Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Centralized Request for Proposals
Info Technology

Proc Folder: 1913510			**Reason for Modification:**
Doc Description: Workflow Based Agentic AI, Automation, and E-Permitting Syst			Addendum #1 is issued to publish agency respones to all vendor submitted questions, and extend the b..... See Page 2 for complete info
Proc Type: Central Contract - Fixed Amt			
Date Issued	**Solicitation Closes**	**Solicitation No**	**Version**
2026-05-19	2026-06-10 13:30	CRFP 0313 DEP2600000003	2

BID RECEIVING LOCATION

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PURCHASING DIVISION
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CHARLESTON WV 25305
US

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WV PURCHASING DIVISION

VENDOR

Vendor Customer Code: Available Upon Request
Vendor Name : Vulcan Technologies, Inc.
Address : 200 E. 6th Street, Austin, TX 78701
Street : 200 East 6th Street
City : Austin
State : TX **Country :** USA **Zip :** 78701
Principal Contact : Tanner Jones
Vendor Contact Phone: 7372123417 **Extension:** 1

FOR INFORMATION CONTACT THE BUYER
Joseph (Josh) E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

Vendor Signature X Signed by: **FEIN#** 39-3166581 **DATE** 6/9/2026

All offers subject to all terms and conditions contained in this solicitation

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CRFP 0313 DEP2600000003

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:
(Check the box next to each addendum received)

[X] Addendum No. 1	[ ] Addendum No. 6
[ ] Addendum No. 2	[ ] Addendum No. 7
[ ] Addendum No. 3	[ ] Addendum No. 8
[ ] Addendum No. 4	[ ] Addendum No. 9
[ ] Addendum No. 5	[ ] Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Vulcan Technologies, Inc.

Company

Authorized Signature

June 9th, 2026

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Tanner Jones

(Address) 200 East 6th Street

(Phone Number) / (Fax Number) (737) 212-3417

(email address) Tanner@vulcan.ai

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through *wv*OASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Vulcan Technologies, Inc.
(Company)

(Signature of Authorized Representative)
Tanner Jones
(Printed Name and Title of Authorized Representative) (Date)
(737) 212-3417
(Phone Number) (Fax Number)
Tanner@Vulcan.ai
(Email Address)

Original

RESPONSE TO SOLICITATION

Workflow-Based Agentic AI, Automation, and E-Permitting System for UIC Class I & Class VI

CRFP 0313 DEP2600000003 · Centralized Request for Proposals

West Virginia Department of Environmental Protection · Division of Water and Waste Management

Submitted by **Vulcan Technologies, Inc.**

200 E 6th Street, Suite 310 · Austin, Texas 78701

June 2026

TECHNICAL PROPOSAL — SEALED SEPARATELY FROM COST

Title Page

Technical Proposal submitted in response to West Virginia CRFP 0313 DEP2600000003 · §5.3.2

RFP Subject	Workflow-Based Agentic AI, Automation, and E-Permitting System for UIC Class I & Class VI
Solicitation No.	CRFP 0313 DEP2600000003
Vendor	Vulcan Technologies, Inc.
Business Address	200 E 6th Street, Suite 310, Austin, TX 78701
Telephone	(737) 212-3417
Fax	— / N/A
Contact Person	Tanner Jones, Chief Executive Officer
Email	tanner@vulcan.ai
FEIN	39-3166581
Vendor Signature / Date	

June 10, 2026

Joseph (Josh) E. Hager III
Buyer, Purchasing Division
West Virginia Department of Administration
2019 Washington Street East · Charleston, WV 25305-0130
joseph.e.hageriii@wv.gov

Re: CRFP 0313 DEP2600000003 — Workflow-Based Agentic AI, Automation, and E-Permitting System

Dear Mr. Hager,

Vulcan Technologies, Inc. submits this proposal in response to the State of West Virginia's solicitation for a Workflow-Based Agentic AI, Automation, and E-Permitting System for Underground Injection Control Class I and Class VI permits.

Vulcan is a government technology company based in Austin, Texas, dedicated to bringing frontier intelligence to state government. We have built and deployed the core capabilities this solicitation requires, including intake routing, HITL review gates, draft permit generation, public-notice workflow support, and audit logging.

Vulcan currently supports work in West Virginia. Our agentic legal and regulatory engine, **Justinian**, has already been used by the **Office of Governor Patrick Morrisey** and the **West Virginia State Auditor's Office**. This project would build on that work.

Our retrieval architecture combines dense vector search with knowledge-graph reasoning — capturing the complex relationships between EPA regulations, geological formations, well construction standards, and prior permit decisions that Section 4.3.2.2.2 describes. The platform supports multiple approved model options. Model choice can vary by task, subject to WVDEP and WVOT approval and the FedRAMP boundary requirements, with all processing inside a FedRAMP Moderate boundary on AWS GovCloud. Vulcan's platform has **passed a FedRAMP Readiness Assessment Report (RAR) with an accredited third-party assessment organization (3PAO)**, and we hold a current **SOC 2 Type II** attestation — both provided on request.

Because the platform already exists, the work is configuration, integration, testing, and validation against West Virginia's Class I and Class VI standards. For that reason, we propose a shorter implementation schedule than a net-new build would require — with administrative-completeness automation in reviewers' hands early, and production go-live on WVDEP's schedule, no later than the State's **July 1, 2027** target.

We have read every requirement in the solicitation and every answer in Addendum #1, and we acknowledge Addendum #1.

We would welcome the opportunity to present this proposal to your evaluation committee.

Respectfully submitted,

Tanner Jones
Chief Executive Officer, Vulcan Technologies, Inc.
tanner@vulcan.ai · (737) 212-3417

Table of Contents

West Virginia holds primary enforcement authority (primacy) over the federal Underground Injection Control program for Class I (hazardous-waste, industrial, and municipal-wastewater injection) and Class VI (geologic CO_2 sequestration) wells — governed by 40 CFR Part 146 Subparts B, G, and H and codified in 47 CSR 13 and 47 CSR 64. Today the WVDEP Division of Water and Waste Management runs that program by hand: permit packages arrive as PDFs (Addendum Q.37), are sorted into electronic folders, and are reviewed manually, with ERIS and AppExtender for records retention. There is no dedicated review system beneath it. That is manageable at two applications a year — but it will not scale as Class VI carbon-sequestration applications grow with the CCS economy, which is precisely the capability this solicitation is built to add.

WVDEP is seeking the intake, routing, review, and drafting functions described in Section 4.3.2.2.1. Vulcan proposes an existing platform that supports those functions.

1,400	10+	50+
PERMIT WORKFLOWS	**STATE DEPLOYMENTS**	**AGENCIES INTEGRATED**
Live in Texas	Already in use	Across the Justinian & Trajan platforms

Product: The Vulcan Platform

Trajan is our public-facing permitting concierge — the applicant portal that walks operators through a UIC Class I or VI submission, validates inputs at intake, and packages the application for review.

Justinian is our agentic AI reviewer — the Digital Intake Specialist that ingests the submission, routes it through Class-specific sub-workflows (AoR analysis, financial responsibility verification, well-construction validation, USDW conflict detection), drafts the permit, generates the public notice, and processes the comment response.

Together, Trajan + Justinian deliver the system Section 4 describes, end-to-end, as a single FedRAMP Moderate SaaS deployment on AWS GovCloud.

END-TO-END FLOW

Core Capabilities Mapped to WV DEP Requirements

WV DEP NEED	VULCAN CAPABILITY
Digital Intake Specialist (§4.3.2.2.1)	Justinian orchestrator routes Class I vs VI applications through six specialized sub-agents
Agentic sub-routing (§4.3.2.2.1.1)	Administrative Completeness, Technical Compliance, AoR & Risk, Blueprint Vision, Drafting, and Watchdog Agents
GraphRAG + dense retrieval (§4.3.2.2.2)	Hybrid retrieval: knowledge-graph reasoning over regulations ↔ geology ↔ permit history, combined with dense vector search for semantic recall
Hallucination elimination (§4.3.2.2.3)	Source-grounded responses with mandatory citation back to the submitted document; configurable confidence thresholds escalate low-confidence determinations to senior reviewers
¼-mile fixed-radius AoR for Class I (§4.3.2.3.1)	Fully automated; identifies all artificial penetrations, USDWs, surface water, and sensitive receptors from state datasets
Class VI computational AoR validation (§4.3.2.3.1)	Parameter extraction and validation per Q.2; the computational simulation itself remains with reviewers per Q.68
ESRI integration (Q.67)	Native ArcGIS REST + Enterprise; embedded ArcGIS Pro 3D scenes in the HITL workspace
6 mandatory HITL gates (§4.3.2.5.4)	All six gates implemented as configurable workflow stops with digital sign-off, AgentOps logging, and override capture
Watchdog Agent (§4.3.3.1.2)	24/7 monitoring of Federal Register, EPA, and the WV Legislature with quarterly regulatory-drift report and 30-day compliance-engine review SLA
FedRAMP Moderate boundary (§4.3.3.2.4)	AWS GovCloud (US-only); FedRAMP authorization from Amazon per Q.57; all third-party model APIs inside the boundary per Q.22
99.9% uptime + SLAs (§4.2)	Contractual SLAs for uptime, performance, incident response, and support (see §4.2)
SOC 2 Type II (§4.4.2.3, §4.3.3.5.6)	Held today; annual audit; right-to-audit clause accepted
Section 508 (§4.3.3.5.4)	Full conformance; VPAT 2.5 available on request
Audit retention (§4.3.3.5.3, Q.46)	5-year minimum retention for all AI reasoning logs; also supports retention for the full life of the permit, including Class VI PISC

Summary — WV DEP needs a system that:

- Uses an existing platform rather than a net-new build
- Maintains auditable decision records and retention controls that can support long-lived Class VI records
- Supports higher application volume through structured intake, workflow routing, and draft generation
- Stays inside a FedRAMP Moderate boundary with no model-vendor lock-in
- Operates independently from legacy systems and limits integration to the systems identified by WVDEP in the solicitation and addendum

Vulcan operates an existing permitting and regulatory-review platform for government use.

SECTION 01

Project Goals & Proposed Approach

Response to Solicitation §4.3

"We have read every requirement and every answer in Addendum #1."

SaaS Platform & Service-Level Commitments

RFP §4.2: *Cloud-based SaaS, hosted and managed by the vendor, fully compliant with FedRAMP Moderate; subscription licensing with predictable annual costs; 99.9% availability; automatic updates/patches/AI-model improvements; high availability and elastic scalability; data sovereignty within the continental U.S.; SLAs covering uptime, performance, incident response, and support; Section 508 conformance.*

Vulcan delivers Trajan + Justinian as a single managed SaaS solution hosted entirely within a **FedRAMP Moderate** boundary on **AWS GovCloud (US)**, accessed through secure web browsers. We commit to each of the §4.2 service standards as contractual SLA terms:

SLA COMMITMENT	VULCAN STANDARD
Platform availability	**99.9% uptime**, excluding scheduled maintenance, measured monthly
Licensing	Subscription-based with predictable, fixed annual costs (Attachment A)
Updates	Automatic updates, security patches, and AI-model improvements at no added cost; 30-day advance notice of major upgrades
Scalability	High-availability, multi-AZ architecture; elastic scaling from 2 to 20+ applications/year with no reviewer-headcount growth
Data sovereignty	All data stored and processed solely within the continental United States (Q.22; SaaS Addendum §3(i))
Incident response	Confirmed security incidents reported within **24 hours**; data-breach detail within **72 hours** (SaaS Addendum §4)
Support	Technical support during standard business hours at minimum; dedicated Technical Account Manager; monthly service + quarterly business reviews
Accessibility	Section 508 conformance for all user-facing components; VPAT available on request

General Automation & Dashboard Integration

RFP §4.3.2.1: *Describe how the solution will utilize an AI-enabled RPA platform (or equal) with a central dashboard for all jobs and logs.*

Vulcan delivers the AI-enabled automation layer the RFP describes as a single SaaS platform: **Trajan** (the applicant-facing intake portal) feeding **Justinian** (the agentic review engine), both governed from one web-based **Reviewer Dashboard**. Every job, every agent action, and every human decision is a logged event on that dashboard — there is no shadow process running off-screen.

Justinian is an orchestration engine in which named AI agents execute discrete regulatory tasks, suspend at mandatory human gates, and write a complete reasoning record for each step. That same architecture runs today at **efficiency.texas.gov** across 1,400 permitting workflows.

§4.3.2.1.1 — System Automation / Integration

RFP §4.3.2.1.1: *Demonstrate how the system will integrate with existing operational software applications.*

Per Addendum **Q.6, Q.18, Q.30, and Q.51**, the integration surface for this contract is precisely three systems, and the platform integrates with exactly those:

WVDEP SYSTEM	ROLE	VULCAN INTEGRATION
WV One-Stop Shop Permitting (OSSP)	Reporting & payment	Outbound export package + REST/API sync of permit status and fee events
OneLogin	External applicant access	SAML 2.0 / OIDC federation; every applicant authenticates via OneLogin
Active Directory	Internal staff access	SAML 2.0 / OIDC; reviewer identity and RBAC roles sourced from AD groups

Consistent with **Q.7, Q.17, Q.61, Q.64, and Q.65**, the platform does **not** integrate with, migrate, or index ERIS, ESS, or AppEnhancer — Class I and Class VI are new programs with no historical permit corpus, and those systems are explicitly out of scope. This keeps the integration footprint small, auditable, and aligned with the legacy-independence mandate of §4.3.2.7. Where validation data is needed, the platform reads from public sources (WVGES, WV Office of Oil and Gas API well records per **Q.36**, EPA SDWIS) rather than touching agency systems of record.

§4.3.2.1.2 — Dashboard Development

RFP §4.3.2.1.2: *Develop a web-based (HTML) dashboard … with secure login/password capability to restrict access to authorized personnel.*

The Reviewer Dashboard is **hosted natively within Justinian** — not a separate product or a bolt-on integration, but a first-class, browser-based HTML surface of the same platform that runs the agentic review. Because it lives inside Justinian, every job, agent action, log, and HITL decision renders in real time with no external sync layer, and WVDEP can link to it directly from the WVDEP UIC web page behind secure, MFA-protected login. From the dashboard, staff get:

- **Work queue** — every active application with its tracking number, class, workflow stage, and next pending HITL gate.
- **Live job & agent logs** — the full chain-of-reasoning for each agent action, streamed as it happens (§4.3.2.5.3).
- **Compliance calendar** — 30-/45-day comment deadlines, AoR reevaluation dates, and PISC milestones, calculated automatically.
- **Staff workload & throughput metrics** — for the 4 administrative dashboard licensees (§4.3.3.4.1).
- **Legal cross-reference** — from any application, reviewers check determinations directly against Vulcan's **West Virginia legal corpus** (the full body of WV statute, administrative regulations, and agency guidance) without leaving the dashboard.

Role-based access (applicant, reviewer, senior reviewer, administrator) is provisioned through Active Directory (§4.3.3.2.2, §4.3.3.2.5).

RFP §4.3.2.2: *Describe how the system will streamline review of Class VI and Class I UIC applications using agentic workflows.*

§4.3.2.2.1 — Digital Intake Specialist Functionality

RFP §4.3.2.2.1: *The solution should function as a "Digital Intake Specialist" executing a multi-stage regulatory review process.*

Justinian **is** the Digital Intake Specialist. An orchestrator agent receives each submission, classifies it, and coordinates six specialized sub-agents through a multi-stage review. Each agent does one job, cites its sources, scores its confidence, and stops at the human gate the RFP requires.

Per **Q.24**, the **Administrative Completeness** function is prioritized for initial rollout; the Blueprint Vision and full drafting agents follow in the implementation sequence (Attachment C).

§4.3.2.2.1.1 — Agentic Routing and Sub-Workflow Orchestration

RFP §4.3.2.2.1.1: *Determine Class I vs Class VI and route accordingly; handle granular sub-routing (AoR, financial responsibility, corrective action, well construction) based on data detected in the application.*

The orchestrator first classifies the application by well class, then performs **data-driven sub-routing**: it reads what the application contains and triggers the matching sub-workflow. A Class VI package with a Testing and Monitoring Plan, Injection Well Plugging Plan, and Post-Injection Site Care Plan automatically activates the Class VI corrective-action, financial-responsibility, and PISC paths. A Class I package activates the ¼-mile fixed-radius AoR path and EPA Form 7520-6 checks. The same orchestration also handles **post-issuance permit-modification requests over the life of the permit (per Q.47)** — routing a modification through a scoped review of only the changed elements. This is the production sub-routing pattern driving 1,400 Texas workflows, configured to the UIC regulatory tree (47 CSR 13, 47 CSR 64; 40 CFR 146 B, G, H).

§4.3.2.2.1.2 — Administrative Completeness Review

RFP §4.3.2.2.1.2: *Confirm all required sections are present — project plans, site maps, AoR calculations, EPA Form 7520-6, operator ID, well construction, injection/confining zone identification, rates/volumes/pressures, fluid characterization; for Class VI, geologic characterization, TMP, plugging plan, PISC plan, Emergency & Remedial Response Plan, Financial Responsibility; use CV/NLP to verify RCO signatures and certification statements.*

The Administrative Completeness Agent checks each submission against a class-specific regulatory checklist encoded in the Compliance Engine (§4.3.3.1.2):

Class I — required at intake

- ✓ EPA Form 7520-6
- ✓ Facility location & legal description
- ✓ Operator identification
- ✓ Well construction — casing & cementing programs
- ✓ Injection- & confining-zone identification
- ✓ Proposed rates / volumes / pressures
- ✓ Injection-fluid characterization
- ✓ RCO signatures & certification statements (CV/NLP-verified)

Class VI — everything in Class I, plus

- ✓ Detailed geologic characterization
- ✓ Testing & Monitoring Plan (TMP)
- ✓ Injection Well Plugging Plan
- ✓ Post-Injection Site Care (PISC) Plan
- ✓ Emergency & Remedial Response Plan
- ✓ Financial Responsibility documentation

Computer-vision and NLP agents verify that Responsible Corporate Officer signatures are present and that mandatory certification statements appear and are signed — flagging any missing or unsigned certification before the package advances. Applications are received from the UIC page at **dep.wv.gov/WWE/PERMIT/UIC** via the Trajan portal. This stage terminates at **HITL Gate 1 (Pre-NoD Review)**.

§4.3.2.2.1.3 — Technical Compliance Review

RFP §4.3.2.2.1.3: *Confirm submitted responses meet regulatory standards through data extraction and geological validation — injection-zone properties (depth, thickness, lithology, porosity, permeability, formation pressure), confining-zone integrity, USDW identification/protection, well construction design, operational parameters.*

The Technical Compliance Agent extracts the engineering and geologic parameters from the application — including values read directly from diagrams by the Blueprint Vision Agent (§4.3.2.4.1) — and validates them against regulatory thresholds and the confining-zone/USDW protection logic in the Compliance Engine. Every determination carries a citation to the source document and a confidence score; low-confidence determinations escalate to a senior reviewer rather than being asserted as findings (per **Q.33**). This stage feeds **HITL Gates 3 and 4**.

Parameters extracted and validated against regulatory thresholds:

Injection-zone properties

- ✓ Depth
- ✓ Thickness
- ✓ Lithology
- ✓ Porosity
- ✓ Permeability
- ✓ Formation pressure

Confining zone & USDW

- ✓ Confining-zone integrity
- ✓ USDW identification & protection
- ✓ Injection will not endanger a USDW

Well construction & operations

- ✓ Casing & cementing design
- ✓ Well-construction standards
- ✓ Operational parameters

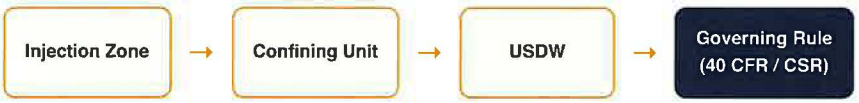
§4.3.2.2.2 — RAG and Source Grounding (GraphRAG)

RFP §4.3.2.2.2: *Use RAG to retrieve contextual information: preference may be given to GraphRAG capable of mapping relationships between regulations, geological data, and permit history. Explain why the chosen approach is superior.*

Vulcan uses a **hybrid retrieval architecture** that combines dense vector search with a **knowledge graph (GraphRAG)**. Dense vectors handle semantic recall — finding the relevant regulatory passage even when the application uses different wording. The knowledge graph encodes the *relationships* the RFP names: which 40 CFR / CSR provision governs which well-construction element, how a confining-zone formation relates to the USDWs above it, how a prior permit decision in the same field bears on a new application.

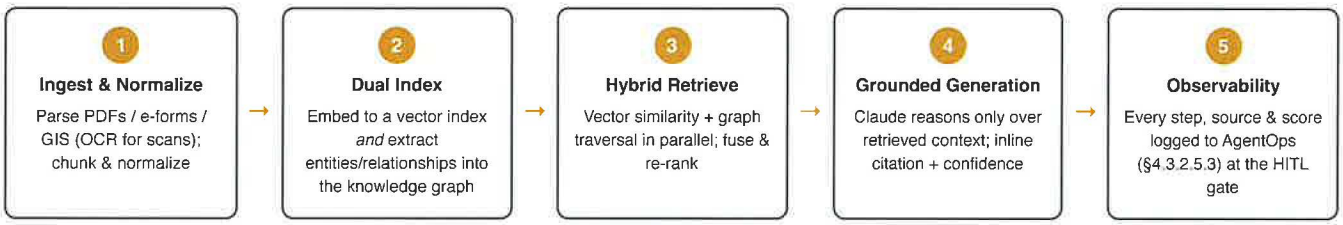
Take a confining-zone adequacy question. Text-similarity search alone cannot answer it — the answer depends on how the injection zone, the formations above it, and the USDW protection standard relate. The knowledge graph follows that chain directly:

DETERMINISTIC GRAPH TRAVERSAL — WHAT VECTOR SEARCH ALONE CAN'T DO



Pure vector RAG retrieves passages that *look* relevant; GraphRAG retrieves passages that *are* relationally correct — what survives a §4.3.2.5.3 audit. Retrieval is scoped to current, authoritative sources (WVDEP-supplied SOPs and regulations per **Q.23**; current CFR/CSR), and the Watchdog Agent flags when a cited authority changes (§4.3.3.1.2) so the engine never reasons from superseded rules.

HOW THE RETRIEVAL PIPELINE WORKS — END TO END



The entire pipeline executes inside the FedRAMP Moderate boundary on AWS GovCloud — no processing leaves the boundary (Q.22).

§4.3.2.2.3 — Hallucination Elimination

RFP §4.3.2.2.3: *Describe robust guardrails to minimize hallucinations.*

Four layers, in order of effect:

1. **Source-grounded generation.** Every factual assertion must resolve to a retrieved passage in the submitted application or an authoritative regulation; the agent cannot output a finding it cannot cite (§4.3.2.2.5).
2. **Confidence thresholds with mandatory escalation.** Determinations below a configurable confidence floor are routed to a senior reviewer instead of surfaced as findings — the approach WVDEP accepted in **Q.33**.
3. **Structured extraction over free generation.** Where the task is reading a value (a casing depth, an injection pressure), the agent extracts and validates a typed field rather than narrating, removing the room in which hallucination occurs.
4. **Human-in-the-loop gates.** No determination becomes an action without the §4.3.2.5.4 sign-off; the AI cannot autonomously issue a permit.

§4.3.2.2.4 — Automated and Continuous AI Validation (Security)

RFP §4.3.2.2.4: *Provide continuous AI security — protection from malicious requests, unauthorized/unsafe approvals, unauthorized access; enforce safety policies; avoid unintended harm.*

Adversarial validation runs continuously against the agent layer, not just at deployment. The platform enforces prompt-injection and jailbreak defenses on every document ingested (a malicious instruction embedded in an applicant PDF cannot redirect an agent), input/output content filtering, and policy guardrails that make certain actions structurally impossible — most importantly, **no agent holds the authority to issue or deny a permit** (that command is reserved to a human at HITL Gate 6). Unauthorized-access protections (MFA, RBAC, §4.3.3.2) and the FedRAMP Moderate boundary (§4.3.3.5.1) complete the perimeter. This continuous adversarial-validation function is the "Security and Adversarial Validation" line carried in the annual subscription (Attachment A).

§4.3.2.2.5 — Citations and Explainability

RFP §4.3.2.2.5: *Provide references for all AI-generated interactions, indicating where in the supplied documents the information originated, with a link; all decisions must include confidence scores and clear rationale.*

Every AI-generated statement carries an inline citation that links to the exact location in the source document (page, and where available the bounding region) or to the governing regulation. Every determination shows its confidence score and a plain-language rationale. Per **Q.60**, these comprehensive decision records — prompt, extracted data, source reference, confidence score, validation result, reviewer action — constitute the auditable reasoning trail WVDEP accepts in lieu of raw model chain-of-thought.

RFP §4.3.2.3: *Handle advanced visualization validation: validate geographic data integrity (topology); support 2D/3D visualization of subsurface stratigraphy; ingest/normalize Shapefile, GeoJSON, KML, CAD, DWG; standardize coordinate systems (auto-project to NAD83/UTM Zone 17N).*

The platform ingests Shapefile, GeoJSON, KML, CAD, and DWG, runs topology validation (gaps, overlaps, self-intersections, invalid geometries), and auto-projects all incoming spatial data to **NAD83 / UTM Zone 17N** to align with WV state standards. Subsurface stratigraphy and injection zones render in 2D and 3D in the reviewer workspace.

Per **Q.67 and Q.68**, WVDEP uses ESRI desktop and Enterprise software, and *advanced geospatial modeling is performed by reviewers in that separate system* — ESRI remains the GIS system of record. Vulcan's platform integrates with ESRI (native ArcGIS REST / ArcGIS Enterprise) and embeds the review outputs into the permitting workflow, rather than replacing ArcGIS. The platform performs the *screening and validation* the workflow needs; the reviewer's authoritative modeling stays in ArcGIS, and its results flow back into the HITL workspace.

§4.3.2.3.1 — Automated Risk Assessment & AoR

RFP §4.3.2.3.1: *Determine AoR using fixed-radius (¼ mile, Class I) and computational methods (Class VI); identify artificial penetrations, faults/fractures, USDWs, sensitive receptors and surface water within the AoR; for Class VI, validate computational model inputs, boundary conditions, and assumptions.*

For **Class I**, the platform computes the **¼-mile fixed-radius AoR** automatically and identifies, within it, all artificial penetrations (wells, mines, boreholes) from WV Office of Oil and Gas and WVGES records, mapped faults and fractures that could serve as migration pathways, USDWs (EPA SDWIS), and proximity to sensitive receptors and surface water.

For **Class VI**, consistent with **Q.2 and Q.35**, the platform does **not** run reservoir or CO_2-plume simulation — that modeling is the reviewer's, in ESRI/EPA tooling (**Q.68**). Instead the AoR & Risk Agent **validates the computational AoR inputs stated in the application**: it extracts and accounts for the model parameters, boundary conditions, and assumptions the applicant supplied, checks them for internal consistency and completeness, and presents them for reviewer judgment at HITL Gate 3. No standardized WV computational model is mandated (**Q.35**); the platform's role is parameter accounting and risk screening, not independent simulation.

§4.3.2.3.2 — Data Integration & Correlation

RFP §4.3.2.3.2: *Act as a geospatial hub — overlay surface ownership and courthouse plats to verify legal rights and pore-space ownership; integrate/sync with WVGES, EPA SDWIS, WV Office of Oil and Gas, and WVDEP databases; detect overlapping mineral rights or existing injection permits.*

The platform acts as the geospatial correlation hub for review: it overlays applicant geometry against surface-ownership tracts and referenced courthouse plats to surface pore-space and legal-rights questions, and cross-references WVGES, EPA SDWIS, and public WV Office of Oil and Gas API well records (public access confirmed in **Q.36**) plus WVDEP-provided baseline GIS and stratigraphic mapping (**Q.19**). Conflict detection flags overlapping subsurface mineral rights and existing injection permits within the AoR. Where agencies expose APIs the platform syncs on schedule; where they expose file exports it ingests the standard spatial formats in §4.3.3.1.1.

RFP §4.3.2.4: *Accurately extract data from PDF permit applications, including scanned images via OCR.*

Per **Q.37 and Q.38**, applicants submit permit packages as PDFs and WVDEP does not scan documents. The platform handles both text-native and scanned PDFs: a high-accuracy OCR + document-understanding pipeline extracts structured data, tables, and form fields, and routes engineering diagrams to the Blueprint Vision Agent below.

§4.3.2.4.1 — Engineering "Blueprint" Vision Agents

RFP §4.3.2.4.1: *Beyond OCR, use specialized CV agents trained on engineering schematics, CAD/shapefile drawings, and well diagrams to extract technical data (casing depths, cement thickness, tubing/packer placement, construction diagrams) to verify compliance.*

The Blueprint Vision Agent reads engineering schematics and well-construction diagrams as drawings, not as text. It extracts casing setting depths, cement top/thickness, tubing and packer placement, perforation intervals, and zone boundaries directly from the diagram and hands those typed values to the Technical Compliance Agent for validation against construction standards. This is the capability that lets the system check a well-construction design rather than merely confirm that a diagram is present.

§4.3.2.4.2 — AI Draft Generation

RFP §4.3.2.4.2: *NLP-based drafting of formatted permit drafts following WVDEP templates — Facility Information, Well Construction, Operating Requirements, Monitoring/Reporting, Plugging/Abandonment, General Conditions; for Class VI, approved AoR with reevaluation schedule, corrective action, CO_2 stream specs, TMP conditions, Emergency Response, PISC.*

The Drafting Agent generates a formatted draft permit on the WVDEP standard template, populated from validated application data and grounded in the regulatory record. Class I drafts include Facility Information, Well Construction Requirements, Operating Requirements (max injection pressure, rate, volume limits), Monitoring and Reporting, Plugging and Abandonment, and General Conditions. Class VI drafts add the approved AoR with its reevaluation schedule, corrective-action requirements, CO_2-stream specifications, TMP conditions, Emergency Response requirements, and PISC requirements. Per **Q.20 and Q.39**, WVDEP supplies the regulatory and permit requirements that train the drafting tone and language; the AI drafts sections or preliminary documents, and **staff retain final authority** — every draft is subject to HITL review and edit before issuance (HITL Gate 5).

§4.3.2.4.3 — Completeness Determination

RFP §4.3.2.4.3: *Check e-form submissions against regulatory checklists — Class I (EPA Form 7520-6, geologic data, well construction) and Class VI (site characterization, AoR modeling, operational plans, financial responsibility).*

Completeness is determined against the same class-specific checklists that drive Administrative Completeness (§4.3.2.2.1.2), applied to the structured e-form plus attachment-based submittal that Trajan captures. The result is an itemized completeness report — present / missing / insufficient — for each required element, surfaced to the reviewer before HITL Gate 1.

§4.3.2.4.4 — Notice of Deficiency Generation

RFP §4.3.2.4.4: *If incomplete, generate a draft NoD email/letter for human review and approval before transmission, specifying exactly which items are missing or insufficient.*

When the completeness report shows gaps, the Drafting Agent produces a draft Notice of Deficiency that itemizes precisely which elements are missing or insufficient and cites the governing requirement for each. The NoD is a **draft** held at HITL Gate 1 — no deficiency notice is transmitted without human approval. Per **Q.43**, the resubmittal model is supported: an applicant returns a corrected version with a change-accounting cover sheet, and the platform re-reviews the changed portions against the open deficiency items.

§4.3.2.4.5 — Public Notice Document Generation

RFP §4.3.2.4.5: *Generate public-notice documents compliant with 40 CFR 124 and state requirements — fact sheets, recipient lists, comment-period deadline calculations (30 days minimum, 45 days for Class VI).*

The platform generates 40 CFR Part 124–compliant public-notice packages: a fact sheet summarizing the application, the notification recipient list, and automatically calculated comment-period deadlines — **30 days minimum, 45 days for Class VI**. The comment calendar posts to the dashboard and drives the deadline reminders.

§4.3.2.4.6 — Response to Comments

RFP §4.3.2.4.6: *Ingest and categorize public comments, draft responses from a regulatory response library, flag substantive technical comments for detailed response, compile a Response to Comments document for public release.*

The platform ingests public comments — a volume range of **50 to 1,000 per application per Q.41** — deduplicates and categorizes them, and drafts responses from a regulatory response library seeded with the general comment types WVDEP can provide (**Q.42**). Substantive technical comments are flagged for reviewer-authored detailed response rather than auto-answered. The system compiles a formatted Response to Comments document for public release, held for human approval ahead of the Final Decision gate.

§4.3.2.5.1 — Secure Submission Handling

RFP §4.3.2.5.1: *Retrieve applications via web portal/secure gateway: generate a unique tracking number and create an electronic case file immediately upon submission.*

Applications arrive through the Trajan portal (§4.3.2.7 inbound). On submission the platform issues a unique tracking number and opens an electronic case file immediately — the spine every agent action and HITL decision attaches to. Per **Q.75**, all applicants register and authenticate through OneLogin; no unauthenticated public access.

§4.3.2.5.2 — Agency Logs & Deep Observability

RFP §4.3.2.5.2: *Create an adjacent agency log folder for QC; all automation auditable and recorded for WVDEP's retention policy or 5 years if undefined.*

Each application keeps an adjacent, WVDEP-readable log folder of every AI comment and action for QC. AI reasoning logs are retained for a **5-year minimum** (**Q.46**); permit records can be retained for the full life of the permit, including Class VI PISC.

§4.3.2.5.3 — AgentOps Observability

RFP §4.3.2.5.3: *Record the full "Chain of Thought" for every decision — step-by-step reasoning for legal defensibility.*

AgentOps records the ordered reasoning for every determination — each step, the data used, the source cited, the confidence assigned, and the human action that followed. Per **Q.60** this is the legally defensible trail WVDEP accepts; any conclusion can be reconstructed on a §4.3.3.5.6 right-to-audit review.

§4.3.2.5.4 — Mandatory Human-in-the-Loop (HITL) Decision Gates

RFP §4.3.2.5.4: *Enforce mandatory stop points; the AI suspends and notifies staff via the dashboard, requiring digital sign-off to proceed.*

All six gates are hard stops: the AI suspends, notifies staff, and cannot proceed without a captured digital sign-off. Reviewers may override any finding; overrides are captured with reason and actor (**Q.34**).

GATE	TRIGGER	REQUIRED HUMAN ACTION
1. Pre-NoD Review	Intake complete; required docs checked	Verify missing documents before a Notice of Deficiency is sent
2. Administrative Compliance	Fees verified; ownership validated; public-notice requirements identified	Supervisor approves compliance or issues deficiency; initiates public notice
3. AoR & Risk Validation	Technical params extracted; AoR delineated; risk assessed	Reviews AI AoR & fault analysis; sets expedited vs. standard track
4. Technical Analysis Approval	Full technical review complete; corrective-action needs identified	Senior reviewer validates findings; approves conditions
5. Draft Permit Approval	Draft permit generated with all conditions	Reviews AI-drafted conditions before lock for public comment
6. Final Decision	Comment period complete; RTC prepared	Administrator executes "Issue" or "Deny" — AI cannot autonomously issue a permit

RFP §4.3.2.6: *Describe how the solution addresses LLM token-consumption costs with transparency and predictability.*

Per §5.3.1, this technical section contains no dollar figures. All pricing — unit price per MTOK, the 250-MTOK allocation, and extended costs — is in Attachment A in the separately sealed cost envelope.

§4.3.2.6.1 — Token Cost Pricing Model

Token cost is structured exactly as Attachment A requires: a firm unit price per **MTOK** (one million tokens), with an evaluated allocation of **250 MTOK** (**Q.71**).

§4.3.2.6.2 — Cost Predictability & Budget Controls

Token usage is metered per application and per agent. The platform enforces configurable budget caps and alerting, so consumption is visible and bounded well before the 250-MTOK cap is approached.

§4.3.2.6.3 — Token Optimization Strategies

Consumption is minimized by structured extraction over free generation, prompt-caching of the stable regulatory corpus, retrieval scoping, right-sizing the model to each task step, and reusing validated extractions across stages rather than re-reading documents.

§4.3.2.6.4 — Estimated Token Usage (Attachment B)

Estimated consumption is derived from the §1.3 / Attachment B volumetrics (≈5–10 permit holders annually per **Q.27**; up to 20 applications/year per §1.3), by processing activity (no dollar figures):

PROCESSING ACTIVITY (PER APPLICATION)	EST. TOKENS / APP
Document Ingestion & OCR	1,200,000
Administrative Completeness Review	800,000
Technical Compliance Analysis	1,800,000
Geologic / AoR Evaluation	1,500,000
Draft Permit Generation	1,400,000
Public Notice & Response to Comments	1,000,000
HITL Review Support & Explanations	800,000
Total per Application (Average)	**8,500,000**
Estimated Annual Total (20 Applications)	**170,000,000**

At ~170 MTOK estimated annual consumption against a **250-MTOK contractual cap**, the allocation carries deliberate headroom — usage stays bounded and predictable.

§4.3.2.6.5–.7 — Transparency, Model Flexibility & Cost Guarantees

The dashboard reports token consumption by application, agent, and period, with exportable logs. The platform is model-agnostic (per **Q.21, Q.22, Q.59**): any commercial or open-source model approved with WVDEP/WVOT may be deployed, provided it operates entirely within the FedRAMP Moderate boundary (only unsecured public consumer apps are prohibited, **Q.1**). Per **Q.5 and Q.71**, the per-MTOK unit price is **firm-fixed for the entire life of the contract, including renewals**; change-order overages are procured at the original unit price with no renegotiation.

RFP §4.3.2.7: *Provide a standalone HITL Workflow Interface operating independently from legacy systems: the AI must not port through, interact with, or modify legacy permitting systems.*

This requirement matches Vulcan's proposed architecture and the integration scope confirmed across **Q.6, Q.18, Q.51, and Q.61**: the AI platform is self-contained and never reaches into a legacy system of record.

§4.3.2.7.1 — Standalone HITL Workflow Interface

The Reviewer Dashboard is the self-contained, browser-based workspace — hosted natively within Justinian — where every AI-to-human and human-to-AI interaction occurs. Reviewers receive, process, and complete all AI-generated tasks here, without the AI touching any legacy system.

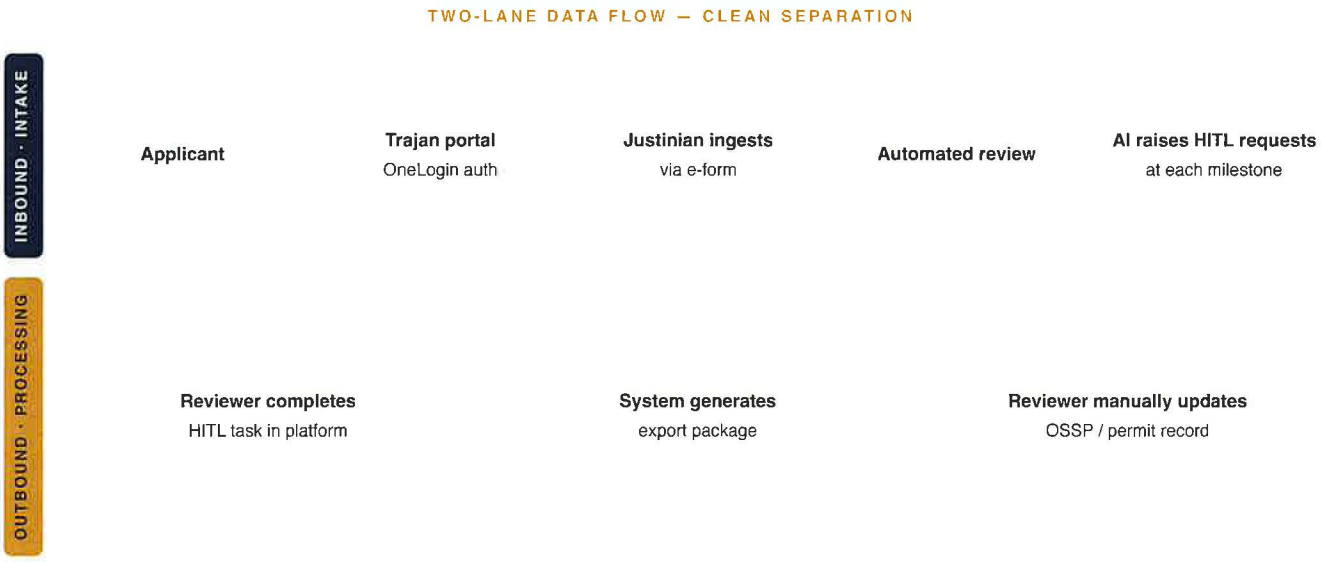
§4.3.2.7.2 — AI-Generated Request Workflow

The AI generates and routes requests (completeness reports, draft NoDs, draft permits, RTC drafts) to reviewers entirely inside the platform interface; it does not call into legacy systems to do so.

§4.3.2.7.3 — Human-Mediated Legacy System Updates

Synchronization to systems of record happens by **human action**. The platform produces an export package; a reviewer reviews it and manually updates the associated record. The integrations the platform *does* hold (OSSP, OneLogin, Active Directory — **Q.6**) are the new, AI-ready systems WVDEP designated, not the legacy stack.

§4.3.2.7.4 — Data Flow Architecture



The architecture keeps the AI platform separate from legacy systems: the AI platform on one side, WVDEP systems of record on the other, with the human reviewer as the deliberate bridge.

Response to Mandatory Requirements

The proposal addresses each mandatory requirement in §4.3.3 — this section is gating (§6.5.2) — and the RFP invites vendors to "include any areas where their proposed solution exceeds the mandatory requirement," scored in the technical evaluation. Because the platform already exists, this section addresses each requirement item by item and notes any additional capabilities where relevant. The pages that follow document compliance item-by-item; the table below highlights additional capabilities relevant to the evaluation.

MANDATORY REQUIREMENT	ADDITIONAL CAPABILITIES
Data formats & ingestion (§4.3.3.1.1)	Beyond ingesting GIS, PDF, and well logs, **Blueprint Vision agents extract** casing depths, cement tops, and tubing/packer placement *directly from engineering diagrams*; spatial inputs auto-project to NAD83/UTM 17N with topology validation.
Compliance engine & Watchdog (§4.3.3.1.2)	The engine is **GraphRAG-backed** — mapping the *relationships* among rules, formations, and prior decisions, not flat rule checks. The Watchdog runs 24/7 with a quarterly regulatory-drift report and human-approved engine updates.
FedRAMP Moderate hosting (§4.3.3.2.4)	The **entire agentic workflow — including every third-party model API — operates inside the FedRAMP Moderate boundary** (Q.22), not just the application shell. Most "AI" vendors call external models outside the boundary; Vulcan does not.
Security assessments (§4.3.3.2.6)	Beyond annual penetration testing: **continuous adversarial validation** plus prompt-injection and jailbreak defenses on *every* ingested document, run by a dedicated ISSM and Security Engineer.
Auditability (§4.3.3.5.3)	**AgentOps records the full chain-of-thought** — step-by-step reasoning, not transaction logs — for legal defensibility, retained for the *full life of the permit* (incl. 50-year Class VI PISC), well beyond the 5-year floor.
AI governance (§4.3.3.5.5)	Model-agnostic, with bias testing, drift detection, **confidence-threshold escalation**, and a **human override at every one of the six HITL gates** — the AI can never autonomously issue a permit.
Certifications (§4.3.3.5.6 / §4.4.2.3)	Satisfies the mandatory certification on **two independent grounds** — a current **SOC 2 Type II** attestation *and* deployment in FedRAMP-authorized AWS GovCloud — with an annual SOC 2 report and right-to-audit clause.
Data ownership & exit (§4.3.3.6)	WVDEP owns all data; it is **never used to train models for other customers** and never leaves the U.S. Clean exit: 30-day export in open formats, 90-day transition assistance, 60-day certified deletion.

§4.3.3 is gating — every mandatory requirement must be met (§6.5.2). Vulcan meets or exceeds each requirement below.

§4.3.3.1 — Data Integration and Regulatory Compliance

§4.3.3.1.1 — Formats. The platform ingests XML, CSV, PDF, GIS layers (Shapefile, GeoJSON, KML, CAD, DWG), well logs, and standard permit forms. The platform also standardizes incoming spatial data to NAD83/UTM Zone 17N and runs topology checks.

§4.3.3.1.2 — Compliance Engine & Watchdog Agents. An adaptable Compliance Engine encodes Class I and Class VI requirements (47 CSR 13, 47 CSR 64; 40 CFR 146 B/G/H; 40 CFR 124) as machine-checkable rules. A dedicated **Watchdog Agent** monitors the Federal Register, EPA, and WV Legislature feeds 24/7, alerts staff to relevant changes, and proposes updates to the engine logic for human approval. Per **Q.52**, Vulcan will present the change-approval workflow and alert turnaround during implementation; our proposed model is a quarterly regulatory-drift report plus event-driven alerts, with compliance-engine changes reviewed and approved by WVDEP before they take effect.

§4.3.3.1.3 — External System Integration. The platform retrieves validation data from external sources — WVGES, EPA SDWIS, and public WV Office of Oil and Gas API well records (**Q.36**) — via API where available and scheduled file sync otherwise (**Q.62**). WVDEP will provide technical documentation and interface specifications during discovery (**Q.63**).

§4.3.3.2 — Security and Deployment

§4.3.3.2.1 — Encryption. TLS 1.3 in transit; AES-256 at rest (FIPS 140-2 validated cryptography per SaaS Addendum §23).

§4.3.3.2.2 — Access Control. Role-Based Access Control aligned to WVDEP's organizational structure, with MFA for all users. Roles sourced from Active Directory groups.

§4.3.3.2.3 — Privacy & PII Handling. PII and Confidential Business Information are identified at ingestion, tagged, encrypted, access-restricted by role, and never used to train models that benefit other customers (§4.3.3.6.2). Christina Martinson (ISSM) owns the PII/CBI handling plan.

§4.3.3.2.4 — Deployment Environment & Hosting. Deployed in a **FedRAMP Moderate** authorized environment — **AWS GovCloud (US)** — with data residency in the continental U.S. Per **Q.22 and Q.26**, the entire system, including all agentic-workflow components and any third-party AI APIs, resides and operates inside the FedRAMP Moderate boundary; no processing occurs in an uncertified cloud.

§4.3.3.2.5 — Single Sign-On. SSO via SAML 2.0 / OpenID Connect — Active Directory for internal staff, OneLogin for external applicants (**Q.6, Q.18**).

§4.3.3.2.6 — Security Assessments. Annual third-party penetration testing with results shared with WVDEP, continuous vulnerability scanning, and patching of critical vulnerabilities within 30 days. Per **Q.4**, where any certification is finalized concurrently with the work, Vulcan provides a plan of action ensuring it is complete before go-live.

§4.3.3.3 — Support and Maintenance

§4.3.3.3.1 — Commencement on Acceptance. The support, maintenance, and warranty period commences only upon written System Acceptance by WVDEP, defined (§4.3.3.3.1.1) as successful demonstration and testing of all requirements, including training, with all users able to perform their roles.

§4.3.3.3.2 — Support Access. Technical support during standard WV business hours at minimum.

§4.3.3.3.3 — Scope of Support. Configuration and cloud-cost-optimization assistance; troubleshooting and secure remote connections; a **dedicated Technical Account Manager**; monthly service reviews and quarterly business reviews; and additional AI-system training.

§4.3.3.3.4 — Stabilization Warranty. Beginning at acceptance, Vulcan remediates at no cost any automation breakage or failure caused by minor updates or environment changes.

§4.3.3.4 — Licensing

Vulcan provides all licenses: **(4.3.3.4.1)** 4 administrative staff on the monitoring/reporting dashboard; **(4.3.3.4.2)** 4 staff to adjust/create automation via the web interface; **(4.3.3.4.3)** appropriate access for applicants, reviewers, and managers across the HITL approval workflow. This covers the user counts WVDEP gave in **Q.9 and Q.28** (≈4–7 full-access internal, 3–5 read-only internal, and all OneLogin-authenticated external applicants).

§4.3.3.5 — Regulatory Compliance

§4.3.3.5.1 — FedRAMP. Hosted in a FedRAMP Moderate authorized environment (AWS GovCloud). Per **Q.57 and Q.58**, FedRAMP authorization documentation from the platform provider (Amazon) is sufficient and will be provided. Beyond the host, **Vulcan's platform has passed a FedRAMP Readiness Assessment conducted by an accredited Third-Party Assessment Organization (3PAO), documented in a Readiness Assessment Report (RAR)** — direct evidence that the application itself, not merely its hosting environment, meets FedRAMP Moderate controls (the distinction WVDEP draws in **Q.26**).

§4.3.3.5.2 — NIST. Compliant with NIST 800-53 controls. **§4.3.3.5.3 — Auditability.** All AI directions and actions recorded; 5-year minimum retention (§4.3.2.5.2, **Q.46**). **§4.3.3.5.4 — Section 508.** Full conformance for all user-facing components; **VPAT 2.5 available on request**.

§4.3.3.5.5 — AI Governance. Documentation of model training-data sources and methodologies; bias testing and mitigation with annual reporting; model-performance monitoring and drift detection with alerts; and human override at every decision point (§4.3.2.5.4, **Q.34**). Model selection complies with the WVOT AI guidelines (**Q.1**); WVDEP data is never used to train models benefiting other customers and never leaves the U.S. **§4.3.3.5.6 — SOC 2 Type II.** Held today; annual audit report provided to WVDEP, with a right-to-audit clause accepted.

§4.3.3.6 — Data Ownership and Exit Strategy

§4.3.3.6.1 All WVDEP data remains the sole property of the State of West Virginia. **§4.3.3.6.2** Vulcan uses WVDEP data only to provide the contracted services, never to train models benefiting other customers without written consent, and never transmits it outside the U.S. **§4.3.3.6.3** On termination, complete data export within 30 days in open formats (PDF, CSV, JSON, XML). **§4.3.3.6.4** Transition assistance for up to 90 days. **§4.3.3.6.5** Secure deletion within 60 days of confirmed transfer, with written certification of destruction.

SECTION 02

Qualifications & Experience

Response to Solicitation §4.4

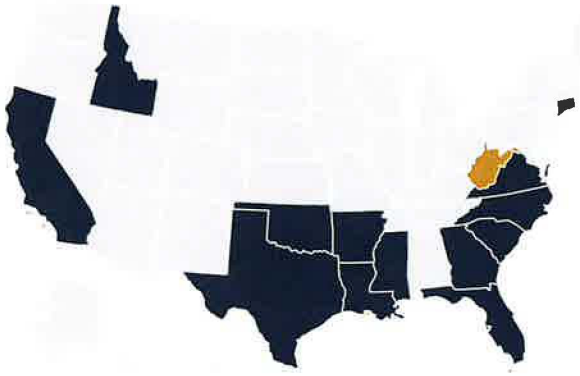
§4.4.1.1 — Company Background and Years of Experience

RFP §4.4.1.1: *Provide background in enterprise software and/or AI-based systems, particularly for government regulatory applications.*

Vulcan Technologies, Inc. is a Delaware C-Corporation headquartered in Austin, Texas, building AI-native government technology for regulatory analysis, permit lifecycle management, and financial compliance. Vulcan graduated at the top of Y Combinator's summer class and is backed by institutional seed funding from General Catalyst and the investment funds of Joe Montana and Trevor Rees-Jones. The company maintains active contracts with state governments and federal agencies. Vulcan builds software for government regulatory, legal, and compliance workflows — the platform proposed here is an existing product already in use.

1,400	50+	10+
PERMIT WORKFLOWS	**STATE AGENCIES**	**STATE DEPLOYMENTS**
Live at efficiency.texas.gov	Integrated on the platform	In production

VULCAN DEPLOYMENTS ACROSS THE COUNTRY



West Virginia (gold) would join active Vulcan deployments **(navy)** — including the engagements detailed below.

§4.4.1.2 — Relevant Agentic-AI Experience & References

RFP §4.4.1.2: *List experience with agentic AI and/or autonomous systems, including environmental regulatory compliance systems. Experience must include references.*

State of Texas — Permitting Portal

Trajan · 1,400 workflows · Ref: Jerome Greener, Director, Texas Regulatory Efficiency Office (jerome.greener@gov.texas.gov)

A full permit-lifecycle platform with a citizen-facing applicant portal. An AI concierge walks applicants through each workflow, validates form completeness at intake, and submits on their behalf; every submission gets a tracked electronic case file; multi-phase compliance tracking calculates and enforces deadlines; staff dashboards display processing metrics, overdue filings, and workload.

MAPS TO THE WV ASK: The production system the **Digital Intake Specialist (§4.3.2.2.1)** runs on — proving the **applicant intake portal (§4.3.2.7)**, **secure submission + tracking number + case file (§4.3.2.5.1)**, **administrative-completeness validation (§4.3.2.2.1.2 / §4.3.2.4.3)**, **automated deadline calendaring (§4.3.2.4.5)**, and the **web-based reviewer dashboard (§4.3.2.1.2)** — at full state scale, the platform's largest deployment.

State of Louisiana — Department of Conservation & Energy

Ref: Dustin Davidson, Secretary (Dustin.Davidson@la.gov) & Carrie Wiebelt, Director of Modernization (Carrie.Wiebelt@la.gov)

A relevant prior example for this solicitation. Office of Conservation staff use Justinian's agentic workflows for **UIC injection-well permitting — including Class VI geologic-sequestration wells**: assembling the public-facing administrative record for Class VI well files ahead of public hearings, analyzing **financial-security and bonding requirements** for Class VI, oil-&-gas, and Class III solution-mining wells, reviewing CCS leases on state lands, and tracking **UIC enforcement actions**. They use it for **Area-of-Review–style geospatial analysis** — agents autonomously join permit data to the **SONRIS oil-&-gas well GIS layer** to map all wells within a set radius of a target well — and to draft **public-notice and response-to-comments** documents in the agency's voice, grounded in Louisiana Statewide Orders and LAC Title 43.

MAPS TO THE WV ASK: This work covers several of the same functional areas requested in Section 4: Class VI **agentic processing (§4.3.2.2)**; **fixed-radius & computational AoR proximity analysis (§4.3.2.3.1)**; **geospatial-hub correlation (§4.3.2.3.2)**; **financial-responsibility verification (§4.3.2.2.1.2)**; **public-notice & RTC (§4.3.2.4.5–.6)**; **auditable, source-grounded determinations (§4.3.2.2.5)** — in production for a primacy state's injection-well program.

State of Louisiana — Department of Environmental Quality (LDEQ)

Ref: Amanda Vincent, Asst. Secretary, Office of Environmental Services (Amanda.Vincent@la.gov)

LDEQ permit writers and compliance staff use Justinian to draft **"Response to Comments and Notification of Final Permit Action"** letters in LDEQ's required format, assemble and respond to public-notice comment packages, and process air- and water-permit modifications by Agency Interest (AI) number. For compliance, agents run multi-year **DMR / biomonitoring (whole-effluent-toxicity) reviews** by autonomously retrieving records from LDEQ's EDMS repository, OCR-ing scanned filings, and flagging exceedances — pulling the source record, extracting the data, and producing the formatted deliverable end-to-end.

MAPS TO THE WV ASK: Direct proof of the document-processing and public-participation engine — **AI draft generation in the agency's template/voice (§4.3.2.4.2)**, **response-to-comments compilation (§4.3.2.4.6)**, **draft-then-human-approve deficiency/notice workflow (§4.3.2.4.4)**, and **OCR + source-grounded retrieval with cited determinations (§4.3.2.4 / §4.3.2.2.5)**.

State of Oklahoma — Department of Environmental Quality

Ref: Madison Miller, Deputy Executive Director (Madison.Miller@deq.ok.gov)

Justinian is in active production use across Oklahoma DEQ's air-quality, water-quality, land-protection, and enforcement work. Staff use agentic workflows to draft **Title V, Acid Rain, NPDES, and RCRA hazardous/solid-waste permit** documents grounded in the governing authorities (OAC Title 252; 40 CFR Parts 60/61/63 NSPS/NESHAP/MACT subparts; 40 CFR 122–125); to generate inspector cheat-sheets, onsite question templates, and records-request packages; to auto-draft **enforcement notices and stipulated-penalty calculations** with statutory deadline/holiday math; and to design electronic-submission workflows (login → submit → pay) for an **EPA CROMERR–compliant e-permitting system**. Throughout, agents autonomously retrieve the controlling authority, extract data from uploaded permits and stack-test reports, and return formatted Word/PDF deliverables.

MAPS TO THE WV ASK: A broader environmental permitting example — **RAG/source-grounded reasoning over federal + state authority (§4.3.2.2.2)**, **technical-data extraction from permits and engineering/stack-test reports (§4.3.2.4.1)**, **AI permit drafting (§4.3.2.4.2)**, **e-permitting submission-and-payment design (§4.1 / §4.3.2.5.1)**, and **citation-backed deliverables (§4.3.2.2.5)** — under the same EPA-delegated structure WVDEP administers for UIC.

Commonwealth of Virginia — Office of Regulatory Management

Ref: Reeve Bull, former Director, Office of Regulatory Management (reeve.bull@gmail.com) · Glenn Youngkin, former Governor of Virginia (glenn@youngkinandco.com)

Statewide regulatory analysis across 100+ agencies and 300,000+ provisions; mapped every provision to its statutory authority and quantified $1.4B+ in annual savings. Governor Youngkin signed Executive Order 51 mandating AI regulatory review based on Vulcan's results.

MAPS TO THE WV ASK: Proves the **knowledge-graph / GraphRAG relationship-mapping (§4.3.2.2.2)** and the **regulatory-monitoring "Watchdog" capability (§4.3.3.1.2)** — tracking statutory and rule changes across a full state code and surfacing downstream compliance impact, exactly what the Watchdog Agent must do against the Federal Register, EPA, and the WV Legislature.

Direct contact details and engagement letters provided on request. The references listed are government clients or former government leaders familiar with the relevant work described here.

Key Personnel & Roles

RFP §4.4.1.3: *List key personnel who will be part of this project, with roles. Technical staff with geosciences/environmental-engineering expertise is highly desirable.*

NAME & ROLE	BACKGROUND
Tanner Jones CEO — Executive sponsor; contract authority	Founded Vulcan after serving as Policy Director at an interstate C3/C4 across 30 states; founded and exited Downballot Solutions; PPE & Classics, Dartmouth.
Chris Minge CTO — Technical lead; platform architecture	Former Google software engineer on ML infrastructure (Gemini, Waymo, Vertex AI); CS & Philosophy, Princeton.
Thurston Powers Chief Data Engineer — Compliance Engine, GraphRAG	Built Scholars Edge, an AI search engine for state and federal law/regulation, at the Institute for Humane Studies; MPP, NYU Wagner.
Christina Martinson ISSM — FedRAMP, NIST 800-53, PII/CBI	U.S. Army veteran, 10+ years securing military and government networks; former DoD IT Security; CISSP, GSEC; M.S. Cybersecurity. Specializes in NIST, FedRAMP, CMMC, Zero Trust.
Jonah Calvo Security Engineer — adversarial validation	3.5 years at AWS on OpenSearch Ingestion and cloud-security infrastructure; leads controls testing and security assessments across government engagements; B.S. CS, University of Minnesota.
Davina Le Chief of Staff — Implementation & delivery	Led customer success at Epic Systems managing complex enterprise technical implementations; Health Economics, Duke.
Nate Branscum Deployed Agent Orchestrator — Config, build, training	Government & CS, Dartmouth (honors); former lead data engineer at Love's.
Danny McFadden Deployed Agent Orchestrator — WVDEP deployment	Stanford; AI and regulatory policy across 30+ states at the Cicero Institute.

Geoscience/environmental depth (highly desirable, §4.4.1.3): *per Q.19, Q.20, Q.23, Q.69, and Q.70, WVDEP supplies the UIC SOPs, regulatory checklists, Class VI learning documents, baseline GIS/stratigraphic mapping, and subject-matter experts to validate prompts and templates. Vulcan pairs Thurston Powers' regulatory-data engineering with WVDEP's UIC geoscientists during configuration so the Compliance Engine reflects West Virginia's specific Class I and Class VI standards. Senior Advisors Jonathan Wolfson (former Regulatory Reform Officer, U.S. Dept. of Labor) and Patrick McLaughlin (Hoover Institution; creator of RegData/QuantGov) advise on regulatory methodology.*

§4.4.2 — Mandatory Qualification / Experience Requirements

Failure to meet a mandatory qualification is disqualifying (§6.5.2): exceeding it scores in the §4.4.2 5-point allocation.

§4.4.2.1 — Data privacy, cybersecurity, and AI governance. Vulcan complies with all applicable data-privacy, cybersecurity, and AI-governance procedures, operated under a FedRAMP Moderate boundary, NIST 800-53 controls, and a documented AI-governance program (§4.3.3.5.5). *Exceeds:* a dedicated ISSM and Security Engineer, continuous adversarial validation, and annual third-party penetration testing.

§4.4.2.2 — Confidentiality agreement. Vulcan will sign a confidentiality agreement upon contract award.

§4.4.2.3 — FedRAMP / StateRAMP / SOC 2 Type II. Vulcan satisfies this mandatory requirement on **two independent grounds**. First, the solution is deployed within **AWS GovCloud's FedRAMP Moderate authorized environment**; per **Q.57 and Q.58**, FedRAMP authorization documentation from the platform provider is expressly sufficient and will be provided. Second, Vulcan **holds a current SOC 2 Type II attestation** today, provided on request. Third, **Vulcan's platform has passed a FedRAMP Readiness Assessment Report (RAR) assessed by an accredited 3PAO**, confirming application-level FedRAMP Moderate readiness — not merely a compliant host (per **Q.26**). *Exceeds:* a current SOC 2 Type II attestation, a FedRAMP Moderate hosting boundary, **and** a 3PAO-assessed Readiness Assessment Report, with an annual SOC 2 report and right-to-audit clause (§4.3.3.5.6).

§4.5 — Oral Presentations

RFP §4.5 (Agency Option): *The Agency may require oral presentations, including an informal project demo of AI capabilities, HITL workflow, and GIS integration.*

Should the Agency exercise this option, Vulcan is prepared to present to the evaluation committee and to give a **live demonstration of the running platform** — agentic Class I/VI routing, the Digital Intake Specialist, the HITL decision gates, AoR/GIS screening, and the AgentOps audit trail. Per **Q.73**, the demonstration will use **sample or synthetic data**. Presenters will include the CTO and the Deployed Agent Orchestrator assigned to the WVDEP build; Vulcan will only clarify — not alter or add to — its submitted proposal.

SECTION 03

Implementation Timeline

Attachment C · Response to §4.6

Proposed 20-week implementation plan — operability reached before the State's July 1, 2027 target.

Accelerated Phased Implementation Plan

RFP §4.6 / Q.8 / Q.29: *Provide a phase-based timeline from contract award to full production. Target go-live 7/1/27: full system operable before go-live.*

Because the platform already exists, the work is configuration, integration, testing, and validation against West Virginia's Class I and Class VI standards. That is why we propose a **20-week implementation plan — shorter than a net-new build schedule**. The plan front-loads the **Digital Intake Specialist for administrative review** per **Q.24**, finalizes all security audits before go-live with a plan of action per **Q.4** (**Q.29**: full system operable before go-live), and assumes a contract award in the third quarter of 2026. Production go-live is on WVDEP's schedule — as early as ~20 weeks post-award, and no later than the State's **July 1, 2027** target.

PHASE	WEEKS	KEY ACTIVITIES & MILESTONES
Phase 1 — Discovery & Foundation	1–3	WVDEP UIC SOPs, regulations, Class VI learning docs, baseline GIS/stratigraphic data ingested (Q.19, Q.23, Q.25). FedRAMP boundary stood up in AWS GovCloud. AD / OneLogin / OSSP interface specs gathered (Q.63). SME working sessions begin.
Phase 2 — Compliance Engine & Integrations	4–8	Class I & VI rules encoded (47 CSR 13/64; 40 CFR 146 B/G/H; 40 CFR 124). OSSP / OneLogin / AD integrations built & tested. WVGES / SDWIS / Oil & Gas data connectors. GraphRAG over WVDEP corpus.
Phase 3 — Agent Build	9–14	Digital Intake Specialist (Admin Completeness) DELIVERED FIRST (Q.24). Then Technical Compliance, AoR & Risk (ESRI integration), Blueprint Vision, Drafting (NoD/Permit/Public Notice/RTC), Watchdog. All 6 HITL gates wired.
Phase 4 — HITL UAT & Validation	15–17	WVDEP SMEs validate checklists, prompts, deficiency & public-notice templates (Q.69). Reviewers run end-to-end on sample/synthetic data (Q.73). Override & confidence-threshold tuning (Q.33, Q.34).
Phase 5 — Security Close-out, Training & Acceptance	18–20	Third-party pen test & audit finalization with plan of action (Q.4). Section 508 conformance verified. All required functions tested and demonstrated; training delivered; WVDEP issues written System Acceptance.
GO-LIVE	Wk 20	**Operable ~20 weeks post-award — on WVDEP's schedule, no later than the State's 7/1/27 target. Support, maintenance & stabilization warranty commence on acceptance (§4.3.3.3.1).**

Acceptance (§4.3.3.3.1.1) is the successful demonstration and testing of all requirements, including training, with all users able to perform their roles — at which point the five-year term and the support/warranty period begin.

SECTION 04

Compliance & Certifications

Mandatory Forms

SaaS Addendum Acceptance & Appendix A

Vulcan **accepts the State of West Virginia Software-as-a-Service Addendum** and will execute it upon award. Vulcan commits to: U.S.-only data location for all public-jurisdiction data at rest (§3(i)); confirmed-security-incident notification within **24 hours** and data-breach detail within **72 hours** via the WVOT incident-reporting system and the Department privacy officer (§4); a **Cloud Security Alliance STAR / CAIQ self-assessment submitted prior to award** and annually thereafter (§11); an annual SOC 2 (or approved-equivalent) data-center audit (§12); criminal background checks per **W. Va. Code §15-2D-3** (§8); FIPS 140-2 encryption of data at rest (§23); 30-day advance notice of major upgrades (§13); and a business-continuity / disaster-recovery plan on request (§20).

Appendix A — Vendor-Supplied Information (item 6): Primary 24/7 Security Contact

Name	Jonah Calvo, Security Engineer
Email	jonah@vulcan.ai

Department privacy officer (Appendix A item 5): John Nilles, John.J.Nilles@wv.gov. Restricted information = Yes; non-public data = Yes; personal data = No; alternative non-US data center = No.

General Terms, Insurance & Registration

- ✓ **Insurance (§3.8).** Vulcan will furnish proof, prior to award and maintained for the life of the Contract, of **Commercial General Liability of at least $1,000,000 per occurrence** and **Cyber Liability of $1,000,000 per occurrence**, with 30 days' notice of any policy change.
- ✓ **Workers' Compensation (§3.9).** Maintained as required by law; proof furnished on request.
- ✓ **Vendor Registration (§2.12).** Vulcan **is registered** with the WV Purchasing Division and current on the **$125 fee** where applicable.
- ✓ **Licensing & Good Standing (§3.32).** Licensed and in good standing with the WV Secretary of State and the WV Tax Department prior to award.
- ✓ **Public Document (§3.31).** This proposal is a public document; it contains no material marked confidential, proprietary, or trade-secret.
- ✓ **Contract Term (§3.3).** Five-year initial term with one optional one-year renewal, consistent with §4.3.2 and Attachment C.