

Title: A Nation-Wide Program to Improve Integration and Application of Wildland Fire Science and Traditional Ecological Knowledge in Tribal Communities

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Federal Cooperators: Bill Downes, Chief Forester; Bryan Rice, Federal Fiscal Rep: USDI Bureau of Indian Affairs, Division of Forestry and Wildland Fire Management, WA. D.C.

1. Statement of need

Goals – Improve information exchange between tribal, agency, and scientific communities regarding wildland fire.

Indian tribes, agencies, research organizations, and institutions of higher learning share a common need for effective and efficient means of sharing and applying wildland fire science. A programmatic approach that will establish enduring lines of communication can help bridge communication barriers between these communities.

Indian tribes lack ready access to forest research information (IFMAT I & II 1993; 2003) generally and particularly to developments in wildland fire science. Tribal and BIA practitioners have not fully benefitted from emerging applied wildland fire science (Palmquist 2008). Fire science and non-Indian resource management agencies have been largely uninformed of traditional insights into ecosystem health and the use of fire as a management tool gained by intergenerational experiential learning from the anchored stewardship commitment of Indian tribes (Trospen 2007).

Aggressive management interventions on tribal and non-tribal ownerships are needed to address ecosystem declines and unprecedented wildfire hazards created by vegetative fuel accumulations (Healthy Forests Restoration Act 2003). Warming trends and drought stresses associated with global climate change heighten the need for adaptive management (QFR 2009). Hazardous fuels removals have been identified as a source of needed raw material for renewable energy development (Perlack et al. 2005). However, integrated management to combine objectives of wildfire hazard, climate change, renewable energy, and ecosystem sustainability is difficult, time-consuming, and costly. Uncharacteristically severe wildfires are increasing; three times as many acres are burned by wildfires as receive fuels treatments (QFR 2009). Costs are enormous and escalating (QFR 2009). Collaborations are needed to turn the tide of ecosystem declines (WGA 2006). We propose to create an innovative framework for information exchange and problem solving based in strengthened relationships between tribal resource managers, academic scientists, and agency professionals.

Inadvertent or unnecessary damage to cultural resource values important to tribal communities have resulted from a lack of awareness by agencies and fire scientists when conducting field activities relating to wildland fire management. Because wildland fire threatens environmental, social and economic stability, tribes are seeking a more proactive role in confronting declines in forest health on reservations and adjacent ownerships, including the treatment of hazardous fuel loads under Stewardship contracting with authority provided by the Tribal Forest Protection Act (PL 108-278, 118 Stat. 868-871). In many areas, especially in the rural west, tribal natural resource departments represent the only surviving and functional resource management infrastructure. Fire science findings and decision support systems have potential to provide powerful support to tribes if customized for improved delivery and application. As

resource management strategies evolve to meet complex contemporary challenges, fundamental tribal ethics of stewardship and sustainability provide a steadfast anchor from which to integrate the needs of place-bound people with the health of the environment. Gathering and synthesizing traditional fire knowledge held by tribal communities presents an opportunity for modern fire science to expand understanding of fire regimes, gain insight into early indicators of change in ecological processes and cultural lifeways, and adjust research priorities to better reflect cultural and environmental priorities. National forest fire challenges can also contribute to economic development in tribal communities by creating opportunities for tribal enterprise development and employment of Indian firefighting crews. Natives have been a major part of the nation's wildland fire fighting capabilities for decades (Dejong 2004). Tribes have long managed timber to maintain desirable forest conditions and as a means to generate wealth. Tribal enterprises are important to the well-being of communities and forests.

The potential benefits of multi-disciplinary and cross-cultural collaborations involving tribal and non-tribal communities to integrate hazardous fuels reductions and bioenergy development with efforts to respond to uncertainties of climate change have not been realized. The commitment and expertise of Tribes to national and regional forest health is a unique human resource worthy of investment to improve forest stewardship.

This proposal assembles senior research scientists, agency professionals, and Native American leaders to improve JFSP science deliverables and science/culture cross-communications with special focus on service for tribal audiences. The goals of this project are ambitious and unprecedented yet the need is undeniable. Execution will require humility, respect, and willingness to listen. We think that we know how to begin. Long-term success will require flexibility for adaptive management and continuous quality improvement.

Background - The value of traditional ecological knowledge (TEK) residing in tribal communities is under-appreciated and underutilized in scientific circles and applied resource management.

Legacies of misunderstanding and prejudice, compounded by fragmented historical records, have hindered appreciation of aboriginal influences on North American ecosystems (Vale 2002, Bonnicksen 2000, Suzuki and Knudtson 1992, Clements 1931, Greeley 1920, Marsh 1864). The scientific community has displayed little appreciation of the whys, whens, and hows of tribal resource management practices (Wuenther 2006, Trostler 2007). Ecosystems found by early European settlers in the Americas were not virgin wilderness, but were instead landscapes altered through time by many generations of Natives who intensively burned, pruned, sowed, weeded, tilled, and harvested to meet their requirements for fuel, fish and wildlife, vegetal foods and medicines, craft supplies, and materials for shelter and transportation (Aikens and Jenkins 1994, Anderson and Moratto 1996). A fundamental land ethic, founded upon the survival imperative and implemented through adaptive management involving multiple, diverse values, has endured through millennia of interaction between man and nature, in ways that conserve resources while providing for the needs of people (Stewart and others 2002). Fire was, and will always be, an important management tool for Indian peoples. Periodic under-burning not only produced desirable ecological conditions, but reduced fuel accumulations that might otherwise sustain intense fires and cause the catastrophic loss of property, resources, and lives (Pyne 1982, Williams 2003). Knowledge of fire, accumulated by generations of native practitioners, is kept by tribal elders who have inherited understanding of the reasons and responsibilities associated with its use. Traditional ecological knowledge (TEK) is a cumulative understanding of human interactions with nature.

Since European settlement, ecosystem conditions across North American landscapes have changed dramatically. With the imposition of European concepts of property and management, the ability of tribes to manage the land diminished. Fire exclusion and cessation of indigenous management practices have resulted in altered fire regimes, unprecedented forest fuels build-up, and increased incidence and intensities of wildfires. Indian reservations, often located in rural areas prone to wildfire, suffer from limited wildland and structural fire-protection capability, scarce funding for programs and services,

minimal capacity to influence land-management practices adjacent to trust lands (especially on reservations with checkerboard land-ownership patterns), inadequate fire and building code standards, and lack of access to relevant developments in wildfire science and best practices. Thousands of acres of tribal timberlands have been destroyed by catastrophic wildfires. For example, fires in Southern California in 2003 devastated several Indian reservations (NYT 2003) as did fires in the Ponderosa pine forests of the Inland West (NWCN 2008) and the Southwest, where the White Mountain Apache Tribe lost nearly 300,000 acres of productive tribal forest during the 2002 Rodeo-Chediski fire (Keller 2005).

A “Tribal Wildfire Resource Guide” was produced in 2006 to help connect tribal resource managers with current wildfire planning and prevention information (ITC/UO/CKST 2006). Examples of tribal efforts at outreach to capture and make available valuable perspectives on fire from tribal elders to help inform the general public, resource managers, and the scientific community include the “Fire on the Land” project produced by the Confederated Salish and Kootenai Tribes of the Flathead Reservation in cooperation with the Bureau of Indian Affairs and the National Interagency Fire Center (CSKT 2005), and “Beaver Steals Fire”, a Salish traditional tale of fire (Arlee and Sandoval 2005). The College of Menominee Nation hosted an international conference in 2007 entitled “Sharing Indigenous Knowledge; An International Dialogue on Sustainable Development” which identified the need to merge indigenous knowledge and western science in the twenty-first century. These and other projects are creative beginnings, but further efforts are needed to integrate tribal perspectives into wildland fire management.

2. Geographic region

This proposal has a nation-wide scope that targets an important subset of forest and grass lands and a historically underserved cultural audience. While immediate focus will be directed to service deliverables for tribal communities, we expect benefits to extend to the broader society as well. There are over 550 Indian reservations in the continental United States (<http://www.infoplease.com/ipa/A0778676.html>). While there is only one Indian reservation in Alaska, there are hundreds of tribal communities, many of which are located in fire-prone rural areas with very limited access to information and technical support.

Geographical designations are often employed for organizing ecosystems and social communities. Indeed, the JFSP RFA, to which our proposal responds, seeks the creation of Regional Science Delivery Consortia. However, we see important value in improved communication between the fire science community and tribal communities and suggest that, in this circumstance, cultural issues are paramount. Powerful differences in language, social arrangements, and conceptual construct must be thoughtfully considered. Scientists tend to be secular and specialized while tribal peoples are more generalist with holistic worldviews. Native languages vocalize identities, values, and symbols that are shared timeless attributes between humans and nature while English words have formal properties, definitions, and meanings that can be fixed in a single generation and serve to separate humans from nature. Scientists rely upon experimental design while Natives depend upon keen multi-generational observations. North American tribes share many practical values and are uniquely united by historical circumstance, but they have many different cultural backgrounds and resource issues. Communication obstacles and interpretations can be challenging (Motanic 2009).

Historical factors are converging that offer new opportunity: 1) Wildfire hazard is increasingly viewed as an ecosystem crisis (QFR 2009); 2) Attitudes about the appropriateness of fire on the landscape are evolving (Trosper 2007); 3) Native American cultures and ecosystem values can no longer be regarded as subordinate to those of Euro-Americans (Kimmerer and Lake 2001); and 4) Tribal forest fuels programs are now looked to by agencies as models for public land management (DNR 2004).

This proposal recognizes that science and culture are complementary and interconnected. In our view, within Indian Country, a cultural, rather than geographical, approach would be most fruitful for achieving JFSP science objectives.

3. Consortium partners and roles of the investigators

University of Washington (UW), School of Forest Resources (SFR), Rural Technology Initiative (RTI) <http://www.ruraltech.org/> outreach coordinator, *Mason*, has worked with tribal organizations since 2000 in information and technology transfer for sustainable forest management. UW is home to NSF Integrative Graduate Education and Research Traineeship (IGERT) program for tribal bioenergy students; UW has undertaken a \$15 million campus project to build a long-house style “House of Knowledge” for Tribal students and elders to participate in educational cultural exchange with non-Native faculty and students, many PNW tribal forestry leaders are graduates of the SFR, and a documentary on tribal forestry has been produced by the UW School of Forest Resources in cooperation with ITC and BIA <http://www.uwvtv.org/programs/displayseries.aspx?fid=558> Fire science *Professor Alvarado* has worked with indigenous peoples in many parts of the world. His graduate fire science program currently includes two Native American PhD candidates who will help with this project.

Intertribal Timber Council (ITC), <http://www.itcnet.org/> Executive Board Member, *Dr. Morishima*, is an original ITC founder and has worked with tribes for more than 35 years. ITC is a nation-wide Native-led association of 70 Indian tribes and Native Alaskan organizations dedicated to improving the management of Indian natural resources. ITC retains a Staff Fire Specialist, *Erickson*, and participates in activities of the Wildland Fire Leadership Council and the National Wildfire Coordinating Group. ITC collaborates with several national organizations (Society of American Foresters, National Association of State Foresters, National Congress of American Indians, Western Governors Association, and Western Forestry Leadership Coalition), produces newsletters and publications (including a Tribal Wildfire Resource Guide), issues alerts, convenes workshops and symposia, and maintains an extensive communications network with Indian tribes and intertribal organizations interested in forest management.

The Fire and Environmental Research Applications Team (FERA) of the USFS PNW Research Station informs management of natural resources through research and development in fuels and combustion science, fire and landscape ecology, and integration of the physical and ecological sciences. *Dr. Peterson* is the team leader. FERA anchors the Pacific Wildland Fire Sciences Laboratory. FERA coordinates training sessions on fire management tools with BIA fire managers. FERA is a national leader in the investigation of adaptive management and climate change mitigation in fire-prone forests.

USDI Bureau of Indian Affairs, Division of Forestry and Wildland Fire Management (BIA), Chief Forester, *Downes*, and staff participate in intra and interagency communication networks, including participation in National Interagency Fire Center, Wildland Fire Leadership Council, National Wildfire Coordinating Group, numerous other interagency working committees, and publishes the Smoke Signals newsletter. The BIA provides essential technical support to Indian forestry programs around the Nation. An established system of BIA workshops provides excellent opportunity for science deliveries and consultations. BIA is the Federal Cooperator for this project.

USDA Forest Service, Office of Tribal Relations participates in intra- and interagency communication between research, field operations, policy and administration. It helps develop, maintain, and enhance relationships between the Forest Service, Tribes, intertribal organizations, and other partners to promote government-to-government consultation, collaboration, and desired outcomes for ecosystem health and cultural values.

USDA Forest Service, Missoula Fire Sciences Laboratory of the USFS Rocky Mountain Research Station conducts research into fire behavior prediction modeling, soil heating modeling and effects, landscape fire ecosystem dynamics, smoke emissions and dispersion modeling, and fire danger rating. The Missoula Lab will collaborate on this project to aid science delivery and increase fire science research opportunities for Native American students.

Current Project Advisors and Consultants. ITC has convened an oversight committee of tribal and BIA representatives from around the nation to guide project development and to review progress. Members include Vernon Sterns, Spokane Tribe and Committee Chair; Jim Erickson, ITC Fire Specialist; Theron Johnson, Confederated Tribes of the Warm Springs Reservation; Phil Rigdon, Yakama Indian Nation; John DeGroot, Nez Perce Tribe; Kevin Lane, Hoopa Valley Tribe; Jim Durglo, Confederated

Salish and Kootenai Tribes; Lyle Carlile, BIA National Interagency Fire Center; Tim Miller, Grand Portage Band of Chippewa Indians; and Reggie Atkins, BIA Colville Agency.

Academic advisors include but will not be limited to: John Gordon, former Dean of the Yale School of Forestry and Environmental Studies and Chairman IFMAT-I and IFMAT II; Phil Omi, Professor Emeritus Colorado State University; James Agee, Professor Emeritus University of Washington; Adrian Leighton, Forestry Instructor Salish Kootenai College; and Mike Dockry, USFS Forest Products Laboratory and College of the Menominee

Table 1. Roles of Investigators and Primary Consortium Partners.

| Personnel | Role | Responsibility |
|-------------|---|---|
| L.Mason | Principal Investigator, Res Sci (UW RTI) | Provide overall direction and coordination. |
| E.Alvarado | Co-PI. Prof of Wildland Fire Science (UW) | Facilitate contact between tribal and science communities. Develop case studies and tech transfer strategies. Prepare reports. |
| G.Morishima | Co-PI. ITC Exec Board Rep | Develop proposal. Liaison with Intertribal Timber Council. Prepare reports. |
| D.Peterson | Co-PI. FERA Team Leader PWFSL (USFS) | Link TEK to climate change adaptation/mitigation. |
| B.Downes | Federal Cooperator, Chief Forester, BIA, Forestry and Wildland Fire Management Fed. Fiscal Rep. | Contact point for Bureau of Indian Affairs and Department of the Interior. Participate in development and implementation of proposal. |
| B.Rice | | Oversee project funding transfer. |
| F.Clark | Director Office of Tribal Relations. (USFS) | Develop and implement proposal. |
| J.Erickson | ITC Fire Specialist | Develop and implement project. |
| V.Stearns | Chair ITC Oversight Com. | Lead tribal contacts and advisory board oversight. |
| P.Omi | Professor Emeritus (CSU) | Senior scientists and educators with academic and tribal experience to offer guidance, advice, and oversight. |
| J.Gordon | Professor Emeritus (Yale U) | |
| J.Agee | Professor Emeritus (UW) | |
| A. Leighton | Forestry Instructor (SKC) | |
| M.Dockry | Forest Prod Lab and College of the Menominee | |

4. Consortium Structure and Governance

Mason (UW) will function as program coordinator and, with support from RTI staff members and student assistants, create/maintain a website, prepare printed materials, schedule activities, conduct workshops, and oversee daily activities from the program office. Alvarado (UW) will serve as science advisor, workshop instructor, activities planner, and liaison to FERA. Morishima and Erickson (ITC) will serve as project advisors, developers and liaisons to tribal and government cooperators. Peterson and FERA will investigate potential for TEK to inform forest adaptations to the pressures of climate change (CCSP 2008). This project team will meet regularly to review progress, plan events, co-author publications, participate in tribal visits and delivery of presentations. Communications with the oversight committee, federal partners, and a broadening group of advisors and cooperators will occur by phone, email, and in person. Workplans will be submitted for approval to the ITC oversight committee with formal reports delivered every six months. Science collaborations with BIA, USFS, FERA, FRAMES, FFS, and others will be pursued. Educational partnerships will be developed with universities and tribal colleges. Special effort will be made to seek collaborative projects in conjunction with JFSP Regional Consortia.

5. End-user communities

Hundreds of Indian reservations and tribal communities nationwide can be served, as well as federal, state agencies, and academic institutions. Native American students will be encouraged to pursue education in fire science. Cultural exposure will be provided to the non-Native fire science community. A defining project objective will be facilitation of information exchange and technology transfer among diverse contributors/recipients.

6. Planned activities

This proposal seeks to establish new and enduring partnerships between tribal communities, academic institutions, and agencies involved with wildland fire science. Visits to tribal communities are occurring to introduce the program, request cooperation, observe fire management practices, and encourage keepers of traditional ecological knowledge to share wisdom and perspective. At the national level, partnerships between the UW, ITC, BIA, and USFS will facilitate communication and provide guidance.

Information Transfer. The UW/ITC team will produce, disseminate, receive, collate, and publish syntheses of information. Web technologies, such as streaming video, will be used to facilitate communication and distribute information. A video communiqué to request advice and recommendations from tribal leaders http://www.ruraltech.org/projects/fire_management/index.asp has been prepared. Symposia proceedings, science lectures, and technology training workshops, as well as “on-location” tribal practices and interviews will be recorded and made available. RTI, with years of award-winning tech transfer experience, has developed streaming video techniques for click-by-click web-based instructions for distance learning of software and modeling applications. For example, see workshop tutorial created for NRCS in 2009 http://www.ruraltech.org/video/2009/LMS_Training/#sc Science delivery and decision support workshops will be provided at field locations that, when possible, build on BIA training sessions. See <http://www.ruraltech.org/video/2010/pruning/index.html> for example of field training captured for web video. To extend audience access, workshop proceedings will also be captured as streaming video and made available. The project website will be periodically reviewed by the oversight committee for constituent utility, attractive/respectful display, user-friendly functionality, convenience, and compelling content. Fire science reports and links to decision support software, available from JFSP and other fire research sources, will be reviewed by project cooperators and organized by topic, region, and applicability. Historical and contemporary literature pertaining to cultural use of fire, resources, and traditional ecological knowledge will be reviewed and posted. An evolving index of reference listings, summaries, fact sheets, and other publications is envisioned. Science delivery collaborations with BIA, FERA, FRAMES, FFS, JFSP regional consortia, and others will be sought.

Partnerships. At the regional level, local agencies, Indian tribes, and academic institutions will provide expertise and knowledge for applications of wildland fire science. Regional partnerships with academic institutions can help to identify applicable research and best practices. These partnerships will provide opportunities for Native American undergraduate and graduate students to gain direct exposure to wildland fire science and to work within tribal communities to increase the availability and transfer of traditional knowledge. In addition, partnerships with institutions engaged in wildland fire training, such as the Fire Use Training Academy (co-located with NAFRI), the Interagency Prescribed Fire Training Center in Florida, the National Advanced Fire Resource Institute (NAFRI) in Arizona, The Washington Institute (Technical Fire Management) in Seattle, Washington, and the Wildland Firefighter Apprenticeship Program in California, will be sought to explore opportunities to complement formal training for fire management career advancement.

Workshops. Workshops tailored for regional circumstances will provide forums for information exchange and development of interpersonal relationships among tribes, agencies, and academia in settings where practical solutions are sought to real-world problems. Shared learning and outreach can be enhanced through collaborative workshops convened at reservation locations, where traditional ecological knowledge and western fire science will be accorded equal standing when determining appropriate

actions to accomplish management objectives. Findings and recommendations will be compiled and reported to Indian tribes, government agencies, and the fire science research community. Public briefings for professional societies are being scheduled - BIA National Forestry and Wildland Fire Management Conference (March '10), National Indian Timber Symposium (April '10), and National Society of American Foresters Meeting (Oct '10).

This project is organized in two phases. Phase I, begun in the winter of 2009, has been exploring the feasibility, interest, and utility of developing a national program for information and technology transfer between Indian tribes, agencies, and the fire science community. Discussions to date with tribal, agency, and academic representatives indicate strong support. Contacts have already been established with many tribes that are developing linked programs for fuels reductions and biomass to energy development.

Discussions have been initiated with cooperators from the educational community, with special preference given to Indian colleges and involvement of Indian students. There are 32 federally recognized Tribal colleges and universities in the United States serving 30,000 students, but most of these institutions have very limited opportunity to participate in wildland fire research. Through establishment of formal ties between larger universities and tribal colleges, Native American students will be given broader exposure to the fire science community, gain access to student mentoring programs, and have greater opportunity for graduate level education.

Phase II of this project will add partners and expand understanding of relevant wildland fire science and best practices, document and synthesize local knowledge, identify regional partnerships, assist access to decision support systems, establish communications networks, begin synthesis of pertinent literature, and explore delivery approaches. Phase II is envisioned to initiate an enduring program. The budget proposed below is for two years of support from JFSP and other contributors beginning 06/30/10.

Envisioned Deliverables:

(1) **Clearinghouse services for research** relating to wildland fire to facilitate access (evaluate for content, scientific credibility, and relevance; organize by region, ecotype, and topic) by tribal communities. Employ regional expertise to categorize and synthesize available information by topical areas. Develop a web site and populate with annotated bibliography. Develop fire fact sheets customized to Native interests.

(2) **Identify reservation locations interested in hosting wildland fire workshops** to demonstrate fuel and fire management tools recommended by tribes and fire science consortia, as well as to validate on-the-ground applicability of these tools and identify research needs. Convene at least one workshop to develop protocols and refine operational logistics for such workshops. Streaming video capture of workshop proceedings and interviews with tribal leaders, scientists, agency personnel, and others. Publish results in reports and journal articles. As feasible and desirable, workshops would be conducted in conjunction with field programs to help individuals gain field experience and earn credentials and qualifications for various positions in the fire fighting career hierarchy. For example, the BIA has developed a wildland fire "mentoring" program and has hosted training details on various reservations throughout the country including Seminole (FL), Mississippi Choctaw (MS), Crow (MT), and Ft. Apache (AZ). The mission of the BIA Fire Mentoring Program is to strengthen the confidence of fireline leaders through high intensity developmental "details" where trainees are given the opportunity to complete numerous prescribed burns in a short period of time. By repeatedly putting fire on the ground and effectively managing it, participants enhance their recognition-primed decision making ability and increase their effectiveness as leaders in both prescribed fire and suppression operations. Develop recommended procedures for obtaining and sharing traditional knowledge with scientists and practitioners. Workshops would be designed to facilitate knowledge transfer, strengthen communication networks, and record and systematize traditional knowledge on fire use and management issues with the assistance of Native American students. Funding support for graduate students is included in the budget for this proposal. Two Native PhD candidates at UW are already involved.

(3) **Solicit and compile tribal perspectives on contemporary and emerging issues**, such as: (a) the need to integrate fire science with other disciplines to help resolve complex, multi-resource, multi-value, multi-jurisdictional natural resource management problems; (b) guidelines for biomass utilization, mechanical treatments, and prescribed burning while maintaining ecosystem functions in the context of ruralization, climate change, and pressures for biofuels development; (c) maintaining long-term viability of infrastructure for processing, manufacturing, and biomass utilization; (d) identification, communication, and integration of fire use in support of important cultural values such as traditional foods and basket materials; (e) Potential stewardship contracting to reduce hazard on federal wildlands; (f) Implications of climate change for fire management strategies; (g) Integrate case studies, traditional knowledge, and tribal perspectives into fire and ecosystem training programs such as those provided by National Advanced Fire and Resource Institute (NAFRI).

(4) Identify potential delivery mechanisms and focal points for incorporating **traditional ecological perspectives (TEK) into existing fire science curricula**, agency training programs, and other tech-transfer/educational outlets.

REQUEST FOR SUPPLEMENTAL PROJECT SUPPORT

– A Meeting of the Minds - Pending availability of supplemental funding, a national conference on traditional ecological knowledge and western fire science will be organized for spring 2012 to bring together international leaders from the science and tribal communities for two days of information-sharing, one day of field visits, and one day to develop findings and recommendations for improvements to fire management and ecosystem health. \$100,000

7. Program effectiveness

Evaluations would be completed as an integral part of the regional workshops convened under Phase II through the use of survey instruments, informational items distributed through newsletters, and personal interviews. We will measure success by monitoring adoption of new fire science and technology into the tribal fire management programs and expansion of tribal influence on fire science curricula and research. Program effectiveness will be assured through periodic reviews by the ITC oversight committee and the BIA federal cooperator.

8a. Table 2. Budget Summary for Phase II (06/30/10 through 06/30/12)

| | Requested | Contributed | TOTAL |
|----------------------------------|-----------|-------------|-----------|
| LABOR | \$229,706 | \$182,928 | \$412,634 |
| CONSULTANTS | \$60,000 | | \$60,000 |
| TRAVEL | \$51,336 | \$122,440 | \$173,776 |
| VEHICLES | \$2,450 | | \$2,450 |
| Materials and Supplies: | \$4,000 | \$1,600 | \$5,600 |
| Other Costs | \$8,000 | \$3,000 | \$11,000 |
| Total Direct Costs | \$355,492 | \$309,968 | \$665,460 |
| Indirect Costs: | \$80,483 | \$64,927 | \$145,411 |
| Total Contributed Funding | | \$374,895 | \$374,895 |
| Total Requested Funding | \$435,976 | | \$435,976 |

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