University of California, Berkeley

Capital Projects

Project 12303A

2151 Berkeley Way, Nuclear Waste Assessment

Request for Qualifications

Background:

The University of California Berkeley (UC Berkeley) has acquired the property and structures formerly utilized by the California Department of Health Services as its public health laboratory located at 2151 Berkeley Way, Berkeley California, 94720. This multistory structure was initially constructed in the 1950s and occupies the area approximately equal to a city block. Radioactive materials were used in research pursuant to California Radioactive Materials License No: 03377-01 from 1980 until about 2005. Since 2005 the building has been vacated, hazardous chemicals, infectious media, and radioactive materials removed and the use location released for unrestricted use by the California Department of Public Health's (CDPH) Radiologic Health Branch (RHB).

UC Berkeley plans to recycle most of the material and equipment remaining in the building, deconstruct the building, and utilize the site for new construction.

Purpose, Contract, Deadlines:

The purpose of the RFQ is to obtain the services of a qualified radiological contractor to develop and implement a plan that will demonstrate compliance with the Executive Order D-62-02 (the Order), issued by the Governor of the State of California (copy attached).

Please respond by 4:30 pm, Friday, 26 June 2009 to:

Eric Ellisen, Project Manager
1936 University Av, Rm 232
Berkeley CA 94704-7027

Address questions to Mr. Ellisen at eellisen@cp.berkeley.edu, 510-642-4690.

The successful firm will be required to sign the University's Professional Services Agreement, which is posted for review at
http://www.cp.berkeley.edu/CP/ContractAdmin/SampleDocs/Agreements/PSA.pdf.

Scope:

The successful contractor will be responsible for designing, developing, and implementing a radiological confirmatory action plan that will ensure decommissioned materials, materials with low residual levels of previously licensed radioactivity, will be disposed of to licensed radioactive materials treatment or disposal facilities, or in accordance with the Order.

The contractor must demonstrate a high level of confidence (95%) that recyclables and material disposed of into Class III land fills and unclassified waste management units do not contain low levels of previously licensed residual radioactivity.

The contractor shall use the values presented in United States Nuclear Regulatory Commission, Regulatory Guide 1.86, Table 1 as its measurement criteria to demonstrate the absence of residual low levels of previously licensed radioactive materials and shall design and implement its surveys in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) NUREG-1575, EPA 402-R-97-016 and Mulit-Agency Radiation Survey and Assessment of Materials and Equipment Manual (MARSAME) NUREG-1575, Sup.1, EPA 402-R-06-002, DOE/EH-707.

The contractor shall follow the following steps:

- Prepare a Radiological Confirmatory Action Plan that meets all the requirements presented in the Order. The plan will demonstrate that no detectable residual radioactivity remains in excess of natural background radiation.
- As described in MARSSIM, four separate survey efforts will occur as follows:
  - Scoping survey;
  - Background reference area survey;
  - Characterization survey; and
  - Final status survey.
- Develop a Radiological Survey and Sampling Plan (RSSP) that fulfills the requirements of both a characterization survey and final status survey.
- Perform radiological surveys of all areas identified as use locations in RML 03377-01, Berkeley Closure Project No. 1014079, and correspondence with the CDPH in connection with the license termination and scoping surveys as having stored or handled radioactive material using appropriate instrumentation including surveys of comparable areas, not used to store or handle radioactive materials, to establish suitable background levels of radioactivity.
- Remove equipment, surfaces, or components that are determined to be contaminated and process these items for final disposal at a licensed disposal facility.
- Ship all radioactive waste from the site adhering to the regulations in 49 Code of Federal Regulation (CFR).
- Develop a Final Status Survey Report (FSSR) consistent with the guidance contained in MARSSIM. and submit a written report to the UC Berkeley Radiation Safety Officer (RSO) regarding compliance with the Order for release of material and equipment from 2151 Berkeley Way.

Historical Site Assessment (HSA)

A draft Historical Site Assessment (HSA) has been prepared for 2151 Berkeley Way. The draft HSA provides information on the use of radioactive materials at 2151 Berkeley Way and provides a list of impacted areas and radionuclides of concern. The draft HSA also provides a list of materials and equipment that may be found in impacted areas of 2151 Berkeley Way.

Scoping Survey

The scoping survey will consist of a walkthrough of the entire facility at 2151 Berkeley Way to accomplish three tasks:

1. Identify all generally licensed instruments or articles like tritium exit signs or americium smoke detectors still present in the building.

2. Identify and label all impacted materials and equipment that will be disposed of as radioactive material without a complete survey because of difficulty in accessing all impacted areas, such as small diameter vacuum lines and drain lines, or items that are known to contain measurable radioactivity such as the bench top in Room B043.
3. Identify locations of reference material in preparation for performing the background reference area survey.

Background Reference Area Survey

One of the most important components of the closure surveys is the selection of appropriately representative reference area background survey units. Each change in the survey unit substrate (i.e., linoleum, metal, concrete, etc.) requires a matching separate reference area survey unit since as the constituents change, the quantity of naturally occurring radioactive material also changes. To accurately account for these changes in background radioactivity, a separate background survey unit is used for the different survey unit constituents. Each background survey will consist of surveys identical to those proposed for the survey units. Physical measurements and background reference area surveys will be performed immediately following the scoping survey and prior to performing the final status survey.

Radiological Survey and Sampling Plan (RSSP)

The contractor will develop an RSSP that will detail the methodologies to be followed during performance of the final status survey. The RSSP is a planning document that will be used to describe the types, methods, controls, survey design, and data analysis for the Characterization/Final Status Surveys. The survey philosophy contained in the RSSP will be based upon guidance contained in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), Revision 1; NUREG 1757 Volumes 1 and 2; and NUREG 1507.

Data Quality Objectives (DQOs) and Derived Concentration Guideline Levels (DCGLs) will be developed during preparation of the RSSP. The RSSP survey design will use surface scanning of building surfaces, collection of beta static measurements, and collection of beta swipes.

Data Quality Objectives (DQOs)

One of the first steps when developing a RSSP is development of Data Quality Objectives (DQOs). The DQOs will be used to improve the survey effectiveness and efficiency and to assure that the type, quantity, and quality of data used in decision making will be appropriate to ensure the release of materials and equipment. The DQOs will define the criteria that the survey design should satisfy, including when and where to perform measurements, the types of measurements to be performed, the instruments used to perform the measurements, the detection and quantitation capabilities of the instruments (as described in MARSAME), the level of decision errors (Type I and Type II) for the survey, and how many measurements to perform.

Derived Concentration Guideline Level (DCGL) Development

The DCGL for the unrestricted release of 2151 Berkeley Way will be established to assure no residual radioactivity statistically different from background remains in the building using Uniited States Nuclear Regulatory Guide 1.86.

Survey Unit Classification

Based on information provided in the HSA the contractor will determine the appropriate classification for the individual survey units following the guidance contained in MARSSIM. In the event that data obtained during the scoping and/or characterization/final status surveys indicates the need to reclassify

any areas, a technical assessment supporting the change in classification will be submitted to the UC Berkeley RSO.

Final Status Survey Design

Characterization/Final Status Surveys will consist of:

- Alpha, Beta, and Gamma static measurements;
- Beta and Gamma scanning of floor surfaces (an appropriate percentage to be determined after initial area classification);
- Beta dry swipes for determining loose surface contamination.
- Dry swipes for determination of alpha and gamma loose surface contamination.

Areas surveyed will include those with the highest potential for contamination including the following:

- Floors;
- Walls above sinks;
- Laboratory sink traps and sink lips;
- Fume hoods;
- Air intake and exhaust vents;
- Laboratory benches and bench lips;
- Floor drains; and
- Hot lab ducting;
- Equipment such as refrigerators and freezers

The number of samples collected from floor surfaces will be determined following MARSSIM guidance using non-parametric tests and the potential for hot spots. Additional biased samples will be collected from the high-risk areas listed above.

RSSP Submittal

The Draft RSSP will be submitted to the UC Berkeley RSO for review and comment. The contractor will meet with the UC Berkeley RSO to discuss comments. Once comments have been incorporated, the contractor will prepare a Final RSSP. The RSSP will be submitted for review to the State Radiologic Health Branch.

Characterization/Final Status Survey

Once the RSSP has been approved, the contractor will perform the radiological surveys following the methodologies outlined in the RSSP and analyze the results to determine compliance with approved release criteria. The contractor will provide all equipment and personnel necessary to complete the surveys. Any concerns identified during the analysis of the survey data will be discussed with the UCB RSO to determine a course of action.

The Characterization Survey will be designed so as to meet the requirements for the Final Status Survey. In the event the Characterization Survey results indicate that the area could be released for unrestricted use, no further survey work will be necessary. The Characterization/Final Status Surveys will follow the guidance contained in the RSSP. The primary objectives of the Characterization/Final Status Survey will be to:

- Verify correct survey unit classification;
- Demonstrate that the residual contamination is below the release criterion for each survey unit;
- Demonstrate that small areas of elevated activity are disposed of inaccordance with the Order.

Analyze Data

All data collected will be analyzed following guidance contained in MARSSIM and NUREG 1757. Data will be analyzed for completeness and to ensure that residual radioactivity levels meet the release criterion (DCGL) for each survey unit. To assist in this analysis, the Wilcoxon Rank Sum Test (WRS) will be used as recommended by MARSSIM, if necessary. As part of the data interpretation process, all scanning, static measurement, and swipe sample data collected by the field personnel will be reviewed by the contractor's Health Physicist (HP) experienced in D&D review. The HP will approve contractor work plans and oversee the in-house QA/QC function. The HP will review the results to ensure the data gathered is consistent with the RSSP. The HP will also review the minimum detectable activities achieved during the scanning efforts and the scanning data to ensure data of sufficient sensitivity are collected. A recommendation regarding unrestricted release of the affected areas will be submitted to the UC Berkeley RSO.

Decontamination and/or Removal of Contaminated Material

In the event that contamination is identified during any of the surveys the contractor will be responsible for decontamination of areas or items identified as exceeding the DCGL. The contractor will be responsible for the proper shipping and disposal any waste generated as part of the decontamination at a licensed burial facility.

Any structures, systems or components determined to have been in contact with unsealed radioactive materials that can not be surveyed in a manner sufficient to demonstrate compliance with the DCGL shall be considered as containing decommissioned material and be disposed of in accordance with the Order. This includes small bore piping such as vacuum and sanitary drain lines in areas where radioactive materials were used.

Final Status Survey Report (FSSR)

After the analysis of final status survey data is complete, the contractor will develop a FSSR consistent with the guidance provided in MARSSIM and NUREG 1757. In general, the FSSR will substantiate the recommendation regarding unrestricted release of potentially impacted survey units.

The results of all investigations will be documented in the FSSR, including the locations and results of initial surveys as well as any follow-up surveys that may have potentially identified areas of elevated radiation. The results of the investigation of the measurements that exceed the investigation level and the basis for reclassifying all or part of a survey unit as Class 1 or Class 2, if necessary, will be included in a technical assessment submitted to the UC Berkeley RSO and in the final status survey report.

The FSSR will document the final status survey activities by providing detailed information. A sample table of contents for the FSSR follows:

EXECUTIVE SUMMARY

1.0 Introduction and Background
- 1.1 Site History/Description
- 1.2 Radiological Contaminants of Concern

2.0 Survey Units and Classification
- 2.1 Survey Unit Designation
- 2.2 Survey Unit Classification

3.0 Mechanism of Release
- 3.1 DCGL Determination
- 3.2 DCGL Comparison

4.0 Background Determination

5.0 Site Survey Techniques

All supporting information (i.e., instrument calibration and source checks, completed radiation surveys, survey unit figures, graphics, photographs, MDA/MDCR calculations, etc.) will be included in the FSSR. Calculations of the MDA/MDCR shall follow the guidance contained in MARSSIM and NUREG 1505.

The Draft FSSR will be submitted to the UC Berkeley RSO for review and comment. Once UC Berkeley RSO comments have been incorporated, the contractor will prepare a Draft Final FSSR for submittal to the UC Radiation Safety Committee for review and approval.

Contractor's Radioactive Materials License

The contractor shall provide a current copy of its Radioactive Materials License indicating it is authorized to conduct radiological decontamination and decommissioning activities in the state of California.

The contractor will implement its radiation protection program to the extent that it meets or exceeds all radiation safety requirements imposed by the State of California and the University of California's Radioactive Materials License (RML).

Contractor's Health and Safety Program

The contractor shall prepare a project-specific safety plan that addresses personal protective equipment (PPE) to be worn by all contractor personnel and will describe the methodology for monitoring their exposure during completion of work under this contract.

2151 Berkeley Way is an old building containing hazardous materials such as asbestos that conducted research into infectious diseases using hazardous chemicals and radioactive materials. The building had high energy and electrical sources that represent typical industrial hazards. The building has been cleared of hazardous chemicals and infectious products; however, THE PLAN SHOULD ADDRESS RECOGNITION, SELF-PROTECTION, AND IMMEDIATE ACTIONS IN THE EVENT MATERIALS ARE DISCOVERED THAT REPRESENT A CONCERN.

The contractor will implement its Health and Safety Plan during all activities at the 2151 Berkeley Way site.

Contractor's Quality Assurance Project Plan(QAPP)

The contractor shall provide a QAPP that addresses the general and common objectives, procedures, functional activities, and specific quality assurance and quality control activities associated with the Radiological Confirmatory Action Plan.

Schedule

The contractor shall submit a draft schedule for the project, stating the shortest practical interval of time needed to meet the following milestones:

- Submission of the Draft Radiological Confirmatory Action Plan including its Radioactive Materials License and reciprocity letter, if appropriate, Health and Safety Plan, and Quality Assurance Project Plan to UC Berkeley for review.
- Completion of Historical Site Assessment.
- Completion of scoping and characterization surveys.
- Removal and disposal of all decommissioned materials.
- Completion of the final FSSR.
- Submission of the FSSR to UC Berkeley.