PROPOSAL FOR EMERGENCY RESPONSE
SICHUAN, PRC – JUNE 2008

Prepared by Thomas R. Benke
Managing Member, ECO International LLC
Director of Environmental Programs, Oregon Fujian Sister State Association
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At this writing less than 2 weeks after the magnitude 7.9 earthquake in Sichuan Province, People's Republic of China, the people of China have barely begun post-rescue operations in the stricken province. As the death toll nears 60,000 persons, with the missing estimated at another 30,000 persons, and with an estimated 5.5 million buildings collapsed, Chinese emergency personnel only now are turning to recovery of the dead and responding to overwhelming environmental and ecological disasters. In a recent letter to Oregon Fujian Sister State Association (OFSSA) President Jin Lan (in response to various offers of assistance by several government representatives and the people of the State of Oregon) Sichuan provincial officials have requested immediate support with respect to various environmental and ecological crises. These crises include an imminent threat to drinking water caused by decomposing bodies (human and animal), releases of hazardous or toxic chemicals from commercial or industrial facilities, and epidemiological (bacteriological and viral) impacts of dysfunctional sewage systems and displaced persons. Instability of hillsides, dams, flood control and irrigation levees, and bridges remains a constant threat according to these provincial officials.

We can appreciate these problems – anticipate others – but lack sufficient information to justify a fully responsive mobilization at this time. A staged response is therefore recommended. First, sending a small (2 to 3 person) advance team with several emergency response technologies having broad and easily anticipated application, followed by organization and dispatch of a larger group of specialists and necessary equipment based on the scoping work of the advance team.

The following budget assumes full collaboration with (and support of) Sichuan provincial officials. The budget does not include any expense for translation. A professional translator is essential to the success of the proposed response. Translator fees and expenses should be added to the overall budget totals.

Travel Expenses

Estimated travel expenses (two weeks) are $5,420.00 per person as detailed in the budget summary below:

Travel (one person)

Airfare	**3100**	
		PDX – Hong Kong – 2500
		Hong Kong – Fuzhou – 300
		Fuzhou – Chengdu – 300
Lodging	**1440**	12 nights @ 120/night
M&IE	**630**	14 days @ $45/day
Medical Evacuation Insurance	**100**	
Visa	**150**	
TOTAL TRAVEL	**5420**	

Equipment and Supplies

The total cost of recommended equipment and supplies for the advance team is $29,765.00 (see equipment list, below), although the minimum necessary expenditure for protection of advance team personnel would be as little as $8,375.00. Equipment and supplies for the second response team would depend on needs established in the advanced team's scoping study.

Some of the equipment below is essential to personal safety and therefore would be a mandatory component of any emergency response. All of the equipment below has broad application in response to threats to drinking water and would therefore be highly useful to the response team *as well as to their Chinese counterparts with whom the equipment would remain upon departure of the Oregonians*. The time and effort expended by Chinese response personnel in supporting the Oregonian advance team would not be justifiable without the technology transfer component of the Oregonian response. The choice of technologies defines the response and, if the technology is beneficial to the recipient Chinese, creates opportunities for continued support of that technology (and other long-term opportunities) for the Oregon community. All of the recommended technologies are available in China, some with Chinese language support and some without, but all the technologies require a collaborative effort of U.S. and Chinese

specialists to be used in China. And, while the science of these technologies will be very familiar to the Chinese (e.g. photo-ionizing detection, gas chromatography, spectrophotometry, and colorimetry), their use "in the field" (e.g., outside the laboratory) will be quite novel to the Chinese, as will be the acceleration of environmental assessments and decision-making made possible by these high-tech devices. In the right Chinese hands, these technologies will save lives. Here is the proposed equipment list, with a following summary of the utility of the various devices:

Device or Supplies	Cost	Breakdown
VRAE – 5 Gas Monitor	**3075**	
		Basic Unit + Accessories Kit – 1875
		Regulator – 200
		Calibration Gas – 200 x 5
MiniRAE 3000 – VOC Monitor	**4800**	
		Basic Unit – 3800
		Spare Sensor – 200
		Spare Lamp – 200
		Regulator – 200
		Case – 200
		Calibration Gas – 200
Rapid Water Testing Equipment	**7906**	
		YSI 556 Multi-parameter Probe – 1995
		DREL-2800 Portable Spectrophotometer - 3782
		Reagent Set for DREL 2800 – 373
		Portable Turbidimeter – 300
		Digital Titration (Alkalinity Test) – 500
		LaMotte Smart 2 Colorimeter – 836
		Reagent Sets for Colorimeter – 3 x 40
SRI Model 310 Portable GC	**12084**	
		Basic Unit – 5495
		PID Detector – 3494
		Ancillary Components – 200
		Spare Column – 500
		Spare Lamp – 400
		FID Detector – 1995 (optional)
Heavy Duty Transformer	**200**	
Portable Electrical Generator	**1000**	
Safety Supplies	**500**	
Sample Collection Materials	**200**	
TOTAL EQUIPMENT	**$29,765**	

VRAE 5-Gas Monitor

The VRAE 5-Gas Monitor is essential to personal safety. The device measures oxygen, protecting responders from asphyxiation when entering enclosed spaces. It measures the explosivity of the atmosphere, and monitors for the presence of as many as three toxic gases at a time such as carbon monoxide, sulfur dioxide, and chlorine.

MiniRAE 3000 VOC Monitor

The MiniRAE 3000 VOC Monitor (the third generation of the most heavily relied upon air quality monitor by emergency responders) measures the concentration of volatile organic chemicals in the atmosphere. It too is essential to personal safety as it can be used to continuously monitor for dangerous but otherwise undetectable toxic chemicals (particularly common fuel and solvent components.) This device is also used to "survey" the magnitude and extent of a chemical spill. Soil and water samples can be analyzed (by reference to contaminant concentrations in sample head-spaces) in real-time, giving the responder the information necessary to contain a spill or warn affected persons of an imminent threat. The device has been used, and likely would be used in China, as a quick check for man-made chemical contamination in drinking water sources.

Rapid Water Testing Equipment

Listed under the heading Rapid Water Testing Equipment are several technologies indispensable to any emergency responder interested in water quality. The YSI 556 Multi-parameter probe gives real-time readings on basic water quality parameters such as oxygen levels, conductivity, temperature and pH (roughly equivalent to a physician's use of a stethoscope and thermometer.) The DREL-2800 Portable Spectrophotometer is itself a portable water laboratory capable of running as many as 100 different water quality tests (including tests for ammonium, calcium nitrites and nitrates which could evidence impacts from decomposing human bodies and animals.) The LaMotte Smart 2 Colorimeter is capable of measuring more than 50 parameters, some but not all of them redundant of the spectrophotometer. All the devices recommended here are included in the USEPA's guidance on emergency response essential equipment list.

SRI Model 310 Portable GC

The SRI Model 310 Portable GC is used to measure the concentration of chemical contaminants in drinking water to within levels considered safe by hygiene authorities. In itself, the use of gas chromatography to separate chemical compounds for detection and identification (gasoline, for instance, is composed of over a hundred chemical compounds) is not uncommon, nor is the use of a photo-ionizing (PID) or flame-ionizing (FID) detection. What is uncommon is the transportability and flexibility of the SRI Model 310 unit. Roughly the size of a microwave oven and half as heavy, the unit can be outfitted with a choice of columns and as many as four detectors (each optimized for different compounds) simultaneously. While the PID is used to detect organic chemicals with an ionizing potential of 10.6 eV or less (most common organic compounds plus many pesticides and herbicides) the FID is primarily used to detect nitrates and other highly stable compounds. The unit can be run off a portable generator and gives results within 15 minutes of sample preparation. Properly supported, the SRI Model 310 becomes a mobile laboratory saving days or weeks in turn-around time for testing drinking water samples.

2008年**6**月： 中华人民共和国四川紧急情况响应提议.

撰写者：美国俄勒冈州福建省姐妹州协会，环境规划处主任， **ECO** 国际公司的执行董事 **Thomas R. Benke**； 时间：**2008**年**5**月**23**日.

中国四川省7.9级地震之后2个星期不到，
在写本文的时刻，中国已经开始在受灾省份进行救援后继运作。
死亡人数接近六万，失踪人数接近3万， 550万座建筑倒塌，
这时中国的应急人员开始从挽救遇难者转向回应巨大的环境和生态灾难。
在四川省的官员最近写给俄勒冈州福建姐妹州协会OFSSA的主席Jin Lan（答复俄勒冈州的人民和政府的几名代表人提出的援助意愿的）的一封信中，官员请求对方立即对各种环境和生态危急给予直接支援。这些危机包括（人和动物的）尸体分解、商业的或者工业企业生产设施泄漏有毒或者危险品、失灵的污水系统和被迫流离者的流行病学的影响（细菌学上的和病毒性的）给饮用水造成的即将来临的威胁。 据省府官员所讲，不稳定的山坡,水坝,防洪和灌溉用堤坝，
桥梁仍然是一个持续的威胁因素。
我们可以评估这些问题， 也能预料一些其它问题，
但是要在这时候作出充分反应的动员还是缺乏充分的信息，
因此推荐进行分阶段的反应。
首先，将派遣2到3人的小组，他们具有多种应用范围广泛的、针对预见的用途的、紧急情况响应技术，
然后将根据先遣队反馈的工作范围，组织并派遣大批专家和必要的设备。
以下的预算案假定我们和四川省的官员进行充分的协作，得到其充分支持。
这个预算案不包括任何翻译费用。
我们提议的响应计划要取得成功，一名专业的翻译者是很关键的。翻译费用应该添加到全面预算总额中去。

旅差费.

估计旅差费(二个星期)是每一个人5,420.00美元，
下面的预算总汇表中有详细说明。

旅行(一人).

机票	**3100**	
		PDX – 香港 – 2500
		香港 – 福州 – 300
		福州 –成都 – 300
住宿	**1440**	12晚，单价 120每晚
餐费及杂费	**630**	14 日，每日 $45美元
医疗撤离保险	**100**	
签证	**150**	
总差旅费	**5420**	

设备和供给.

给先遣队推荐的设备和供给的总金额是$29,765.00美元（参看下面的设备清单），但是先遣人员的最低的必要防护开支仅$8,375.00美元。

第二批响应队伍的设备和供给将依赖于先遣队的框架调研认定的需求。.

下面列出的一些设备对于人身安全是必要的，

因此在任何应急响应方案中都必须包含它们。下面的全部装备都对于饮用水的威胁具有广泛的适用性， 因此对于应急响应队伍以及中国的同仁们都是非常有用的，

俄勒冈州的人员撤离后，这些设备就留给这些中国同仁使用。.

如果没有俄勒冈州的响应计划中的那些技术转让部件，

中方应急响应人员对俄勒冈州的先遣队人员的支持和耗费的时间都是无意义的。对技术的选择确定了具体的应急响应， 而且如果所选定的技术有益于中国接收方，

就能创造机会让俄勒冈州的社会继续支持那些技术（还有其它长期机会）。.

所推荐的技术都能在中国找到， 有些还有中文支持， 有些没有中文，

但是所有这些技术都要求美国和中国的专家通力合作才能在中国得到应用。虽然这些技术的科学原理是中国人非常熟悉的 （例如，光离子探测， 气相色谱法，

分光光度测定法，

比色法)，但是它们在野外实战中的应用（例如，在实验室外面）将是中国人相当生疏的， 而这些高科技装置将对环境评估和决策起到加速作用。.

在正确地选出的一部分中国人的手中， 这些技术将能够挽救生命。

以下就是提议的设备清单， 并附有各种装置的用法的摘要信息。.

装置或者供应品的价格分解.

VRAE－5气体监测器	**3075**	
		基本单元+附件工具箱－1875
		调节器－200
		校准气－200x5
MiniRAE3000－ 挥发性有机化合物监视器	**4800**	
		基本单元－3800
		备用的传感器－200
		备用的灯－200
		调节器－200
		箱－200
		校准气－200
高速水压试验装备	**7906**	
		YSI556多参数探针－1995
		DREL-2800便携式分光光度计-3782
		DREL用的试剂组合 2800－373
		手提式的浊度计－300
		数码滴定(碱度测试)－500
		LaMotte Smart 2 色度计－836
		色度计的试剂组合－3x40
SRI 310型 手提式的**GC**	**12084**	
		基本单元－5495
		PID 检波器－3494
		辅助的元件－200
		备用的栏目－500
		备用的灯－400
		FID 检波器－1995(可选的)
大功率转化器	**200**	
手提式的发电机	**1000**	
安全供应品	**500**	
试样收集材料	**200**	
全部装备	**$29,765**美元	

VRAE5-气体监测器.

VRAE 5-气体监测器对人身安全是有必要的。.
这个装置能测量氧气,保护应急人员进入封闭空间时不受窒息威胁。 它测量大气的爆炸性，
一次可以同时监视是否存在三种毒气，比如一氧化碳,二氧化硫,和氯。.

MiniRAE3000－挥发性有机化合物监视器.

MiniRAE
3000挥发性有机化合物监视器(第三代最受应急救援人员信赖的大气质量监视器）能测量大气中存在的挥发性有机化学药品浓度。 它对人身安全也是关键的，
因为它可用于连续不断地监测那些危险的，却又不可检测到的，
有毒化学品（特别是一般的燃料和溶剂成分）。.
这个装置也可用于“测量”化学溢漏的程度和范围。可以实时地分析土壤和水的样本（参考样品的顶空污染物浓度），
向应急人员提供必要的判断信息，以便决策是否要把溢出物包围起来，并警告受影响的人群有这个迫在眉睫的威胁。. 这个装置已经投入运用， 也可以用于中国，
作为饮用水源的人造化学污染快速试验方法。.

高速水压试验装备.

“快捷的水检测设备”这个标题下列出了几个技术，
都是任何对水质感兴趣的应急响应人员不可或缺的技术。. YSI556多参数探针，
提供基本水质参数（比如，氧含量、导电率、温度和pH
）的实时读数（就像医师使用听诊器和温度计一样）。. DREL-
2800便携式分光光度计本身是手提式的水实验室，
能够进行100项不同的水质测试（包括铵、亚硝酸钙和硝酸盐测试，这些元素能指示人和动物尸体的分解情况）。. LaMotte Smart 2色度计能够测量超过50种参数，
有些和分光光度计的参数重叠了，但是不是全部重叠。这里推荐的全部的装置都被归入了USEPA的紧急情况响应指导方针的基本设备清单中。.

SRI 310型 手提式的GC.

SRI 310型手提式GC 用于测量饮用水内的化学污染物浓度，
把它控制在卫生当局认为安全的水平以下。
从自身来讲，利用气相色谱法来分离化合物，从而探测和识别物质（例如汽油包括超过一百种化合物），这不是一个寻常的办法， 而光电离（PID ）或者火焰电离（FID) 探测也不是寻常的方法。.
不寻常的是， SRI 310型具有可运输性和灵活性。 尺寸大概只有微波炉大小， 只有微波炉一半重，
这个装置可以同时配备多种不同的测试柱，
配备多达四种检测器（各个检测器都为不同的化合物进行了优化）。. PID
用于检测电离势小于10.6eV
的有机化学物质（最常见的有机化合物，以及许多杀虫剂和除草剂），而FID
基本上用于检测硝酸盐及其他高度稳定的化合物。 这个装置可以用移动式发电机驱动，
在样品制备后15分钟内就能给出结果。. SRI 310型只要得到适合的支持就能变成活动的实验室，
把饮用水样品的测试耗时节省好几天或者好几星期。.