

AGREEMENT NUMBER 13-C0002
REGISTRATION NUMBER 1285627

1. This Agreement is entered into between the State Agency and the Contractor named below:

STATE AGENCY'S NAME

Department of Pesticide Regulation (DPR)

CONTRACTOR'S NAME

The Regents of the University of California

2. The term of this Agreement is July 1, 2013 or upon final approval by the State whichever occurs later, through April 15, 2016

3. The maximum amount of this Agreement is: **\$ 240,000.00**
Two hundred forty thousand dollars and no cents

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement.

Exhibit A – Scope of Work	7 Pages
Exhibit B – Budget Detail and Payment Provisions	3 Pages
Exhibit C* – General Terms and Conditions (GIA 610)	
Exhibit D - Special Terms and Conditions	2 Pages
Exhibit E – Additional Terms and Conditions	2 Pages
Exhibit F – Curriculum Vitae	2 Pages

Items shown with an Asterisk (*), are hereby incorporated by reference and made part of this agreement as if attached hereto. *These documents can be viewed at <http://www.ols.dgs.ca.gov/Standard+Language/default.htm>*

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

CONTRACTOR		California Department of General Services Use Only <div style="border: 2px solid black; padding: 5px; text-align: center;"> APPROVED MAY 2 2013 DEPT OF GENERAL SERVICES </div> <i>Kyates</i>
CONTRACTOR'S NAME (if other than an individual, state whether a corporation, partnership, etc.) The Regents of the University of California		
BY (Authorized Signature) <i>Myma A. Lindo</i>	DATE SIGNED (Do not type) 05/10/13	
PRINTED NAME AND TITLE OF PERSON SIGNING Myma A. Lindo Sr. Contract & Grant Officer		
ADDRESS Research and Economic Development 200 University Office Building, Riverside, CA 92521-0217		
STATE OF CALIFORNIA		
AGENCY NAME Department of Pesticide Regulation		
BY (Authorized Signature) <i>Anise Severns</i>	DATE SIGNED (Do not type) 5/17/13	
PRINTED NAME AND TITLE OF PERSON SIGNING Anise Severns, Assistant Director, Administrative Services Division		
ADDRESS 1001 I Street, 4 th Floor, Sacramento, CA 95814		

Exempt per:

APPROVED
1002 3

1002 3

EXHIBIT A
STANDARD AGREEMENT

SCOPE OF WORK

1. This Agreement is entered into by and between the Department of Pesticide Regulation (DPR) and the Regents of the University of California (Contractor).
2. This Agreement will commence on the start date July 1, 2013 as presented herein or upon final approval by the State, whichever is later and no work shall begin before that time. This Agreement is of no effect unless approved by the State. Contractor shall not receive payment for work performed prior to approval of the Agreement and before receipt of notice to proceed by the Contract Manager. This Agreement shall expire on April 15, 2016. The services shall be provided during normal working hours, Monday through Friday, except State holidays.
3. The Project Representatives during the term of this Agreement will be:
 - A. All official communications, except invoices, from the Contractor to DPR shall be directed to the attention of the DPR Contract Manager **Dr. Yuzhou Luo**, at:

Department of Pesticide Regulation
Environmental Monitoring Branch
1001 I Street
P.O. Box 4015
Sacramento, CA 95812-4015
Phone (916) 445-2090; Fax (916) 445-4405
Email address: ylouo@cdpr.ca.gov

- B. All invoices from the Contractor to DPR shall be directed to:

Department of Pesticide Regulation
Attn: Accounts Payable
P.O. Box 4015, MS 4A
Sacramento, CA 95812-4015

- C. All technical communications from DPR to the Contractor shall be directed to the attention of **Prof. Jay Gan** at:

Prof. Jay Gan
Professor and Water Quality Specialist
Department of Environmental Sciences
UC Riverside, CA 92521
Phone: (951) 827-2712; Fax: (951) 827-3991
Email: jgan@ucr.edu

EXHIBIT A
STANDARD AGREEMENT

D. All fiscal communications and from DPR to Contractor shall be directed to:

The Regents of the University of California, on behalf of its Riverside campus
Riverside Accounting Office
208E University Village
Riverside, CA 92521
Attn: Fred Devera, Fund Manager

Telephon (951) 827-1948
Email: fred.devera@ucr.edu

E. The Project Representatives during the term of this Agreement may be changed by mutual written agreement without the necessity of formal amendment to this Agreement.

4. Background and Goals

Pesticides such as pyrethroids and fipronil are frequently found in residential runoff as a result of insecticide use for preventive and eradication structural pest control. Recent studies have linked hard surfaces such as concrete to the sustained occurrence of pyrethroids and fipronil in residential runoff. Findings to date have shown that pesticide runoff loads may be influenced by various environmental and application factors, including types of pesticides, pesticide formulations, pesticide contact time on concrete, rainfall intensity, and concrete surface types. Data obtained from these studies have improved our understanding of pesticide behaviors in urban environments, but also revealed knowledge gaps critical for developing better model predictions and more effective mitigation strategies.

In outdoor environments, hard surfaces such as concrete are always covered with loose soil and dust particles deposited by wind, water or traffic from adjacent areas or atmosphere. Fine particles may also be generated from concrete through mechanical abrasion, hydraulic erosion, and weathering under sunlight, heat and moisture. Our studies to date showed that >80% of pyrethroids in runoff water were associated with suspended particles >0.7 μm , even though the particle content was <0.6 g/L. A recent survey of 40 homes in Riverside showed that pyrethroids, fipronil and metabolites, and selected organo-phosphates (OPs) were present in nearly every dust sample collected from driveway, sidewalk or street throughout the year. However, the relationship between loose particles and pesticide runoff loads has yet to be quantified under realistic conditions, sources of pesticides in the loose particles are unknown, and distribution of pesticides as a function of particle sizes is not understood. If loose particles are proven to be the main contributor to urban pesticide runoff, the information may be highly valuable for the modeling prediction of pesticide runoff at the watershed

EXHIBIT A
STANDARD AGREEMENT

scale. In addition, a better understanding of the interactions of loose particles and pesticide runoff can also help developing mitigation strategies that are based on dust/particle abatement and retention.

Monitoring studies have shown that rain-induced runoff during the winter season contributes the most to pesticide loading. Winter storm events often last for hours, if not days. However, studies so far have considered pesticide runoff losses over a limited time scale, often within the range of minutes. It is important to characterize pesticide runoff patterns over longer time durations that more realistically reflects the actual situations, and to discern the role of particles in the runoff trend. This information will be valuable for both pesticide load modeling and mitigation.

The objectives of this project are to provide new and critical knowledge that may be used for refining predictive models to estimate pesticide runoff loads on different scales, to develop ready-to-use tools for estimating pesticide runoff loads, and to develop and test effective source-oriented mitigation practices.

5. Work To Be Performed

Task 1. Optimization of surface wipe method for predicting runoff potential

- In this task, the previously developed surface wipe method will be optimized to further enhance its predictability of runoff potential. Real home sites will be used.
- The current method involves the use of a piece of 10 cm × 10 cm Versalon™ nonwoven sponge (4-ply, Kendall Healthcare, Mansfield, MA) that is pre-wetted with 10 mL isopropanol before use. The variables to be optimized include the type of sponge or cloth, solvent type (water-miscible solvents) or the make of solvent-water mixture, the amount of solvent, and the area that may be reproducibly and accurately wiped for measurement. As validation, an equivalent area next to the sampling area will be vacuumed and the loose particles collected into a disposable bag. Vacuuming recovers dislodgeable particles, which should best represent runoff-washable particles. However, compared to vacuuming, the wipe method is much more portable, rapid, foolproof, and “inconspicuous”.
- Pesticides on the wipes and vacuum particles will be extracted and quantified. The data will be analyzed statistically for reproducibility and accuracy. Concentrations from the wipe method will be compared to the vacuum measurement for the same pair of samples. The closeness to the vacuum-derived values will be used to assess the method performance. It is possible that when strong solvents are used to pre-wet the sponge, the measurement may be even higher than that by the vacuum method, as the solvent extracts sorbed residue that is otherwise not transferable to runoff water.

EXHIBIT A
STANDARD AGREEMENT

- The end product of this task will be a standardized and clearly outlined surface wipe method that may be easily adopted by moderately trained users for estimating runoff-transferable pesticide residues on hardscapes.

Task 2. Relationships between loose particles and pesticide runoff from concrete surfaces

- The concrete slabs (60 × 40 cm) built previously will be used to understand how pesticide contamination of loose particles take place. These slabs are at the UC South Coast Research & Extension Center (SCREC) in Irvine and were last exposed to pesticides over 2 years ago. Three possibilities may result in pesticide-contaminated loose particles on hardscapes: 1) loose particles present on hard surfaces prior to pesticide treatment get treated during pesticide application; 2) pesticide-laden particles are relocated or deposited from elsewhere due to wind, water or traffic and from air deposition; and 3) the topmost surface of concrete disintegrates into fine fragments to produce fine particles containing high levels of pesticides. It is also likely that several or all of these mechanisms are at play. A systematic design will be developed to distinguish these sources or assign relative importance to each of these processes. For example, some concrete slabs may be power washed to remove preexisting particles to preclude the first possibility. The finding from this part of project should have practical implications. For instance, if preexisting particles are important, it is feasible to clean the to-be-treated surfaces (i.e., sections of walls, sidewalks, and driveways) before a licensed applicator sprays pesticide mixes.
- Pesticides in runoff water, on wiping cloth or in vacuum particles will be extracted and analyzed by GC-MS/MS for pesticides and metabolites. The target analytes will include all pyrethroids, fipronil, and fipronil metabolites. Other information, including mass of loose particles per sample or per surface area, textural properties of loose particles (e.g., organic matter and clay contents) will also be obtained.

Task 3. Survey of pesticides in loose particles in Orange County

- In this task, homes in Orange County will be used.
- A batch of 20 homes will be randomly selected, and the test will be repeated three times throughout a year. For loose particle collection, vacuuming or wiping will be used. Pesticide residues in loose particles will be determined, from which the potential runoff loading may be estimated.
- Statistical analysis will be performed on the data to understand the seasonality and spatial patterns of accumulation of loose particles and pesticides.

EXHIBIT A
STANDARD AGREEMENT

Task 4. Pesticide runoff during continuous rainfalls

- In this task, pesticide loads as a function of runoff interval will be determined, and the experiments will use pesticide treated concrete slabs under simulated conditions. Multiple pesticides in professional formulations will be pre-mixed and applied onto the same concrete slabs. A rainfall simulator will be modified to deliver water at a low rate and over long time duration.
- Runoff water will be collected incrementally into individual sample bottles and the volume recorded. Samples will be filtered ($>0.7 \mu\text{m}$) to obtain the mass of fine particles per sample. Both solids and filtrate will be analyzed for pesticides and metabolites.
- Correlation of pesticide loads (i.e., pollutograph) and the amount of runoff water (i.e., hydrograph) will be made to discern pesticide runoff patterns, and information on fine particles in runoff samples will be used to understand the significance of loose particles in continuous runoff.

Task 5. Development and evaluation of mitigation strategies

- In this task, under the premise that loose particles are the major culprit of pesticides in runoff, two mitigation strategies will be tested. Concrete slabs will be treated with multiple pesticides in professional formulations and kept under outdoor conditions for 3 months before exposed to simulated rainfall.
- In the first mitigation strategy, concrete surfaces will be thoroughly washed with water before the pesticide treatment to remove pre-existing solids. In the second mitigation strategy, the concrete surfaces will be vacuumed to remove loose particles before the onset of simulated runoff. Pesticide levels in the ensuing runoff water will be measured, and reductions in runoff will be estimated by comparing to the control treatment.
- If proven effective, these are simple and inexpensive mitigation measures that can be replicated at real home sites. For example, surfaces can be washed with a hose prior to pesticide spray by either the home owner or the applicator. Before the arrival of the first rain storm, it is possible to ask the applicator or homeowner to vacuum hard surfaces around the perimeter. Educational materials can further be developed to encourage such practices.

Task 6. Dissemination of information and outreach/education

- Submit final report of the study results to DPR
- Give a presentation of final results to DPR

EXHIBIT A
STANDARD AGREEMENT

8. DPR Responsibilities

Provide acknowledgment of receipt and review of deliverables within thirty days of submission.

EXHIBIT B
Standard Agreement

BUDGET DETAIL AND PAYMENT PROVISIONS

1. Invoicing

- A. For services rendered in accordance with the agreed upon Scope of Work, Exhibit A, and upon receipt of the invoices, DPR agrees to compensate Contractor, in arrears, for actual allowable costs incurred as specified herein and in accordance with the rates specified herein or attached hereto. Incomplete or disputed invoices shall be returned to Contractor, unpaid, for correction.
- B. Invoices shall include the Agreement Number, shall be itemized in accordance with the Rates detailed in Item 4 of this Exhibit, and submitted in triplicate, not more frequently than monthly or less than quarterly in arrears, to:

Department of Pesticide Regulation
Attn: Accounts Payable
P.O. Box 4015, MS-4A
Sacramento, CA 95812-4015

2. Budget Contingency Clause

- A. It is mutually agreed that if the Budget Act of the current year and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for the program, this Agreement shall be of no further force and effect. In this event, DPR shall have no liability to pay any funds whatsoever to Contractor or to furnish any other considerations under this Agreement and Contractor shall not be obligated to perform any provisions of this Agreement.
- B. If funding for any fiscal year is reduced or deleted by the Budget Act for purposes of this program, DPR shall have the option to either cancel this Agreement with no liability occurring to DPR, or offer an Agreement Amendment to Contractor to reflect the reduced amount.

3. Payment

- A. Costs for this Agreement shall be computed in accordance with State Administrative Manual (SAM) Sections 8752 and 8752.1.
- B. Nothing herein contained shall preclude advance payments pursuant to Article 1, Chapter 3, Part 1, Division 3, Title 2 of the California Government Code, Sections 11256 and 11257.

EXHIBIT B
Standard Agreement

- C. Transportation and subsistence costs shall not exceed rates authorized to be paid UC system non-represented employees traveling within California.
- D. Contractor will be reimbursed for direct costs, other than salary costs, that are identified in the Contractor's rates.
- E. Contractor will bill in arrears for costs incurred during the billing period. If applicable, salary costs will be itemized and billed by position. Documentation supporting specific salary costs will be presented if requested by DPR. Non-wage costs will be billed, in summary, according to general expense categories. A detailed report of transactions will support the billing. Individual expenditures exceeding \$500.00 will be supported by a photocopy of the original documentation. Documentation in support of expenditures less than \$500.00 will be presented if requested by DPR.
- F. Contractor shall not commence performance of work or services until this Contract has been approved by the State. No payment will be made prior to approval nor for any work performed prior to approval of this Agreement.
- G. Ten percent (10%) of each invoice amount shall be withheld by DPR until the satisfactory completion of this Agreement

4. Rates

Rates for these services are as follows:

Table I. Expenditures by Budget Line Item

Budget Line Item	FY 13-14	FY 14-15	FY 15-16	TOTAL
1. Salaries & Wages	\$41,364	\$45,227	\$47,954	\$134,545
2. Direct Benefits	\$8,686	\$9,498	\$10,070	\$28,254
3. Travel (in state) ①	\$1,000	\$1,000	\$1,000	\$3,000
4. Supplies ②	\$12,950	\$8,275	\$4,976	\$26,201
4. Overhead @ 25% ③	\$16,000	\$16,000	\$16,000	\$48,000
Total	\$80,000	\$80,000	\$80,000	\$240,000

- ① Travel – To and from study site in Orange County and neighborhood sampling.
- ② Supplies include: miscellaneous consumable supplies required to perform the contracted services, this line item does not include any unit acquisition of \$5,000 or more.
- ③ Overhead –Includes department and general administration, sponsored projects administration, building and equipment depreciation, building interest, operations and maintenance, library, and student services administration.

EXHIBIT B
Standard Agreement

Table II. Detail of Salaries and Wages

Classification	Monthly Salary	Number of Months	Percentage of Time	Total
Post Doctorial Researcher (FY 13-14)	\$3,447	12	100%	\$41,364
Post Doctorial Researcher (FY 14-15)*	\$3,769	12	100%	\$45,227
Post Doctorial Researcher (FY 15-16)* Represents a 2.0% pay increase	\$3,996	12	100%	\$47,954
Total Personnel		36	100%	\$134,545
Direct Benefits:				
Post Doctorial Researcher @21.00%	(FY13-14)			\$8,686
Post Doctorial Researcher @21.00%	(FY14-15)			\$9,498
Post Doctorial Researcher @21.00%	(FY15-16)			\$10,070
Total Benefits				\$28,254
Total Personnel and Benefits				\$162,799

* Represents a 2.0% pay increase

5. Cost Limitation

- A. The total amount of this Agreement shall not exceed \$ 240,000.00.
- B. It is understood and agreed that this total is an estimate and that DPR will pay for only those services actually rendered as authorized by the DPR Contract Manager or his/her designee.

EXHIBIT D
Standard Agreement

SPECIAL TERMS AND CONDITIONS

1. Termination

- A. Either Party reserves the right to terminate this agreement without cause upon thirty (30) days written notice to the other Party, or immediately in the event of a material breach. In the event of termination, Contractor shall be paid for all allowable costs incurred up to the date of termination, including any non-cancelable obligations.
- B. In the event that the total Agreement amount is expended prior to the expiration date, DPR may, at its sole discretion, terminate this Agreement with 30 days notice to contractor.

2. Subcontracting

Contractor shall perform the work contemplated with resources available within its own organization and no portion of the work shall be subcontracted.

3. Dispute Resolution

- A. DPR reserves the right to issue an order to stop work in the event that a dispute should arise, or in the event that DPR gives the performing agency a notice that this Agreement will be terminated. If DPR exercises this right, the stop-work order will be in effect until the dispute has been resolved or this Agreement has been terminated.
- B. Any dispute concerning a question of fact arising under the terms of this Agreement which is not disposed of within a reasonable period of time by agency employees normally responsible for the administration of this agreement, shall be brought to the attention of the Executive Officer or designated representative of each agency for joint resolution.
- C. The Contractor shall continue to perform all its responsibilities under this agreement during any dispute until notified to stop work or expiration of this Agreement.

4. Harassment Free Workplace

The Department of Pesticide Regulation (DPR) is committed to providing a safe, secure environment, free from sexual misconduct. It is policy of the Department that employees have the right to work in an environment that is free from all forms of discrimination, including sexual harassment. This policy specifically speaks to freedom from a sexually harassing act that results in the creation of an intimidating, hostile or offensive work environment or that otherwise interferes with an individual's employment or work performance. As a Contractor with DPR, you and your staff are expected to comply with a standard of conduct that is respectful and courteous to DPR employees

EXHIBIT D
Standard Agreement

and all other persons contacted during the performance of this Agreement. Sexual harassment is unacceptable, will not be tolerated; and may be cause for prohibiting some or all of the Contractor's staff from performing work under this Agreement.

EXHIBIT E
Standard Agreement

ADDITIONAL PROVISIONS

1. Disposition of Work Product

DPR retains use and non-commercial governmental distribution rights to all deliverables identified in Exhibit A of this Agreement.

2. Lead Free Products

The Contractor is hereby notified that all products offered or provided to the State as a result of this Agreement will be lead free.

3. Contractor Evaluation

The Contractor is hereby notified that its performance under this Agreement shall be evaluated within thirty (30) calendar days following the Expiration of this Agreement. The evaluation may include statements on the adequacy of the service or the product, whether the service was satisfactory, whether the service or the product was provided or completed within the time limitations, reasons for time or cost overruns, whether the product is operational or being utilized by the State, and/or the State plans for implementation, and the State's general impression as to the competency of the Contractor and its staff. The evaluation shall be filed in the State's official Contractor Evaluation File.

4. Consulting Services

- A. The Contractor is hereby advised of its duties, obligations and rights under Public Contract Code § 10335.5.
- B. The Contractor's key personnel assigned to perform work under this Agreement and their level of responsibility shall be mutually acceptable to the State and the Contractor.