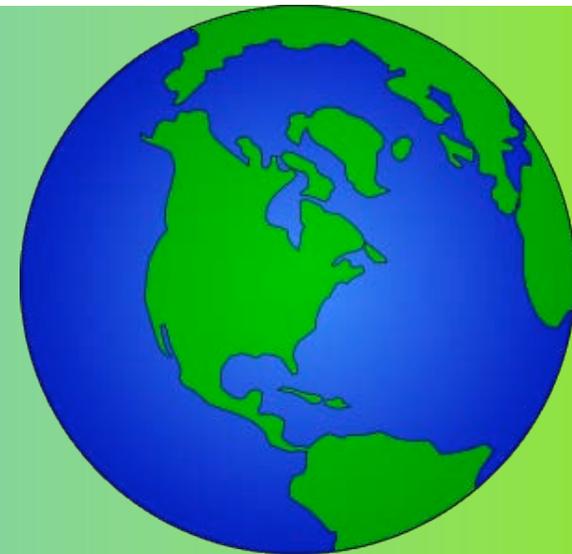


SURF the Globe

*Dave Woodward
AECOM and SURF*



May 31, 2011

AECOM

Presentation Outline

- Introduction and Background
- Emergence of the Sustainable Remediation Forum
- SURF Accomplishments and US Initiatives
- International SURFs
- Emerging SURFs
- Continued Evolution of SURF and Sustainable Remediation
- Q and A



The Birth of Remediation Industry

- Remediation industry born in the late 1970s in response to discovery of contamination and a need for a better understanding of its impacts on human health & environment
- Environmental regulatory agencies and laws were created, and an industry rapidly emerged
- Cleanup focused on rapid response and completion, typically involving energy-intensive remedies
- Experience has shown that often these remedies have not/cannot achieve acceptable cleanup levels due to technical limitations
- Long-term operations are commonly required after aggressive initial remedial measures (e.g., source removal/treatment)

Going Green and Living Sustainably

- Increased awareness of global climate change has fueled a desire to lessen greenhouse gas (GHG) emissions
- Energy-intensive remedies are often a significant source of GHGs
 - Ellis et al. (2008) estimated that the difference between two remedies being considered for a NJ site could be as high as 2 percent of the annual GHG emissions for the state
- Sustainability recognized as important underpinning consideration
 - The capacity to endure; the potential for long-term maintenance of our well being (Wikipedia, 2010)
 - Most segments of industrialized society are rethinking how behavior, reliance on technology, and consumption of energy impact the environment
 - Life cycle costs are more frequently being identified and considered in decisions
 - Government established sustainability goals (EO 13423 and EO 13513)
 - Society is looking for ways to minimize these impacts, or avoid them altogether, so that human activity can become more sustainable

The Environmental Industry and Regulatory Authorities are Responding

2006 - Sustainable Remediation Forum (SURF) formed

2007 - EPA Region III Pilot Projects

- SURF UK established under CL:AIRE
- CA DTSC “Green Team” established
- IEPA Greener Cleanups Program developed

2008 - US EPA launched Green Remediation Website

- WDNR began work on WISC

2009 - SURF White Paper Published

- ASTM GSR Subcommittee established
- ITRC Green Remediation Team established

2010 – EPA Revised Green Remediation Strategy



SURF - Primary Objective and Mission Statement

SURF's primary objective is:

...to provide a forum for various stakeholders in remediation — industry, government agencies, environmental groups, consultants, and academia — to collaborate, educate, advance, and develop consensus on the application of sustainability concepts throughout the lifecycle of remediation projects, from site investigation to closure.

Mission - to maximize the overall environmental, societal, and economic benefits from the site cleanup process by:

- Advancing the science and application of sustainable remediation
- Developing best practices
- Exchanging professional knowledge
- Providing education and outreach

SURF Accomplishments

- “Sustainable Remediation White Paper—Integrating Sustainable Principles, Practices, and Metrics Into Remediation Projects”
 - Remediation Journal, Summer 2009
- Sustainable Remediation Panel
 - Remediation Journal, Quarterly Q&A

www.sustainableremediation.org



The screenshot shows the SURF website homepage. At the top, there is a navigation menu with links for HOME, ABOUT, NEWS, LIBRARY, LINKS, SUSTAINABLE REMEDIATION FORUM, CONTACT SURF, and SEARCH SURF. Below the menu is a large banner image of a landscape with hills and a cloudy sky, with the SURF logo and the text 'SUSTAINABLE REMEDIATION FORUM' overlaid. The main content area is divided into several sections:

- OTHER RESOURCES:** Includes links for member login, membership application, calendar, subscribe to SURF news, and gallery.
- NEXT MEETING:** Announces that SURF 13 will be held at the Chicago-Kent College of Law in Chicago, IL, on April 13 and 14, 2010.
- White Paper Announcement:** A section titled 'SURF is now accepting members!' with a call to action: 'Click "membership application" in the sidebar menu to learn more.' (Posted March 9, 2010).
- Textual Content:**
 - A paragraph describing the forum's mission: 'The Sustainable Remediation Forum (SURF) promotes the use of sustainable practices during implementation of remedial action activities with the objective of balancing economic viability, conservation of natural resources and biodiversity, and the enhancement of the quality of life in surrounding communities.'
 - A paragraph about the White Paper: 'SURF's primary objective is to provide a forum for various stakeholders in remediation — industry, government agencies, environmental groups, consultants, and academia — to collaborate, educate, advance, and develop consensus on the application of sustainability concepts throughout the lifecycle of remediation projects, from site investigation to closure.'
 - A paragraph about the White Paper's publication: 'SURF authored a groundbreaking White Paper on sustainable remediation that was published in a special edition of the Summer 2009 Remediation Journal, and is currently available in our library. The White Paper communicates SURF members' thoughts on incorporating sustainability principles into environmental remediation. In this paper, sustainable remediation is broadly defined as a remedy or a combination of remedies whose net benefit on human health and the environment is maximized through the judicious use of limited resources.'
- Logo:** A circular logo with the text 'SUSTAINABLE REMEDIATION FORUM' around the perimeter and 'SURF' in the center.

At the bottom of the page, there is a copyright notice: 'COPYRIGHT © 2010, SUSTAINABLE REMEDIATION FORUM, INC. ALL RIGHTS RESERVED.'

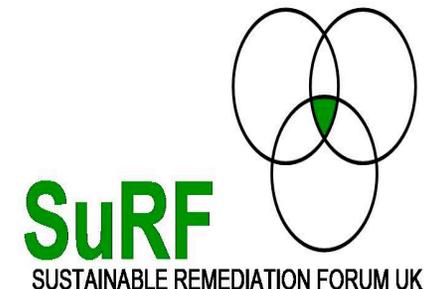


SURF Initiatives

- Ongoing Communications and Outreach
- Encourage Government and Academic Participation
- Consensus-based Framework for Sustainable Remediation Practices
- Developing Standardized Criteria and Metrics
- Promoting Consistency, Transparency, and Best Practices for Life Cycle Assessment (LCA)
- Site of Sites – database of information and Case Studies, supported by Illinois Institute of Technology

SuRF-UK initiative

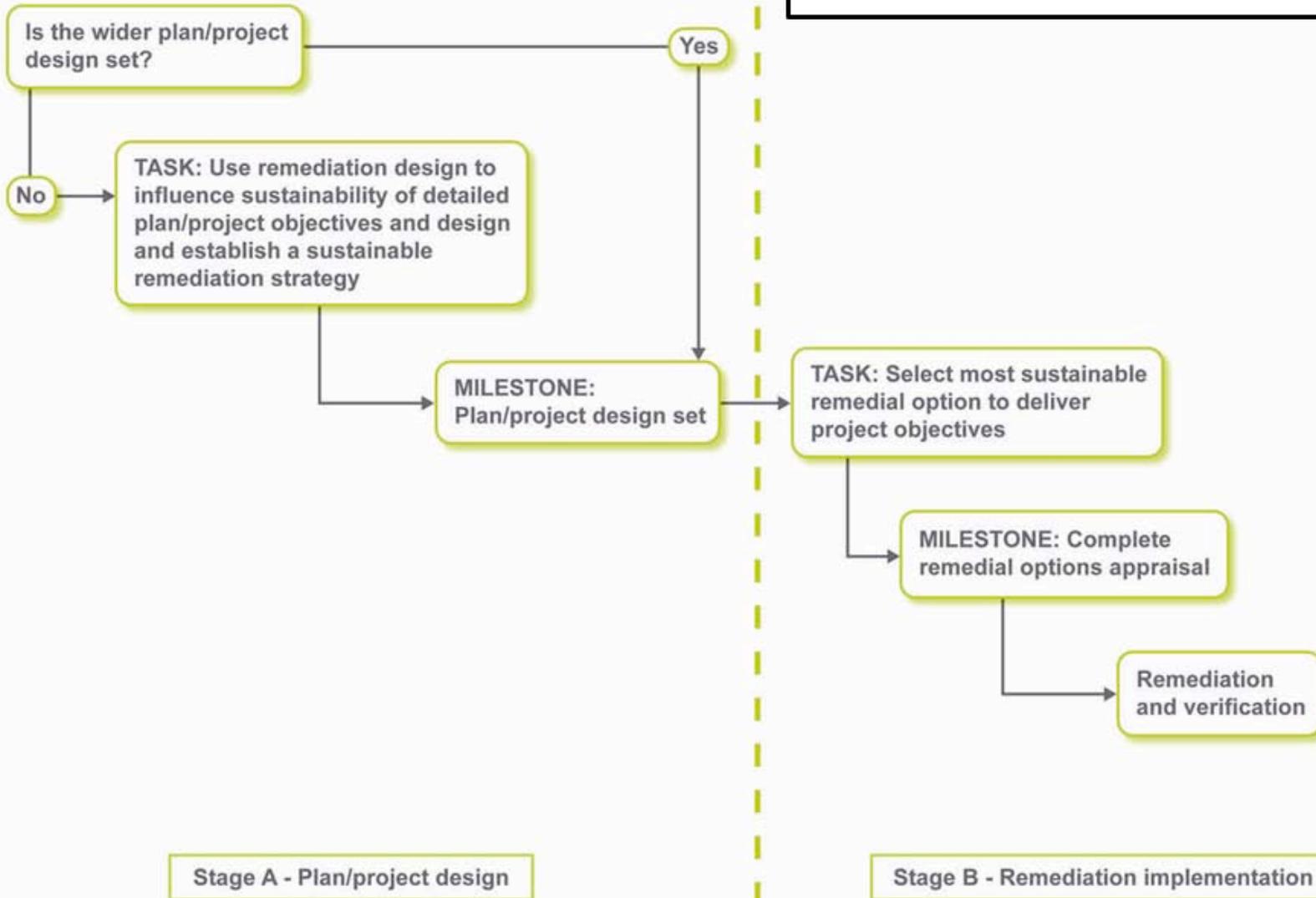
- Established in 2007, following the lead of SURF.
- UK-based collaboration of regulators, industry, academics and consultants. Open forum meetings.
- Independent coordination by CL:AIRE (www.claire.co.uk/surfuk)
- Focus on holistic sustainability assessment of
 - remediation input to high-level land-use planning
 - remediation input to overall site / project design ('Better by design')
 - remedial strategy selection and remediation technology selection
 - remediation implementation and verification
- Goals
 - A framework for assessing sustainable remediation
 - Sustainability indicator review



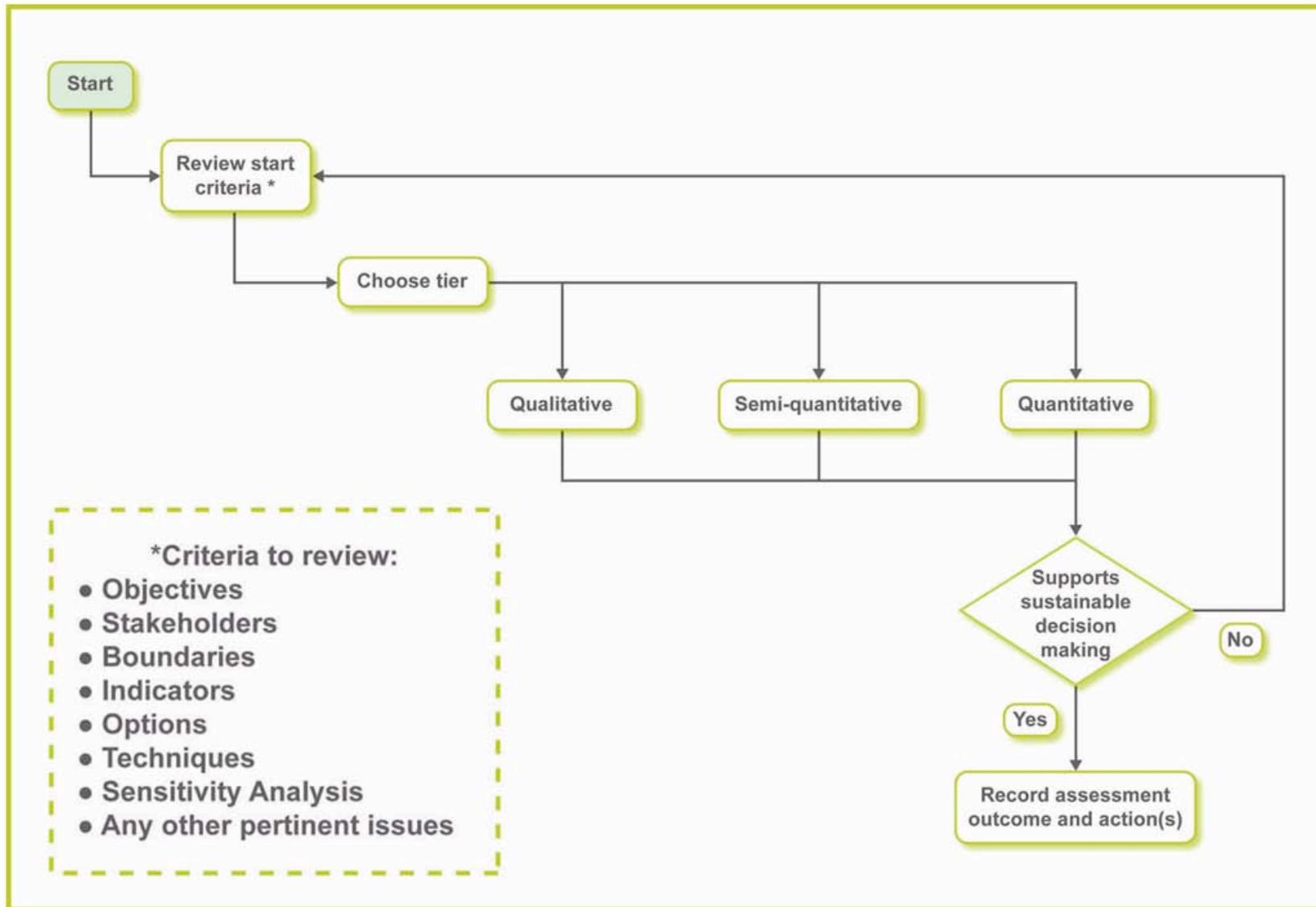
SuRF-UK Definition

- *‘the practice of demonstrating, in terms of **environmental**, **economic** and **social** indicators, that the benefit of undertaking remediation is greater than its impact and that the optimum remediation solution is selected through the use of a balanced decision-making process’*
- Optimize risk-management based on consideration of social, environmental and economic factors, but always ensure:
 - Principle 1: Protection of human health and the wider environment
 - Principle 2: Safe working practices
 - Principle 3: Consistent, clear and reproducible evidence-based decision-making
 - Principle 4: Record keeping and transparent reporting.
 - Principle 5: Good governance and stakeholder involvement
 - Principle 6: Sound science

SuRF-UK framework



SURF UK - Tiered assessment



Possible Sustainable Remediation Indicator Categories

Environmental	Social	Economic
<ol style="list-style-type: none"> 1. Impacts on air (including climate change); 2. Impacts on soil; 3. Impacts on water; 4. Impacts on ecology; 5. Use of natural resources and generation of wastes; 6. Intrusiveness. 	<ol style="list-style-type: none"> 1. Impacts on human health and safety; 2. Ethical and equity considerations; 3. Impacts on neighbourhoods or regions; 4. Community involvement and satisfaction; 5. Compliance with policy objectives and strategies; 6. Uncertainty and evidence. 	<ol style="list-style-type: none"> 1. Direct economic costs and benefits; 2. Indirect economic costs and benefits; 3. Employment and capital gain; 4. Gearing; 5. Life-span and 'project risks'; 6. Project flexibility.

Regulatory acceptance: Foreword to report

CEAIRE



A handwritten signature in black ink, appearing to read 'J. Palfalvy'.

John Palfalvy
Policy Advisor, Brownfield Land
Department of Communities and Local
Government

A handwritten signature in black ink, appearing to read 'Tom Coles'.

Tom Coles
Contaminated Land Policy Team
Department for Environment, Food and
Rural Affairs

A handwritten signature in black ink, appearing to read 'T. Beattie'.

Trevor Beattie
Director Strategy, Performance, Policy &
Research
Homes and Communities Agency

A handwritten signature in black ink, appearing to read 'Gareth Hall'.

Gareth Hall
Director General, Department for the
Economy and Transport
Welsh Assembly

A handwritten signature in black ink, appearing to read 'S. Engineer'.

Sheena Engineer
Land Quality Policy
Manager
Environment Agency

A handwritten signature in blue ink, appearing to read 'C. MacDonald'.

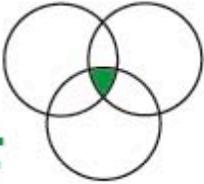
Calum MacDonald
Director of Environmental
and Organisational Strategy
Scottish Environmental
Protection Agency

A handwritten signature in black ink, appearing to read 'Theresa Kearney'.

Theresa Kearney
Principal Scientific Officer
Northern Ireland
Environment Agency within
the Department of the
Environment

SURF UK - Summary

- SuRF-UK assessment framework published
 - Applies at a range of stages (regional planning, project design / site-specific risk-assessment, remediation options appraisal, implementation)
 - Adopts a tiered structure
 - Is Holistic - Start wide-ranging and narrow down quickly
 - Requires consultation with stakeholders
 - Is flexible and voluntary
- Phase 2 nearly complete
 - Indicator development and refinement
 - Road testing framework
 - Benchmarking assessment tools



SuRF
SUSTAINABLE REMEDIATION FORUM UK

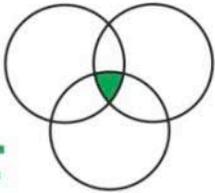
sponsored by the
 Homes & Communities Agency

A Framework for Assessing the Sustainability of Soil and Groundwater Remediation

FINAL
MARCH 2010

CL: AIRE

CONTAMINATED LAND: APPLICATIONS IN REAL ENVIRONMENTS



SuRF
SUSTAINABLE REMEDIATION FORUM UK

sponsored by the
 Homes & Communities Agency

A Review of Published Sustainability Indicator Sets:
How applicable are they to contaminated land remediation indicator-set development?

CL: AIRE

CONTAMINATED LAND: APPLICATIONS IN REAL ENVIRONMENTS



SURF Brazil

- First meeting held on October 18, 2010
- Founding members:
 - AECOM
 - BASF
 - CETESB (São Paulo State Environmental Agency)
 - DuPont
 - Shell/Cosan
- Five meetings have been held, the fifth encounter was held on May 17, 2011.

SURF Brazil Milestones

- Selection of forum name: Fórum Brasileiro de Remediação Sustentável (*Brazilian Forum for Sustainable Remediation*)
- Incorporation of sustainability concepts in São Paulo State Environmental Law 13.577, which became effective early 2011.
- Creation of an official blog: <http://foresbr.wordpress.com/>
- Elaboration of a White Paper on GSR (in Portuguese)

SURF Brazil - Planned activities

- Sponsorship of ReLASC (Rede America Latina de Sitios Contaminados) a Latin American network for contaminated land management
- Creation of a GSR website on the Brazillian page of ReLASC.



- Organization of a roundtable discussion about GSR at the CIMAS II conference in São Paulo, October 2011.



SURF Australia

- ALGA has been actively promoting sustainable remediation in Australia –conferences and seminars
- CRC CARE took on the organization of SuRF Australia - Launched at Cleanup09
- ALGA prepared the draft Framework for Sustainable Remediation and Management - drawn from SuRF UK
- CRC CARE formed Steering Committee
- Representatives: CRC CARE (Ravi Naidu as Chair), ALGA, AIP, regulatory agencies (NEPC, SA EPA, Dept Health and Ageing), industries (mining, petroleum, Defence), developer, contractor, consultant
- Continued activity – Steering Committee, ALGA State seminars on sustainable remediation – latest meeting at EcoForum Conference

SURF Australia – Vision and Approach

- Vision - To promote approaches and practices that achieve better, more balanced outcomes in our remediation and management of contaminated sites
- encourages tiered approach
- Sustainable Remediation - the practice of demonstrating, in terms of environmental, economic and social indicators, that an acceptable balance exists between the effects of undertaking remediation activities and the benefits that those activities deliver.

SURF Australia – Planned Activities

- Further consultation (particularly to involve the regulatory agencies)
- Working group to finalise the Framework
- Other activities:
 - Encourage the application, promotion and evolution of the approach
 - Draw on the efforts and knowledge of others (eg international)
 - Encourage research on methods and measurement and guidance – 9 year CRC CARE program

Emerging SURFs

- Japan
- China
- Netherlands
- Canada
 - Kickoff meeting held May 5, 2011 in Toronto
 - Information available here at this conference
 - Fall Meeting Planned in Western CN
 - Website planned



SURF and GSR Evolution and Expansion

- Additional SURF Organizations likely to form throughout the world
- Geographies with risk-based regulatory framework are best suited to embrace Sustainable Remediation
- Increasing International Collaboration and advancement of science of GSR
- Dramatic increase in case studies and lessons learned
- Evolution to the point of Standard Practices
- US EPA adoption of Sustainable Remediation?
- Opportunities to influence and get involved in SURF CN

Questions?



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