

**Environmental Protection Commission  
Iowa Department of Natural Resources**

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**ITEM**

**10**

**DECISION**

**TOPIC     Contract with Iowa State University for 2009 Iowa Lakes Monitoring**

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**Recommendations:**

Commission approval is requested for a one year-service contract with Iowa State University of Ames, Iowa. The contract will begin on May 11, 2009 and terminate on February 26, 2010. The total amount of this contract shall not exceed \$217,190.

**Funding Source:**

This contract will be funded through Infrastructure (60%) and Lake Restoration Program (40%).

**Background:**

This contract encompasses the majority of lake water quality monitoring conducted as part of the state-wide water monitoring program and is the primary basis for assessing the state's lake water quality. The purpose of this program is to define the condition of Iowa's lakes, characterize existing and emerging issues, measure changes or trends in water quality, and provide information to citizens and decision-makers. These data have historically been used for reporting on the status and quality of lakes in fulfillment of Clean Water Act requirements. The data are also utilized heavily for management of our lake resources.

**Purpose:**

The parties propose to enter into this Contract for the purpose of contracting with ISU to provide the DNR with lake monitoring data. As part of this contract ISU will provide field and analytical support for monitoring on 131 of Iowa's significantly and publicly owned lakes. The lakes are monitored three times during the field season for basic water chemistry, nutrients, plankton composition, and clarity.

Specific ways the DNR intends to utilize the information gathered and analyzed in this Contract include: to fulfill Clean Water Act requirements of the department including: biennial reports on the status of lake water quality, impaired waters listing, and total maximum daily load reports; manage and evaluate lake resources; and allocate lake restoration funds appropriately.

**Contractor Selection Process:**

Code of Iowa allows the Department to contract, with public agencies of this state, to provide all laboratory, scientific field and environmental quality evaluation services necessary to fulfill requirements of Clean Water Act Reporting. ISU Limnology Laboratory is one of two laboratories that have conducted monitoring for Iowa's Ambient Lakes Program in the past. Because of additional work being conducted by ISU, for the DNR's Lake Restoration Program, this contractor offers an opportunity for partnership and shared expenses.

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Watershed Monitoring and Assessment Section Supervisor  
Environmental Services Division  
April 21, 2009

Attachment: Special Conditions ESD04HAEobrie090014.doc

ESD04HAEobrie090014

**SPECIAL CONDITIONS - CONTRACT NUMBER ESD04HAEobrie090014**  
**2009 Lake Monitoring**

**Statement of Work.** ISU shall be responsible to perform the following tasks as described by the Task Milestone Dates set out in the following table:

<b>Obligation</b>	<b>Task Milestone Date</b>
<p><b>Task 1: Project Management</b>  <b>Description:</b> To provide partial salary amounts for ISU Professional and Scientific (P&amp;S) staff members. Salaries support project oversight, data analysis, quality assurance and reporting, field operations and logistics, and laboratory analyses of chemical and biological samples.</p>	<p>Ongoing - to be completed no later than February 26, 2010</p>
<p><b>Task 2: Monitoring</b>  <b>Description:</b> To provide monitoring for Iowa's principle recreational lakes (Table 1) and to characterize current water quality, ISU shall sample these lakes during the 2009 sampling season.  <u>Sites</u>            Monitoring samples shall be collected from one site in each lake basin, chosen to represent the open-water zone that is mutually agreed upon by DNR and ISU.  <u>Frequency</u>            Three times per year with the first round occurring in mid May through June, the second round occurring in July through early August, and the third round occurring in early August through mid-September.  <u>Field Monitoring</u>            Parameters: Depth profiles (temperature, pH, dissolved O2, specific conductivity, and turbidity) and Secchi depth (determined by Secchi disk). Samples shall also be collected for processing in the laboratory as described in Task 3 for the remaining parameters listed in Table 2.            Approach: These measurements shall be determined using remote analytical transducers. Calibration and maintenance of remote analytical transducers shall follow the ISULL QAPP approved by the DNR. Collection of water and biological samples for processing at a later date shall follow the ISULL QAPP approved by the DNR. Requests for deviations from the QAPP shall be submitted and approved in writing to the DNR technical contacts prior to changing any protocols.</p>	<p>First round of monitoring: No later than June 30, 2009            Second round of monitoring: No later than August 7, 2009            Third round of monitoring: No later than September 25, 2009</p>
<p><b>Task 3: Analysis</b>  <b>Description:</b> To provide biological, chemical and limnological analysis of the lakes, ISU shall process water samples collected during each of three sample visits. A full set of biological and chemical parameters shall be analyzed for each lake (Table 2).  <u>Chemical</u>            Parameters: Chlorophyll a, total phosphorus, dissolved phosphorus, NO2 + NO3, NH4, unionized NH3, total</p>	<p>Data update report: July 31, 2009 (to include all data that is being included on the July 31, 2009 invoice)            Data update report: September 25, 2009 (to include all data that is being included on the September 25, 2009 invoice)</p>

<p>nitrogen, alkalinity, total suspended solids, inorganic suspended solids, volatile suspended solids, and dissolved organic carbon.</p> <p>In addition, samples for Total Kjeldahl Nitrogen and NO<sub>3</sub> + NO<sub>2</sub> must be collected at each lake on each sampling trip and submitted to UHL for analysis. These samples must follow UHL procedures for sample storage and submittal.</p> <p>Approach: Sampling shall be performed using a 2 meter fixed upper mixed zone sampler.</p> <p><u>Biological</u></p> <p>Parameters: Phytoplankton biomass and composition, zooplankton biomass and composition.</p> <p>Approach: Integrated mixed-zone samples of phytoplankton and zooplankton shall be collected using the integrated column sampler and Wisconsin net.</p> <p>Analyses shall follow standard methods as agreed upon by the DNR and shall follow the ISULL QAPP approved by DNR.</p>	<p>Data update report: November 27, 2009 (to include all data that is being included on the November 27, 2009 invoice)</p> <p>Final data report: no later than February 26, 2010 (Task 4).</p>
<p><b>Task 4: Data Transfer</b></p> <p><b>Description:</b> To transfer all chemical, physical, and biological data results to DNR in electronic form for submittal to the Iowa STORET or WQX compatible database, ISU shall generate and submit a summary table of data and appropriate metadata annually. Metadata requirements are described in Table 3. The data summary shall be converted to an up-loadable text file for STORET or equivalent WQX database.</p>	<p>No later than February 26, 2010</p>
<p><b>Task 5: Update to web applications</b></p> <p><b>Description:</b> To update the Iowa Lakes Information System and DNR Mini-report web application, ISU shall provide data updates to the DNR technical contacts or their designees. The DNR technical contacts or their designees shall have 2 weeks after receipt to review the data before they are posted to the web. Any data that are disputed by the DNR shall not be posted to the web until mutually agreed upon by ISU and DNR.</p>	<p>Ongoing - to be complete no later than February 26, 2010</p>
<p><b>Task 6: Quality Assurance</b></p> <p><b>Description:</b> ISULL shall obtain laboratory certification for parameters in Table 4 in the time frame requested by DNR. ISULL shall also complete and follow a QAPP that must be approved by DNR prior to sample collection. ISULL shall also agree to utilize field and laboratory methods agreed upon with DNR in Table 5.</p>	<p>No later than May 11, 2009, unless noted in Table 4.</p>

**Budget.** The budget for this Contract shall be as follows:

<b>Task</b>	<b>Amount of compensation allotted to Task</b>
<b>Task 1:</b> Project Management	\$ 49,403
<b>Task 2:</b> Monitoring	\$ 57,348
<b>Task 3:</b> Analysis	not to exceed \$ 81,351
<b>Task 4:</b> Data Transfer	\$ 9,370
<b>Task 5:</b> Update to web applications	\$ 3,630
<b>Task 6:</b> Quality Assurance	\$ 0
<b>Indirect Cost</b>	\$ 16,088
<b>Total</b>	<b>not to exceed \$ 217,190</b>

Table 1. List of Lakes

<u>LAKE NAME</u>	<u>COUNTY NAME</u>	<u>MONITORING LOCATION</u>	<u>STORET ID #</u>
Arbor Lake	POWESHIEK	Max Depth UTM: 15T 522226, 4620031	22790004
Arrowhead Pond	POTTAWATTAMIE	Max Depth UTM: 15T 283371, 4590387	22780002
Arrowhead Lake	SAC	Max Depth UTM: 15T 330917, 4684791	22810001
Avenue of the Saints Pond	BREMER	Max Depth UTM: 15T 537961, 4728720	22090001
Badger Creek Lake	MADISON		22610004
Badger Lake	WEBSTER	Max Depth UTM: 15T 402156, 4715564	22940001
Beaver Lake	DALLAS	Max Depth UTM: 15T 398855, 4598577	22250001
Beeds Lake	FRANKLIN	Max Depth UTM: 15T 480557, 4735282	22350001
Belva Deer Lake	KEOKUK	Max Depth UTM: 15T 573309, 4581050	22540001
Big Creek Lake	POLK	Max Depth UTM: 15T 439233, 4627160	22770004
Big Spirit Lake	DICKINSON	Max Depth UTM: 15T 331520, 4816313	22300014
Black Hawk Lake	SAC	Max Depth UTM: 15T 332801, 4684717	22810002
Blue Lake	MONONA	Max Depth UTM: 15T 735070, 4658458	22670002
Bob White Lake	WAYNE	Max Depth UTM: 15T 466158, 4507608	22930001
Briggs Woods Lake	HAMILTON	Max Depth UTM: 15T 434365, 4698124	22400004
Browns Lake	WOODBURY	Max Depth UTM: 15T 720294, 4687473	22970001
Brushy Creek Lake	WEBSTER	Max Depth UTM: 15T 419282, 4693457	22940002
Carter Lake	POTTAWATTAMIE	Max Depth UTM: 15T 256764, 4574955	22780001
Casey Lake (aka Hickory Hills Lake)	TAMA	Max Depth UTM: 15T 556818, 4679425	22860001
Center Lake	DICKINSON	Max Depth UTM: 15T 326842, 4808839	22300010
Central Park Lake	JONES	Max Depth UTM: 15T653995, 4663949	22530001
Clear Lake	CERRO GORDO	Max Depth UTM: 15T 466083, 4774865	22170001
Cold Springs Lake	CASS	Max Depth UTM: 15T 325212, 4573260	22150001
Coralville Reservoir	JOHNSON	Max Depth UTM: 15T 622374, 4620486	22520004

<u>LAKE NAME</u>	<u>COUNTY NAME</u>	<u>MONITORING LOCATION</u>	<u>STORET ID #</u>
Crawford Creek Impoundment	IDA	Max Depth UTM: 15T 285029, 4683691	22470001
Crystal Lake	HANCOCK		22410001
Dale Maffitt Reservoir	POLK		
DeSoto Bend	HARRISON	Max Depth UTM: 15T, 249885, 4602833	22430001
Diamond Lake	POWESHIEK	Max Depth UTM: 15T 537006, 4603763	22790005
Dog Creek (Lake)	OBRIEN	Max Depth UTM: 15T 296561, 4756678	22710002
Don Williams Lake	BOONE	Max Depth UTM: 15T 415706, 4662659	22080004
East Lake (Osceola)	CLARKE	Max Depth UTM: 15T 437578, 4542641	22200001
East Okoboji Lake	DICKINSON	Max Depth UTM: 15T 328696, 4805531	22300008
Easter Lake	POLK	Max Depth UTM: 15T 453575, 4599470	22770001
Eldred Sherwood Lake	HANCOCK	Max Depth UTM: 15T 453924, 4754462	22410002
Five Island Lake	PALO ALTO	Max Depth UTM: 15T 364978, 4777896	22740001
Fogle Lake S.W.A.	RINGGOLD	Max Depth UTM: 15T 386075, 4519009	22800001
George Wyth Lake	BLACK HAWK	Max Depth UTM: 15T 549618, 4709278	22070001
Green Belt Lake	BLACK HAWK	Max Depth UTM: 15T 550237, 4703126	22070002
Green Castle Lake	MARSHALL	Max Depth UTM: 15T 511589, 4641977	22640001
* <b>Green Valley Lake</b>	UNION	Max Depth UTM: 15T 383816, 4550488	22880001
Greenfield Lake	ADAIR	Max Depth UTM: 15T 375979, 4572919	22010001
Hannen Lake	BENTON	Max Depth UTM: 15T 573634, 4635018	22060001
Hawthorne Lake (aka Barnes City Lake)	MAHASKA	Max Depth UTM: 15T 545182, 4591762	22620001
Hickory Grove Lake	STORY	Max Depth UTM: 15T 469881, 4648758	22850001
Hooper Area Pond	WARREN	Max Depth UTM: 15T 450572, 4569746	22910001
Indian Lake	VAN BUREN	Max Depth UTM: 15T 605670, 4498241	22890001
Ingham Lake	EMMET	Max Depth UTM: 15T 362139, 4797517	22320001
Kent Park Lake	JOHNSON	Max Depth UTM: 15T 605607, 4619847	22520005
Lacey Keosauqua Park Lake	VAN BUREN	Max Depth UTM: 15T 587001, 4507212	22890004
Lake Ahquabi	WARREN	Max Depth UTM: 15T 450056, 4571501	22910002
Lake Anita	CASS		22150002
Lake Cornelia	WRIGHT	Max Depth UTM: 15T 443600, 4737793	22990001
* <b>Lake Darling</b>	WASHINGTON		22920004
Geode Lake	HENRY	Max Depth UTM: 15T 636027, 4519104	22290001
Lake Hendricks	HOWARD	Max Depth UTM: 15T 536606, 4802088	22450001
Lake Icaria	ADAMS	Max Depth UTM: 15T 352763, 4545553	22020001
Iowa Lake	IOWA	Max Depth UTM: 15T 568838, 4609565	22480001
Lake Keomah	MAHASKA	Max Depth UTM: 15T 538666, 4571623	22620002
Lake Manawa	POTTAWATTAMIE	Max Depth UTM: 15T 260407, 4565455	22780003
Lake MacBride	JOHNSON	Max Depth UTM: 15T 618577, 4627859	22520001
Lake Meyer	WINNESHIEK	Max Depth UTM: 15T 588328, 4780866	22960004
Lake Miami	MONROE		22680001
Minnewashta Lake	DICKINSON	Max Depth UTM: 15T 327944, 4803061	22300011
Lake of the Hills	SCOTT	Max Depth UTM: 15T 693869, 4599242	22820001
Lake of Three Fires	TAYLOR		22870001
Orient Lake	ADAIR	Max Depth UTM: 15T 379573, 4561558	22010002
Lake Pahoja	LYON	Max Depth UTM: 14T 704893, 4806433	22600001
Lake Smith	KOSSUTH	Max Depth UTM: 15T 399012, 4775266	22550001

<u>LAKE NAME</u>	<u>COUNTY NAME</u>	<u>MONITORING LOCATION</u>	<u>STORET ID #</u>
Lake Sugema	VAN BUREN	Max Depth UTM: 15T 585556, 4504092	22890005
* Lake Wapello	DAVIS	Max Depth UTM: 15T 535946, 4518832	22260001
Little River Watershed Lake	DECATUR	Max Depth UTM: 15T 434236, 4511339	22270001
Little Sioux Park Lake	WOODBURY	Max Depth UTM: 15T 269537, 4703182	22970002
Little Spirit Lake	DICKINSON	Max Depth UTM: 15T 328239, 4819878	270630001
Little Wall Lake	HAMILTON		22400001
Littlefield Lake	AUDUBON		22050001
Lizard Lake	POCAHONTAS		
Lost Island Lake	PALO ALTO	Max Depth UTM: 15T 345418, 4782059	22740002
Lower Gar Lake	DICKINSON	Max Depth UTM: 15T 328116, 4802411	22300012
Lower Pine Lake	HARDIN	Max Depth UTM: 15T 493597, 4690480	22420001
Manteno Park Pond	SHELBY	Max Depth UTM: 15T 295175, 4636461	22830001
Mariposa Lake	JASPER	Max Depth UTM: 15T 503094, 4625097	22500002
Meadow Lake	ADAIR	Max Depth UTM: 15T 379809, 4582727	22010003
Meyer Lake	BLACK HAWK	Max Depth UTM: 15T 558410, 4701292	22070003
Mill Creek (Lake)	OBRIEN	Max Depth UTM: 15T 282215, 4762598	22710001
Mitchell	BLACK HAWK	Max Depth UTM: 15T 556380, 4702992	22070004
Moorhead Park Pond	IDA	Max Depth UTM: 15T 295738, 4692454	22470002
Mormon Trail Lake	ADAIR	Max Depth UTM: 15T 362940, 4567001	22010004
Nelson Park Lake	CRAWFORD	Max Depth UTM: 15T 285393, 4646002	22240001
Nine Eagles Lake	DECATUR	Max Depth UTM: 15T 434654, 4494280	22270002
North Twin Lake	CALHOUN	Max Depth UTM: 15T 365350, 4704019	22130001
Oldham Lake	MONONA	Max Depth UTM: 15T 269000, 4654430	22670001
Otter Creek Lake	TAMA	Max Depth UTM: 15T 539735, 4654672	22860002
Ottumwa Lagoon	WAPELLO	Max Depth UTM: 15T 548264, 4539653	22900001
Pierce Creek Pond	PAGE	Max Depth UTM: 15T 301197, 4522706	22730001
Pleasant Creek Lake	LINN	Max Depth UTM: 15T 598333, 4664312	22570001
Poll Miller Park Lake	LEE	Max Depth UTM: 15T 632111, 4508035	22560001
Prairie Rose Lake	SHELBY	Max Depth UTM: 15T 314372, 4607909	22830002
Rathbun Reservoir	APPANOOSE	Max Depth UTM: 15T 508937, 4519333	22040001
Red Haw Lake	LUCAS	Max Depth UTM: 15T 477130, 4538868	22590002
Red Rock Reservoir	MARION	Max Depth UTM: 15T 501290, 4580136	22630001
Roberts Creek Lake	MARION	Max Depth UTM: 15T 495886, 4585560	22630002
Rock Creek Lake	JASPER	Max Depth UTM: 15T 512074, 4620871	22500001
Rodgers Park Lake	BENTON	Max Depth UTM: 15T 576318, 4672559	22060002
Saylorville Reservoir	POLK	Max Depth UTM: 15T 443316, 4617544	22770005
Silver Lake	DICKINSON		22300007
Silver Lake	WORTH	Max Depth UTM: 15T 465945, 4814024	22980001
Silver Lake	DELAWARE		22280001
Silver Lake	PALO ALTO	Max Depth UTM: 15T, 346497, 4765895	22740003
Slip Bluff Lake	DECATUR	Max Depth UTM: 15T 427894, 4500673	22270003
South Prairie Lake	BLACK HAWK	Max Depth UTM: 15T 544372, 4702973	22070005
Spring Lake	GREENE	Max Depth UTM: 15T 393380, 4657801	22370001
Springbrook Lake	GUTHRIE	Max Depth UTM: 15T378113, 4625954	22390001
Storm Lake (incl Little Storm Lake)	BUENA VISTA		22110001
Summit Lake	UNION		22880005

<u>LAKE NAME</u>	<u>COUNTY NAME</u>	<u>MONITORING LOCATION</u>	<u>STORET ID #</u>
Swan Lake	CARROLL	Max Depth UTM: 15T 347642, 4655305	22140001
Thayer Lake	UNION	Max Depth UTM: 15T 410403, 4541704	22880002
Three Mile Lake	UNION	Max Depth UTM: 15T 398095, 4547390	22880003
Trumbull Lake	CLAY		22210001
Tuttle Lake	EMMET	Max Depth UTM: 15T 369301, 4816565	22320002
Twelve Mile Creek Lake	UNION		22880004
Union Grove Lake	TAMA	Max Depth UTM: 15T 523237, 4663716	22860003
Upper Gar Lake	DICKINSON	Max Depth UTM: 15T 328228, 4804015	22300013
Upper Pine Lake	HARDIN	Max Depth UTM: 15T 494530, 4691272	22420002
Viking Lake	MONTGOMERY	Max Depth UTM: 15T 329215, 4538096	22690001
Frog Hollow (aka Volga Lake)	FAYETTE	Max Depth UTM: 15T 600391, 4750049	22330001
West Okoboji Lake	DICKINSON	Max Depth UTM: 15T 325912, 4804680	22300009
West Lake (Osceola)	CLARKE	Max Depth UTM: 15T 432315, 4543511	22200002
White Oak Conservation Area Lake	MAHASKA	Max Depth UTM: 15T 543870, 4569294	22620003
Williamson Pond	LUCAS		22590001
Willow Lake	HARRISON	Max Depth UTM: 15T 268183, 4627929	22430002
Wilson Park Lake	TAYLOR	Max Depth UTM: 15T 370016, 4521856	22870002
Windmill Lake	TAYLOR	Max Depth UTM: 15T 345713, 4510506	22870003
Yellow Smoke Park Lake	CRAWFORD	Max Depth UTM: 15T 307528, 4654905	22240002

\* Drained lake, unavailable for 2009 sampling

Table 2. Analyte set for 2009 Iowa Lakes Monitoring

<b>2009 Analyte Set</b>
- Alkalinity
- Chlorophyll a
- DOC / TDOC
- Solids (TSS, ISS, VSS)
- Total Nitrogen
- Total Phosphorus
- SRP
- NO <sub>2</sub> + NO <sub>3</sub>
- NH <sub>4</sub>
- Unionized NH <sub>3</sub>
- Phytoplankton Composition
- Zooplankton Composition
- Secchi
- YSI Profile (temperature, pH, DO, conductivity, turbidity)

Table 3. Information to include in metadata

ProjectID:
TripID:
StationID
ActivityID:
Activity Type:
Medium:
Activity Category:
Activity Start Date:
Activity Start Time:
Activity Start Time Zone:
Personnel:
Sample Collection Procedure ID:
Characteristic Name:
Result value:
Result value Units:
Sample Fraction:
Lab ID:
Field/Lab Procedure Source:
Field/lab Procedure:
Lab Batch ID:
Analysis Date:
Detection Limit:
Detection Limit Unit:

Table 4. Laboratory Certification Requirements

Parameter	Certification Required	Date Required
Ammonia Nitrogen	Yes	5/2009
Unionized Ammonia Nitrogen	No	
Nitrate + Nitrite Nitrogen*	Yes - via UHL	5/2009
Total Kjeldahl Nitrogen*	Yes - via UHL	5/2009
Ortho Phosphate	Yes	9/2009
Total Phosphate	Yes	5/2009
TSS + VSS + ISS	Yes	9/2009
Total Alkalinity	Yes	9/2009
Dissolved Organic Carbon	No	
Chlorophyll a	No	
Phytoplankton	No	
Zooplankton	No	
Field Temperature	No	
Field pH	No	
Field Dissolved Oxygen	No	
Field Specific Conductance	No	
Field Turbidity	No	
Secchi Depth	No	