Library Reference 3.2

Onondaga County Department of Water Environment Protection
Tributary Audit Report

Completed on: _May 12, 2011
Completed by: Liz Moran, EcoLogic

Quality Assurance Project Plan Requirement	Comment
Sondes calibrated per written procedure and logged in bound notebook	Acceptable
Bottles pre-labeled and match planned field effort	Acceptable (date was modified, power outage at the lab)- sample bottles re-dated by hand
Chain-of-custody accurate and complete	Acceptable. Notebooks well maintained
Wash blanks prepared on cleaned equipment and submitted to lab check-in prior to departure.	Acceptable – the lab has now fully integrated the reverse osmosis water treatment system
Field crews verify that all equipment is loaded into vehicles prior to departure	Acceptable. New checklist
Schedule and sequence of sites are reviewed prior to departure	Acceptable. We conferred with Dan Walpole to coordinate working with B and A crews.
Safety precautions observed	Excellent, new this year- safety glasses for handling preservatives. Other innovations noted in 2010 continue to be observed, lights on truck, all wearing vests, traffic cones, etc.
Field team verifies correct location prior to initiating sampling	Acceptable. Marks on bridges remain visible
Samples collected per QAPP	New site- manhole 15 replaces East Flume (see notes)
Duplicate sample collected	Acceptable- rotated among stations
Water mixed in churn	Acceptable
Bottles rinsed with sample water prior to filling	Acceptable (caps are also rinsed)
Field filtration SRP, TDP samples	Acceptable
Preservation in accordance with QAPP	Acceptable, verified with dip strips.
Proper equipment used for each sampling location	Acceptable
Field crews observe ambient conditions and make notes as needed	Acceptable
Field crews properly trained and understand assignments	Acceptable, very well organized and trained crews

Summary: Janaki Suryadevara and I accompanied Dan Walpole on a routine tributary monitoring event and had the opportunity to observe both crews (A and B).

We began at Manhole 15, which is on the lakeshore in the Honeywell remedial construction area. This site replaces the East Flume. Crew explained the flow calculations (measure velocity and water level in pipe). Pipe is 4 ft. diameter. Dunker had to pass through floatables to collect aqueous sample.

We observed conditions at tributary 5a; stream bed and bank conditions adjacent to the sampling location continue to be modified by construction activity at the Crucible Specialty Metals facility (replacing sewers).

We proceeded to the station on Harbor Brook at Bellvue, newly added to the 2011 program, and observed sampling of this small tributary- using 1 qt. jar on rope to collect. Site is upstream of the underground portion. Janaki will review the CDM map to evaluate whether the site could be affected by CSO.

Finally, we proceeded to Onondaga Creek in the vicinity of the CSO 044 location which will be sampled during dewatering for construction and located the bridge access points. Rich St bridge, upstream.

We noted that the 2012 program will include stream mapping. We observed the outside of the storage/RTF at Midland Ave and agreed to schedule a tour for later in the summer.

Overall, the tributary sampling is exceptionally well-organized; sample collection and documentation followed the written protocols. The equipment is well-maintained. Staff are focused and committed to collecting representative samples.

I have no additional recommendations as a result of the May 12, 2011 tributary field audit.

Elizabeth C. Moran

Onondaga County Department of Water Environment Protection
Lake Audit Checklist

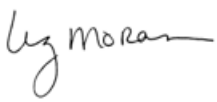
Completed on: _June 1, 2011
Completed by: Liz Moran, EcoLogic

Quality Assurance Project Plan Requirement	Comment
Sondes calibrated per written procedure and logged in bound notebook	Yes- sonde failed to stabilize during field profile, replaced
Bottles pre-labeled and match planned field effort	yes
Chain-of-custody accurate and complete	yes
Wash blanks prepared on cleaned equipment and submitted to lab check-in	Yes, all ready by 0730
Field crews verify that all equipment is loaded into vehicle prior to departure	Day-specific checklist, initialed
Schedule and sequence of sites are reviewed prior to departure	N/A- lake
Field team verifies correct location prior to initiating sampling	Tethered to buoy at S Deep, near shore locations verified
Samples collected per QAPP	yes
Duplicate sample collected	Yes
Equipment markings maintained and legible	yes
Submersible pump allowed to run for sufficient time to purge system of previous sample	yes
Tube composites sampled properly	yes
Depth composites determined in field using proper reasoning and reference to SOP	Yes- first day of stratified period defaults
Water mixed in churn at proper rate	yes
Flow meter for zooplankton net tow calculations	yes
Bottles rinsed with sample prior to filling	Yes, also caps
Field filtration SRP, TDP samples	yes
Field crew discusses and reaches correct decision regarding collection of sulfide samples	Redox high
Preservation in accordance with QAPP	Yes- safety glasses
Proper equipment used for each sampling location	yes
Field crews observe ambient conditions and make notes as needed	Yes, very observant
Field crews properly trained and understand assignments	yes

Summary: Janaki Suryadevara and I accompanied Dan Walpole, Jason Teribury, Alex Studdert and Nate Talucci to audit the lake sampling effort. Water levels remain high, marina open. We arrived on station at 8:30 am. Sonde did not stabilize (DO sensor fluctuating). Jason verified that the probe was not stable at depths below the surface and conferred with Dan, they decided to return to facility for a back-up probe. The unit calibrated properly in the lab prior to departure.

Janaki and I were pleased with the decision-making process and Jason's attentiveness to the equipment readout. While Jason returned to Henry Clay to prepare a second unit, we completed several of the near-shore stations and North Deep. Back at South Deep by 1000, sampling proceeded smoothly and in accordance with the QAPP. Completed the remainder of the nearshore stations, returned to marina by 1230.

No additional recommendations, sampling is extremely well organized and the crew is trained, attentive to detail and focused.



ANCHOR QEA

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MEMORANDUM

To:	Liz Moran, EcoLogic, LLC	**Date:**	May 18, 2011
From:	Margaret H. Murphy, Anchor QEA	**Project:**	090582-01.06
Cc:	Files		
Re:	Field Audit of OCDWEP Pelagic Larval Sampling Program		

On May 18, 2011, Dr. Margaret H. Murphy (Anchor QEA, LLC) conducted a quality assurance/quality control (QA/QC) audit of the Onondaga County Department Water Environment Protection's (OCDWEP) field pelagic larvae trawl efforts. The purpose of the audit was to ensure that the studies were conducted as outlined in Section 3.0 of the Quality Assurance Program Plan for the Onondaga Lake Fish Sampling Program (February 2009) prepared by OCDWEP and in the standard operating procedure (SOP) for Pelagic Larvae Sampling – Miller High Speed/Modified Double Oblique Tow (2/13/06 Rev. #3) prepared by OCDWEP. Additionally, the audit was conducted to ensure that the data were collected in a scientifically defensible manner.

The audit was performed during the third of the bi-weekly larval trawling efforts conducted by OCDWEP staff. The OCDWEP field crew for the sampling effort consisted of Alex Studdart, Mark Halbritter, and Nathan Talucci. Chris Gandino met with the sampling crew and Dr. Murphy prior to the audit, but was unable to accompany the crew on the water. The attached field audit checklist provides the details of the audit.

The field audit indicated that the field crew conducted their work in a professional manner and complied with the procedures outlined in the QAPP and SOP. The methods followed during the sampling are consistent with previous years. There were no discrepancies noted during the audit, and the field crew should be complimented on their efforts to accomplish the sampling in a high quality manner.

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Pelagic Larvae

Project Location: Onondaga Lake

Date(s) of Field Audit: May 18, 2011

Time(s) of Field Audit: 0800-0930

Auditor: Margaret H. Murphy

Field Crew: Mark Halbritter
Alex Studdert
Nathan Talucci

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Pelagic Larvae

Anchor QEA, LLC.	Page 2 of 4

General/Equipment	YES	NO	NA	***COMMENTS***
Are personnel and responsibilities defined?	X			
Have personnel performing work been trained in the procedures listed in the SOP?	X			
Were weather conditions reviewed for sampling feasibility?	X			Overcast; scattered showers
Is the folder containing data and information sheets available? Facility code and station description Map showing location of sampling stations Field data sheets Chain of custody forms	X			
Equipment – was all equipment on board?				
Depth finder	X			
WildCo clinometer	X			
GPS	X			
Compass	X			
Pre-calibrated YSI 650 MDS and YSI 600 XL	X			
PFDs	X			
Marine Radio	X			
Hand held radio (county)	X			
Flow meter with maintenance equipment	X			
Two Miller high speed sampler cylinders (1 is spare)	X			
Two Brass depressors	X			
Two cable and winch systems	X			
Two marine batteries	X			
Pre-labeled sampler containers	X			
One gallon fixative (10% buffered formalin)	X			
Larval fish maintenance tool box to repair equipment in field	X			
Two 500 um nets for Miller High Speed Samplers (1 is spare)	X			
Safety glasses and gloves	X			

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Pelagic Larvae

Anchor QEA, LLC	Page 3 of 4

Field Collection Procedures	YES	NO	NA	***COMMENTS***
Were water quality data collected at each basin (near the mooring buoy)?	X			Sampled north basin
Were water quality data logged on the instrument for downloading at the end of the day?	X			
Were water quality data collected at 0.5 m intervals to 6 meters?	X			
Were all water quality parameters recorded – temperature, DO, salinity, conductivity, pH, and ORP? (are values reviewed during collection to make sure instrument is reading properly?)	X			
Is trawl location consistent with locations depicted in SOP and greater than 12 meters deep?	X			Depth was 18 m
Correct facility code assigned to trawl number?	X			
Were the transect number, date, time, and actual GPS coordinates recorded on the field data sheets?	X			
Was one sampling rig attached to the crane and starting flow meter reading recorded?	X			
Did sampler thoroughly inspect the net, collection chamber mesh, cable, connections, and all hardware prior to deployment at each location?	X			
Were any replacements or repairs completed prior to deployment?		X		None needed; all equipment in working order
Was boat placed in forward gear and accelerated to 3 mph?	X			
Was enough cable payed out to achieve the optimum net depth (10 m mark on cable)? Were markings on cable clearly visible?	X			
Was boat speed increased to approximately 5 mph to maintain the 10-m cable deployment (from water surface interface)?	X			
Was the actual depth of the net confirmed by measuring the angle of the cable from vertical measured with the clinometer and recorded on the field data sheet? (optimum net depth of 5 to 5.5 m) (Table in SOP)	X			Reading taken at start – 63 degrees
Once the depth was obtained was the sampler towed at a consistent speed (approximately 5 mph) for 25 seconds heading in the proper direction (northeast to southwest or vice versa)?	X			4.9 mph maintained
Was the compass heading recorded?	X			
After 25 seconds elapsed, was the sampler retrieved to the next mark on the cable (1 meter)?	X			
Was the sampler retrieved one meter length every 25 seconds until the 1 m mark was visible?	X			
Was the boat speed reduced to idle speed when the sampler reached the 1 m mark and the rest of the sampler retrieved?	X			

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Pelagic Larvae

Anchor QEA, LLC	Page 4 of 4

Field Collection Procedures	YES	NO	NA	COMMENTS
Was the net thoroughly inspected after retrieval and the net and collection chamber checked for tears?	X			
Was the station resampled if the sample was compromised?			X	
Was the ending flow meter reading recorded on the data sheet?	X			
Was the inside of the sampler and the net rinsed into the sampling vessel with as much of the water decanted as possible?	X			
Were the contents of the sampling vessel emptied into the pre-labeled sample jar using tap water from a squirt bottle?	X			
Was the sample preserved with 10% buffered formalin?	X			
Did the field crew wear nitrile gloves and goggles when pouring the formalin?	X			
Was the chain of custody form filled out and placed in a box for safe keeping?	X			Forms held in 3-ring binder

OTHER COMMENTS/NOTES
Crew worked well together, understood all sampling procedures, and implemented them without any issues or concerns.

ANCHOR QEA

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MEMORANDUM

To:	Elizabeth C. Moran, PhD, EcoLogic, LLC	**Date:**	June 23, 2011
From:	Margaret H. Murphy, PhD, Anchor QEA, LLC	**Project:**	090582-01.06
Cc:	Files		
Re:	Field Audit of OCDWEP Littoral Electrofishing Field Program		

On June 5, 2011, Dr. Margaret H. Murphy (Anchor QEA, LLC) conducted a quality assurance/quality control (QA/QC) audit of the Onondaga County Department Water Environment Protection's (OCDWEP) field littoral electrofishing efforts. The purpose of the audit was to ensure that the studies were conducted as outlined in Section 6.0 of the Quality Assurance Program Plan (QAPP) for the Onondaga Lake Fish Sampling Program (February 2009) prepared by OCDWEP, in the standard operating procedure (SOP) for Littoral Zone Electrofishing (February 2006), and in the SOP for Fish Tagging (March 2005) prepared by OCDWEP. Additionally, the audit was conducted to ensure that the data were collected in a scientifically defensible manner.

The audit was performed during the first day of the spring electrofishing effort conducted by OCDWEP staff. The OCDWEP field crew for the sampling effort consisted of Mark Halbritter, Alex Studdert, Jason Teribury, and Jason Shaw; Chris Gandino accompanied me on the audit. Mark Halbritter was the boat captain and in charge of the field staff for sampling, and previously conducted training on the boat operations with Chris Gandino. The attached field audit checklist provides the details of the audit.

The field audit indicated that the field crew conducted their work in a professional manner and complied with the procedures outlined in the QAPP and SOPs. One deviation from the SOPs occurred during the audit: the safety clips for the electrofishing unit were not tested prior to initiating sampling. This was discussed with Mark Halbritter and Chris Gandino following the audit and Mark was encouraged to remember the safety checks in future efforts. Sampling proceeded normally, with no problems with the equipment or need to use the emergency shutoff.

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Littoral Zone Electrofishing

Project Location:	Onondaga Lake
Date(s) of Field Audit:	June 5, 2011
Time(s) of Field Audit:	1930-2200
Auditor:	MH Murphy
Samplers:	Mark Halbritter, Alex Studdert, Jason Teribury, Jason Shaw
Weather conditions:	clear, 70F, calm

Anchor QEA, LLC.				
General	YES	NO	NA	***COMMENTS***
Are personnel and responsibilities defined?	X			
Have personel performing work been trained in the procedures listed in the SOP?	X			
Were weather conditions reviewed for sampling feasibility?	X			
Is the folder containing data and information sheets available? Facility code and station description Map showing location of sampling stations Field data sheets Chain of custody forms	X			
Was the "Electrofishing Boat Safety Checklist" completed by all personnel?	X			
Was the Onondaga County Sheriff's office and OCDWEP Metro Board Operator informed of night sampling event?	X			No need to call the sheriff anymore
Equipment – was all equipment on board?				
Fish tagging guns and tags	X			
Scale envelopes and knife (Fall only)			X	
Fish holding tubs	X			
Fish Life chemical fish conditioner	X			
Two aerators (generally use when water temp > 18^{o}C)	X			
Depth finder	X			
GPS (preloaded with coordinates for transects)	X			
Pre-calibrated YSI650 MDS and YSI 600XL	X			
Life jackets	X			
Hand held marine radio or cell phone	X			
Hand held county radio	X			
Gas can with reserve fuel	X			
Flare kit	X			
Paddle	X			
Fire extinguisher	X			
Toolbox with rubber mallet and strap wrench	X			
Anchor	X			
First aid kit	X			
Ring buoy	X			
Three long handled fiberglass poled nets (no metal)	X			

Anchor QEA, LLC				Page 3 of 5
Equipment – cont'd	YES	NO	NA	***COMMENTS***
One short handled fiberglass poled net (no metal)	X			
Two fiberglass poled minnow nets (no metal)	X			
High voltage gloves	X			
Boat keys	X			
Measuring board (in mm)	X			
Metric weight scale (fall only)			X	
Digital Camera	X			
Spare battery	X			
Flash lights	X			
Field Collection Procedures				
Are there 4 technicians – 2 shockers, 1 data recorder, 1 boat driver on board?	X			
Was surface water quality data taken at the start of each transect location?	X			
Is water temperature between 15 and 21°C?	X			20.4°C
Did crew determine if "all fish" or "game fish" transect (odd for all fish)?	X			Transect 24 sampled – gamefish
Did data recorder record the starting information (time of day, starting seconds on pulsator, actual GPS coordinates)?	X			
Did 2 shockers don safety gear (electrical gloves with outer leather gloves) prior to start of shocking?	X			
Did driver and data recorder attach the emergency shut-off safety clips and hearing protection prior to starting electrofisher?	X			
Was the safety shut-off clips tested to ensure they would interrupt the current during an emergency situation?		X		
Were the safety shut-off clips reinstalled after testing?		X		
Was boat placed in forward gear at idle speed to begin collection of fish?	X			
Were the proper fish netted by the two shockers (gamefish only or all fish)?	X			
If common carp encountered, were these fish within netting distance counted (or estimated) and noted as a estimate?			X	
If gizzard shad and/or alewives were encountered in schools, were the numbers estimated in the bulk fish section?			X	
Were any other missed fish estimated and recorded in the bulk fish section as estimated?	X			
Were the electrofisher data recorded – voltage, amps, pulse width – and monitored throughout the transect?	X			
Were the pulse frequency and volts/range settings fixed at 120 and 340, respectively (fixed settings)?	X			
Was the amperage/output current maintained between 19-23 amps by adjusting the percent range (typically varies between 40-60%)?	X			
Was boat maintained approximately parallel to shore in 1 m of water moving forward at idle speed?	X			

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Littoral Zone Electrofishing

Anchor QEA, LLC				Page 4 of 5
Field Collection Procedures	YES	NO	NA	***COMMENTS***
Was the electrofisher turned off and the boat set to neutral at the end of the transect?	X			
Was the end time, GPS coordinates and miscellaneous collection notes recorded at the end of the transect?	X			
Were fish worked up following the sampling at the mid-transect location?	X			
Were fish whose numbers were estimated entered in the Bulk Catch Data section of the Field Data Sheet form first with extras recorded on the Bulk Catch Data Sheet?			X	
Were collected fish identified to species and listed in the Individual Fish data sheet using the NYSDEC species codes/names?	X			
Was fish (total) length (nearest mm) recorded on the individual Fish data sheet?	X			
Was each fish screened for DELTFM parameters and recorded if noted?	X			
Were all fish measured if less than 30 fish of a species collected?	X			
Were random sub-samples measured for species with more than 30 fish collected and the remaining individuals counted and listed in the bulk fish data sheet?			X	
Were fish that were not measured mass counted based on life stage (YOY, juvenile, adult)?			X	
Were unknown species noted on the data forms and the fish preserved in a labeled jar of formalin to be identified later?			X	
Were representative game fish tagged with a numbered floy tag and sampled for scales (Fall) prior to release? Was floy tag number recorded?	X			One walleye tagged
Were game fish that already were tagged evaluated for need for a replacement tag?		X		One walleye with an ESF tag was captured; tag was intact
Were data sheets reviewed for completeness before proceeding to the next transect?	X			
Fish Tagging				
Were the minimum size guidelines adhered to when tagging fish?	X			
Were tag guns check to make sure they were operating properly and the needles were sharp?	X			
Was a clip of tags inserted into the round hole at the top of the gun?	X			
Was fish placed on measuring board with the left side of the fish facing up?	X			
Was the following data recorded on the data sheet and scale envelope: species, date of capture, location of capture, tag number, weight (fall), scale sample number (fall), and total length (mm)?	X			
Was fish held firmly in swimming position and several scales flicked off on the left side of the fish approximately ¼ inch below the posterior end of the first dorsal fin with the needle tip?	X			

Anchor QEA, LLC				Page 5 of 5
Field Collection Procedures – fish tagging	YES	NO	NA	***COMMENTS***
Was the needle inserted at an ~45^{o} angle where the scales were removed forcing it forward through the dorsal rays toward the anterior of the dorsal rays? Was the T-bar locked firmly in place behind the rays?	X			
Once the needle was inserted was the gun held firmly against the fish's body while compressing the handle fully?	X			
Was the gun twisted approximately 90o so the tag stays as the needle is withdrawn? Was handle compressed until the needle was completely withdrawn?	X			
Was the tag checked for proper setting and recorded if it was an improper set?	X			
Were any gun jams properly cleared?			X	

OTHER COMMENTS/NOTES
Chris Gandino accompanied me on the audit; Mark Halbritter was the boat captain and responsible for the crew.
I discussed with Mark and Chris the safety check on the electroshocker that was not conducted and informed Mark he should be sure to remember to conduct the test prior to starting as a final safety check on the equipment prior to sampling.

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MEMORANDUM

To:	Elizabeth C. Moran, Ph.D, EcoLogic	**Date:**	August 22, 2011
From:	Margaret H. Murphy, Ph.D, Anchor QEA	**Project:**	090582-01.06
Cc:	Files		
Re:	OCDWEP Ambient Monitoring Program audit		

On August 22, 2011, Dr. Margaret H. Murphy (Anchor QEA) conducted a quality assurance/quality control (QA/QC) audit of the Onondaga County Department Water Environment Protection's (OCDWEP) field littoral seining efforts. The purpose of the audit was to ensure that the studies were conducted as outlined in Section 6.0 of the Quality Assurance Program Plan for the Onondaga Lake Fish Sampling Program (February 2009) prepared by OCDWEP and in the Standard Operating Procedure (SOP) for Littoral Zone Young-of-Year and Juvenile Fish Bag Seine (May 2009) prepared by OCDWEP. Additionally, the audit was conducted to ensure that the data were collected in a scientifically defensible manner.

The audit was performed during the first day of the fourth round of juvenile seining conducted by OCDWEP staff. The OCDWEP field crew for the sampling effort consisted of Mark Halbritter, Alex Studdert, Jason Teribury, and Nathan Talucci. Chris Gandino accompanied Dr. Murphy during the audit. The attached field audit checklist provides the details of the audit.

The field audit indicated that the field crew conducted their work in a professional manner and complied with the procedures outlined in the Quality Assurance Project Plan (QAPP) and SOP. The one largemouth bass captured at the marina was 97 mm total length, which is greater than the table in the SOP advises as young-of-year (YOY). However, Chris Gandino believes this is a YOY (I agreed) and that bass may be growing faster due to limited sunfish juveniles in the littoral zone this year. This may warrant further evaluation and the table in the SOP may need to be updated to reflect changing conditions and annual variability (maybe provide more of a range since the size limit is for June through August sampling when fish growth is typically high).

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Juvenile Seines

Project Location:	Onondaga Lake – Marina
Date(s) of Field Audit:	August 22, 2011
Time(s) of Field Audit:	0800-0900
Auditor:	MH Murphy
Field Staff:	Mark Halbritter, Alex Studdert, Jason Teribury, Nathan Talucci
Weather:	partly cloudy; 60^{o}F; moderate wind from NNW

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Juvenile Seines

Anchor QEA, LLC.	Page 2 of 4

General	YES	NO	NA	***COMMENTS***
Are seine sites physically marked on the shoreline?	X			
Are there three sites within each strata (total 15 sites)?	X			
Are seine locations documented with GPS coordinates?	X			
Equipment – was all equipment on board?				
Folder containing data and information sheets for each sample location	X			
Mark II Regular scissor grip tag gun	X			
Mark II Long Pistol Grip Tag gun	X			
Floy T-bar anchor tags	X			
Spare needles for each gun	X			
Two 50 ft. X 4 ft ¼ in. mesh bag seine	X			
Measuring board	X			
Weight scale with small basket	X			
Pre-calibrate YSI 650 MDS and YSI 600XL	X			
Scale envelopes and knife	X			
Fish holding tub	X			
Fish life chemical conditioner	X			
Waders	X			
Minnow nets	X			
Digital camera	X			
Spare batteries for camera	X			
Handheld GPS	X			
Sample containers and fixative (10% buffered formalin)	X			
Twine for net repairs	X			

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Juvenile Seines

Anchor QEA, LLC				Page 3 of 4
Pre-Field Collection Procedures	YES	NO	NA	***COMMENTS***
Was water quality meter calibrated?	X			
Was equipment examined for repairs prior to heading out in field?	X			
Was weather forecast reviewed to assess feasibility of sampling?	X			Weather forecasted to clear throughout the day
Were all field data sheets assembled prior to departure?	X			
Was QAPP and SOP reviewed prior to departure?	X			
Field Collection Procedures				
Did field crew proceed to appropriate station?	X			Started at marina; observed Butterfly Garden site as well
Was facility code/location, date, and time recorded on the field data sheet?	X			
Were water quality data (temperature, DO, salinity, conductivity, pH, ORP) from the water surface recorded on the field data sheet?	X			
Was the bag seine stretched out on shore prior to deployment and checked for debris and holes?	X			
Were repairs made to the net or was the backup net used (after being checked for holes)?		X		Primary net was was in good condition
Was the net brought to the marked station location?	X			
Was the site assessed for the ability to seine effectively (limited macrophyte growth)?	X			Very few macrophytes observed in sample area
If it was determined that site could be sampled effectively, did one person walk the end of the seine off shore until the full length of the net was deployed perpendicular to the shoreline?	X			
Was the bag section checked to be sure it was fully deployed and not tangled?	X			
Did the offshore person sweep their brail toward shore while the onshore person held their brail stationary?	X			
Did a third person walk behind the bag end of the seine and dislodge the seine if it became stuck?	X			
Was the leadline lifted or the seine stopped to dislodge a snag? If yes, was the sample rejected?		X		
If sample was rejected did crew proceed to the next location with plans to return to current location at later time?			X	
As the offshore brail was worked to shore, were the two brails worked together to beach the seine without lifting the leadline and maintaining the integrity of the bag?	X			
Were fish picked and placed in holding tanks immediately following seine retrieval?	X			Only one LMB YOY captured; several more fish at Butterfly Garden site (banded killifish, LMB)
Was the bag thoroughly checked and all debris sorted through to remove all fish from the sample?	X			
If adult fish were captured, were they identified to species, counted, data recorded on the data forms, and released back to the lake?			X	
Were representative adult bass and other selected game fish tagged with a numbered floy tag, and measured prior to release?			X	None captured

Anchor QEA, LLC	Page 4 of 4

Field Collection Procedures (Cont'd)	YES	NO	NA	COMMENTS
If adult fish were tagged, was the relevant information recorded on the data form?			X	
Were fish that were tagged in good health and not overly stressed?			X	
Was seine stretched out on shore following removal of all fish, any material (e.g., macrophytes) removed, and the net checked for holes?	X			
Was seine allowed to dry while samples were processed?		X		Placed in bin for next station
Was a minimum of thirty random individuals of each life stage (YOY and juvenile) and species measured and weighed?	X			Less than 30 of each species and life stage captured
Were remaining fish mass counted based on life stage?			X	
Were YOY pumpkinseeds and bluegills grouped as *Lepomis* sp.?			X	No YOY's collected
Were all other fish identified to species?	X			
Were all fish returned to the lake following processing?	X			
Were unknown species noted on the data forms, assigned a number, and placed in a formalin filled labeled jar for identification in the laboratory?			X	
Were species life stage determined based on the table of lengths of species life stages for June to August or September to October (depending on when sampling occurred) provided in the SOP?	X			Determined the LMB at marina site as YOY although slightly larger than the 80 mm length on the table
Were all captured fish screened for visible abnormalities?	X			
Were abnormalities recorded for individual fish and not bulk counts?			X	
Were data sheets reviewed for accuracy and completeness prior to mobilizing to the next station?	X			
Was original site not seinable or was the sample rejected due to excessive macrophytes?		X		
If original site was not seinable, was the next closest location, or back-up site, sampled and the new GPS coordinates documented in the field data sheet?			X	
If the site was changed during the first two sampling events, was this secondary site now sampled as the primary site for the rest of the season?			X	
If macrophytes were dense at the backup location, and the leadline rolled over "some" of the macrophytes – was the Data Validity Classification marked as "conditional"?			X	

OTHER COMMENTS/NOTES

Discussion with Chris Gandino on size of the one LMB captured – we both agreed it was a YOY although larger than the 80 mm size limit for June and August samples. With few sunfish juveniles, Chris is wondering if the bass are growing faster than in the past. May want to revisit these tables for 2012, or soften the text in the SOP that these are a guide, not hard and fast numbers.

ANCHOR QEA

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MEMORANDUM

To:	Elizabeth C. Moran, Ph.D., EcoLogic, LLC	**Date:**	September 28, 2011
From:	Margaret H. Murphy, Ph.D., Anchor QEA, LLC	**Project:**	090582-01
Cc:	files		
Re:	Field Audit of OCDWEP Gill Net Sampling Field Program		

On September 26, 2011, Dr. Margaret H. Murphy (Anchor QEA, LLC) conducted a quality assurance/quality control (QA/QC) audit of the Onondaga County Department Water Environment Protection's (OCDWEP) littoral-profundal zone fixed deep water gill net sampling efforts. The purpose of the audit was to ensure that the studies were conducted as outlined in Section 7.0 of the Quality Assurance Program Plan (QAPP) for the Onondaga Lake Fish Sampling Program (February 2009) prepared by OCDWEP and in the standard operating procedure (SOP) for Littoral-Profundal Zone Fixed Deep Water Gill Net Sampling (revised February 17, 2011). Additionally, the audit was conducted to ensure that the data were collected in a scientifically defensible manner.

The audit was performed during the first day of the fall gill net sampling conducted by OCDWEP staff. The OCDWEP field crew for the sampling effort consisted of Chris Gandino, Mark Halbritter, and Alex Studdert. The attached field audit checklist provides the details of the audit.

Observations during the field audit indicated that the field crew conducted their work in a professional manner and complied with the procedures outlined in the QAPP and SOP. Nothing was observed that would jeopardize the quality of the data.

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Littoral-Profundal Zone Gill Nets

Project Location:	Onondaga Lake
Date(s) of Field Audit:	September 26, 2011
Time(s) of Field Audit:	0800-1130
Auditor:	Margaret H. Murphy
Samplers:	Chris Gandino, Mark Halbritter, Alex Studdert

Anchor QEA, LLC.				
General	YES	NO	NA	***COMMENTS***
Is gill net sampling being conducted within one week of the electrofishing?	X			
Has SOP been reviewed by all personnel?	X			
Equipment – was all equipment on board?				
Folder containing data and information sheets for each sample location	X			
Mark II Regular scissor grip tag gun	X			
Mark II Long Pistol Grip Tag gun	X			
Floy T-bar anchor tags	X			
Spare needles for each gun	X			
Five experimental gill nets with mesh sizes of 3.8, 5.1, 6.4, 7.6, 8.9, and 10.2 centimeters; 50 m long and 2 meters deep		X		4 nets on board; no need for 5 – maximum of 2 set at one time
10 anchors with 1 meter of rope attached to each		X		Need a minimum of 4, not 10
15 buoys with 5 meters of rope attached to each		X		Need a minimum of 6, not 15
Extra rope and snaps	X			
Measuring board	X			
Weight scale – large and small scale (fall only)	X			
Pre-calibrate YSI 650 MDS and YSI 600XL	X			
Scale envelopes and knife	X			
Fish holding tub	X			
Fish life chemical conditioner	X			
2 aerators	X			
Depth finder	X			
Secchi disk	X			
Flare kit	X			
Paddle	X			
Handheld GPS	X			
Life jackets	X			
Marine and county radios	X			Cell phones typically in place of county radio
Fire extinguisher	X			
Toolbox	X			

Anchor QEA, LLC				Page 3 of 5
Equipment Checklist – Continued	YES	NO	NA	***COMMENTS***
Boat anchor	X			
First Aid Kit	X			
Ring Buoy	X			
Two fiberglass poled minnow nets	X			
Boat keys	X			
Digital Camera	X			
Spare batteries for camera	X			
****Not listed***** formalin and jar (in case species need to be taken back for id)				
Pre-Field Collection Procedures				
Was water quality meter calibrated?	X			
Was equipment examined for repairs prior to heading out in field?	X			
Was weather forecast reviewed to assess feasibility of sampling?	X			
Were all field data sheets assembled prior to departure?	X			
Was QAPP and SOP reviewed prior to departure?	X			
Field Collection Procedures – gill net set				
Did field crew proceed to a random monitoring location within one of the 5 strata?	X			Strata 1 near Russ' reef; Strata 5 near grandstand
Was the 5 meter depth of water identified with the depth finder?	X			
Were water quality data (temperature, DO, salinity, conductivity, pH, ORP) at 0.5 m intervals logged into the water quality meter?	X			
Were the GPS coordinates recorded on the field data sheet?	X			
Was the gill net rigged with the appropriate anchors and buoys?	X			
Was the boat brought in parallel to shore in 5 meters of water, turning into the prevailing wind, if necessary?	X			
Did one technician remain on the bow of the boat and lower the leading anchor to the bottom and then pay out the net as the boat was slowly reversed by handling the float line and shaking-out or spreading the mesh?	X			
After the full length of gill net was set out, was the net stretched as taut as possible and the trailing anchor dropped?	X			
Was the net set portion and the date, basin, and facility code sections of the Pelagic Adult Gill Net field data sheet completed?	X			
Was the net allowed to set for two hours before retrieval?	X			

Onondaga County Department of Environmental Protection

Onondaga Lake Ambient Monitoring Program

Audit Checklist – Littoral-Profundal Zone Gill Nets

Anchor QEA, LLC				Page 4 of 5
Field Collection Procedures – Gill net retrieval	YES	NO	NA	***COMMENTS***
Was the downwind buoy and anchor pulled into the boat and removed from the net?	X			
Was the net slowly brought aboard the boat by grasping the lead and floatlines together?	X			
As fish were encountered in the gill net, were they removed as quickly as possible and placed in a live well?	X			
If the catch was large were only gamefish removed during net retrieval and non-gamefish removed after the net was retrieved?			X	
Was the net haul, comment portion, date, basin, and facility code sections of the Pelagic Adult Gill net field data sheet completed after net retrieval?	X			
Were collected fish identified to species and listed on the Individual Fish data collection sheet by NYSDEC species code and name?	X			
Were all fish measured (total length) to the nearest mm and weighed (fall samples only) and data recorded on the Individual Fish data sheet?	X			
Were all fish screened for visible abnormalities (DELTFM) and recorded for individual fish?	X			
Were fish less than 100 grams weighed on the small scale?	X			
If the small scale would not stabilize, were multiple fish of the same species and size range bulk weighed and the total weight divided by the number of individuals to establish a relative weight? Were these weights noted as bulk weights in the data sheet?			X	
If samples were less than 30 of a species – were all fish measured?	X			
If samples were more numerous (>30) were random subsamples of the abundant species measured, and the remaining individuals bulk counted and recorded on the bulk fish data sheet?			X	
Were fish that were not measured individually mass-counted based on life stage (YOY, juvenile, adult)?			X	
Were unknown species noted and placed in a formalin-filled labeled jar for identification later?			X	All identified (3 northern pike, 2 yellow perch, 1 smallmouth bass)
Were representative adult bass and other game fish tagged with a numbered floy tag and sampled for scales (fall only) prior to release?			X	The one SMB was dead when pulled from the net
Were tagged fish in good health and not overly stressed from the capture experience?			X	
Was the tag number, scale envelope number, and other related information recorded on the appropriate data form?	X			
Were recaptured fish evaluated to determine the need for a replacement tag?			X	
If sampling during fall, were select species (bluegill, pumpkinseed, white perch, yellow perch, and gizzard shad) randomly sampled for scales prior to release?	X			
Were data sheets checked over for accuracy and completeness following completion of processing before moving on to the next station?	X			

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OTHER COMMENTS/NOTES