Can Science Really Foster Better Public Policy Decisions at DOE Sites: an Introduction to the CRESP Experience

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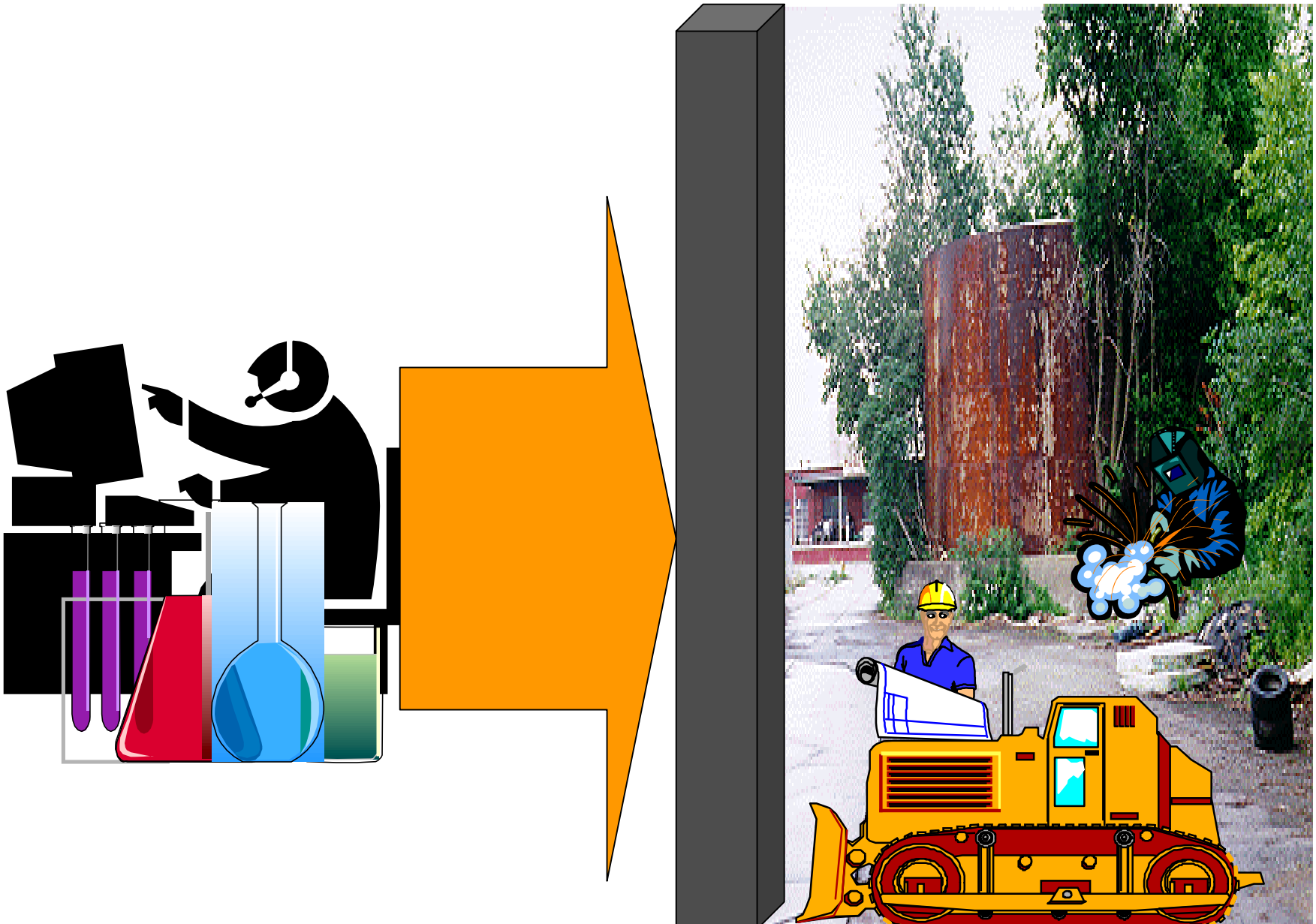
Consortium for Risk Evaluation with Stakeholder Participation

EMSP Annual Meeting

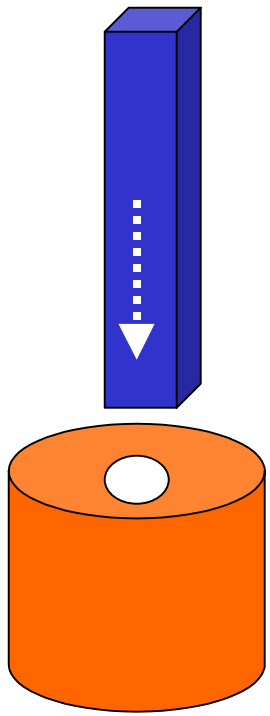
April 26, 2000

Atlanta, Georgia

We are discussing more here than the CRESP Experience in getting from the research bench to field application



Hypothesis: DOE and its Regulators Need New Science and Technology to achieve the Problem Redefinitions and the Pathways and the Mechanisms that will allow DOE Cleanup to achieve the Fit and the Finality that makes Protective and Efficient Stewardship Possible

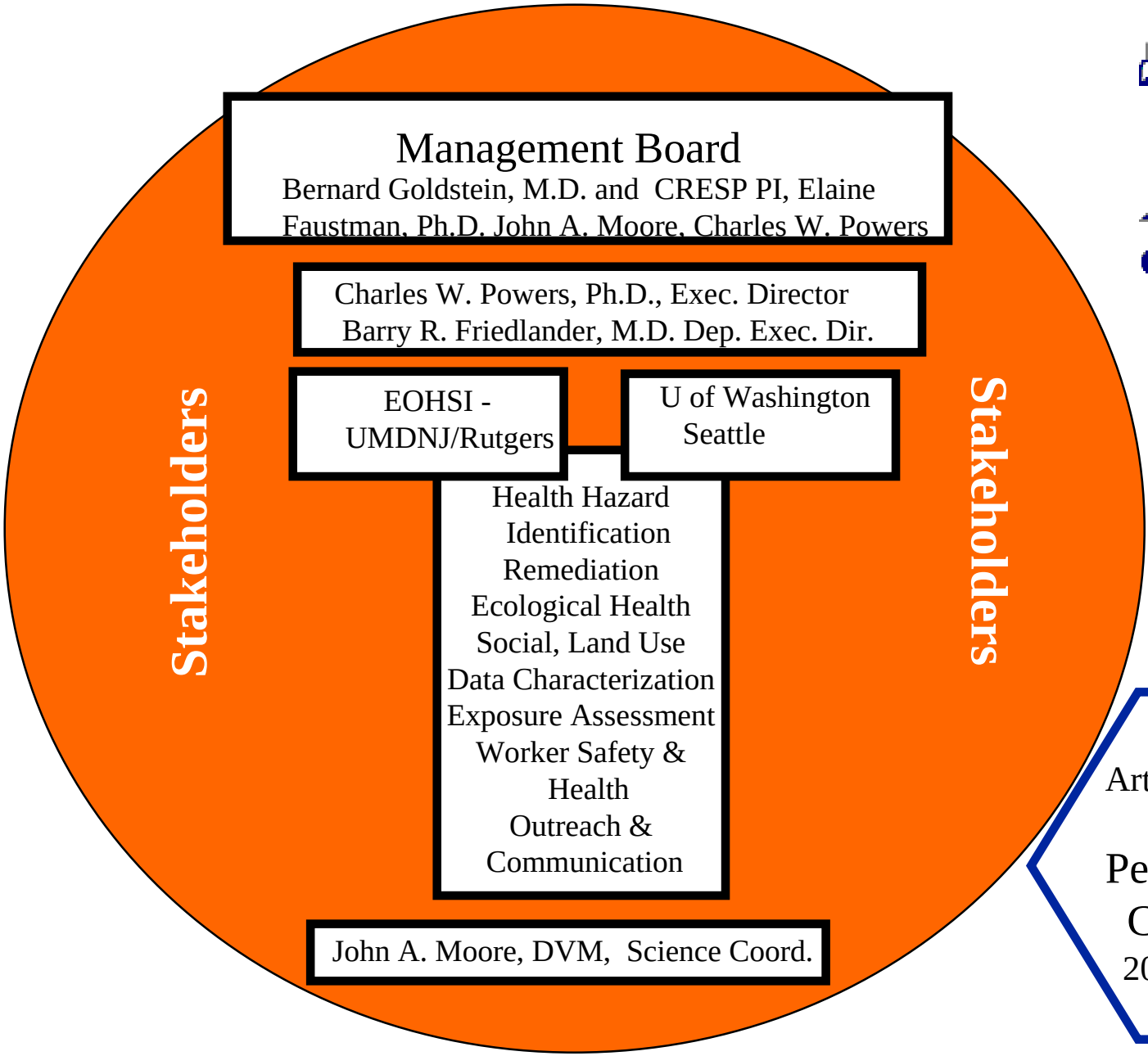


Overcoming the Obvious Obstacles

Defining Protective Endstates

Modeling and Assuring Congruence between the End of Cleanup and Long-term Protection

Are regulators part of the solution to new introducing new science and technology?



C R E S P

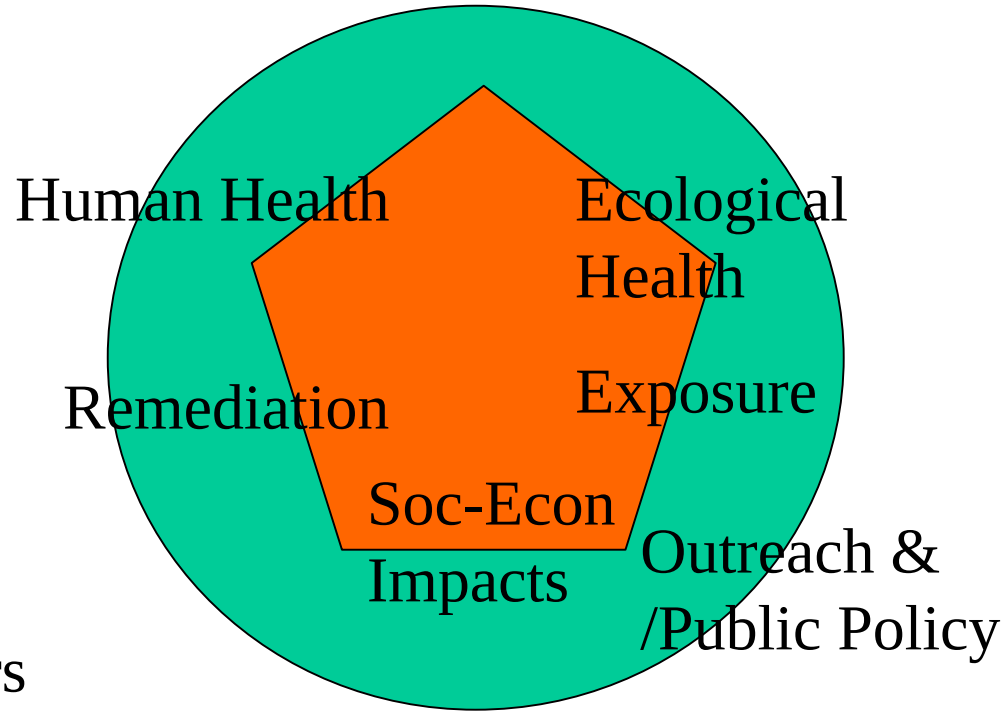
Arthur Upton, M..D.
Chairman.
Peer Review Committee
20 Nat'l Experts

How CRESP is evolving

Rutgers | UMDNJ

UW | Vandy

U of Georgia
Columbia?
U of Arizona
Other



A True Consortium of Universities and Others

Completion Project Sites as Primary Foci of Work

SRS

RL

RF

OR

INEEL

Hallmarks of CRESP's Approach

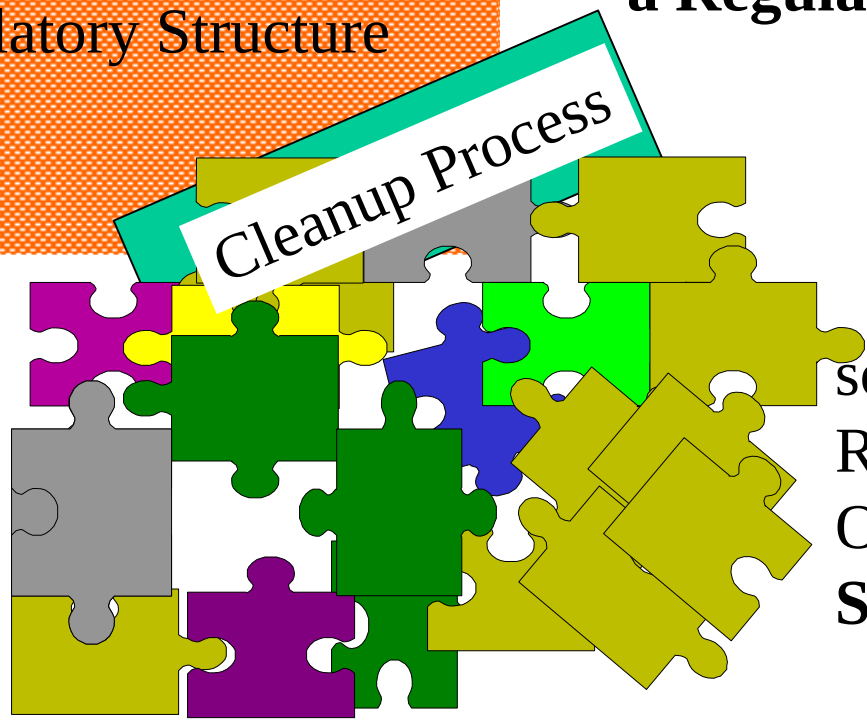
- Research by senior faculty
- Stakeholder related
- Focus is on risk issues
- Multidisciplinary
- Integrative
- Independent evaluation

The Problem

- well defined -

Regulatory Structure

must be addressed by
a Regulatory Structure

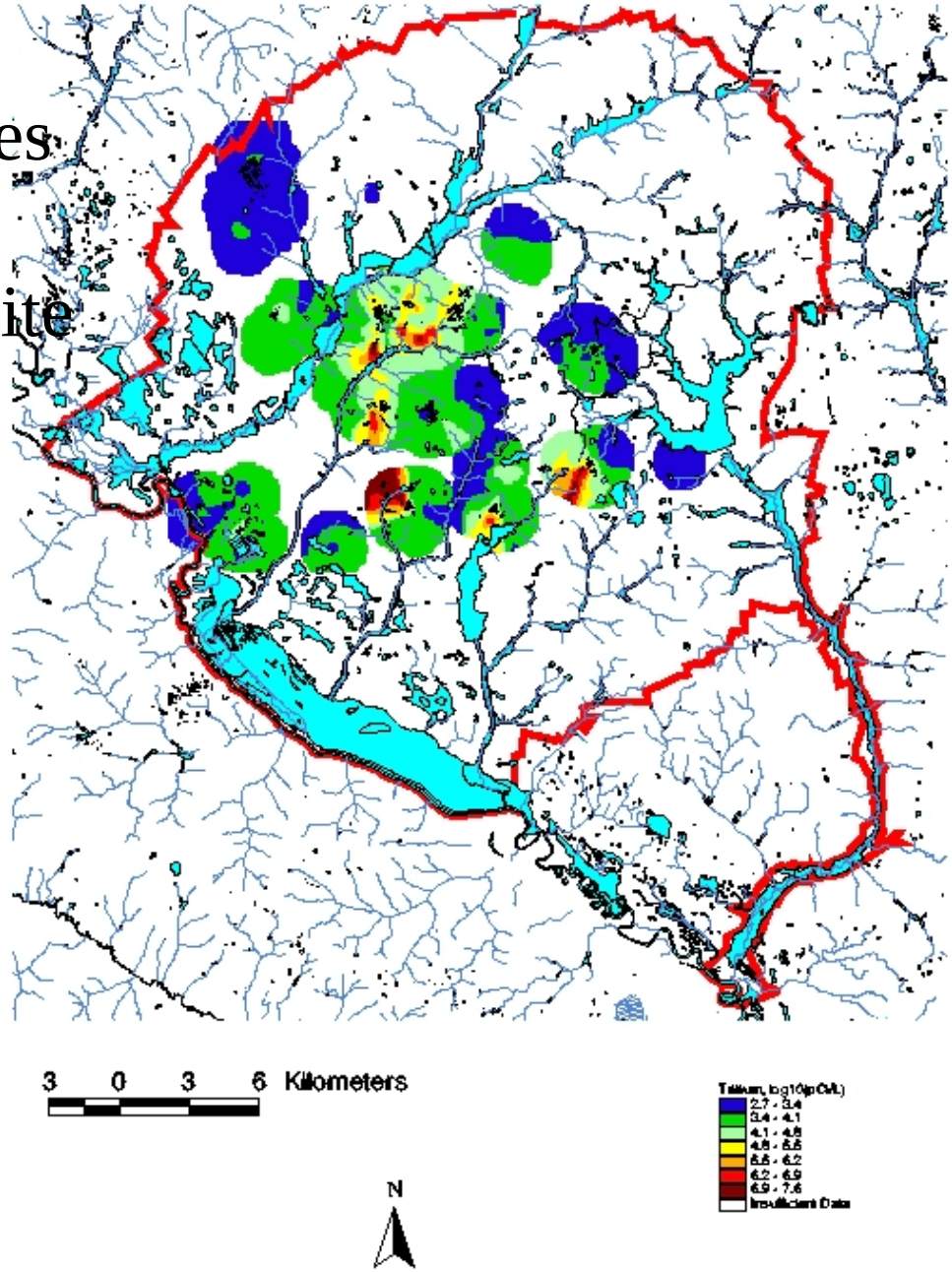


so that the
Remediation Process
Optimally
Solves the Problem

The Challenge of the Big Sites

- The largest DOE sites are beyond our normal understanding:
  - spatially are hundreds and thousands of times LARGER than traditional Superfund sites
  - the temporal characteristics of many radioactive hazards also puts their management beyond our ken
  - the challenge of putting new science in formats where they can be understood is greatly underrated

Tritium 75th Percentile Estimates Over the Entire Savannah River Site



Especially at Big Sites

Critically important to assure that the cleanup process and the regulatory structure cohere.
There has often been a mismatch.

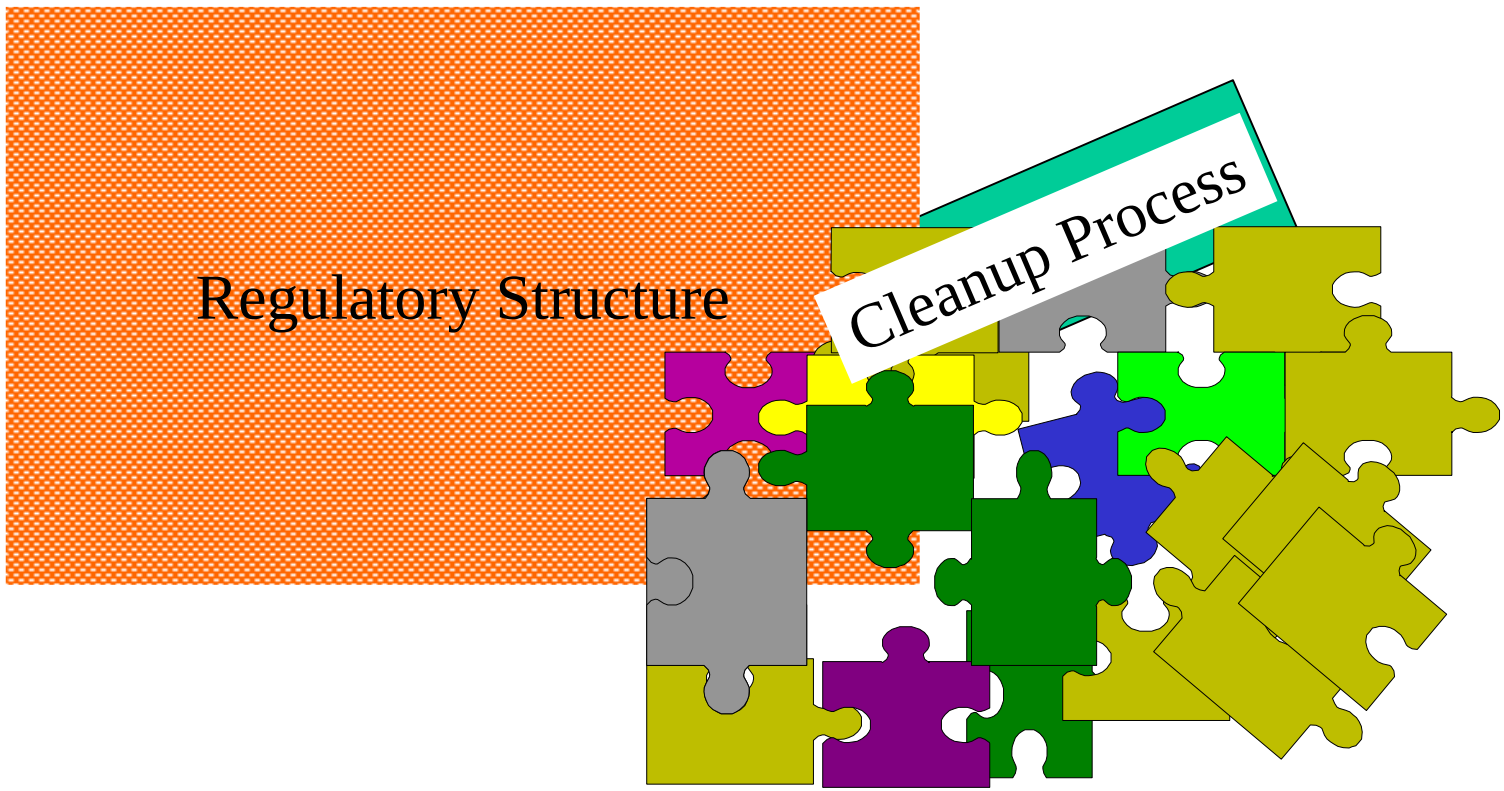
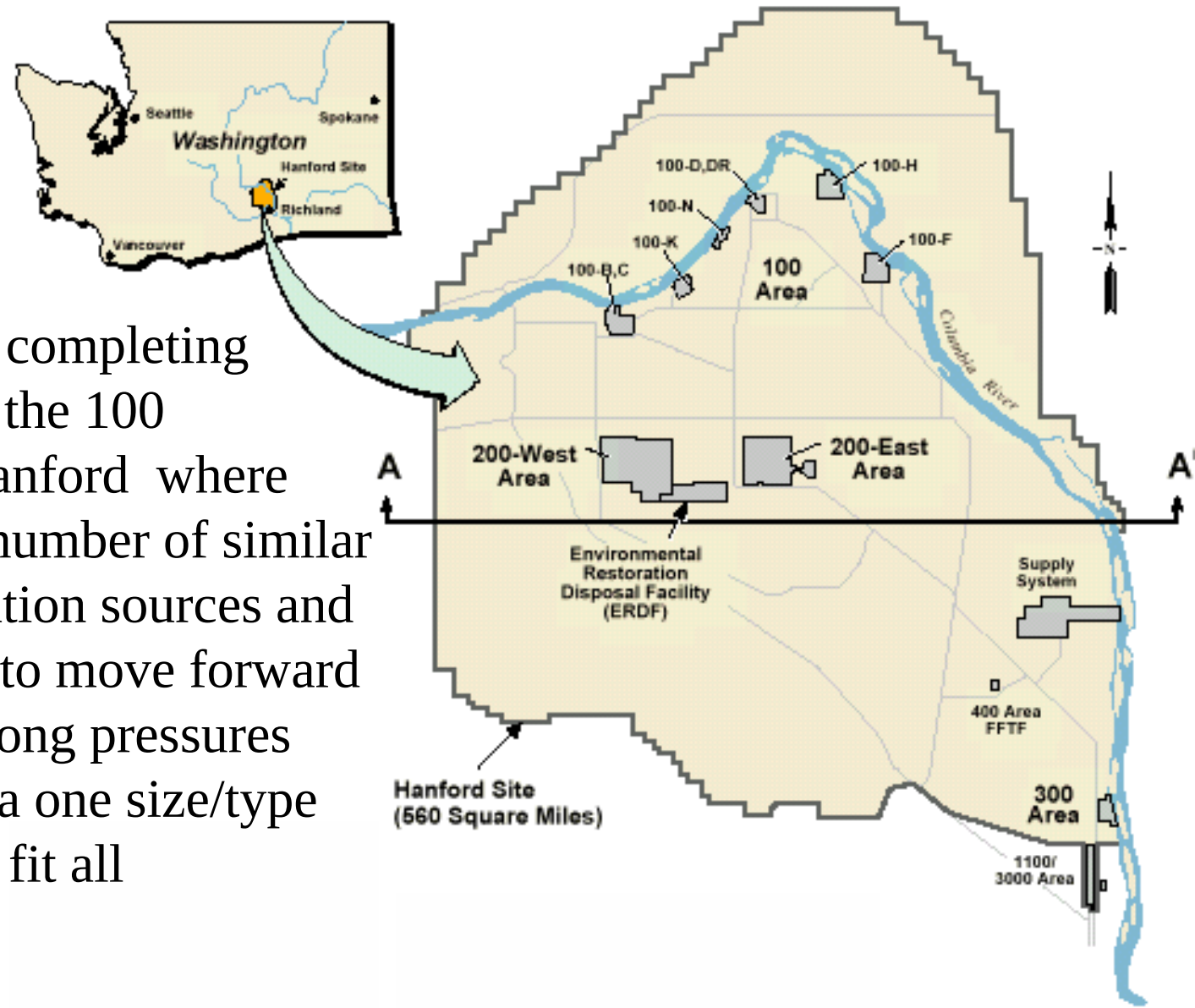
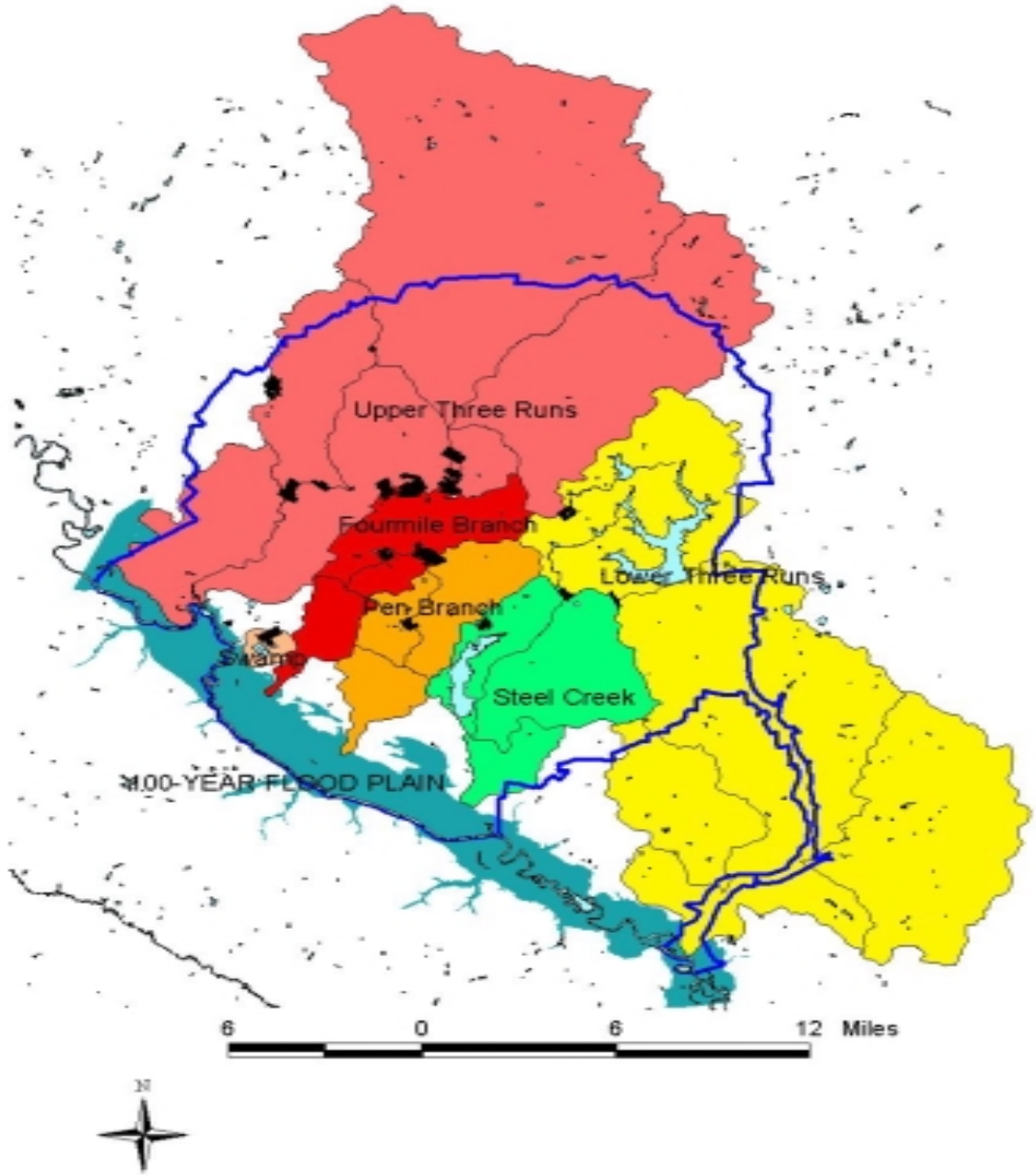


Figure 2-1. Hanford Site Location Map, with Major Geological Formations.

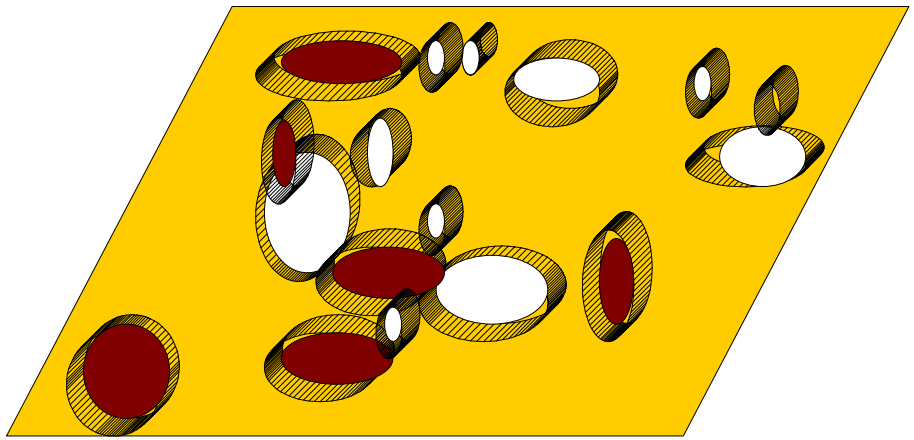


CRESP is completing a study of the 100 Area at Hanford where the sheer number of similar contamination sources and the desire to move forward creates strong pressures to choose a one size/type scheme to fit all

Watershed Areas of the SRS

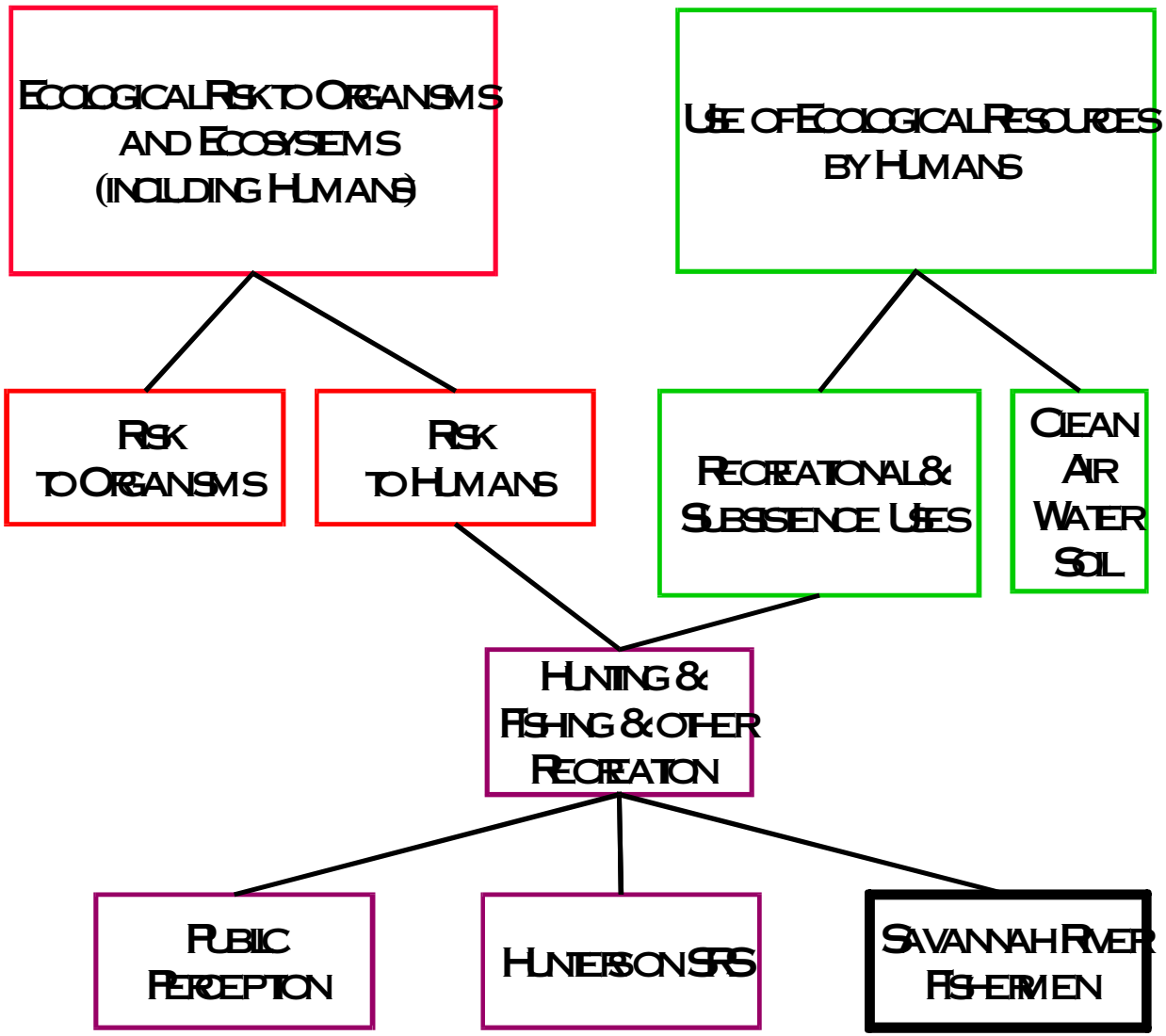


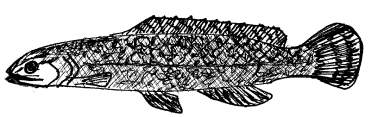
The Integrator Operable Unit:
The Slice, not just the holes, to clean big sites

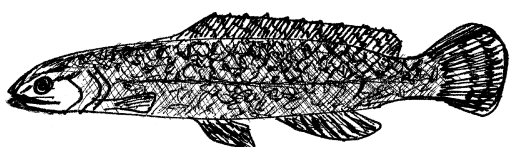


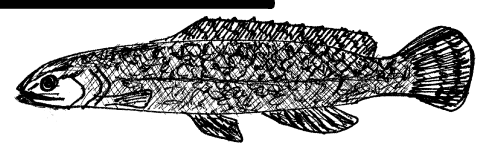
New IOU does not replace Operable Units but provides
a comprehensive, multi-media focus on all the space
in between and this gives basis for prioritizing remediation
and knowing when work on some areas is complete.
Goal is to reach a final end-state and thus the basis for transition
to stewardship -- (Dave Kosson will describe the IOU further)

The need for synthetic approaches to evaluating large scale ecosystems

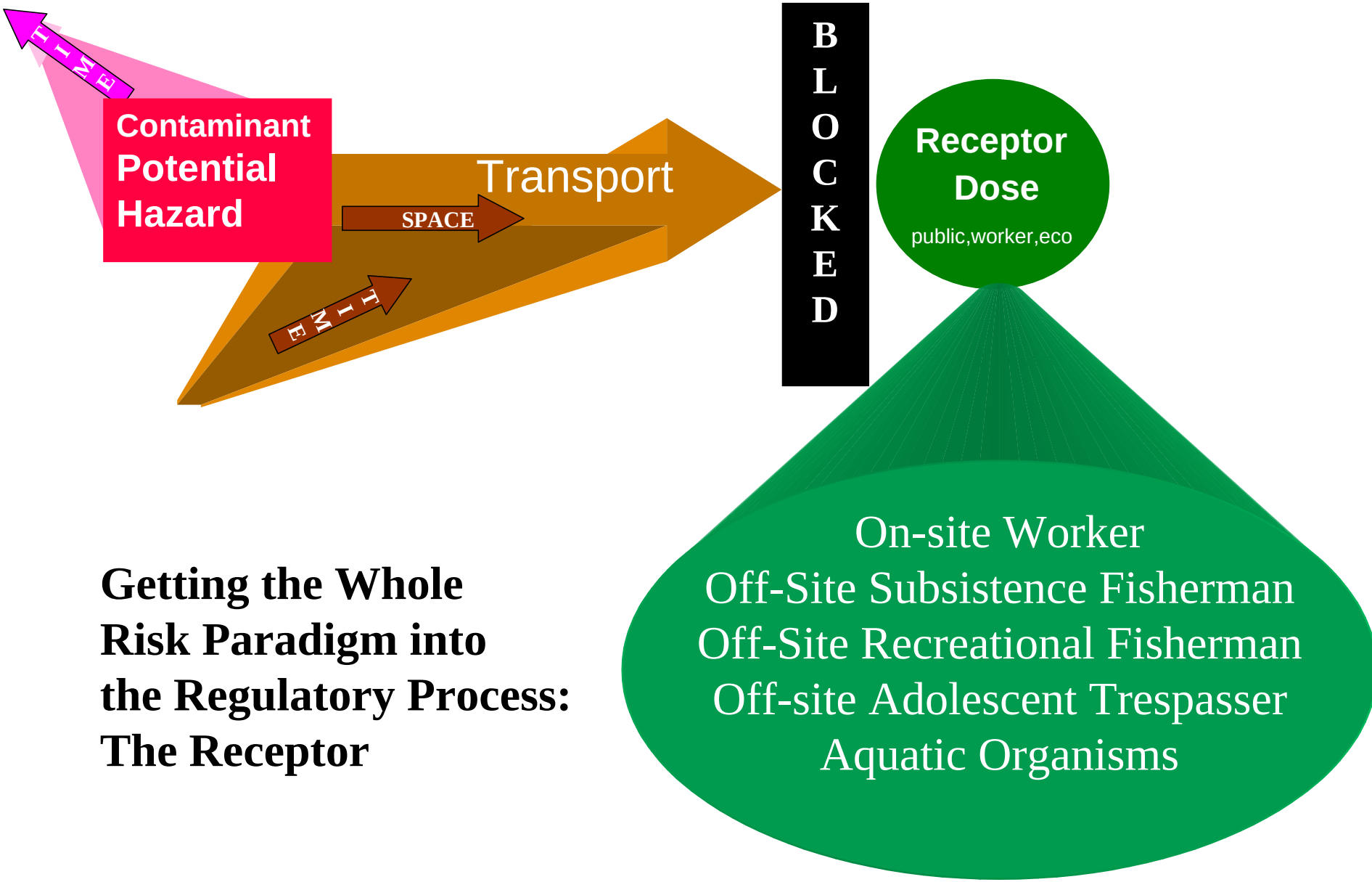








Joanna Burger will expand on this



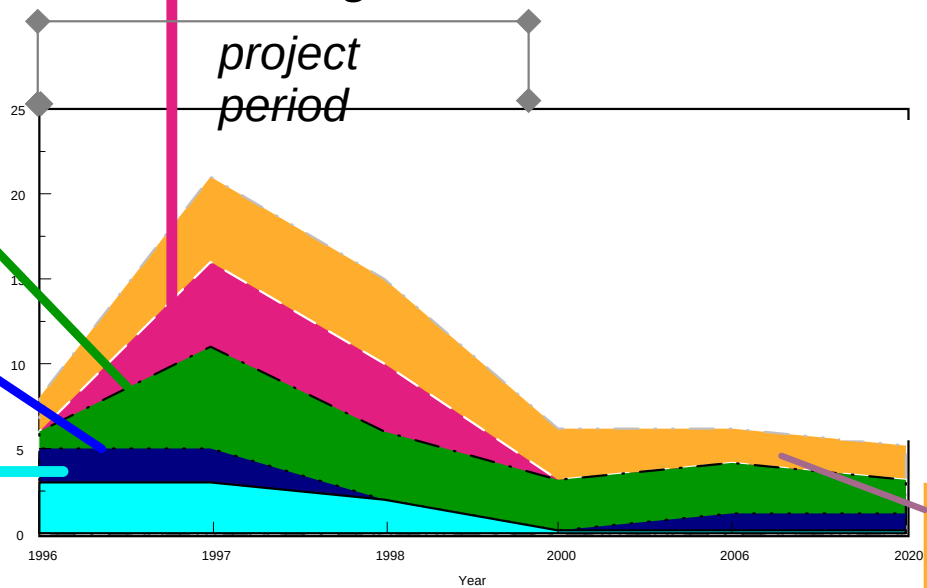
Getting the Whole Risk Paradigm into the Regulatory Process: The Receptor

Remediation Worker

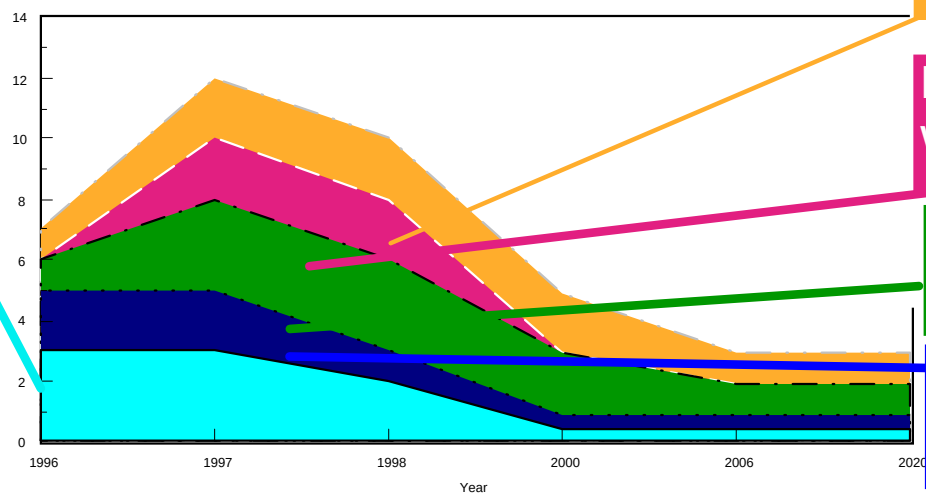
Ecological

Regular Worker

Public Health/Safety



Economic



Remediation Worker

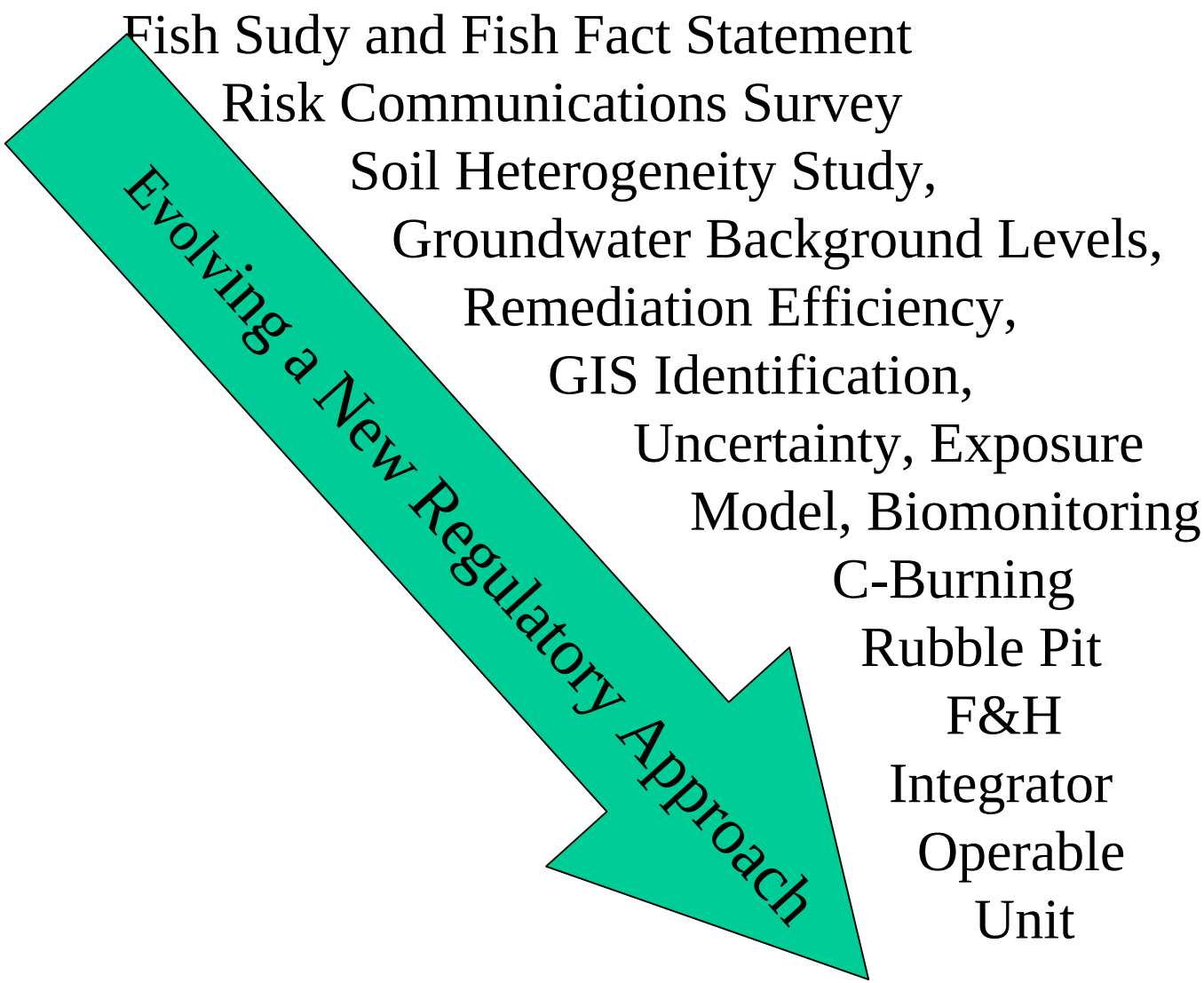
Ecological

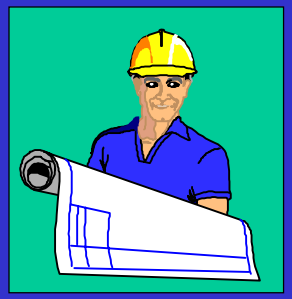
Regular Worker

We still do not have agreed ways of defining and evaluating different kinds of risk a - in communicable ways

Same problem; different solutions

Is CRESP Helping Change the Regulatory Dynamic at SRS?



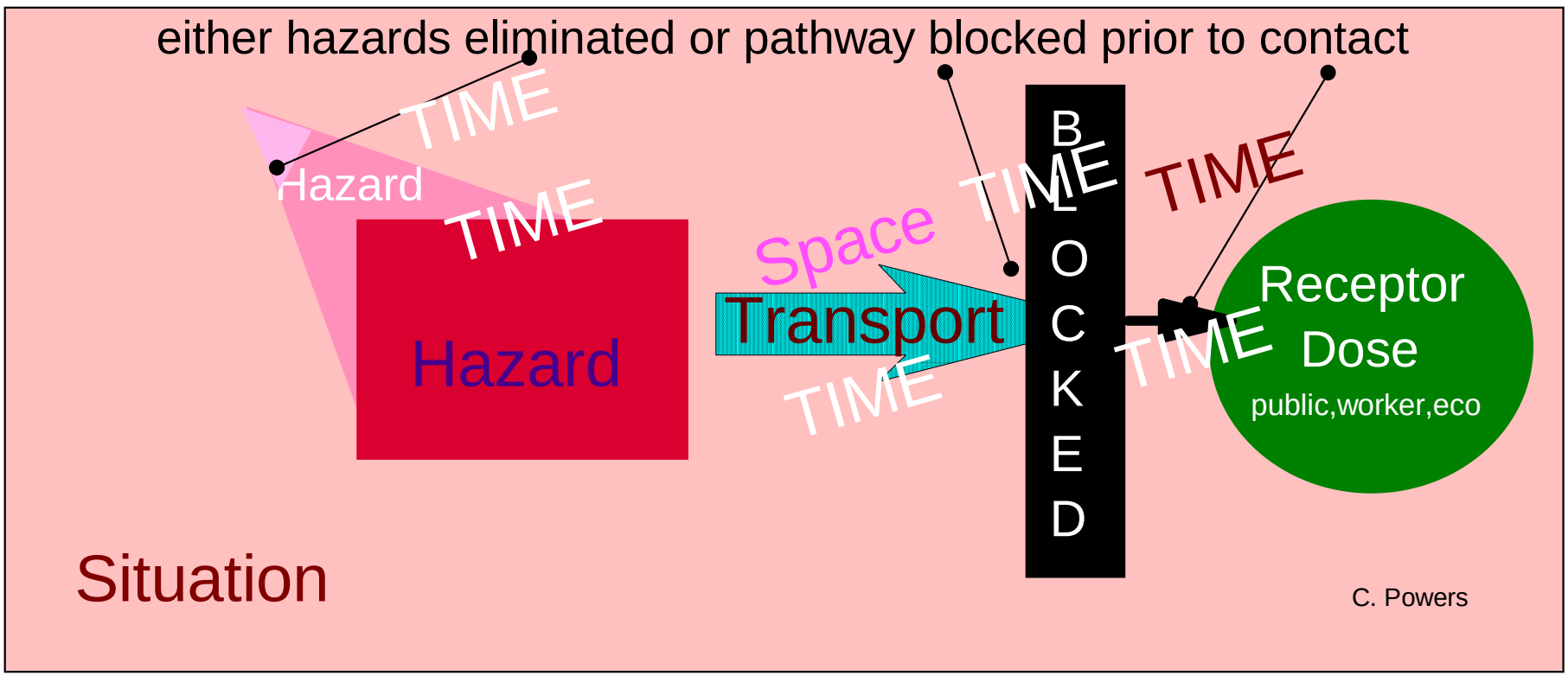


Examples of CRESP Projects that Improve Worker Health

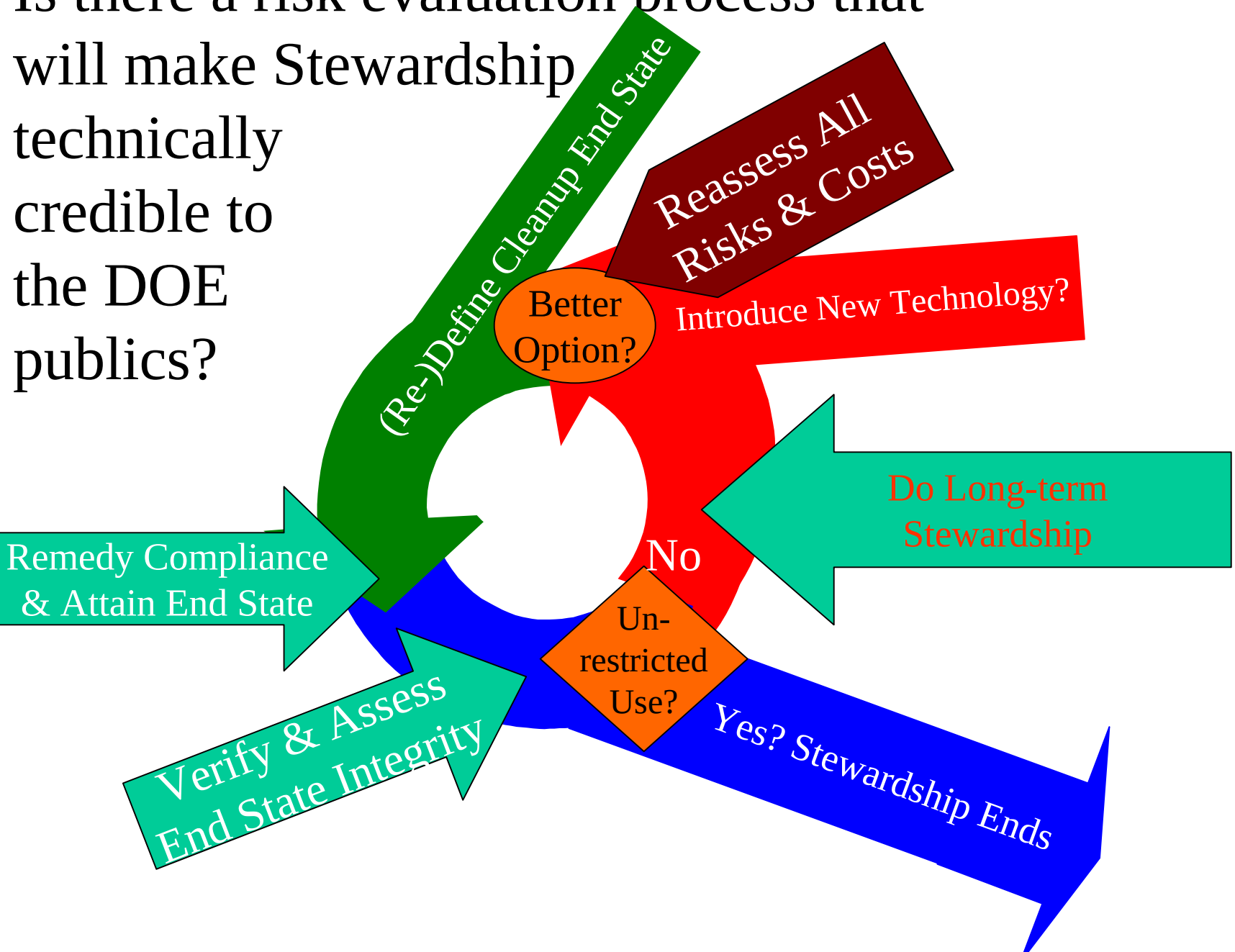
- Cross-Complex Evaluation of Occupational Health & Safety Programs
- Evaluating Worker Risks Using Employee Based Analyses
- Beryllium (Be) Biomonitoring at the Hanford Site
- Reproductive Effects of Solvents in Workers
- Registry of Subcontractor Workers at SRS
- Evaluating Barriers to the Use of Respiratory Protection among Hazardous Waste Workers

Elaine Faustman will expand on this

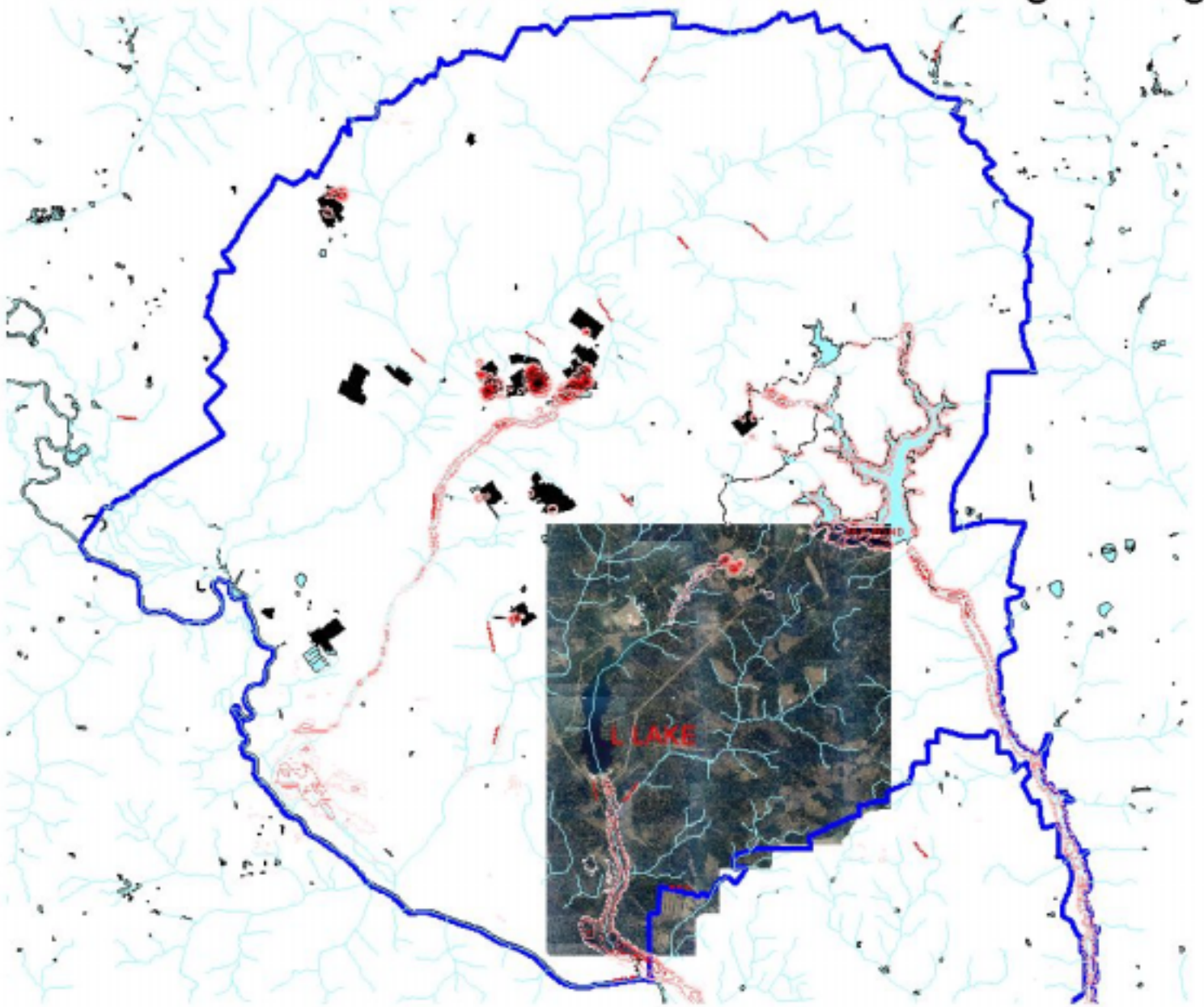
When Stewardship is integrated into the process, time and space are both the enemy and the friend of protective, cost-effective cleanup at DOE sites: because radionuclides decay over time; space is a buffer, but land use a challenge



Is there a risk evaluation process that will make Stewardship technically credible to the DOE publics?



SRS Boundaries with Steel Creek Area Overflight Imagery



IOU's, GIS and Risk Communication

"The submitted databases are preformatted for incorporation into a standard GIS platform (ArcView™) and will allow the reviewers to perform their independent analyses/review without the typical restrictions associated with the limited information normally presented in conventional hard copy maps, figures and tables. Each stakeholder in the IOU work plan process, from natural resource damage trustees to the public, has different interests based on cultural, regulatory or personal convictions. GIS will allow multiple evaluations to address the concerns of individual entities"

Integrator Operable Unit Work Plan for Steel Creek - September 1999, I-6

"The IOU will become part of the Administrative Record File and be available to the public. Information repositories have been established at US DOE's Public Reading Room located at the Aiken campus of the U of SC in Aiken, SC, and at the Thomas Cooper Library in Columbia, SC. Additional repositories include the Reese Library in Augusta, Ga. and Asa H. Gordon Library in Savannah, Ga."

IOU Work Plan for Steel Creek, I-7

Lessons Learned

- Most new science / technology gets lost and does not actively shape the definition of compliance requirements. One reason why:

for new “facts to be friendly” they must be generated or validated by processes recognized to be both competent and credible, not motivated to achieve a particular outcome - band-aids or specific regulatory results.

CRESP is beginning to function like the chef who cooks the meal at the table where everyone is watching -
the process is becoming almost as important as the data results

Some Lessons Learned

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The Consortium for Risk Evaluation with Stakeholder Participation (CRESP)

The organized independent national academic capacity competently and credibly to generate or review - and effectively communicate - the data, methods, technologies and assessment tools needed to evaluate risks and impacts to the public, workers and the environment of key decisions, alternatives and strategies being considered by DOE, its regulators and other affected parties for cleaning up and assuring protective long-term stewardship primarily at its large sites.

Can Science Really Foster Better Public Policy Decisions at DOE Sites: an Introduction to the CRESP Experience

- Introduction — Charles W. Powers, Ph.D
- Defining Achievable Remediation Endpoints — David Kosson, Ph.D.
- Science for Ecological Risk, Food Chains & Regulation — Joanna Burger Ph.D.
- What Science Informs Better Worker Protection? — Elaine Faustman Ph.D.
- Summary: Progress in Achieving Use of CRESP Science — Bernard Goldstein M.D.

Poster Session:

- CRESP Peer Review of DOE's Use of Risk Analysis in Decisionmaking — Arthur Upton, M.D
- Heavy Metal & Radionuclide Bioavailability from SRS Soils — Kristie Ellickson
- Economic Impact of Policy and Economic Choices in DOE EM — Michael Frisch
- Terrestrial Insects and Ecological Health — Diana Kimberling, James Karr & Leska Fore
- Using Integrated Food Web and Population Based Models for Environmental Monitoring and Decisionmaking — Joanna Burger, et. al.
- Mapping Air Pollutants at Hanford's Tank Farms Using ORS — Ram Hashmonay et. al.
- Policy Analysis & Clinical Research on Occupational Beryllium Exposure — Raphael Ponce, et. al.
- Structure and Function of Occupational Health Services — Mary Salazar, et.al.