

APPENDIX D – USFWS QA Program (5/04)

EQUIPMENT CALIBRATION/MAINTENANCE

The following chart provides a guide for calibration of standard equipment used in the Fish Health Laboratory. All Intervals suggested are subject to individual manufacturer and/or equipment manual.

EQUIPMENT	EXTERNAL CALIBRATION INTERVAL	INTERNAL CHECK INTERVAL	PARAMETERS TO CHECK	INSTRUMENTS REQUIRED
Autoclaves		Daily	Temperature & pressure sustained during operation	Pressure gauge, safety valve, temperature gauge, indicator strips
Balances	3 years	Weekly	Linearity, zero point, accuracy, level	Calibration reference weights
Biosafety Cabinets/hood	1 year	Weekly	Air flow, UV bulbs	Anemometer, vacuum meter
Centrifuges		During operation	Balance, speed, temperature, timer	Manufacturer provided
Electrophoresis Units		Daily / as used	Structural integrity, voltage	Volt meter (power unit)
ELISA readers	1 year	Monthly	Lamp stability, optics, filters	Calibration plate
Freezers		Daily	Visual, thermal stability	Calibrated thermometer or pyroprobe
Incubators		Daily	Temperature	Calibrated thermometer
Micro-pipettes	3 years	Daily / as used	Dirt and damage, volume delivery accurate	70% ethanol. If damaged, send for repair, graduated tips
		Every three months	Volume accuracy	Gravimetric method
Micro-pipettor (automatic)		Every three months	Volume, accuracy	Manufacturer's procedure
Microscopes	3 years (cleaned)	Daily / as used	Alignment, bulbs	Manufacturer procedure
pH meters		Daily / as used	Electrode drift or reduced response	Check against two buffer solutions
Plate washer (automatic)		Daily / as used	Nozzles, hoses, vacuum, pH of wash buffer	Distilled water for flushing, instrument gauges, pH meter
Thermal-cyclers	If needed	Annually	Block Temperature	Probe or check with sample replicate matrix
Thermometers (digital)	1 year	6 months	Check at point in working range against reference thermometer	Certified reference thermometer
Thermometers (liquid in glass)	10 Years	6 months	Check at point in working range against reference thermometer	Certified reference thermometer
Thermometers (reference)	10 years	Before use	Check at ice point	
Timers		2 years	Accuracy	
Water baths		Daily / as used	Temperature and correlation with controls	Calibrated thermometer
Water Purification (deionizer)		Daily / as used	Conductivity and meter battery	Conductivity meter, voltmeter
Water purification (glass distillation)		Weekly / as used	Conductivity, pH, hardness	Conductivity and pH meter, hardness test kit

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EQUIPMENT LOGS

A separate file shall be maintained for each item of equipment, to contain updated information. The following is a template set of required records to be kept for all equipment used for testing samples and calibration:

EQUIPMENT INFORMATION

ITEM:

INVENTORY NUMBER:

SERIAL NUMBER:

MANUFACTURER'S NAME AND CONTACT:

SOFTWARE USED (NAME)?

CURRENT LOCATION OF EQUIPMENT:

CURRENT STATUS: ☐ In Use

☐ In Repair ☐ Out of Service (see attached documentation for details)

Additional Items on File:

- ☐ Manufacturers Instructions
- ☐ Maintenance Plan
- ☐ Equipment Log (maintenance and calibration)
- ☐ Calibration Reports, Certificates, Adjustments made
- ☐ Documentation of Damage, Malfunction, modification or Repair
- ☐ Other: _____

Signature

Date

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EQUIPMENT CALIBRATION LOG

Equipment Item/Inventory No.:[illegible]

***All specific results and certifications must be documented and filed**

EQUIPMENT MAINTENANCE LOG

[illegible]

***All specific information must be documented and filed**

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EQUIPMENT REPAIR LOG

Equipment Item:

[illegible]

***All specific information must be documented and filed**