	NEG	<0.3	NEG
19/06/2008	Mussels	NEG	<0.3	NEG
22/07/2008	Mussels	NEG	<A.L	NEG
27/08/2008	Mussels	NEG	<A.L.	NEG
16/09/2008	Mussels	NEG	<A.L	NEG
28/10/2008	Mussels	NEG	<A.L.	NEG
25/11/2008	Mussels	NEG	<A.L.	NEG
09/12/2008	Mussels	NEG	<0.3	NEG
13/01/2009	Mussels	NEG	0.58	NEG
10/02/2009	Mussels	NEG	<A.L.	NEG
26/03/2009	Mussels	NEG	<A.L.	NEG
28/04/2009	Mussels	NEG	<A.L.	NEG
12/05/2009	Mussels	NEG	<A.L.	NEG
09/06/2009	Mussels	NEG	<A.L.	NEG
07/07/2009	Mussels	NEG	<A.L.	NEG
10/08/2009	Mussels	NEG	NEG	<A.L.
06/09/2009	Mussels	NEG	<A.L.	NEG
20/10/2009	Mussels	NEG	<A.L.	NEG
04/11/2009	Mussels	NEG	<A.L.	NEG
16/12/2009	Mussels	NEG	<A.L.	NEG

Biotoxin results for Longfield Bank mussel beds from 2008-2009 (FSANI).

Date of Sampling	Shellfish Species	DSP (must not be present)	ASP 20μg/g)	PSP (80μg/100g)
09/01/2008	Mussels	NEG	<A.L.	NEG
05/02/2008	Mussels	NEG	<0.3	NEG
19/03/2008	Mussels	NEG	<A.L.	NEG
23/04/2008	Mussels	NEG	<0.3	NEG
05/2008	Mussels	Unsuitable for testing		
03/06/2008	Mussels	NEG	<A.L	NEG
19/06/2008	Mussels	NEG	>0.3	NEG
22/07/2008	Mussels	NEG	<A.L	NEG
27/08/2008	Mussels	NEG	<A.L.	NEG
16/09/2008	Mussels	NEG	<A.L	NEG
28/10/2008	Mussels	NEG	<A.L.	NEG
25/11/2008	Mussels	NEG	<A.L.	NEG
09/12/2008	Mussels	NEG	<0.3	NEG
13/01/2009	Mussels	NEG	0.7	NEG
10/02/2009	Mussels	NEG	<A.L.	NEG
26/3/2009	Mussels	NEG	<A.L.	NEG
28/04/2009	Mussels	NEG	<A.L.	NEG
12/05/2009	Mussels	NEG	<A.L.	NEG
09/06/2009	Mussels	NEG	<A.L.	NEG
09/07/2009	Mussels	NEG	<A.L.	NEG
10/08/2009	Mussels	NEG	NEG	<A.L.
06/09/2009	Mussels	NEG	<A.L.	NEG
20/10/2009	Mussels	NEG	<A.L	NEG
04/11/2009	Mussels	NEG	<A.L	NEG
16/12/2009	Mussels	NEG	<A.L	NEG

Biotoxin results for Redcastle Perch wild oyster beds for 2009 (FSANI).

Date of Sampling	Shellfish Species	DSP (must not be present	ASP (20µg/g)	PSP (80µg/100g)
13/01/2009	Oysters	NEG	<0.3	NEG
10/02/2009	Oysters	NEG	<A.L.	NEG
April 2009	No Longer Harvesting			
May 2009	No Longer Harvesting			
June 2009	No Longer Harvesting			
July 2009	No Longer Harvesting			
August 2009	No Longer Harvesting			
06/09/2009	Oysters	NEG	<A.L.	NEG
20/10/2009	Oysters	NEG	<A.L.	NEG
04/11/2009	Oysters	NEG	<A.L.	NEG
16/12/2009	Oysters	NEG	<A.L.	NEG

Phytoplankton results for Balls Point mussel beds from 2008-2009 (FSANI).

Date of Sampling	Shellfish Species	DSP	ASP	PSP
09/01/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
07/02/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
24/02/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
18/03/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
07/04/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
22/04/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
06/05/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
20/05/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
18/06/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
21/07/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
05/08/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
27/08/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
15/09/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
01/10/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
27/10/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
10/11/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
24/11/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
08/12/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
12/01/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
26/01/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
09/02/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
03/03/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
25/03/2009	Mussels	**Sample Unable to be Counted**		
27/04/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
11/05/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
08/06/2009	Mussels	**Sample Unable to be Counted**		
22/06/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
06/07/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
20/07/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
09/08/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
06/09/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
23/09/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
06/10/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
20/10/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
03/11/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
16/11/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
15/12/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels

Phytoplankton results for Longfield Bank mussel beds from 2008-2009 (FSANI).

Date of Sampling	Shellfish Species	DSP	ASP	PSP
09/01/2008	Mussels	**Sample Unable to be Counted**		
07/02/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
24/02/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
18/03/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
07/04/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
22/04/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
06/05/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
20/05/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
18/06/2008	Mussels	**Sample Unable to be Counted**		
25/06/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
21/07/2008	Mussels	**Sample Unable to be Counted**		
05/08/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
27/08/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
15/09/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
01/10/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
27/10/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
10/11/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
24/11/2008	Mussels	**Sample Unable to be Counted**		
08/12/2008	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
12/01/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
26/01/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
09/02/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
03/03/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
25/03/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
27/04/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
11/05/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
08/06/2009	Mussels	**Sample Unable to be Counted**		
22/06/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
06/07/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
20/07/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
09/08/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
06/09/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
23/09/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
05/10/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
20/10/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
03/11/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
16/11/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels
15/12/2009	Mussels	Below Trigger Levels	Below Trigger Levels	Below Trigger Levels

Phytoplankton results for Redcastle Perch wild oyster beds for 2009 (FSANI).

Date of Sampling	Shellfish Species	DSP	ASP	PSP
12/01/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
09/02/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
03/03/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
25/03/2009	**Sample Unable to be Counted**			
27/04/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
08/06/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
22/06/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
July 2009	**No Longer Harvesting**			
06/09/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
23/09/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
6/10/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
20/10/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
03/11/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
16/11/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level
15/12/2009	Oysters	Below Trigger Level	Below Trigger Level	Below Trigger Level

Appendix 7

Sample Submission Form

Shellfish Sample Results

Council name

Full postal address

Telephone number

Fax number

Sample Date

Location data

CEFAS RMP id ☐

RMP name ☐

Actual location of sampling:

NGR/Lat Long ☐

General data

Collection date ☐

Time of collection ☐

Collection method

☐ *Hand picked* ☐ *Hand raked*

☐ *Dredged*

If OTHER please specify ☐

Water/between-sample temperature (°C)* ☐

**delete as appropriate*

Species

☐ *Mytilus* spp. ☐ *O. edulis* ☐ *C. gigas*

☐ *C. edule* ☐ *T. philippinarum*

☐ *Mya arenaria* ☐ *P. maximums* ☐ *Spisula* spp.

☐ *M. mercenaria* ☐ *Ensis* spp.

☐ *T. decussatus* ☐ Other (please state)

Additional information ☐

Name of sampling officer ☐

Test details

Date & time arrived at lab

Temperature on arrival (°C)

Date & time tested

Testing laboratory

E.coli/100g

Salmonella tested ☐ *yes* ☐ *no*

Salmonella isolated ☐ *yes* ☐ *no*

Species isolated (if applicable):