LANDTREK: A WEB-BASED TOOL FOR LAND TRANSFER AND REUSE

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ABSTRACT

LandTrek is an interactive web-based tool used to facilitate environmental cleanup, closure, and reuse of contaminated sites. It improves access to information and encourages collaborative decision making among project managers, regulators, and stakeholders.

The LandTrek Information System contains operations support systems, such as transaction processing systems, control systems, and enterprise collaboration systems. LandTrek also includes management support systems, such as management information systems, decision support systems, and executive information systems. Additional major features include knowledge management systems, strategic information systems, and business information systems. These systems are all combined into cross-functional information systems that provide information and decision support for managers. They also perform operational processing activities.

PROGRAM DESCRIPTION

LandTrek was initially developed as a cooperative effort by the U.S. Department of Energy (DOE) and a twenty-seven-member group representing federal, state, commercial, regulatory, financial, and stakeholder organizations. Beginning in 1994, DOE provided $1.5 million to develop LandTrek. Following a successful peer review, DOE proposed an additional $1.1 million for field pilot projects.

Successful pilot tests were performed at sites in Idaho and California; a third test is ongoing at the DOE Grand Junction Office in Colorado. A Critical Needs Assessment and Quality Assurance Evaluation were completed in June of 1999, and the LandTrek team feels that the product is ready for further testing and expansion.

The LandTrek web site is an interactive web-based tool designed to encourage collaborative decision making among federal facility project managers, federal and state regulators, and other stakeholders associated with federal facility restoration projects and activities. LandTrek provides a “road map” to guide a user through the entire life cycle from contaminant identification to site restoration, closure, and reuse or land transfer.

The LandTrek program is presently being designed and implemented under an agreement with DOE and is the result of a highly effective team consisting of DOE, the Environmental Protection Agency, the Department of Defense (DoD), WASTREN, Inc., and HAZMED, Inc.

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The DOE LandTrek program has already been successful in transferring to the lending markets its ability to balance and manage project risks. Because of liability, lenders nationally have not been able to make loans on contaminated sites. DOE LandTrek’s ability to identify and manage risk has resulted in conventional lending markets now being able to finance projects such as land restoration, reuse, and transfer.

LandTrek can provide a centralized focus for all contaminated land restoration, reuse, and transfer projects. LandTrek will also provide a forum for standardization on a national level by making historical data from land reuse projects available and by providing a road map for the entire restoration, closure, transfer, and reuse process.

BUSINESS STRATEGIES AND OBJECTIVES

The mission of DOE LandTrek is to provide an interactive web-based tool designed to encourage collaborative decision making among federal facility project managers, federal and state regulators, and other stakeholders associated with federal facility restoration projects and activities. The LandTrek team plans to make LandTrek a high quality, up-to-date program that is the most cost efficient, comprehensive, and easiest to use program for decision makers and stakeholders involved in land reuse and transfer projects. During the next 5 years, DOE LandTrek will seek to achieve the following goals.

Non-Financial Goals

• Expand LandTrek at the DOE Grand Junction Office site to include the Analytical Chemistry Laboratory closure or transfer, the Monticello projects, and the entire Grand Junction Office site.
• Create LandTrek Colorado.
• Enhance current LandTrek use by DoD clients such as Vandenberg Air Force Base.
• Expand LandTrek use at the national level by DOE and DoD clients.
• Explore the state and local government markets.
• Explore international possibilities.

Financial Goals

• Increase present funding for LandTrek development and expansion.
• Seek new public and private funding sources in conjunction with increased use and development of the web site.

USERS OF LANDTREK

LandTrek customers are those involved in land reuse and transfer projects that are complex, involving competing stakeholder interests, complicated regulations, unknown technical problems, and uncertain risks and liabilities. LandTrek projects will typically involve many interdependent perspectives, specialties, stakeholders, and decision makers.
Too often, decisions are made in isolation, without an understanding of how a particular decision will affect the whole project. For example, the choice of a technical solution must depend upon several factors: regulatory guidelines and requirements, cost of implementation, community concerns about health and safety, and agreement by the stakeholders.

Lack of understanding each factor’s interdependence leads to a scattered and reactionary approach to decision making, often resulting in a land reuse project impasse known as “toxic gridlock.”

As a project management, decision-making, and communication tool, LandTrek responds to the diversity of issues and interests (e.g., project management, technical consulting, environmental engineering, finance, regulatory agencies, community organizations, environmental activism) of a federal facility or brownfield project. What makes LandTrek unique is that it clearly outlines the interdependence of these disciplines and issues.

**Examples of Potential LandTrek Users**

- Project managers can use LandTrek to guide the life cycle of their projects, making sure that all bases are covered.
- Scientific staff and technical consultants can use LandTrek to identify, evaluate, and access innovative technologies that can make their projects more efficient.
- Researchers can use LandTrek as a centralized resource center for applied research across diverse technical disciplines.
- Lenders can use the LandTrek system to establish a due diligence trail of decision making, which can back up loan documentation. A lender can document the role of project financing throughout the project’s life cycle and how it links to and interacts with decisions made in other project disciplines.
- Redevelopment agencies can use LandTrek, since they must integrate their programs and policies with current redevelopment laws and regulations.
- Community members can use LandTrek to participate, communicate, and assess the progress and regulatory compliance of projects in their neighborhoods.

Because LandTrek offers a central, standardized, web-based, interactive decision-making tool that is available to all potential users, it is unique in its ability to address the magnitude and complexity of the many national and international land reuse projects. Because contaminated land reuse and transfer issues are predicted for the near- and long-term, and budgets are continuously being constrained, the LandTrek marketing and expansion efforts will initially focus on DOE and DoD projects.

**PRIMARY MARKETS FOR DOE LANDTREK**

- Federal, state, and local regulatory and government agencies responsible for site cleanup and land reuse activities.
- DOE and DoD project managers.
- Community members, public advocates, and community organizations.
- Environmental consultants and contractors.
• Technology developers, scientists, and researchers.
• Potential land purchasers and their representatives.
• Lenders, trust departments, and portfolio managers.
• Redevelopment and economic development agencies, and other federal land management resource agencies.
• Public and private organizations and practitioners that are affected by or can support the land reuse life cycle at federal facilities.

DETAILED DESCRIPTION OF LANDTREK

Several LandTrek features are available to assist collaborative decision making throughout the entire cleanup, closure, reuse, or transfer process at federal facilities. The LandTrek web site will provide users with many tools to support stakeholder collaboration and public interaction. These tools can assist interested persons in asking questions or seeking clarification on property disposal and transfer activities at specific DOE and DoD sites. LandTrek features include

• Links to specific DOE and DoD project pages.
• General DOE and DoD project management policy and guidance.
• The Executive Performance Management (EPM) system.
• A library.
• Lessons learned.
• Tools (including the LandTrek Forum for Collaborative Decision Making).
• A search engine.
• Site maps.
• A feedback and evaluation form.

BENEFITS OF LANDTREK

LandTrek’s core competency lies in its unique ability to

• Provide information, resources, and tools to facilitate the management or mitigation of project risks, such as regulatory, community, technical, land-use planning, land transfer, and financing risks.
• Provide methods for avoiding potential liabilities associated with cleanup, closure, and land transfer and reuse processes.
• Gather necessary data, perform necessary tasks, and maintain necessary record-keeping practices for land reuse and land transfer.
• Provide due diligence record-keeping mechanisms to facilitate and support land title transfer and land reuse activities.
• Expedite and enhance the efficiency of site cleanup, closure, land transfer, and reuse activities through collaborative stakeholder decision-making processes.
• Provide focus for project management of site cleanup, closure, and land transfer efforts.
• Enhance protection of public health and the environment.
DOE and DoD project managers are the keys to the ultimate acceptance and success of LandTrek. They need to be involved in every stage of LandTrek development to ensure that the product will provide value to them. To leverage the core competencies into a sustainable competitive advantage, the DOE LandTrek team will work closely with DOE and DoD project managers to build the relationships and alliances necessary to ensure that customer value is integrated into LandTrek in every aspect.

There are no other products similar to LandTrek; however, it has several points of difference in the approach to land reuse.

**Old Approach**
Hierarchical and isolated
Autonomous decision makers
“Stovepipe” thinking
Competitive and exclusionary process
Turfs and territories
Survival of the fittest or extinction
Build new “greenfield” expansion

**New Approach**
Teamed and interdependent
Multiple decision makers (stakeholders)
Integrated cause and effect
Cooperative and inclusionary process
Consensus and common ground
Diversity and sustainability
Recycle and reuse—brownfields revitalization

## LANDTREK OPPORTUNITIES AND LIMITATIONS

Tables I and II show the internal and external factors affecting opportunities for DOE LandTrek.

### Table I. DOE LandTrek Strengths and Weakness

<table>
<thead>
<tr>
<th>Internal Factors</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management</td>
<td>Strong leadership team</td>
<td>Lack of entrepreneurial experience. High turnover rate.</td>
</tr>
<tr>
<td>Offerings</td>
<td>Unique web-based tool facilitates standardization and historical reference for all users.</td>
<td>Not well known. Potential customers may already have their own programs.</td>
</tr>
<tr>
<td>Marketing</td>
<td>Highly trained, competent workforce.</td>
<td>No national awareness or acceptance.</td>
</tr>
<tr>
<td>Personnel</td>
<td>Adequate funding questionable. Competition for limited resources in target customer agencies.</td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td>Web site construction is high quality.</td>
<td>Web site construction process is cumbersome.</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Collaborative process ensures comprehensive, high-quality product.</td>
<td></td>
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Table II. DOE LandTrek Opportunities and Problems

<table>
<thead>
<tr>
<th>External Factors</th>
<th>Opportunities</th>
<th>Problems</th>
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<tbody>
<tr>
<td>Consumer/social</td>
<td>Useful for public and private entities involved in land reuse projects that will continue for the foreseeable future.</td>
<td>Myriad of other programs and tools might deter busy program managers from considering yet another program.</td>
</tr>
<tr>
<td>Competitive</td>
<td>No other web-based, standardized, single-focus product available.</td>
<td>Project managers may already have programs they are comfortable with.</td>
</tr>
<tr>
<td>Technological</td>
<td>Provides interactive web-based decision-making tool that can limit users and provide information to all. Decision makers and stakeholders can participate as individual schedules allow.</td>
<td>Probable use by decision makers and all stakeholders is questionable and requires considerable training time. Technology dependent.</td>
</tr>
<tr>
<td>Economic</td>
<td>Cost effective</td>
<td>Competing resources</td>
</tr>
<tr>
<td>Legal/regulatory</td>
<td>Due diligence. Policies and regulations are accessible to all users. Liability avoidance.</td>
<td></td>
</tr>
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**LANDTREK COSTS**

Pricing strategy begins with DOE planning, programming, and budgeting to support the 5-year plan. Reimbursement will come from DoD and DOE users.

The cost of the 5-year funding program is expected to ultimately be paid for through labor costs savings and direct and indirect associated costs savings realized through use of a standardized tool (LandTrek), which provides historical examples and a road map for conducting land reuse and transfer activities. With the acceptance and use of LandTrek at the local level, local providers and vendors will then be encouraged to list and advertise their services on the LandTrek web site for a fee. Private entities desiring to use LandTrek will also be charged a fee accordingly. The long-term goal is for LandTrek to be self-supporting.

**INFORMATION PROCESSED BY LANDTREK**

Because LandTrek offers too many features to describe here in detail, this paper will describe only two of them—The LandTrek Forum for Collaborative Decision Making (LFCDM) and The Executive Performance Management system (EPM).

**The LFCDM Approach**

The LFCDM establishes a written record and due-diligence trail for the risk management of all phases of a land reuse project, allowing the project’s decision makers to co-create, identify, and appropriately integrate the vast range of resources, information, and tools that will restore land to productive and sustainable new uses. The LFCDM, through a streamlined format of record keeping, is designed to enhance understanding and communication among the diverse specializations and interests involved. As a tool to organize and condense large amounts of
project information, the core document under the LFCDM is designed for concise communication in layman’s terminology. The necessary in-depth understanding of a project is achieved through the LFCDM’s cross-referencing tool, the Reference Document Template (RDT), which allows the user to identify and link an open-ended range of support information. Thus, the RDT’s purpose is to provide the greater levels of sophisticated and detailed information that must substantiate all aspects of a project.

Examples of a project’s supporting documentation include technical environmental reports, remedial and project work plans, regulatory reports, community and stakeholder reports, public information documents, fact sheets, land use planning reports, legal documents, and financial reports. These diverse and often sophisticated resource documents are the major tools for communicating the project. However, a project’s decision makers may need more knowledge and experience in areas outside their fields of expertise. Under the LFCDM approach, the core LFCDM document is designed to provide the user, in plain language, with a concise translation of text covering all phases of the project, and then to identify and link the supporting reference documents and technical reports required to corroborate the entire land reuse process.

From the perspective of mitigating liability and managing risks during and following remediation, the LFCDM approach substantiates and records, for perpetuity, a defensible decision-making chronology of a project.

Executive Performance Management (EPM) System

This is a customized software program designed to monitor information on all facets of corporate responsibility. The EPM system accumulates data from five distinct management information centers into a common data structure and allows controlled access for corporate officers, general managers, project managers, and clients. The five centers feeding data into the EPM system cover the areas of Administration, Operations, Quality, Safety, and Personnel. Each center is composed of stand-alone information management systems for that functional area, and each is capable of printing out records and reports independently of the others.

The EPM system takes desired data directly from each center without modification and provides cross-referencing between functional areas to allow individuals accessing the system a more comprehensive view of the project. For example, a user can compare the accomplishment of performance metrics with the training program to determine the amount of training devoted to achieving a particular performance standard and whether additional training is needed to improve performance. Since all of the centers feed directly into the EPM system, a record or report from any or all of the functional areas can be obtained without having to access the individual systems. The direct feed into the EPM system also eliminates the potential for translation errors that might occur if the data were transcribed or input manually.

The EPM system has an ad hoc search capability allowing searches on all fields, with range searches by key word, project, document number, or dates. All projects or an individual project can be searched for information. The results of the search can be arranged in the order of any field, and all searches can be printed. There is also an on-line, step-by-step help file to support
system use for all management processes, reports, and functions. Access rights are assigned on each project and are based on the individual’s needs and training.

The system can be easily navigated with only rudimentary computer skills. Format and functions are easy and comprehensive. Access to the system is from a personal computer, and all staff members have specific access rights to view and search project and document data. Established procedures and guidance for data entry ensure that the data format is consistent and descriptions are complete and accurate.

Each of the five centers (Administration, Operations, Quality, Safety, and Personnel) that feed information to the EPM system is fully capable of functioning independently of the others and provides information in a format that allows direct input into the EPM system.

In the Administration area, the primary software is Deltek. This system is designed for project-oriented businesses and thus allows integrating project control with financial accounting. On the project side, contract administration, project billing/revenue, project planning and tracking, earned value analysis, and Work Breakdown Structure capabilities are applied depending on the requirements of the client. On the financial accounting side, typical corporate needs are met, such as general ledger, accounts receivable, and accounts payable, as well as purchasing, fixed assets, and personnel management (time collection, payroll, and benefits). These functions are fully integrated and the system generates a standard set of project reports. In addition to the standard project reports, the Deltek Query Writer also generates customized reports.

The Operations system uses two main software programs: SOMAX Maintenance Management Information system and either Microsoft Project 98 or Primavera Project Planner.

The SOMAX Maintenance Management Information system is a complete package consisting of 12 fully integrated modules. The system has the ability to interface with multiple modules simultaneously, moving from one module to another with the click of the mouse or use of a hot key. Designed and developed to be a powerful tool for complete maintenance management, the system provides the following:

- Work order and work request management.
- Work flow management.
- Equipment management (including historical data).
- Planning and scheduling.
- Parts/inventory (including multi-store room).
- A list of vendors.
- A list of personnel.
- Purchase order management (including automatic purchasing).
- Resource management.
- Report writer and data analyzer.
- Paperless processes (if desired).
- Asset management.
The Quality Management system consists of customized software that allows quality-control functions to be integrated, prioritized, planned, and scheduled. It monitors all activities applicable to each functional area of work and encompasses quality assurance/quality control, continuous process improvement, and performance measurement and management. This customized program ensures that the planning, performance, measurement, and feedback mechanisms are in place for deficiency prevention, detection, correction, and closure. Each performance objective/standard is quantified and tracked using measurable performance indicators. Responsibility for collecting these data is assigned to specific work centers. Responsibility for implementing the program and achieving the objectives is assigned to the appropriate work center. Progress toward achieving the objectives is graphically displayed using various graphs and charts for statistical process control. These same metrics support statistical techniques mandated in ISO 9002 element 4.20.

The Safety system uses a customized database, supported by web-based systems, to provide the reporting and analysis services necessary to effectively monitor and report on Environmental Health and Safety (ES&H) issues. It documents and generates data on occurrences, accidents, illnesses, exposures, medical surveillance data, environmental impacts, performance, and compliance. The system will automatically generate commonly requested ES&H data, including Experience Modification Rates, OSHA 200 logs, and Injury and Illness statistics. The system is supported by DOE programs, such as the Computerized Accident and Reporting System (CAIRS) and the Occurrence Reporting and Processing System (ORPS). System access is restricted to authorized staff and clients on an as-needed basis.

The Personnel system is a customized database that maintains all employee records associated with training, qualifications, certifications, position descriptions, and individual performance records. It automatically warns the personnel monitors when any required training or certifications are coming due for a particular individual, with an adequate buffer time to accommodate project or activity schedules and performance (typically one month in advance). The system is equipped with appropriate firewalls to prohibit unauthorized access.

CONCLUSION

As a project management, decision-enabling, and communications tool, LandTrek responds to diverse issues and interests—such as project management, technical consulting, environmental engineering, finance, regulatory agencies, community organizations, environmental activism—that are associated with a federal facility or brownfield project. LandTrek clearly outlines the interdependence of diverse disciplines and issues and provides a built-in economy of scale as projects build upon the experience of one another.