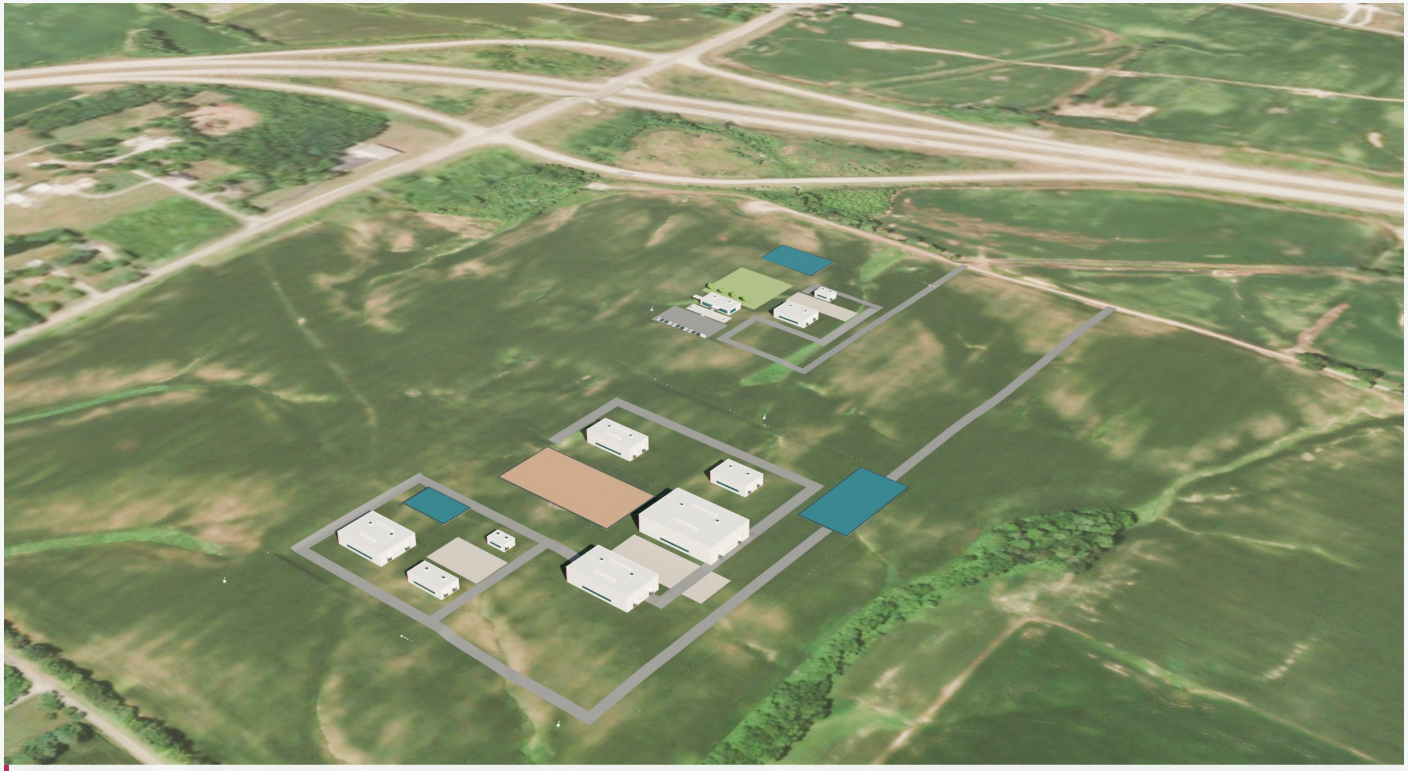
Indiana Uranium and Thorium Development Plan

Milieu Minerals | A coordinated exploration campus, prospective mine investigation and local processing strategy.



Architectural concept | Imagery: Esri, Vantor, Earthstar Geographics and GIS User Community.

EXPLORE / PETERSBURG

A 1,200 m² exploration and core campus, powered by Milieu GeoTrace.

VERIFY / DAVIESS COUNTY

An 8.1 ha prospective mine-investigation area near the SDH-377 geological control.

PROCESS / LOCAL INDIANA

A conditional 1,800 m² test-processing plant, with separately gated expansion.

Architectural concept from the shared geographic model. The Daviess investigation area is shown separately at its true regional location. Imagery: Esri and contributors.

A focused investment in evidence and capability

Local processing is the chosen strategy. Capital is released as rights, feed quality and economics become demonstrable.

Initial proposition

Seek a first release of up to **$15 million** within a proposed **$60 million cumulative development ceiling**. The current scope estimate is **$57.58M**, leaving $2.42M of unallocated headroom.

Build an Indiana platform for core management, geological verification, mapping and authorized test campaigns. Permanent buildings follow site control and design approvals.

Commercial purpose

Milieu Minerals develops the materials operation. Milieu GeoTrace supplies the mapping, prospectivity analysis, sensors, data and integrations that make field decisions repeatable and auditable.

The first customer would be the proposed, separately funded development program. External mapping, laboratory-support and testwork customers are a business-development objective; no sales contracts are assumed.

Value at each gate

The sequence is exploration and representative sampling, then bench testwork, then a conditional local pilot. A commercial mine and recovery plant require independently demonstrated feed supply and positive fully costed economics.

The plan purchases information before committing industrial capital. Thorium and co-product sales contribute zero to the reference case.

Investment decision: fund the next evidence gate, with clear deliverables and a stop-or-advance review.

All funding amounts are proposed ceilings or planning estimates, not approvals, commitments or supplier quotations. Commercial-scale construction is outside the $60M ceiling.

A domestic market with a clear commercial hurdle

Policy recognition and a substantial import-dependent market support investigation; verified feed economics determine investment.

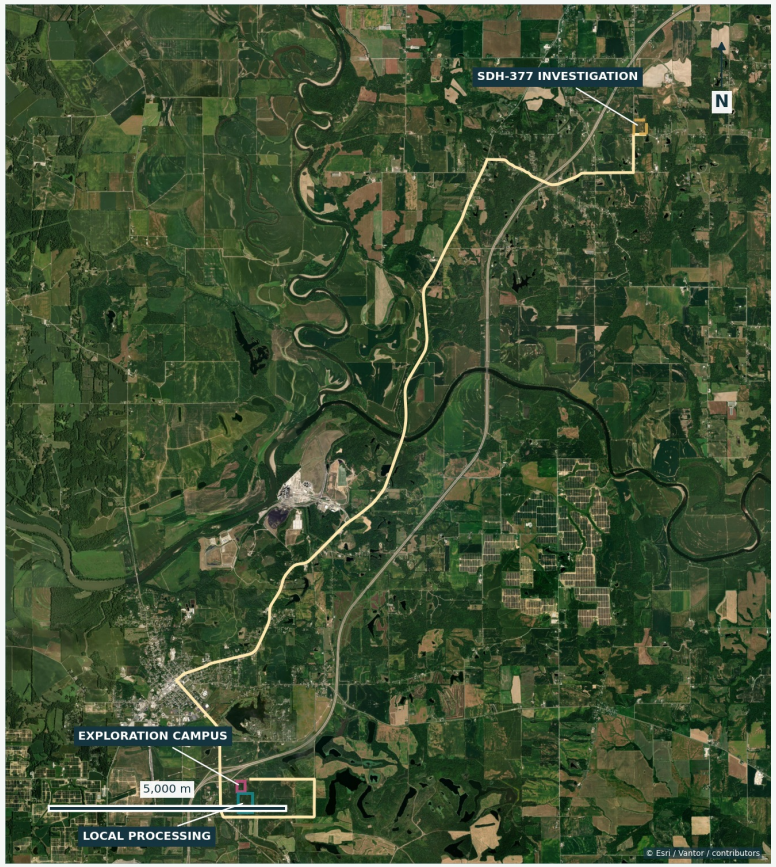
Verified reference	Primary-source finding	Meaning for Milieu Minerals
2025 critical minerals list	The final federal list includes uranium. Thorium is absent.	Uranium has current critical-mineral recognition. This does not establish a deposit, permit, customer or funding award.
U.S. utility purchases	EIA reports 46.9 million lb of U_3O_8 equivalent purchased in 2025; 7% was of U.S. origin.	A domestic supply opportunity exists, but buyers still require qualified product, delivery reliability and acceptable commercial terms.
Historical delivered price	The 2025 weighted-average delivered price was $58.46/lb. The new-contract delivery subset averaged $70.46/lb.	These are different historical purchase measures. Neither is a current spot quote or an achievable Milieu sales price.
Plan price assumptions	The financial model uses explicit downside, reference and upside planning prices.	Secure indicative buyer terms before investment. Price assumptions remain separate from EIA observations and from deposit evidence.
Thorium and co-products	No Milieu-specific recovery, authorized customer or payable specification was established.	Reference thorium and co-product revenue remains zero; any future value requires a separately tested customer and recovery case.

Concentrate production is an upstream business. Conversion, enrichment where applicable, fuel fabrication and qualification are separate activities. Milieu Maritime Forge does not create an assumed offtake or reactor-ready Indiana supply.

Sources AP09-AP11. EIA 2025 report released 29 July 2026 and revised 13 August 2026; source snapshot accessed 17 September 2026.

Three components with real geographic relationships

The exploration campus and local plant share a Petersburg industrial node; the mine investigation is a separate Daviess County location.



Petersburg / campus

Generation Springs reference site. 3.96 ha campus with 1,200 m² of buildings.

Daviess / investigation

8.1 ha near SDH-377. Approximately 26 km by the screened public-road route to the plant, plus access spurs.

Petersburg / plant

12 ha local processing core. Pilot first; commercial recovery and residue capacity require a separate decision.

The regional map preserves actual distances. Campus and plant share a development node; the Daviess investigation is a separate location.

Sources: master geometry IN-GEO-01, Indiana authoritative road and land-constraint services, developer site material. Refer to A3 drawings for coordinates and dimensional control.

A defined physical location for each component

Proposed boundaries are planning geometry. They are distinct from cadastral parcels, title, mineral rights and permitted disturbance.

Generation Springs is the reference Petersburg development node. The campus and plant have separate controlled circulation and visitor access. The Daviess envelope is offset from the published SDH-377 control to examine nearby ground selected for access investigation.

Site ID	Initial operating role	Centre WGS84 latitude, longitude	Envelope
C-SITE	Exploration and geospatial campus	38.471611, -87.262793	3.96 ha
M-SITE	Prospective mine investigation	38.599617, -87.164623	8.10 ha
P-SITE	Local processing core	38.468405, -87.261704	12.00 ha

Use the named roads, gates, public parcel references and legal-description screen in the accompanying site register and A3 atlas. No invented street number is assigned to an undeveloped footprint. Public parcel geometry does not establish Milieu ownership, a lease, mineral rights or uranium-use approval.

Centres are computed from the locked GIS geometry. Gate coordinates and available parcel/legal references are documented separately; obtain a survey and title opinion before acquisition.

Road access and land identity are explicit

Coordinate precision is a planning record, not survey accuracy or evidence of title.

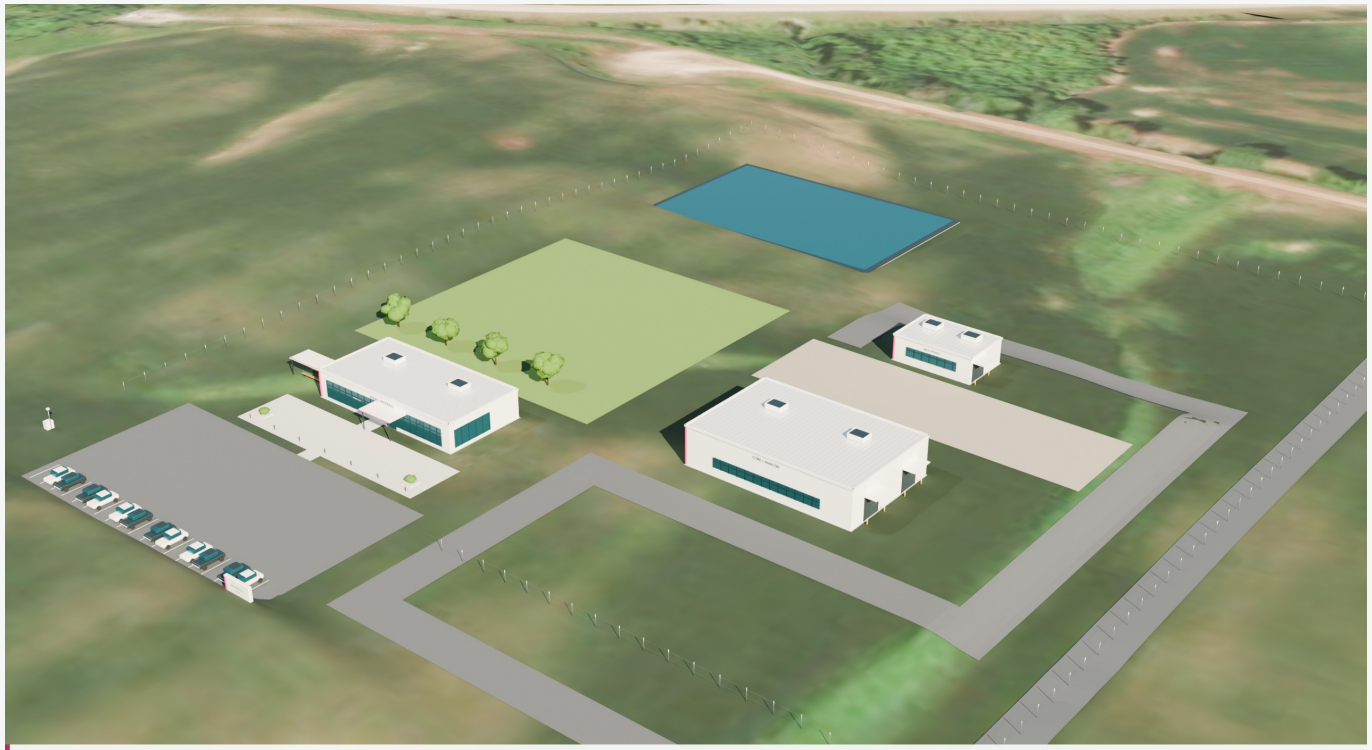
Component	Named road and proposed gate	Public parcel / legal screen
Campus / C-SITE	E County Road 350 N, Petersburg, IN 47567 Gate C11: 38.472469, -87.261936	63-02-35-400-014.000-011 T1N R8W Section 35, Second Principal Meridian.
Plant / P-SITE	Access via the same Petersburg industrial node Gate P14: 38.467008, -87.261813	Same mapped parent parcel as campus; agricultural tax class. Industrial development marketing is not uranium-use permission.
Mine investigation / M-SITE	E County Road 400 S / Horrall Road area, Washington, IN 47501 Gate M05: 38.599348, -87.163359	Main parcel 14-13-14-300-022.001-015; small sliver 14-13-15-400-004.000-015. T2N R7W Sections 14/15.
Residue study / P18	Separate 3.85 ha R7 study envelope with public-road access concept	63-02-36-300-014.000-011; T1N R8W Section 36. Capacity, easements and Milieu rights are unverified. The parcel address says W CR350N; road geometry indicates E CR350N.

Public developer material associates Generation Springs with Bowman Family Holdings. County parcel attributes supplied here do not verify the current owner, mineral estate or Milieu site control. Obtain title, boundary survey, minerals review, zoning determination and written access before development.

Sources: county parcel and road services; BLM mapped PLSS; developer site material. An older developer map uses CR300N where current road GIS uses E CR350N; original addresses are retained as source attributes.

A useful campus from the first operating phase

Core, data and field support create an operating purpose before any commercial mine is justified.



Architectural concept | Imagery: Esri, Vantor, Earthstar Geographics and GIS User Community.

C01 / 450 m²

Visitor reception, Milieu GeoTrace, project controls and partner meeting space.

C02 / 600 m²

Core logging, photography, secure preparation and an organized sample archive.

C03 / 150 m²

Controlled storage and utilities. Acceptance limits follow the applicable authorization.

The 1,200 m² single-storey program is the same in the drawings, geometry register, Blender scene and cost model. Independent accredited laboratories establish chemical assays.

Architectural concept. Geotechnical design, fire/accessibility engineering, material inventories and final licensing remain advancement conditions. Imagery: Esri and contributors.

A welcoming front door to Milieu Minerals

Bright white buildings, tinted glazing and restrained pink accents create a consistent identity.



Architectural concept | Imagery: Esri, Vantor, Earthstar Geographics and GIS User Community.

VISITOR FRONTAGE

Reception, a shaded pedestrian area and clear explanations of the work.

CONTROLLED OPERATIONS

Secure core and sample work separated from visitor circulation and heavy vehicles.

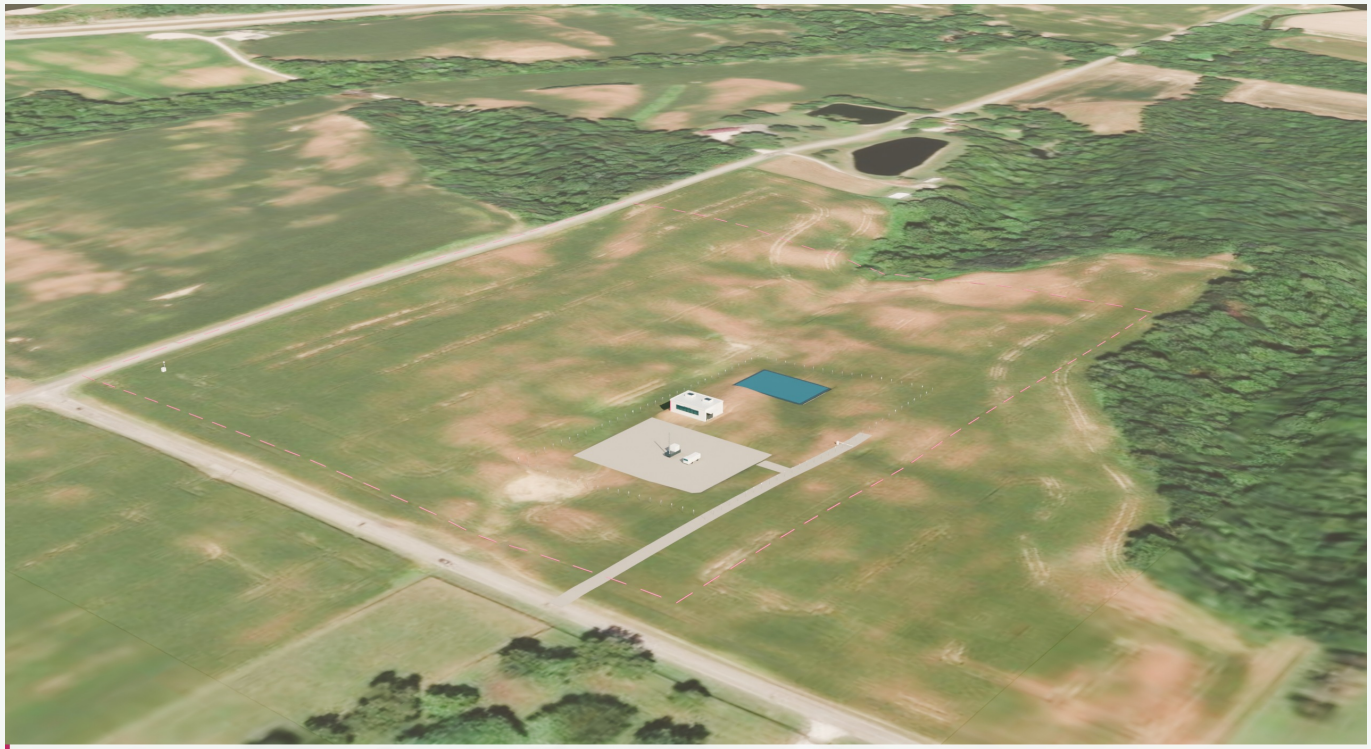
PUBLIC UNDERSTANDING

Scheduled visits and a technically reviewed monitoring dashboard as the program matures.

Same model, terrain, floor levels, facade materials and building IDs as the site plan. Milieu Minerals is the operating frontage; Milieu GeoTrace is its services arm. Imagery: Esri and contributors.

Daviess County prospective mine investigation

M-SITE examines an 8.1 ha field near the SDH-377 geological control. It is not a designed extraction pit.



Architectural concept | Imagery: Esri, Vantor, Earthstar Geographics and GIS User Community.

Observation

The public SDH-377 location provides stratigraphic control. Its marker does not contain a site-specific uranium assay.

Investigation

A field pad, sample shelter, controlled access and runoff reservation support permissions-based verification and drilling design.

Future mine

Depth, method, disturbed area, diluted grade, tonnage and closure are defined only after drilling and representative testwork.

The envelope avoids nearby homes and ponds. The mapped Veale Elementary parcel is about 442 m away; this is a siting screen, not an accepted mining setback. No extraction pit or operating mine is implied.

No mine depth, ore body, resource, reserve or recoverable tonnage is inferred. Private access and mineral rights are not established. Imagery: Esri and contributors.

Select targets by the evidence they can support

Historical maxima and marker density are insufficient grounds for placing a mine.

Opportunity	Why it remains in the program	Decision condition
Daviess / SDH-377 corridor	Primary investigation reference: published geological control and nearby field geometry.	Recover original logs/core; establish representative horizon chemistry, depth, continuity and diluted grade.
Pike / SDH-379 corridor	Secondary verification target; stronger regional eU residual and existing disturbed-ground context.	Resolve deeper cover, land access and sampling representativeness before adding a second mine concept.
New Albany shale	Regional uranium-bearing shale evidence merits archive and partner-feed review.	Find an independently located, representative and economically accessible feed; regional maxima cannot be assigned to a parcel.
Already disturbed or partner material	Potentially avoids part of new mining burden and provides test quantities.	Written feed rights, variability, liabilities, acceptance terms and lawful residue ownership.
Thorium-bearing material	Characterization option, including the historical monazite record.	No commercial thorium mine or revenue assumed without verified elemental grade, recovery, buyer and authorization.

Sources: original Indiana evidence; IGWS 2022 shale paper; native NURE regional grids. Prospectivity is a verification priority, not a resource classification.

The foundation is preserved and reconciled

872 material records are retained at 177 coordinate pairs. They are not 872 separate prospects or deposits.

Evidence class	Records	How it is used
Coal assays	849	456 uranium and 393 thorium rows at 159 locations; retain sample matrix, units and source qualifiers.
Black-shale study locations	11	Study markers, not individual borehole uranium assays. Location precision is retained.
Regional study / literature summaries	5	Regional context only; never assigned as local feed grade.
County fly-ash summaries	4	County-level tests; not an exact sampling site or contracted feed.
Historical monazite occurrence	1	Mineral concentration is not an elemental thorium assay.
Statewide NURE summary anchors	2	Survey-coverage context; original anchors are not measured deposit locations.

The GeoJSON, CSV and KML all reconcile to 872 records: 474 uranium and 398 thorium. Original files remain unchanged and hashed. Derived annotations record metadata corrections and transformations separately.

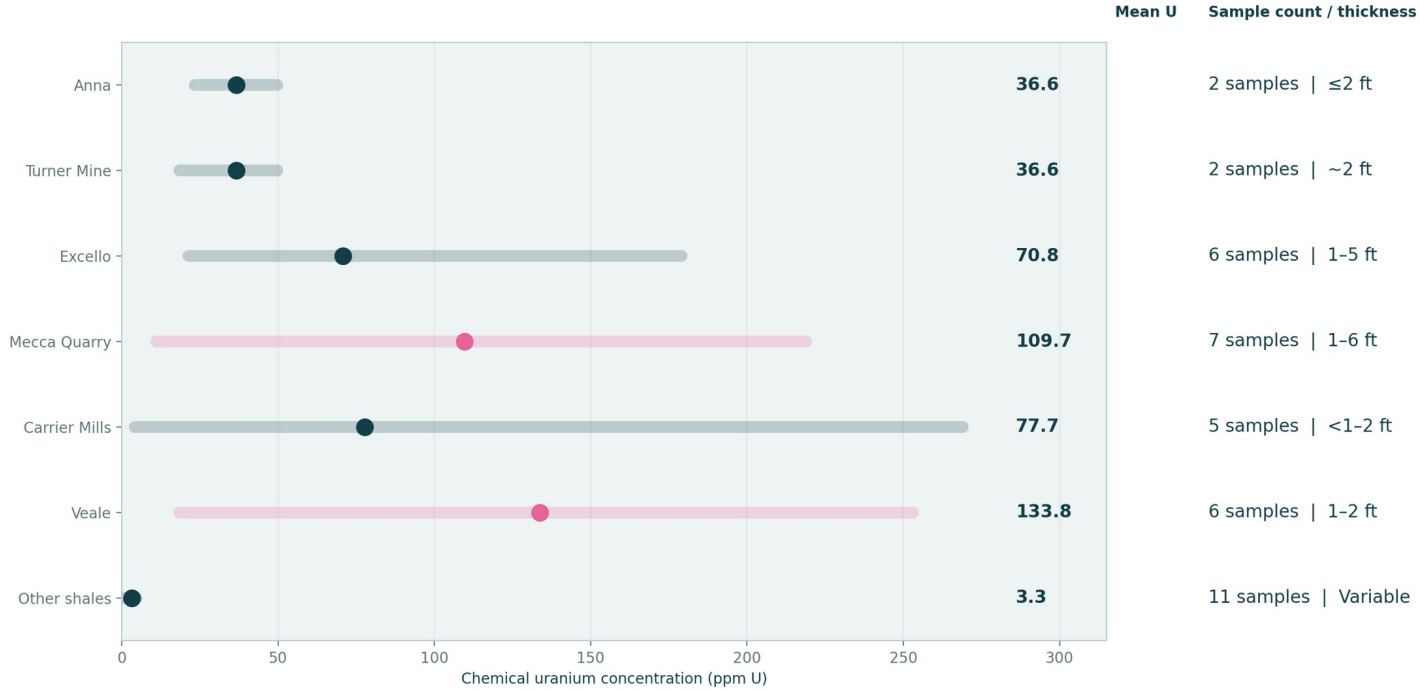
Trace-element method correction: the 2022 study uses ICP-OES-MS; WDXRF applies to major-element work. Original supplied metadata is retained; the derived register explains the correction.

Chemical uranium evidence sets the testwork agenda

Published shale-horizon statistics are informative; sample-to-borehole correspondence is required before assigning local grade.

BLACK-SHALE CHEMISTRY DEFINES THE RESEARCH CASE

Published horizon-level results guide core selection and testwork. They are not assays of the proposed mine footprint.



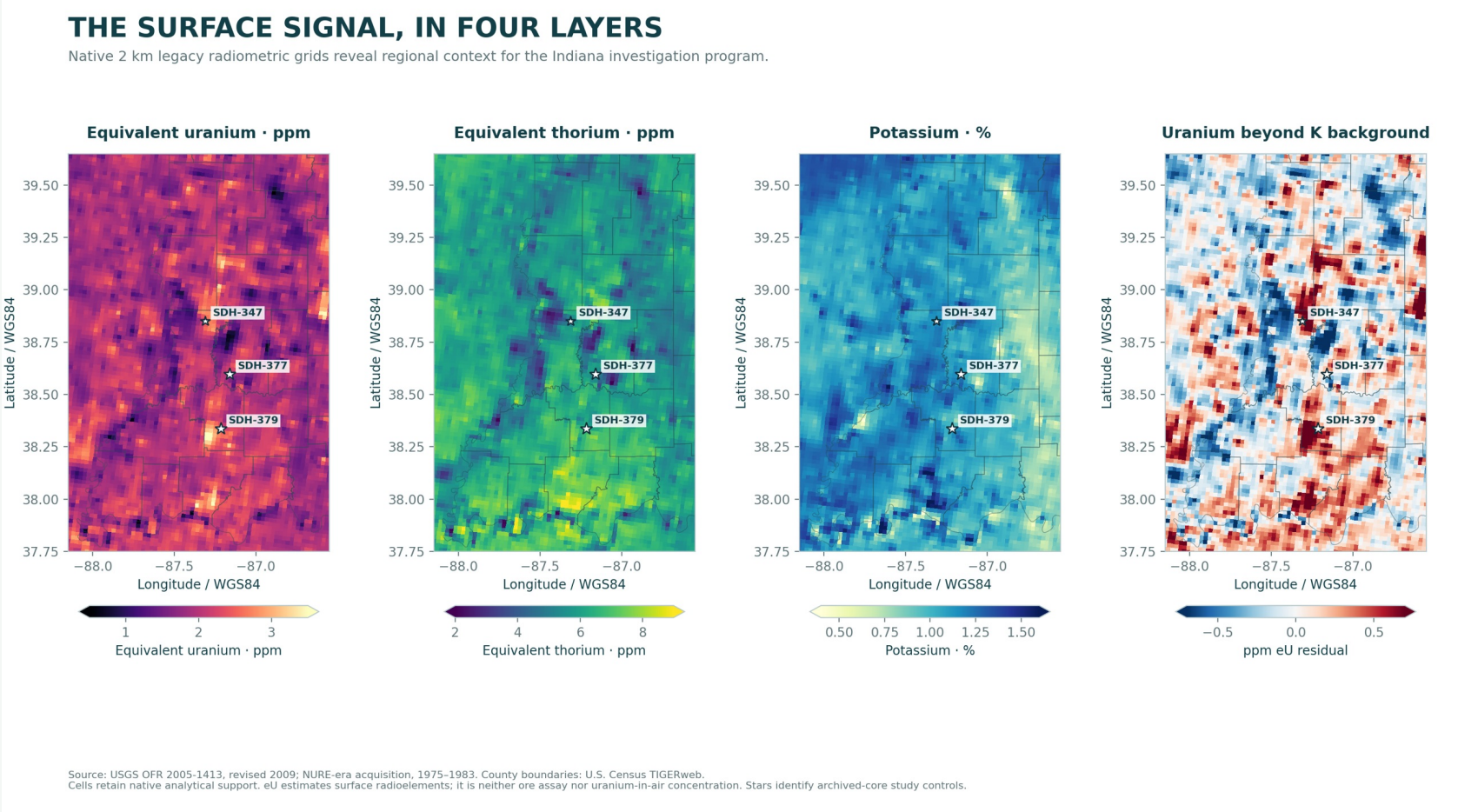
Source: Mastalerz, Drobniak & Ames (2022), DOI 10.14434/ijes.v4i1.34421, Fig. 8A and methodology. Dots: means; translucent bars: reported ranges.
39 samples across 11 boreholes; trace elements analyzed by ICP-OES-MS. No published sample-to-borehole uranium table recovered. No tonnage or mineable grade inferred.

Thin beds make dilution and minimum mining width decisive. The highest reported sample cannot become the average feed grade, a mine reserve or the grade at an unassayed study marker.

Primary source: IGWS 2022 Pennsylvanian black-shale study. Figure uses chemical elemental uranium in ppm; study statistics and site observations are kept separate.

Airborne radiometrics reveal regional surface context

Native numerical eU, eTh and potassium grids are retained at their analytical spacing.

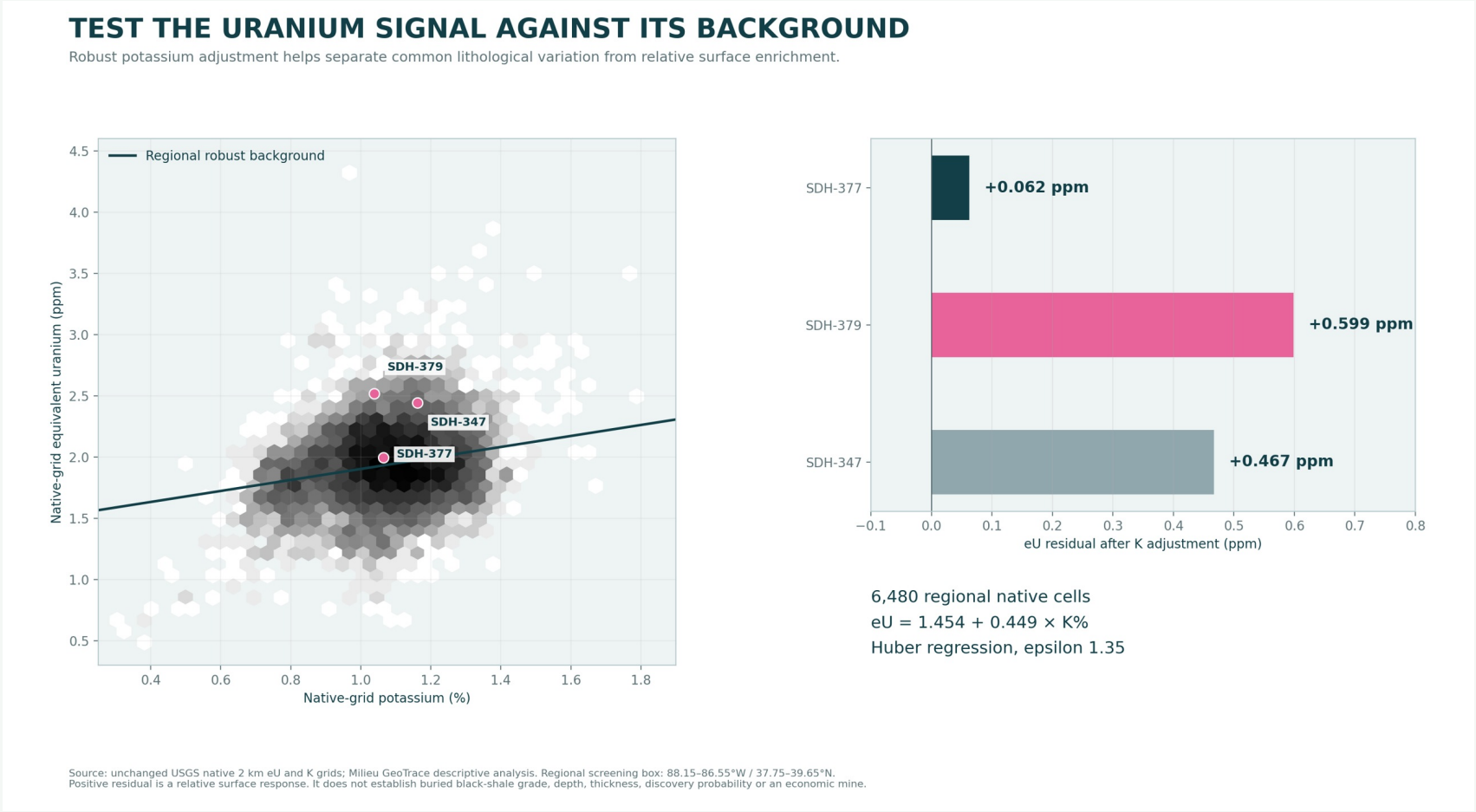


Airborne gamma-ray surveys estimate near-surface terrestrial radioelement response. They do not measure uranium in the atmosphere or establish chemical ore grade.

USGS NURE 2 km grids. Coverage, source transformations, native cells and uncertainty limitations are retained in the evidence register.

Test the uranium response against potassium background

A robust regional adjustment helps distinguish broad lithological background from relative response.



The residual is a contextual anomaly, not a deposit probability. Cover, soil moisture, transported material, survey corrections and radioactive disequilibrium can alter apparent response.

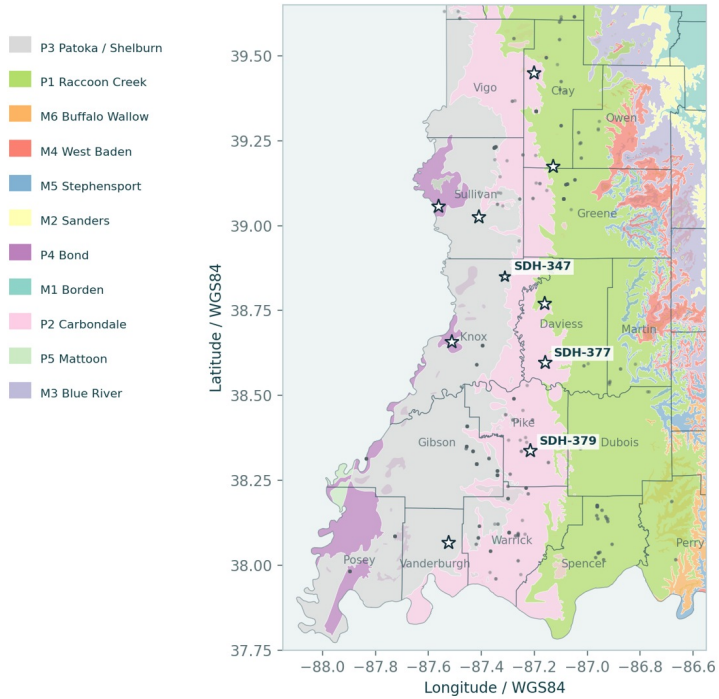
Raw eU and potassium evidence are retained alongside eU/K, eU/eTh and the documented robust adjustment. No radiometric value enters the financial grade assumptions.

Resolve depth before designing extraction

Regional geology and archived core provide investigation controls; their conflicting depth fields are an early decision gate.

A STRATIGRAPHIC INVESTIGATION, GROUNDED IN PLACE

Public borehole controls, mapped geology and preserved historical observations frame the first field program.



PRIORITY ARCHIVED-CORE CONTROLS

SDH-377
38.596927°N / 87.160155°W
2 km cell eU: 1.99 ppm | No site shale U assay

SDH-379
38.337018°N / 87.215020°W
2 km cell eU: 2.52 ppm | No site shale U assay

SDH-347
38.851565°N / 87.311279°W
2 km cell eU: 2.44 ppm | No site shale U assay

DEPTH RECONCILIATION IS AN EARLY GATE

Coal-contact map classes and archived core intervals disagree at these control locations. Reconcile original logs and survey records before selecting extraction depth.

Sources: IGWS MM48 Bedrock Geology, 1:500,000; ICQD coordinate controls; 2022 shale study; U.S. Census county boundaries.
Stars: study locations, including approximate controls outside the priority trio. Small gray dots: preserved coal assay locations. Bedrock colors represent mapped units, not ore bodies.

At southern SDH-377, the Colchester map shows 100-150 ft, while archived-core intervals record 310.5-312.2 and 330-331.5 ft. The label also appears at another Indiana location. Reconcile original logs, locations and horizons before selecting mine depth, method or overburden costs.

IGWS MM48 bedrock map, 1:500,000; ICQD records 3206-3210; 2014 Colchester depth layer. All source responses are preserved. These are conflicting coal controls, not established uranium-host depth.

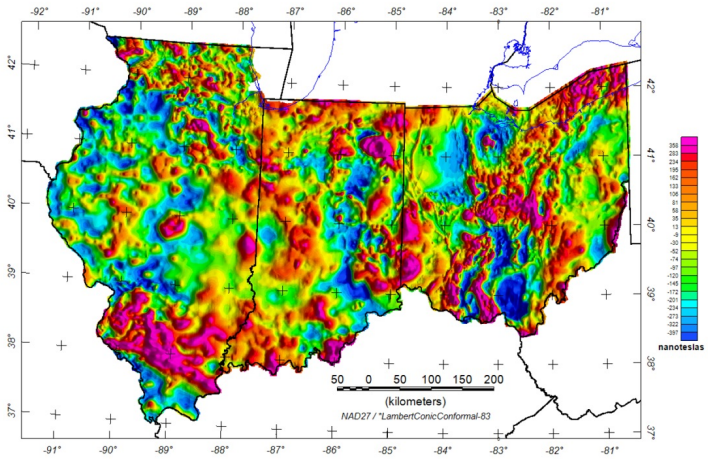
Potential fields frame the regional investigation

Published magnetic and gravity products add structural context without claiming a measured local uranium body.

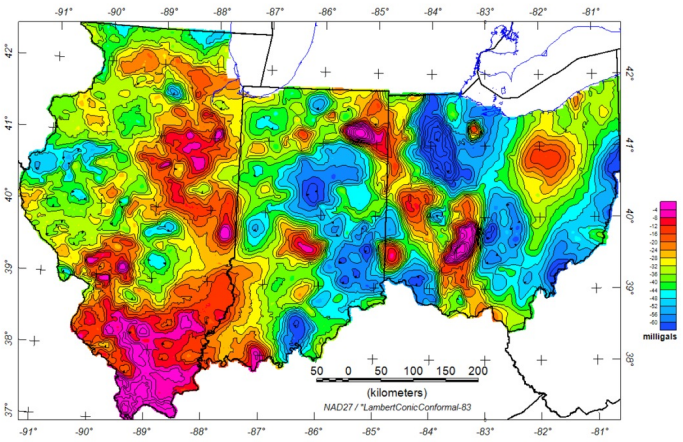
REGIONAL STRUCTURE SUPPORTS THE EXPLORATION FRAMEWORK

Published magnetic and gravity context retained alongside the native source grids for future interpretation.

Aeromagnetic compilation



Complete Bouguer gravity



Three-state context, including the Indiana target corridor

These are the original USGS display maps. Native Geosoft grids and processing metadata are preserved.
No gradients, structural coincidences, uranium values or ore probabilities have been inferred from map colors.

Source: Daniels, Kucks & Hill, USGS Data Series 321 (2008), doi.org/10.3133/ds321. Original published image legends and projections retained.
Quantitative native-grid analysis is proposed future work. Broad magnetic and gravity structure does not by itself establish an economic shale deposit.

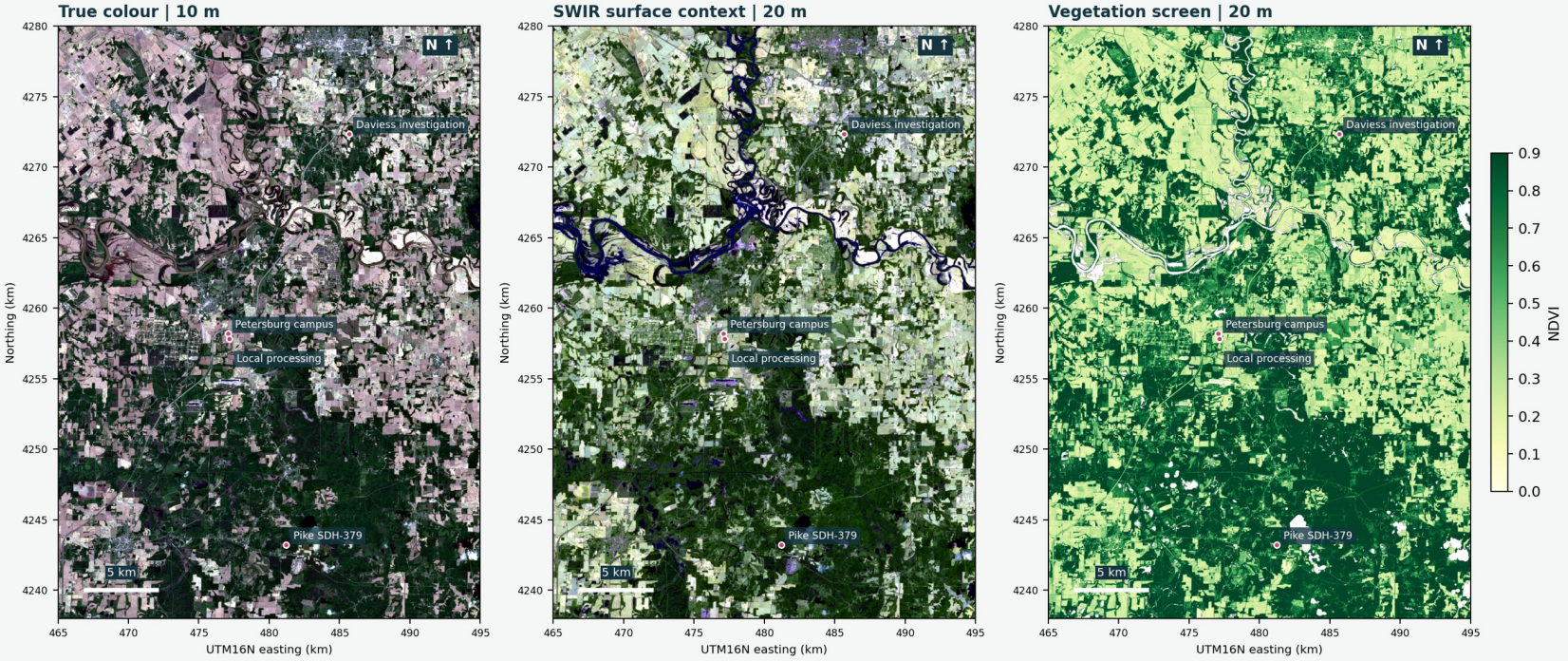
Original USGS numerical Geosoft grids and georeferenced published images were acquired. This exhibit uses published display imagery only: no numerical values were extracted from its colors. Quantitative gradients and structural interpretation remain future work; regional potential fields do not identify a thin uranium-bearing shale bed by themselves.

USGS Data Series 321 (2008), Illinois-Indiana-Ohio compilation, DOI 10.3133/ds321. Original projection, source files and processing metadata retained; no quantitative native-grid analysis is claimed.

Surface imagery adds practical decisions

Current imagery supports access, land-cover checks and sampling design across the actual Indiana landscape.

INDIANA | Surface intelligence



Sentinel-2C | 11 May 2026 | Native 10 m visible and 20 m SWIR bands | Contains modified Copernicus Sentinel data 2026
Cultivated surfaces and vegetation dominate. These images guide land-cover checks and sampling access; they do not measure uranium grade.

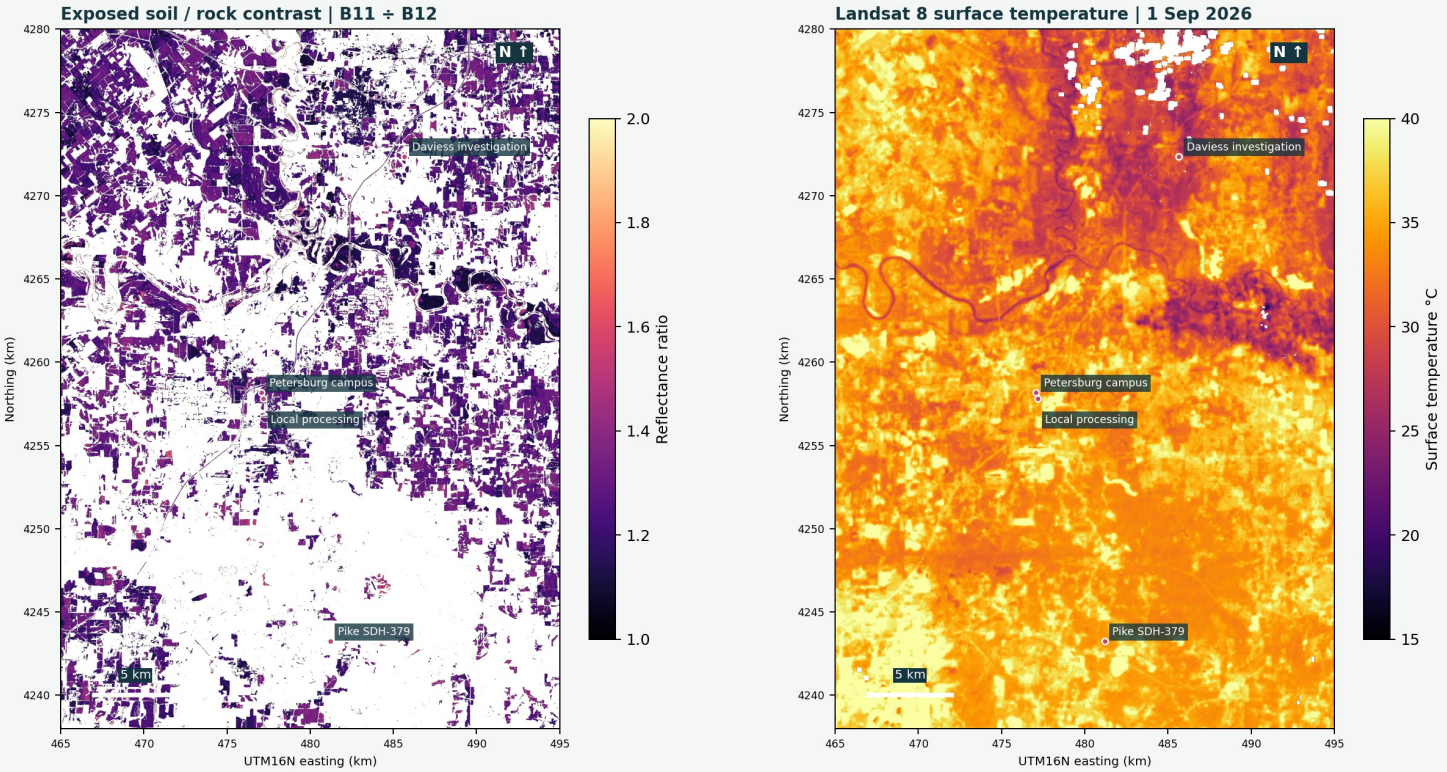
Sentinel-2C, 11 May 2026: 96.9% of the 1,260 km² window passes the stated land-quality screen. Visible bands remain at 10 m; SWIR and derived comparison products are at 20 m.

Contains modified Copernicus Sentinel data 2026. Surface reflectance is calibrated from source digital numbers. A sharper display does not imply finer geological measurements.

Spectral and thermal signals have specific limits

These measured surface conditions help plan verification and monitoring; they do not see an underground uranium body.

INDIANA | Measured surface conditions



Left: Sentinel-2 20 m ratio, SCL 4/5 and NDVI < 0.3. White areas excluded. Right: USGS 100 m thermal observations on 30 m product grid.
Different acquisition dates. Soil, moisture, crops and solar heating affect both products. Neither is evidence of an underground uranium body.

Exposed-surface band contrast is screened for vegetation. The Landsat 8 scene is from 1 September 2026; temperature depends on land cover, weather, moisture and emissivity.

Landsat thermal sensor resolution 100 m, delivered on a 30 m grid. Source ST_QA uncertainty is retained with nodata excluded; the figure does not imply 30 m sensor detail.

Advanced analysis with a traceable boundary

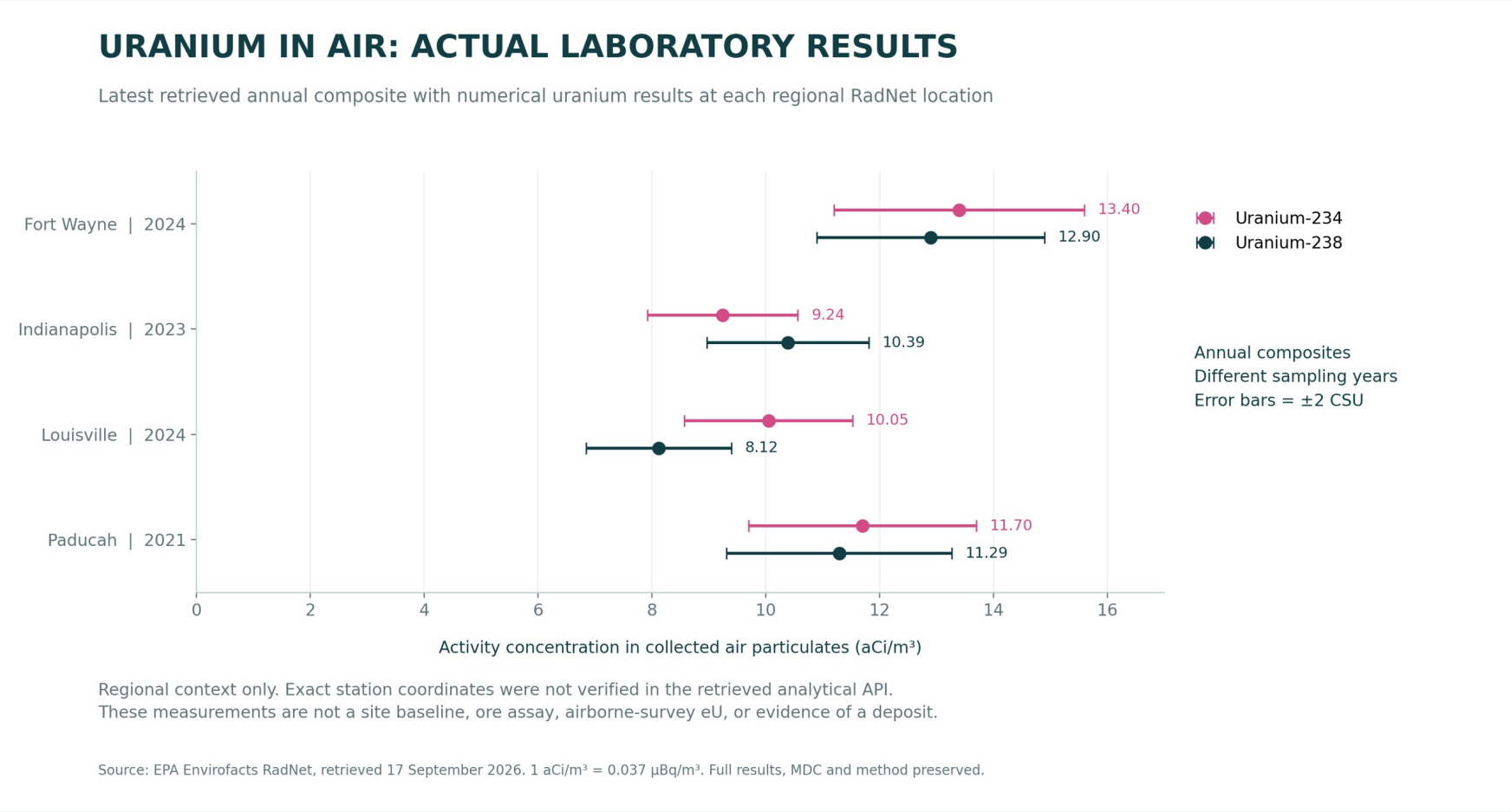
Completed analyses and additional acquisitions are identified separately.

Method / source	Completed result or availability	Decision benefit
LiDAR terrain and aerial imagery	Native elevation and site imagery acquired; final terrain and earthworks screen tied to geometry.	Avoid road/stream conflicts, compare relief and develop preliminary circulation.
Sentinel-2 / Landsat	Calibrated native pixels, QA masks, surface ratios, NDVI, PCA and thermal context.	Land-cover stratification and baseline conditions; no mineral-grade prediction.
EMIT hyperspectral	20 campus and 12 mine query-point footprint matches; pixels not acquired or analyzed.	Potential exposed-soil mineral discrimination after access and quality checks.
EnMAP / PRISMA	Two EnMAP regional footprints miss selected site centres. PRISMA site coverage unverified.	Consider tasking only where exposed material and a specific decision justify it.
SAR / InSAR	Four recent Sentinel-1 GRD footprints cover the sites. No SLC displacement analysis performed.	Potential ground-change program with suitable pairs, controls and validation.
Segmentation / machine learning	Unsupervised spectral PCA completed. No calibrated deposit model is claimed.	Use segmentation for mapping tasks after validation; summary anchors are not deposit training labels.

Footprint metadata is not evidence that usable pixels were acquired. Native analytical rasters, metadata, calibration decisions and reproducible scripts accompany the plan.

Actual uranium in sampled air

EPA laboratory results are a separate evidence product from airborne geological eU.



215 uranium-isotope air-filter results were recovered for four regional monitoring locations. These irregular historical records provide regional context, not a baseline at the selected properties.

EPA RadNet / Envirofacts. Native aCi/m³, isotope identity, collection interval, volumes, MDC, combined standard uncertainty and detection flags are preserved where available. AP01-AP04.

Establish a local baseline before disturbance

Six proposed air-filter locations plus meteorology form a costed planning network, subject to access and a reviewed sampling plan.

Workstream	Proposed operating basis	Budget treatment
Six air-filter stations	Background, campus, mine boundary, processing boundaries and a community comparison location; final roles follow onsite meteorology.	$200,000 setup allowance, tied to AM01-AM06 and MET01.
Sampling and laboratory QA	Weekly filter service, monthly uranium-isotope composites, blanks, duplicates, flow/volume records and chain of custody.	$120,000 per year; $440,000 total for first two years including setup.
Interpretation	Keep gross beta/gamma, radon, dust and uranium isotope concentration as distinct measurements.	No dispersion simulation is presented as an observation.
Transparency	A technically reviewed community dashboard showing method, qualifiers and dates.	Initial data integration is within the program; later compliance scope is separately engineered.

Historical RadNet station coordinates were not verified in the analytical API, and stations may have moved. No exact station-to-project distance is asserted. Obtain EPA station metadata before using regional locations in receptor-distance analysis.

Unquoted September 2026 USD allowance. No proposed station is installed. Regulatory operating, stack and closure monitoring may require a different network and additional funding.

Three practical local processing candidates

Generation Springs leads for a coordinated exploration-to-pilot node. The industrial expansion decision remains open.

Selection balances feed proximity, access and shared infrastructure against grading, water, wetlands and receptors. It does not rank sites solely by distance from a school.

Candidate / 12 ha screen	Terrain relief	Mapped NWI overlap	Nearest school point	Decision
Generation Springs / selected	13.9 m	0.00 ha	2.26 km	Local pilot reference; grading and receptors require design.
ISRR tract / screened core	12.0 m	9.41 ha	3.27 km	Major flood/wetland overlap in this core; not a rejection of every ISRR parcel.
Mount Vernon port area	5.3 m	0.16 ha	2.20 km	Flatter industrial alternative; longer feed haul and a separate logistics node.

P-A and the screened port core lie in mapped Zone X. The P-B core includes substantial Zone A and wetland overlap. P-A needs more grading than the port alternative; shorter local logistics and a shared team support its pilot role. Written utility capacity and authorized residue disposition remain conditions.

Primary Indiana DNR / NWI / county / NCES data and developer material. School distances are boundary-to-authoritative point screens, not surveyed occupied-ground setbacks. Map absence does not establish environmental clearance.

Community separation is a measured decision factor

Petersburg Elementary and Pike Central schools are mapped separately from nearby residential addresses.

Current district sources verify school names and addresses; authoritative point locations retain their source year. Approximate occupied-ground interpretation and field confirmation must precede final receptor modeling.

Site	Nearest school point	Nearest mapped residential address	Construction condition
Campus	2.00 km	312 m	School parcel proxy: 1812 m. Occupied grounds and pathways need field confirmation.
Processing core	2.26 km	160 m	School parcel proxy: 2074 m. Occupied grounds and pathways need field confirmation.
Residue study	2.33 km	550 m	School parcel proxy: 2155 m. Occupied grounds and pathways need field confirmation.
Mine investigation	0.77 km	131 m	School parcel proxy: 442 m. Occupied grounds and pathways need field confirmation.

The processing core remains about 160 m from a mapped residential address. That is a material design gate, not a finding of acceptable impact. The revised residue-study envelope improves residential separation to roughly 550 m. Site meteorology, dust and radiological source terms, groundwater, noise and traffic must demonstrate suitability; otherwise relocate or redesign the affected operating scope.

No legal setback is invented. County residential classification does not prove present occupancy. No dispersion model, site wind rose, exposure conclusion or environmental approval is claimed.

Terrain, water and access shape the facility plan

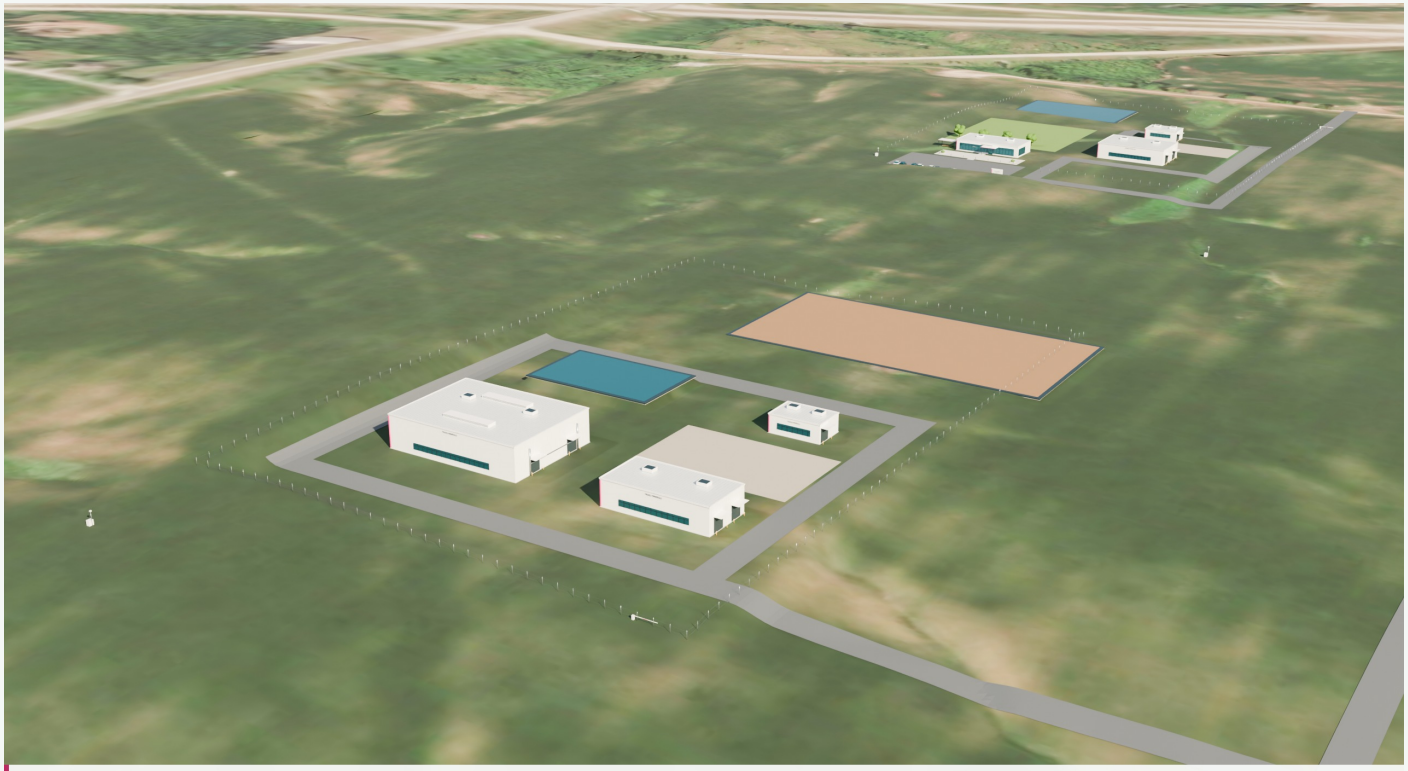
The selected boundaries were revised in response to real stream, road and receptor conflicts.

Constraint	Completed planning response	Evidence required before construction
Terrain and drainage	Campus and plant moved to avoid mapped road/stream conflicts; 1 m terrain informs pad and road geometry.	Geotechnical investigation, surveyed drainage, storm design, cut/fill balance and slope stability.
Water supply	Regional unconsolidated aquifer mapping indicates generally low yield. Do not assume a productive onsite well.	Utility capacity letter or tested/authorized alternative, process water balance and wastewater disposition.
Wetlands and floods	Selected campus, core and R7 reserve avoid mapped NWI features; regional flood screen is Zone X.	Field delineation and jurisdictional review; check local runoff, unmapped channels and flood uncertainty.
Residue capacity	P18 is a 3.85 ha study envelope with no constructed cell or assigned mine life.	Waste characterization, engineered capacity, liner/cover/water design, authorizations and closure funding.
Haulage	About 25.94 km screened public-road route from mine area to plant, plus spurs; model allows 30 km.	Carrier, bridge, road ownership, access permits, load classification and operational route approval.

Whole-envelope mean-plane cut/fill comparisons are screening metrics. Costed grading uses the separate shared design surfaces and phase quantities; no whole-parcel excavation is assumed.

Local processing starts with a justified pilot

P01-P03 provide 1,800 m² for authorized receiving, test campaigns, water control and supporting services.



Architectural concept | Imagery: Esri, Vantor, Earthstar Geographics and GIS User Community.

PRELIMINARY ROLE

A notional 1 tonne/hour campaign testwork basis; no assumed commercial production.

TECHNICAL GATE

Representative feed, bench results, inventories, residue disposition and water/emission controls.

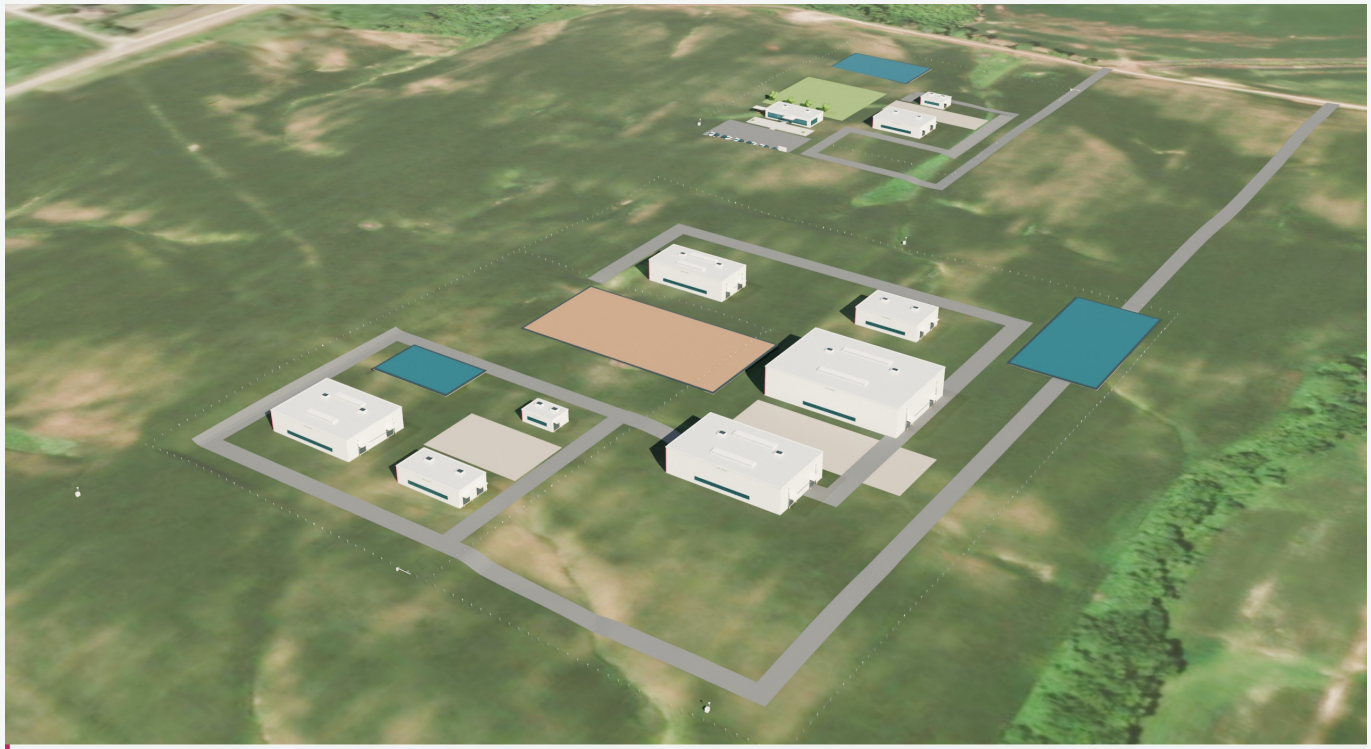
CONSTRUCTION GATE

Site rights, process classification, licenses, engineered design and released funding.

Architectural concept. Functional equipment and services allowances are included in the cost ledger; no detailed recovery process design or saleable pilot product is asserted. Imagery: Esri and contributors.

Reserve the option to expand responsibly

A 7,100 m² total plant program is shown as a conditional commercial concept, including the reused pilot.



Architectural concept | Imagery: Esri, Vantor, Earthstar Geographics and GIS User Community.

5,300 m² added

P04 recovery, P05 enclosed preparation, P06 residue dewatering, and P07 product/maintenance.

Separate capital

Reference expansion funding: $155.01M, additional to the $60M development ceiling. The 100,000 dry tonne/year basis is a parametric screen.

Evidence first

Rights, feed continuity, recovery, product specification, payable terms and a viable residue route precede industrial construction.

A residue investigation reserve is a land-use allowance, not a licensed tailings cell or proof of capacity. Long-term water and residue requirements can materially change the footprint and cost.

Conditional expansion includes 1,920 m² of P08 access-road resurfacing after future grading. No mine life or resource tonnage is inferred; capital is uncommitted. Imagery: Esri and contributors.

A preliminary material flow with measurable outputs

Local processing is chosen; the technology is selected through representative testwork and independent engineering.

Receive and characterize

Authorized feed arrives with chain of custody and documented acceptance criteria. Weigh, characterize and segregate it in enclosed receiving space.

Feed variability, diluted grade, moisture, sulfur, arsenic, cadmium and radionuclides determine what the plant may accept.

Test and demonstrate

Preparation and flexible testwork establish recovery, selectivity, mass balance, reagent demand, product purity and contaminant partitioning.

Physical sorting or concentration receives no assumed mass rejection or uranium retention until both are demonstrated. No process recipe is fixed by this concept.

Manage water and residues

Measure water inputs and outputs, prove treatment and recycle performance, characterize liquid and solid residues, and establish an authorized disposition route.

Secure product verification and dispatch follow customer specifications. Closure and financial assurance are part of the investment scope.

Advance the plant only when feed, recovery, residues, permits, customers and funding agree.

Material flow is a functional concept. The plant layout and equipment allowances are planning estimates, not a completed process design or recovery guarantee.

One model controls every view and quantity

The master geometry register is the spatial authority for GIS, drawings, Blender and the financial model.

Geographic control

Use WGS84 / UTM zone 16N in metres for the planning geometry. Source terrain is recorded with its original CRS and NAVD88 height datum.

Blender uses a documented local origin for numerical precision while retaining the geographic relationships. Camera positions, targets and fields of view are registered.

Feature control

Permanent IDs identify buildings, boundaries, gates, roads, utilities, water reservations, residues and monitors. Dimensions, rotation, height, phase, function and floor levels are recorded.

Any change propagates through scene generation, drawings, takeoffs and cost rows before publication.

Evidence control

Measured observations, interpreted anomalies and proposed infrastructure remain separate layers. Native source imagery is unchanged; display stretches and terrain meshes are labeled derivatives.

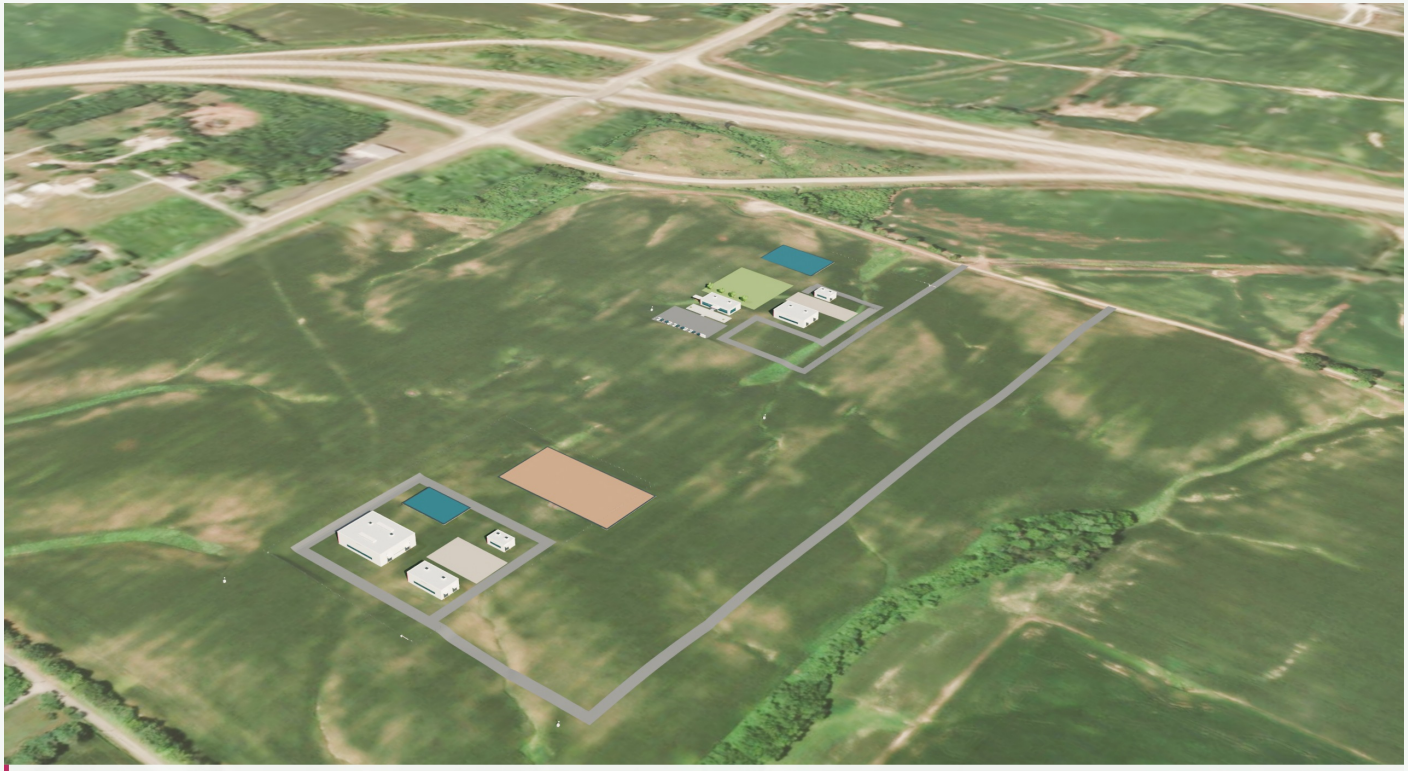
Interoperable GIS layers and reproducible import/build instructions are supplied. Software actually used is identified in the package.

A drawing revision is also a quantity and cost revision. Rendering geometry cannot quietly diverge.

ArcGIS-compatible GIS is provided; native ArcGIS Pro project output is not claimed where that software was unavailable. The shared editable Blender scene is included.

Build the campus, prove the pilot, gate expansion

Phases are visible in the same shared scene and use the same permanent feature IDs.



Architectural concept | Imagery: Esri, Vantor, Earthstar Geographics and GIS User Community.

PHASE 1 / DISCOVERY

Access, baseline, representative assays, drilling and the funded campus program.

PHASE 2 / LOCAL PILOT

Bench evidence, engineering and licenses precede campaign pilot construction.

PHASE 3 / CONDITIONAL

A separate industrial investment follows positive economics and verified feed supply.

The 24-month program milestone is a review target. Pilot commissioning can require 24-48 months or longer; approvals and readiness control the construction date. Imagery: Esri and contributors.

A funding schedule that reconciles to the scope

The model separates estimated expenditure from funding ceilings and unallocated headroom.

All amounts are unquoted September 2026 USD planning estimates. The cumulative development program includes the exploration campus, field work, a conditional 1 tonne/hour pilot, test campaigns and initial closure/assurance allowances.

Release	Scope estimate	Proposed ceiling	Headroom
A	$13.47M	$15.00M	$1.53M
B	$14.32M	$15.00M	$0.68M
C	$29.79M	$30.00M	$0.21M
Cumulative	$57.58M	$60.00M	$2.42M

The former $50-75 million phase range is superseded and is not added to the $60 million cumulative ceiling. The commercial 100,000 tonne/year option is separately costed and excluded from these releases. No government award, offtake advance or committed finance is booked.

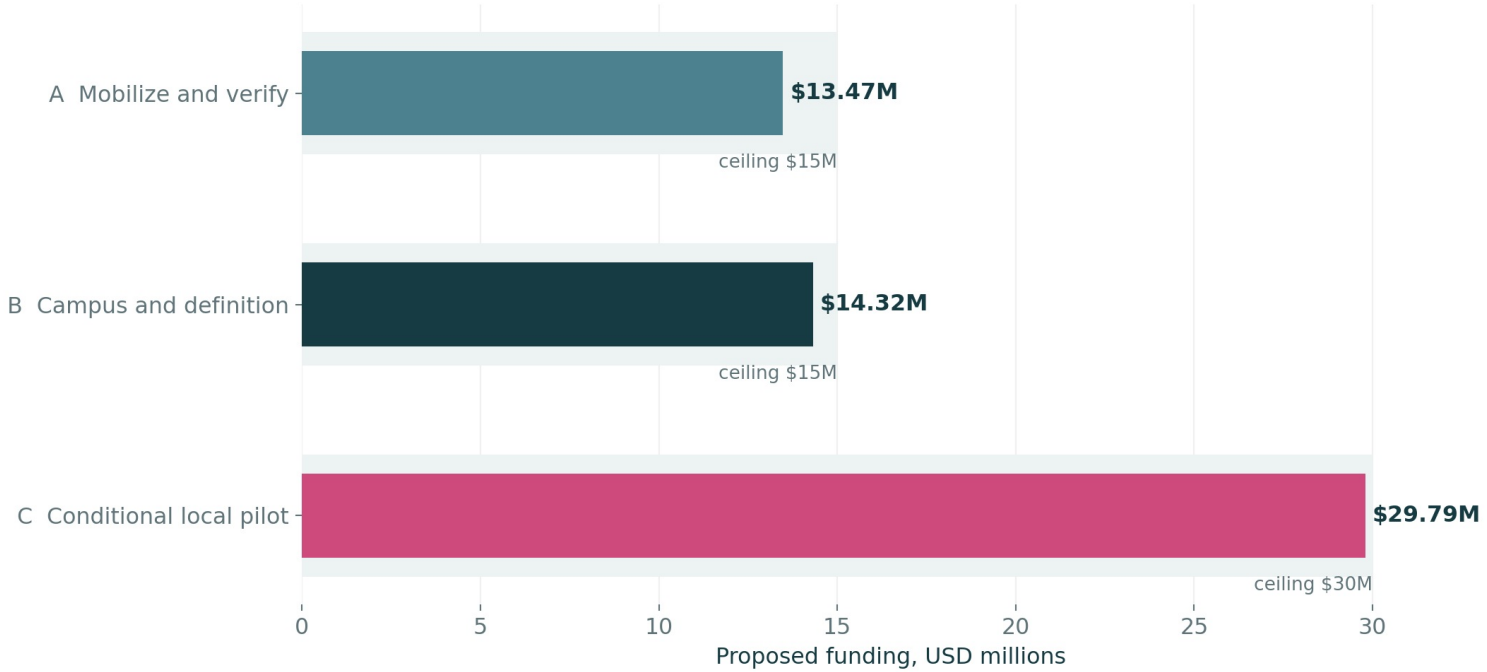
Source: Financial_Model.xlsx and feature-ID cost ledger. Contingency and unallocated ceiling headroom are distinct; neither is represented as a supplier quote.

Funding follows separately reviewed releases

Estimated scope, contingency and unused ceiling are visible rather than blended into one headline amount.

A staged Indiana investment

$57.58M defined scope within a $60M cumulative ceiling; $2.42M remains unallocated.



Proposed releases, not approved or committed funds. The commercial-scale expansion is additional.

The initial $15M amount is a first-release ceiling. The $60M ceiling is cumulative and includes that first release; neither is an approved commitment.

Source: editable financial model, current master geometry hash and cost ledger. Commercial expansion is excluded.

Building costs follow the actual facility schedule

Every single-storey building is measured from the same footprint used in GIS and Blender.

ID	Function	Gross floor area	Phase
C01	Welcome, GeoTrace and offices	450 m²	1
C02	Core analysis and secure sample hall	600 m²	1
C03	Secure storage and utilities	150 m²	1
M02	Sample shelter and field support	150 m²	1
P01	Campaign pilot process hall	1,200 m²	2
P02	Pilot receiving and sample warehouse	450 m²	2
P03	Water and control building	150 m²	2
P04	Conditional commercial recovery hall	2,400 m²	3
P05	Conditional enclosed preparation hall	1,500 m²	3
P06	Conditional residue dewatering hall	800 m²	3
P07	Conditional product and maintenance hall	600 m²	3

The building estimate separates building fabric, specialist fit-out and process equipment so scope is visible and double counting can be checked. Architectural detailing, signage and landscaping are assigned to their relevant feature or documented allowance.

The complete cost ledger also prices roads, paved areas, utilities, preliminary earthworks, water management, monitoring and closure. Planning quantities are not tender quantities.

A visible bridge from footprint to cost

The editable cost ledger prices the master quantities and identifies the funding release.

Selected building fabric and basic functional fit-out lines are shown below. Specialized analytical and process equipment are separate rows tied to their host building or work package.

Feature	Quantity	Planning unit rate	Extended amount	Release
C01	450 m2	$3,200/m2	$1.440M	B
C02	600 m2	$2,200/m2	$1.320M	B
C03	150 m2	$2,100/m2	$0.315M	B
P01	1,200 m2	$2,400/m2	$2.880M	C
P02	450 m2	$1,900/m2	$0.855M	C
P03	150 m2	$2,800/m2	$0.420M	C
M02	150 m2	$1,200/m2	$0.180M	A

Every unit rate shown is an unquoted planning assumption. The complete ledger adds external works, earthworks, utilities, equipment, staff, drilling, engineering, environmental work, working allowances and closure. The XLSX stores editable rates and recalculating formulas; the register stores the fixed source quantities.

Source: Cost_Ledger.csv and Master_Geometry_Register.json. Monetary rounding on this page does not alter the workbook calculations.

Cost control reaches beyond the buildings

The project has one quantity register, one cost basis and a visible path from a site feature to its funding phase.

Measured planning geometry

Footprint area, paved area, route length, perimeter and equipment-host ID come from the master register. Rates state their unit and source basis.

Terrain-to-design-surface cut/fill screens compare grading burdens. They are not a balanced engineered earthworks model, borrow design or geotechnical classification.

Explicit work packages

Drilling, assay QA/QC, engineering, permits, staffing, campaigns, project controls and contingencies are separately named work packages.

Supplier quotations are not available. Costs are therefore transparent screening allowances to replace through geotechnical work, utility letters and competitive procurement.

Close the loop

The QA report reconciles building IDs, areas, phases and the geometry hash used by finance and Blender. Unpriced exclusions and conditional expansion scope are identified.

A conceptual mine pad does not generate ore tonnage, stripping costs or production revenue. A residue reservation does not prove containment capacity.

Before each release: reconcile geometry, scope, unit rates, contingency, cash timing and closure.

Cost accuracy is limited by the current design maturity. The estimate is intended to control staged development decisions and identify the evidence needed for procurement.

Build a service business alongside geological verification

Milieu GeoTrace can provide a commercial pathway while mineral development remains conditional.

Operating driver	Reference planning basis	Commercial implication
Campus team	7 full-time equivalents	Project leadership, geology/core, GIS/data, technical and administrative support.
Annual campus run rate	$1.47M	Staffed cost hurdle; distinguish funded internal work from external sales.
External service sales hurdle	$2.68M / year	Assumes 55% service gross margin. This is a required sales level, not contracted revenue.
Pilot team	8 pilot FTE + 2 campus FTE	Pilot-year funded team: 8 campaign/technical staff plus 2 retained campus/support staff.
Conditional commercial team	32 FTE	Separate industrial staffing scenario; excludes any claim of approved jobs or tax credits.

Customer development should prioritize land and feed owners, existing mines and quarries, material owners, geological institutions, laboratories and engineering firms. Paid mapping, sensor integration, core management and funded test campaigns require negotiated scope and acceptance terms.

Source: editable financial model. No service contract, feed contract, processing acceptance or product offtake is assumed.

The commercial screen defines the advancement hurdle

Hypothetical diluted plant-feed grades are kept separate from historical assays and airborne equivalent uranium.

Reference screen: 100,000 dry tonnes/year, 100 ppm elemental U, 70% recovery, 95% payability and $70/lb U_3O_8. These are planning inputs, not a resource or operating forecast.

Case	Net U value / t	Full cash cost / t	Annual cash result	Cash break-even grade
Downside	$3.76	$365.49	$-21.70M	5,826 ppm U
Reference	$11.80	$214.66	$-20.29M	1,819 ppm U
Upside	$30.09	$137.51	$-16.11M	686 ppm U

All three tested standalone uranium cases are negative. Industrial construction therefore needs materially better verified feed economics, lower-cost already-mined material, or independently demonstrated additional payable value. The current evidence does not justify a resource NPV, project IRR or invented mine life.

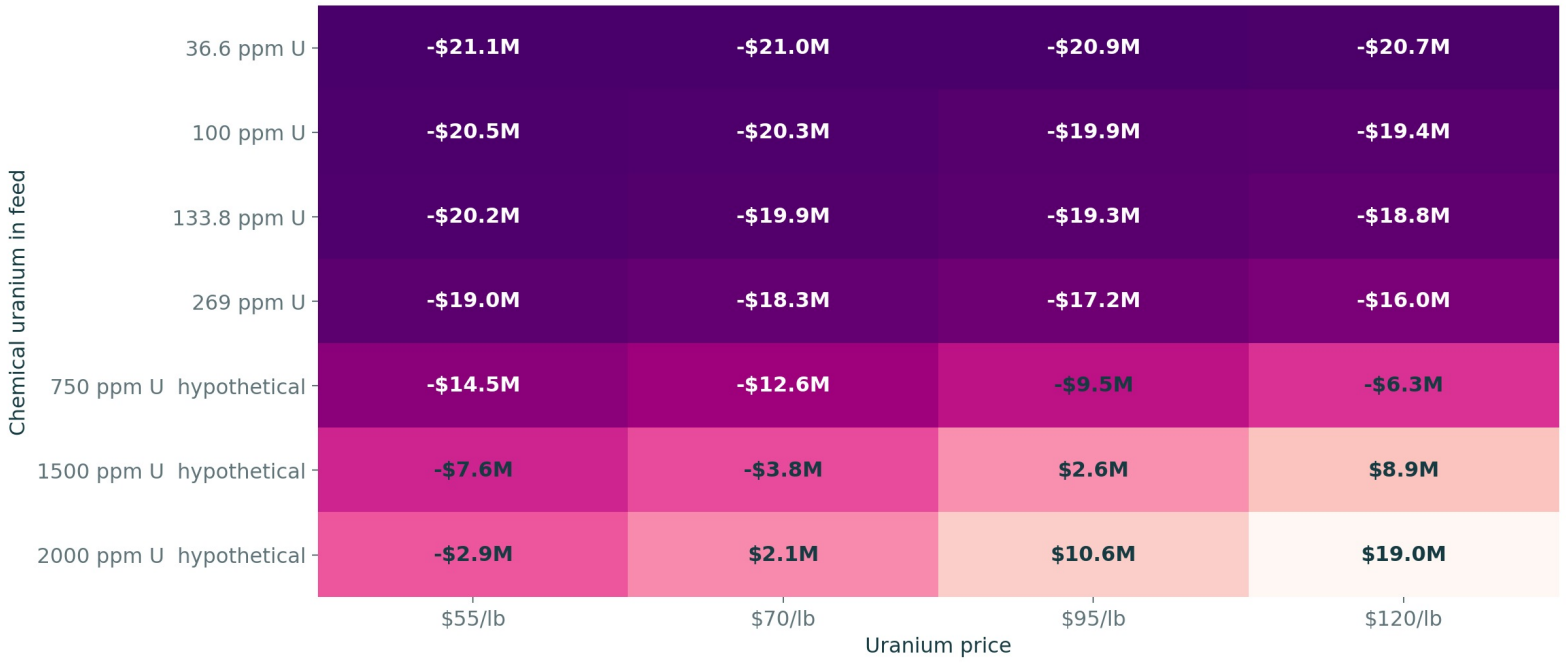
Full cash costs include operating and sustaining items defined in the workbook. Break-even is a cash threshold, not a capital-return hurdle; full investment approval requires both.

Price and diluted grade must carry the full costs

Sensitivity analysis makes the commercial hurdle visible before industrial capital is released.

What would have to change

Annual cash after sustaining capital, before tax and financing; all other reference inputs held constant.



36.6 / 133.8 ppm are historical horizon means; 269 ppm is a sample maximum. Higher grades are unproved sensitivities.

The colored outcomes use hypothetical chemical uranium in diluted plant feed. They do not reclassify historical observations into a resource or convert eU into assay grade.

Planning scenarios, not forecasts. Other drivers, including throughput, recovery, payability, processing, haulage and capital, remain editable and are tested in the workbook.

Local processing can reduce bulk haulage

Off-site licensed recovery remains a benchmark and contingency, with no acceptance or campaign capacity assumed.

Selected local strategy

Develop a nearby authorized pilot first. Measure recovery, residues and delivered costs on representative local materials.

The commercial option is designed for local feed characterization and process learning; it requires a separate capital decision and reliable water, power and residue capacity.

External benchmark

Compare transport, treatment, minimum lots, recovery, payability, contaminants, campaign availability and residue ownership using written terms.

The modeled external route is unquoted. A distant licensed mill is not an available customer merely because it has published nameplate capacity.

Co-products and thorium

Mo, V, Zn and treatment fees remain separate tested options. Their incremental recovery cost, specification, penalties and payability must be established.

Thorium revenue remains zero. A measured mineral proxy or strategic ambition does not establish a saleable thorium product or a customer.

Commercial value must survive dilution, recovery losses, treatment costs, transport and closure.

No radiometric eU is used as financial feed grade. A stoichiometric U-to-U_3O_8 conversion is applied only to hypothetical chemical uranium inputs.

A practical sequence of decisions

The work program can advance in parallel where rights and authorizations permit, with clear stop-or-advance reviews.

Indicative window	Work and evidence	Release condition
0-3 months	Site options, source audit, archive/core access, baseline design and partner interviews.	Approved work scope, lawful access and independent QA/QC arrangements.
3-12 months	Representative sampling, stratigraphic verification, drilling design, bench metallurgy and campus engineering.	Evidence quality, geotechnical/drainage basis and funded campus occupancy.
12-24 months	Feed variability, material balances, residue tests, regulator engagement and pilot procurement design.	Pilot evidence and licensing scope support a construction decision.
24-48+ months	Conditional pilot construction and authorized test campaigns.	Rights, permits, design, funding and operating readiness.
After independent feasibility	Potential commercial mine and local recovery expansion.	Verified feed, positive economics, customer terms, permits, closure security and finance.

Timing is a planning assumption. It does not imply approval or that a uranium-recovery pilot can be commissioned within the first 24 months.

Community confidence is an operating requirement

A welcoming campus sits alongside a controlled technical program with visible environmental responsibilities.

Neighbouring communities

Confirm occupied school grounds and residences, engage local officials and landowners, and use measured separation distances as one part of the siting decision.

Visitor access is distinct from controlled operations. Haulage routes, operating hours, noise and dust controls need a local traffic and community review.

Water and land

Avoid mapped wetlands and sensitive drainage where practical, then verify them in the field. Model runoff, groundwater and contact-water management for the actual operating scope.

Planning buffers are not statutory setbacks. Distance alone does not resolve wind, groundwater, flood or dust pathways.

Closure from the start

Restore drill pads and access as work finishes. Establish material inventories, residue disposition, reclamation criteria and financial assurance before larger disturbance.

Long-term water treatment, monitoring and care remain explicit design and cost risks. A future residue reserve is not an approved tailings facility.

Publish understandable maps, evidence dates and monitoring qualifiers. Invite engagement at each material expansion.

No public consultation, permit, environmental clearance or landowner agreement is represented as completed unless specifically documented in the source register.

Build a project-specific authorization pathway

Local processing proceeds through agency scoping, engineered controls and issued authorizations before construction or operation.

Workstream	Verified jurisdiction or requirement	Development gate
Radioactive materials	NRC currently lists Indiana as a Non-Agreement State. Its 2026 proposed agreement is not an executed transfer; proposed Article II.B retains 11e(2) tailings under NRC.	Confirm licensing authority and material classifications at application. Do not assume the proposed state agreement removes NRC uranium-recovery jurisdiction.
Mining and recovery	NRC distinguishes conventional mining from uranium recovery. Chemical recovery and applicable source/byproduct material activities require a project-specific licensing determination.	Engage NRC and Indiana agencies before selecting the pilot scope, material inventory and residue disposition. Determine DNR requirements for the proposed excavation.
Air and receptors	IDEM air permitting depends on actual emissions and applicable rules. Current property and receptor screening is preliminary.	Verify occupied receptors; establish meteorology, dust and emissions controls, dispersion basis and a reviewed monitoring program.
Water and construction	IDEM construction stormwater coverage applies at the relevant one-acre/common-plan threshold. Industrial discharge and treatment works have separate requirements.	Prepare drainage and water balances, confirm supply, and establish authorized treatment, discharge or disposal routes.
Wetlands and floodways	IDEM Section 401 and state wetland review, USACE Section 404 and DNR water/floodway responsibilities may apply.	Complete delineation and agency determinations. A screening map or water-withdrawal registration does not establish permission or water entitlement.
Access, shipment and closure	Local zoning/building/fire, road access, utility and applicable material-transport requirements remain separate.	Confirm site control, utility capacity, carrier acceptance, residue design, reclamation and financial assurance before the relevant release.

Sources AP05-AP08 and AP12-AP17. Preliminary agency-scoping matrix as of 17 September 2026; no permit determination, approval or exemption is represented.

Treat public finance as an additional pathway

The proposed development budget includes no grant, incentive award or public loan proceeds.

Potential route	Current published position	Action and forecast treatment
DOE Energy Dominance Financing	The Section 1706 program identifies potential critical-material projects, subject to DOE eligibility and credit review.	Request an eligibility discussion when feed, technology, site rights and repayment are credible. No Milieu eligibility or commitment established; $0 forecast proceeds.
OSC National Security Fund Finance	The current call seeks qualified investment fund managers; proposals are due at 5 p.m. EDT on 1 November 2026.	A potential future investor-fund channel. It is not a direct Milieu grant application. No named partner or committed support; $0 forecast proceeds.
OSC original Equipment Finance call	The original Part 1 window closed on 3 February 2025. Its published borrower tests do not support an unsupported early-stage company.	Track future notices and any credible sponsor-backed route. Do not portray the closed call as available mobilization finance.
Indiana EDGE	IEDC describes a performance-based payroll tax credit tied to qualified employment and certified performance.	Seek a project-specific assessment once entity, jobs, wages and timing are established. No award or credit monetization included.

Critical-mineral status is a starting point for eligibility review. It does not confer automatic support. The investment proposition rests on separately funded evidence gates and demonstrated commercial economics, with any future public award disclosed and modeled only when its basis is credible.

Sources AP18-AP21, accessed 17 September 2026. Program availability may change; confirm the live notice and terms before submitting an application.

A domestic materials opportunity with distinct businesses

Milieu Minerals and Milieu GeoTrace create upstream capability; Milieu Maritime Forge remains a separate downstream development context.

Milieu Minerals

Own the materials development scope, technical governance, financing decisions and operating liabilities. Potential output would be an authorized concentrate or intermediate product.

An Indiana mineral discovery and industrial output must be independently established before assigning supply value.

Milieu GeoTrace

Maintain the reusable data architecture: source provenance, native imagery, monitored change, field validation and connected asset records.

Expansion elsewhere in the U.S. or internationally is a repeatable service and development ambition after successful local verification and operation.

Milieu Maritime Forge

Create a context for future industrial partnerships and procurement knowledge, without assuming a purchase commitment, reactor fuel saving or an available Indiana feedstock.

Conversion, enrichment where applicable, fuel fabrication and qualification are separate downstream activities and authorizations.

A repeatable business begins with a verified local operation and a disciplined evidence-to-investment process.

No reactor-ready material, resource valuation, intercompany offtake agreement or downstream fuel qualification is assumed.

Methods and the next evidence purchases

Use advanced analysis when it changes a decision, and document what was actually completed.

Next work	Decision benefit	Control
Original core, logs and sample inventory	Resolve the SDH-377 identifier and depth conflicts; tie chemical assays to location and stratigraphy.	Fund before designing mine depth or claiming representative feed.
Survey, geotechnics and drainage	Replace preliminary floor levels and earthworks with engineering quantities.	Update geometry, Blender, drawings and cost ledger together.
Local radiometrics / downhole gamma	Test exposed materials and log stratigraphy where burial makes surface grids inadequate.	Obtain permits, calibration, background controls and independent chemical validation.
Hyperspectral / commercial orthomosaic	Improve exposed-soil mineral context and current site detail when existing imagery cannot answer a decision.	Verify coverage, pixels, quality and license before use; treat tasking costs as quotations to obtain.
Validated multimodal models	Combine stratigraphy, assays, geophysics and imagery with independently located observations.	Spatial holdouts and uncertainty calibration only after defensible labels exist.

The supplied advanced-imagery inventory separates acquired pixels, metadata-only coverage, inaccessible sources and proposed work. No hypothetical accuracy or discovery probability is reported.

Primary evidence references

Source-level metadata, acquisition dates, rights, hashes and transformations are included in the project package.

ID	Source	Direct reference
EVID-02	Organic-matter-rich Pennsylvanian Black Shales as a Source of Critical Minerals	https://doi.org/10.14434/ijes.v4i1.34421
EVID-03	Terrestrial radioactivity and gamma-ray exposure in the United States and Canada	https://pubs.usgs.gov/of/2005/1413/
EVID-04	Airborne magnetic and radiometric survey, southeastern Illinois, western Kentucky, and southern Indiana, 2019, version 2.0	https://doi.org/10.5066/P14PJFWS
EVID-05	Bayesian modeling of NURE airborne radiometric data for the conterminous United States: predictions and grids	https://www.usgs.gov/data/bayesian-modeling-nure-airborne-radiometric-data-conterminous-united-states-predictions-and
EVID-06	Indiana Coal Quality Database current public query	https://portal.igs.indiana.edu/arcgis/rest/services/DI21_ICQD/MapServer/0
EVID-07	Indiana regional coal-depth services and IGWS MM48 bedrock geology	https://portal.igs.indiana.edu/arcgis/rest/services

Links are primary publications or authoritative data services. Local original files and analysis inputs are retained unchanged where acquired.

Primary evidence references continued

Source-level metadata, acquisition dates, rights, hashes and transformations are included in the project package.

ID	Source	Direct reference
EVID-08	Illinois, Indiana, and Ohio Magnetic and Gravity Maps and Data: A Website for Distribution of Data	https://pubs.usgs.gov/ds/321/
EVID-09	U.S. Census TIGERweb Indiana county boundaries	https://tigerweb.geo.census.gov/arcgis/rest/services/TIGERweb/State_County/MapServer/1

Links are primary publications or authoritative data services. Local original files and analysis inputs are retained unchanged where acquired.

Primary sources behind the decisions

The complete source register, archived responses and reproducible acquisition files accompany the plan.

ID	Authority / evidence	Direct primary source
AP01	EPA: RadNet methods, units and uncertainty	https://www.epa.gov/enviro/radnet-search-user-guide
AP02	EPA: sampling and analytical schedule	https://www.epa.gov/radnet/radnet-sampling-and-analyses-schedules
AP05	NRC: current Indiana jurisdiction	https://www.nrc.gov/agreement-states/indiana
AP07	Federal Register: proposed Indiana agreement	https://www.govinfo.gov/content/pkg/FR-2026-05-22/pdf/2026-10323.pdf
AP09	Final 2025 critical minerals list	https://www.govinfo.gov/content/pkg/FR-2025-11-07/pdf/2025-19813.pdf
AP10	EIA: 2025 Uranium Marketing Annual Report	https://www.eia.gov/uranium/marketing/pdf/umar.pdf
AP19	OSC: current fund-manager finance route	https://www.cto.mil/osc/investment-fund-financing/
AP20	DOE: Energy Dominance Financing	https://www.energy.gov/edf/energy-dominance-financing-program

Air_Policy_Sources.json contains all 21 air, jurisdiction, market and funding references, including Indiana agency pages. EPA query URLs and response hashes are retained in RadNet_Acquisition_Log.json; the nine latest isotope results preserve sample, analytical and uncertainty metadata where available.

Research cut-off: 17 September 2026. Refer to each analytical layer and the site-source register for Indiana imagery, geological evidence, rights and receptor provenance.

Imagery and site-data references

Native analytical resolution is preserved. Visualization exports are explicitly distinguished from measured source detail.

Source	Project use	Reference
Copernicus Sentinel-2 C1 L2A	11 May 2026 calibrated reflectance, 10 m / 20 m bands, QA, NDVI, SWIR ratios and PCA.	https://registry.opendata.aws/sentinel-2-l2a-cogs/
USGS Landsat Collection 2	1 September 2026 surface temperature: 100 m thermal sensor,30 m product grid and native QA.	https://www.usgs.gov/landsat-missions/landsat-collection-2-surface-temperature
NASA EMIT / DLR EnMAP	Footprint metadata and acquisition/access assessment; no analyzed hyperspectral pixels.	https://cmr.earthdata.nasa.gov/ https://geoservice.dlr.de/eoc/ogc/stac/v1/
Indiana authoritative GIS	Parcels, roads, school points, wetlands, geology, water and flood screening; exact endpoints in site-source register.	https://www.indianamap.org/
USGS 3DEP / Indiana terrain	Native 1 m elevation windows and source acquisition metadata; derived site-design surfaces.	https://apps.nationalmap.gov/downloader/
Developer and county records	Generation Springs, ISRR and Mount Vernon comparison; title, occupancy and availability still require verification.	Detailed sources and preserved maps in research/siting.

Review source registers for licenses, timestamps, precision and limitations. No restricted commercial imagery license, title clearance or native ArcGIS Pro project is claimed.