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— TECHNICAL PROPOSAL —

Solicitation No.: CRFP 0313 DEP2600000003

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6-10-20

TO:	WV Department of Administration, Purchasing Division
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PAGES:	40

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CONTENTS: Technical Proposal for WV DEP E-Permitting System — UIC Class 1 & Class 6. This document contains NO cost information.

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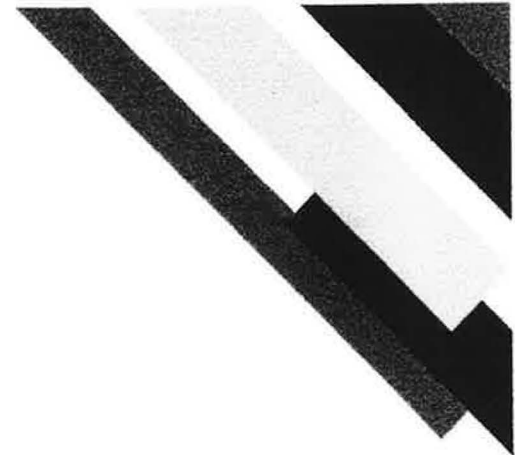
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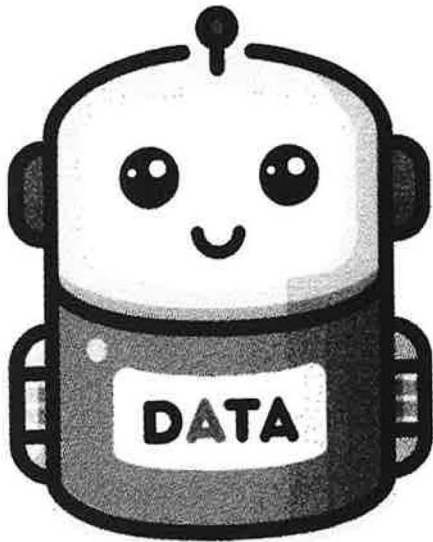
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P002



Technical Proposal
Workflow Based Agentic AI, Automation,
and E-Permitting System

CRFP 0313 DEP2600000003
Vendor Code: VS0000052358
27 May 2026

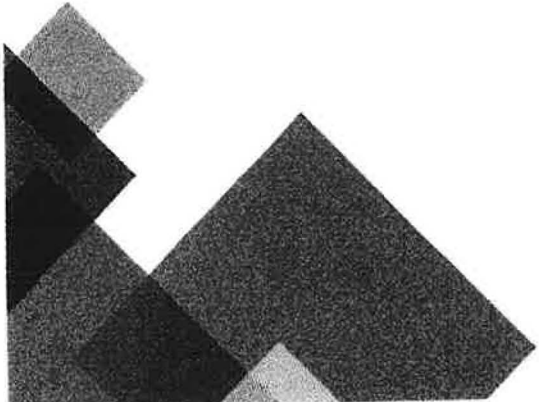


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TABLE OF CONTENTS

Cover Page	1
Compliance Matrix	2
Title Page	3
Executive Summary	4
Section 4.3.1 - Approach & Methodology to Goals/Objectives	5
Section 4.3.3 - Mandatory Project Requirements	17
Section 4.4 - Qualifications and Experience	23
Implementation Timeline	27
Certification and Signature Page	28
Addendum Acknowledgement Form	28
Designated Contact	29



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COMPLIANCE MATRIX

RFP Section	Requirement Description	Proposal Section	Compliance Status
4.3.1	Goals and Objectives	Section 4.3.1	✓ Compliant
4.3.2.1	General Automation and Dashboard Integration	Section 4.3.1.A	✓ Compliant
4.3.2.2	UIC Class I and Class VI Agentic AI Processing	Section 4.3.1.B	✓ Compliant
4.3.2.3	Geospatial Analysis and GIS Integration	Section 4.3.1.C	✓ Compliant
4.3.2.4	Document Processing and AI Drafting	Section 4.3.1.D	✓ Compliant
4.3.2.5	Workflow Integration	Section 4.3.1.E	✓ Compliant
4.3.2.6	AI Token Usage and Cost Management	Section 4.3.1.F	✓ Compliant
4.3.2.7	HITL Workflow Interface and Legacy System Independence	Section 4.3.1.G	✓ Compliant
4.3.3.1	Data Integration and Regulatory Compliance	Section 4.3.3.A	✓ Compliant
4.3.3.2	Security and Deployment	Section 4.3.3.B	✓ Compliant
4.3.3.3	Support and Maintenance	Section 4.3.3.C	✓ Compliant
4.3.3.4	Licensing	Section 4.3.3.D	✓ Compliant
4.3.3.5	Regulatory Compliance	Section 4.3.3.E	✓ Compliant
4.3.3.6	Data Ownership and Exit Strategy	Section 4.3.3.F	✓ Compliant
4.4.1	Qualification and Experience Information	Section 4.4.1	✓ Compliant
4.4.2	Mandatory Qualification/Experience Requirements	Section 4.4.2	✓ Compliant



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TITLE PAGE

RFP Subject: Workflow Based Agentic AI, Automation, and E-Permitting System for Underground Injection Control (UIC) Class I and Class VI Permitting

RFP Number: CRFP 0313 DEP2600000003

Vendor Code: VS0000052358

Vendor Name: Data Machines

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Technical Contact: Edward Mahoney, Technical Program Manager

Phone: (508) 265-4271

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Principal Research Engineer / Lead AI Architect — Philip A. Sage

Role: AI/ML architecture leadership, multi-agent orchestration design, GraphRAG pipeline development, knowledge graph construction, and technical oversight of all AI engineering activities.

Experience: 30+ years in AI/ML, multi-agent systems, and data fusion across DARPA, NGA, IARPA, and DoD. Phil served as Chief AI Architect at Johns Hopkins University Applied Physics Laboratory, leading SOCOM autonomy programs and supporting CDAO Task Force LIMA for responsible DoD AI implementation. He served as NGA Analytic Technologies Office Director through the Intergovernment Personnel Act, guiding R&D portfolios across the IC. At Data Machines, Phil leads the ADMIRAL agent-based decision-support framework for naval C2 — the direct technical predecessor to the Data Machines Agentic AI E-Permitting System



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architecture. Education: M.S. Information Systems, M.S. and B.S. Electrical & Computer Engineering (George Mason University); Ph.D. Computational Sciences & Informatics (George Mason University, in progress). Phil will remain assigned to this project for its duration.

Phone: (703) 863-0487

Email: lindsaymercerc@datamachines.com

Authorized Signature:

A handwritten signature in cursive script that reads "Lindsay Mercer". The signature is written over a horizontal line.

Date: May 27, 2026



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EXECUTIVE SUMMARY

WVDEP gets a production-ready agentic AI system built by the team that delivered autonomous document processing for the Office of Naval Research — not a prototype, not a pilot, but a system engineered for regulatory compliance from day one.

WVDEP's Underground Injection Control program faces a critical operational challenge. UIC permit reviewers currently spend 4-6 hours manually cross-referencing each 500-1,500 page application against 40 CFR Part 146 requirements before substantive technical review can begin. Geologists perform Area of Review analysis manually, with no automated well proximity detection — a process that can consume a full day for a single complex application. As national carbon capture and sequestration initiatives accelerate, Class VI permit applications are increasing, but WVDEP's review bandwidth remains constrained. Meanwhile, critical permitting data is fragmented across siloed legacy systems — AppEnhancer for document management, ERIS for environmental data, and ESS for electronic submissions — with no automated workflow connecting them.

Data Machines (DMC) solves this with the Data Machines Agentic AI E-Permitting System, a purpose-built agentic AI platform designed specifically for UIC Class I and Class VI permit processing. Unlike generic e-permitting platforms that treat AI as an add-on, our system was architected from the ground up for environmental regulatory compliance — built by the team that delivered autonomous document processing for the Office of Naval Research and real-time streaming analytics for DARPA.

Our Understanding of Your Challenge

WVDEP seeks to modernize the UIC permit review process through advanced agentic AI while maintaining strict regulatory compliance, ensuring data security, and preserving human oversight at critical decision points. The system must handle complex geospatial analysis, multi-format document processing, and seamless integration with existing legacy systems without disrupting current operations.

Data Machines' Solution: Data Machines Agentic AI E-Permitting System (Agentic AI E-Permitting System)

DMC proposes Data Machines Agentic AI E-Permitting System, a purpose-built agentic AI platform specifically designed for environmental regulatory compliance.

Key Differentiators:

Production-Ready Agentic AI: DMC builds agentic systems, not COTS software. Our ONR DocAssist contract demonstrates our ability to deploy LLM-powered document authoring with RAG, fine-tuning, and multi-agent workflows in production environments.



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Regulatory Domain Expertise: Our team includes environmental engineers and geoscientists who understand UIC regulations. We propose embedding a dedicated UIC subject matter expert (SME) and encoding 40 CFR Part 146 directly into the compliance engine.

FedRAMP-Ready Security: Hosted on AWS GovCloud with FedRAMP Moderate authorization, ensuring compliance with federal security requirements while maintaining data sovereignty within the continental United States.

Legacy System Preservation: Our standalone HITL Workflow Interface operates independently from your existing systems, eliminating integration risks while enabling AI-assisted workflows.

Transparent AI Operations: AgentOps observability provides complete “Chain of Thought” logging for every decision, ensuring legal defensibility and regulatory audit compliance.

Expected Outcomes:

60-80% reduction in administrative completeness review time

40-50% reduction in technical compliance analysis duration

90%+ accuracy in automated deficiency identification

Complete audit trail for all AI decisions and human interventions

Seamless scaling to handle projected 2-20 applications per year with capacity for growth

Investment Protection: Our solution is designed for long-term partnership with built-in adaptability for evolving AI capabilities, regulatory changes, and growing permit volumes.

Why This Matters: WVDEP is not buying software — WVDEP is engaging an AI engineering team that builds the solution around WVDEP's specific UIC permitting requirements.

SaaS Delivery Model (4.2)

Data Machines Agentic AI E-Permitting System is delivered as a fully managed cloud-based Software as a Service (SaaS) solution hosted on AWS GovCloud with FedRAMP Moderate authorization. WVDEP end users access all system capabilities — including the HITL workflow interface, executive dashboard, permit tracking portal, and administrative tools — via secure web browsers over HTTPS. DMC manages all infrastructure, updates, security patching, and system maintenance, eliminating the need for WVDEP to provision or maintain any on-premise hardware or software. The SaaS model ensures WVDEP always operates on the latest version with continuous improvements deployed through managed release cycles. The platform guarantees 99.9% availability excluding scheduled maintenance windows, backed by contractual SLAs covering uptime, performance, incident response, and support.

SECTION 4.3.1

Approach & Methodology to Goals/Objectives



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WVDEP's staff interact with a single intuitive dashboard that puts permit status, AI decisions, and system health at their fingertips — eliminating the need to check multiple legacy systems.

A. General Automation and Dashboard Integration (4.3.2.1)

DMC's Agentic AI Platform Architecture

Data Machines proposes a sophisticated multi-agent architecture built on our proprietary AgentOps framework, specifically designed for regulatory compliance workflows.

System Automation/Integration (4.3.2.1.1)

WVDEP's integration strategy leverages a modular microservices architecture that interfaces with existing operational software through secure APIs and data exchange protocols:

Event-Driven Integration: Real-time webhook notifications and message queues enable seamless data flow between Data Machines Agentic AI E-Permitting System and WVDEP systems

Secure API Gateway: All external integrations pass through our certified API gateway with OAuth 2.0 authentication and rate limiting

Data Translation Layer: Automatic format conversion and schema mapping for legacy system compatibility

Error Handling & Retry Logic: Robust failure recovery mechanisms with exponential backoff and circuit breaker patterns

Dashboard Development (4.3.2.1.2)

WVDEP's web-based dashboard provides comprehensive oversight and control capabilities:

Executive Dashboard: Real-time KPIs, permit processing metrics, and system health indicators

Operations Center: Live workflow status, queue management, and exception handling

Audit Interface: Complete transaction logs, decision trails, and compliance reporting

Security Features: Role-based access control (RBAC), multi-factor authentication (MFA), and session management

Data Machines Agentic AI E-Permitting System doesn't just automate paperwork — it understands UIC regulations. Every permit application is processed by specialized AI agents that know the difference between Class I and Class VI requirements, reducing review time by 60-80% while catching deficiencies human reviewers might miss.

Integration Ready: RESTful APIs for embedding into existing WVDEP web properties with SSO integration

B. UIC Class I and Class VI Agentic AI Processing (4.3.2.2)

Digital Intake Specialist Functionality (4.3.2.2.1)



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Data Machines Agentic AI E-Permitting System implements a sophisticated multi-agent orchestration system that functions as an intelligent “Digital Intake Specialist”:

Agentic Routing and Sub-Workflow Orchestration (4.3.2.2.1.1)

Data Machines Agentic AI E-Permitting System's dynamic routing engine employs decision trees and machine learning classifiers to:

Primary Classification: Distinguish between Class I and Class VI applications using document structure analysis and keyword detection

Granular Sub-Routing: Deploy specialized agents based on detected application characteristics:

AoR Analysis Agent: Triggered by geospatial data presence

Financial Responsibility Agent: Activated by insurance/financial documents

Corrective Action Agent: Initiated when existing wells are detected in AoR

Construction Standards Agent: Deployed for well design review

Administrative Completeness Review (4.3.2.2.1.2)

The completeness engine utilizes advanced NLP and computer vision to verify required documentation: This includes verification of EPA Form 7520-6, facility location and legal descriptions, operator identification, well construction details, injection zone identification, confining zone characterization, and proposed injection parameters.

Structured Document Detection: Machine learning models trained on EPA forms and permit templates

Signature Verification: Computer vision algorithms for Responsible Corporate Officer authentication

Cross-Reference Validation: Automatic verification that project descriptions match across all submitted documents

Progressive Disclosure: Dynamic checklists that adapt based on project type and classification

For Class VI Applications: Specialized agents handle complex documentation including: - Detailed geologic characterization validation - Testing and Monitoring Plan (TMP) completeness verification - Post-Injection Site Care (PISC) Plan adequacy assessment - Financial responsibility documentation validation

Consider a typical Monday morning for a WVDEP UIC permit reviewer. A new Class VI application arrives — 1,200 pages across geological characterization, well construction plans, AoR modeling data, financial responsibility documents, and a Testing and Monitoring Plan. Today, the reviewer manually inventories each document against the 40 CFR 146 Subpart H checklist, a process that takes 4-6 hours before technical review even begins. With Data Machines Agentic AI E-Permitting System, the Digital Intake Specialist processes the entire