

Sedi-Slurry Comprehensive Apparatus Concept Atlas

60 machinery and apparatus concepts • Version 1.0

Field	Record
Originator of platform architecture	Christopher Alan Woody
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CENTRAL DESIGN NARRATIVE

Water cools. Dirt covers. Sedi-Slurry engineers the combination. This analogy is a functional starting point, not proof of performance. The platform must meter, mix, protect, bypass, purge, recover, and measure the combination—and compare it with water alone.

PUBLIC STATUS

Unverified machinery concepts for qualified research. This atlas is not a certified design, fabrication manual, validated formula, safety approval, regulatory submission, or authorization for active-fire deployment.

1. Scope and publication purpose

This atlas discloses 60 core apparatus concepts and numerous variants across the presently identified Sedi-Slurry architecture. It is designed for public study, defensive publication, qualified engineering discussion, and controlled-test planning. “Comprehensive” means comprehensive as of the preparation date; it does not imply that no future embodiment can be conceived.

The familiar campfire insight belongs in the design basis, but it must be engineered carefully. Water supplies cooling. Wet, conditioned mineral material may provide coating, coverage, retention, or other effects that must be measured. Simply covering hot coals with dry dirt can retain heat, so every apparatus is organized around controlled wetting, mixing, delivery, water-only comparison, cooling verification, purge, and recovery.

OWNERSHIP AND NOVELTY BOUNDARY

Christopher Alan Woody is identified as originator of the Sedi-Slurry platform architecture. Individual pumps, screens, augers, mixers, valves, nozzles, vehicles, sensors, and other components may be conventional. This atlas does not claim component-specific novelty, patentability, freedom to operate, certification, or standards conformity.

Sedi-Slurry Common Platform Architecture

Water cools. Earth can cover or coat. Engineering controls the combination and tests the result.



Two material pathways

LOCAL: document → sample → screen → condition → meter → test PREPARED: verify lot → enclosed receive → meter → mix → test

Both retain water-only comparison, stop, bypass, purge, containment, and traceable data.

2. Common requirements applied to every concept

- Keep a water-only comparison and, where hydraulically relevant, a water-only failover path.
- Document local material source, retain a representative sample, and reject obvious debris, waste, tailings, ash, industrial residue, contamination, or biological-transport hazards.
- Keep raw sediment away from conventional clean-water pumps in early designs; prefer separate slurry pumps or downstream injection after owner-approved isolation.
- Measure the variables required to reconstruct the test: material identity, particle distribution, moisture, feed setting, water flow, pressure, ratio proxy, temperature, mode, purge, maintenance, and result.
- Guard moving machinery; control pressure and stored energy; provide emergency stop, lockout/tagout, isolation, relief, containment, and stop-work authority.
- Capture washout and runoff. Do not discharge to waterways or sensitive areas. Determine applicable environmental and waste requirements.
- Treat each material-machine-ratio-temperature combination as a new system. A successful bench result does not authorize scale-up.

3. Apparatus inventory

ID	Concept	Category	Scale
SSR-A01	Reverse-Rotation Walk-Behind Local-Ground Harvester	Material acquisition	Walk-behind

ID	Concept	Category	Scale
SSR-A02	Tow-Behind Linear Soil Harvester	Material acquisition	Tow-behind
SSR-A03	Screened Loader-Bucket Receiver	Material acquisition	Bulk
SSR-A04	Flexible Pneumatic Material Conveyance — Dirt Hose	Material acquisition	Portable to vehicle-mounted
SSR-A05	Wet-Sediment Suction and Dredge Intake	Material acquisition	Portable to marine research
SSR-A06	Auger/Probe Earth Feeder	Material acquisition	Point collection
SSR-A07	Bulk Hopper, Dump-Truck, and Stockpile Receiver	Material acquisition	Bulk stationary/mobile
SSR-B01	Grizzly and Debris Scalper	Conditioning and classification	All scales
SSR-B02	Vibrating, Trommel, and Multi-Deck Classifier	Conditioning and classification	Bench to bulk
SSR-B03	Lump Breaker and Mineral Pulverizer	Conditioning and classification	Bench to mobile plant
SSR-B04	Wet Hydroclassifier and Hydrocyclone	Conditioning and classification	Bench to skid
SSR-B05	Foreign-Object and Magnetic Separator	Conditioning and classification	All scales
SSR-B06	Source Sampling, Characterization, and Reject Station	Conditioning and classification	Field to stationary
SSR-C01	Bag and Supersack Prepared-Material Induction Station	Metering and mixing	Bench to bulk
SSR-C02	Loss-in-Weight, Belt, and Auger Metering Feeder	Metering and mixing	All scales
SSR-C03	Batch Paddle-Mixer Tank	Metering and mixing	Batch
SSR-C04	Continuous Twin-Shaft or Twin-Auger Mixer	Metering and mixing	Continuous mobile/stationary
SSR-C05	Venturi/Eductor Mineral Induction Mixer	Metering and mixing	Inline
SSR-C06	Annular Downstream Injection and Mixing Collar	Metering and mixing	Inline attachment
SSR-C07	Recirculating Slurry Conditioning Tank	Metering and mixing	Batch/continuous buffer
SSR-D01	Conventional Fire-Pump Isolation Skid	Hydraulic protection and transfer	Apparatus interface
SSR-D02	Water-Only Bypass and Failover Manifold	Hydraulic protection and transfer	All delivery systems
SSR-D03	Slurry-Rated Centrifugal Transfer-Pump Skid	Hydraulic protection and transfer	Skid to bulk
SSR-D04	Progressive-Cavity Positive-Displacement Module	Hydraulic protection and transfer	Metering to transfer
SSR-D05	Peristaltic Small-Flow Test Feeder	Hydraulic protection and transfer	Laboratory/small pilot
SSR-D06	Booster and Relay Slurry Station	Hydraulic protection and transfer	Long-line research
SSR-E01	Solids-Compatible Handline Nozzle	Application and delivery	Handline research

ID	Concept	Category	Scale
SSR-E02	Dual-Channel Water/Slurry Nozzle	Application and delivery	Handline/monitor
SSR-E03	Master-Stream Monitor and Turret	Application and delivery	Master stream
SSR-E04	Wide-Fan Ground-Coating Boom	Application and delivery	Plot/line application
SSR-E05	Ember Mop-Up and Penetration Lance	Application and delivery	Mop-up research
SSR-E06	Fireline and Trench Applicator	Application and delivery	Contained field analog
SSR-E07	Hose-Lay Distribution and Section Manifold	Application and delivery	Multi-outlet
SSR-E08	Remote Applicator Head	Application and delivery	Remote research
SSR-F01	Hand-Cart and Microprototype Unit	Mobile and stationary platforms	Bench/microprototype
SSR-F02	UTV/ATV Modular Skid	Mobile and stationary platforms	Light mobile
SSR-F03	Pickup and Trailer Research Skid	Mobile and stationary platforms	Mobile pilot
SSR-F04	Tender and Dump-Truck Batch Module	Mobile and stationary platforms	Heavy mobile
SSR-F05	Fire-Engine Retrofit Sidecar	Mobile and stationary platforms	Professional research interface
SSR-F06	Tracked Teleoperated Crawler	Mobile and stationary platforms	Remote mobile
SSR-F07	Stationary Community Sedi-Slurry Station	Mobile and stationary platforms	Stationary
SSR-G01	Containerized Mobile Mixing Plant	Specialized, thermal, and recovery systems	Institutional pilot
SSR-G02	Marine and Wetland Research Platform	Specialized, thermal, and recovery systems	Marine research
SSR-G03	Aerial and Airbase Loading Pathway	Specialized, thermal, and recovery systems	Future airbase; not early prototype
SSR-G04	UAS Small-Sample Test Applicator	Specialized, thermal, and recovery systems	Laboratory only
SSR-G05	Chilled-Water Heat-Exchange Module	Specialized, thermal, and recovery systems	Bench/pilot
SSR-G06	Thermal Reservoir and Insulated Transfer System	Specialized, thermal, and recovery systems	Contained thermal research
SSR-G07	Frozen Mineral-Water Article Former and Contained Feeder	Specialized, thermal, and recovery systems	Laboratory only
SSR-G08	Clean-Water Purge and Flush Skid	Specialized, thermal, and recovery systems	All systems
SSR-G09	Reverse-Flush and Line-Pigging Station	Specialized, thermal, and recovery systems	Purpose-designed lines only
SSR-G10	Washout, Settling, and Solids-Recovery Station	Specialized, thermal, and recovery systems	Pilot to institutional
SSR-G11	Runoff Capture and Mobile Dewatering Module	Specialized, thermal, and recovery systems	Controlled outdoor testing
SSR-H01	Sensor Spool and Inline Measurement Package	Controls, interfaces, and test systems	All test scales
SSR-H02	Control and Data-Logging Cabinet	Controls, interfaces, and test systems	All instrumented systems

ID	Concept	Category	Scale
SSR-H03	Material Chain-of-Custody Kiosk	Controls, interfaces, and test systems	All research
SSR-H04	Closed Hydraulic and Mechanical Test Loop	Controls, interfaces, and test systems	Bench to full-scale hydraulic
SSR-H05	Abrasion, Clogging, and Nozzle-Pattern Bench	Controls, interfaces, and test systems	Laboratory/pilot
SSR-H06	Instrumented Comparative Fire-Test Rig	Controls, interfaces, and test systems	Qualified fire facility only
SSR-H07	Environmental and Runoff Test Station	Controls, interfaces, and test systems	Laboratory/contained plot
SSR-H08	Modular Interface and Quick-Connect Architecture	Controls, interfaces, and test systems	Entire platform family

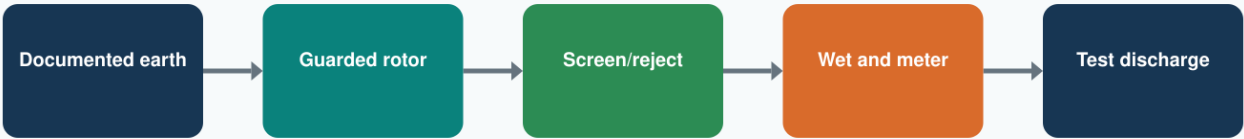
Reverse-Rotation Walk-Behind Local-Ground Harvester

Material modes: Local and prepared material | Scale: Walk-behind | Status: research concept

SSR-A01 • Material acquisition

Reverse-Rotation Walk-Behind Local-Ground Harvester

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

source documentation • debris and contamination screening • guarding/stability review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Gather suitable shallow mineral earth near a bounded test area while keeping collection, water addition, and discharge within one compact research platform.
Operating concept	A guarded ground-engaging rotor turns opposite intended travel, lifting loose mineral material into a screened transfer throat; a separate water path wets the accepted fraction before a forward or side discharge stage.
Principal assemblies	guarded reverse-rotation rotor; adjustable depth/skid shoes; debris grate; screened throat; water manifold; metering gate; mixing/discharge chamber; traction and dead-man controls
Functional sequence	document and inspect source → engage shallow collection rotor → reject roots/rocks/trash → meter accepted mineral feed → add water downstream → discharge to test hose, tray, or receiver → stop, isolate, and purge
Instrumentation	material-source record; feed-rate indication; jam/overload status
Safeguards	guard exposed motion; reject debris before metering; provide emergency stop and lockout points
Failure modes for review	rotor kickback or entanglement; unstable travel on slope; oversize entry; dust before wetting; soil disturbance and biological transport
Disclosed variants	self-propelled wheeled; tracked low-ground-pressure; electric tethered; battery research unit; receiver-only version without discharge
Minimum validation gates	source documentation; debris and contamination screening; guarding/stability review; repeatable feed trial

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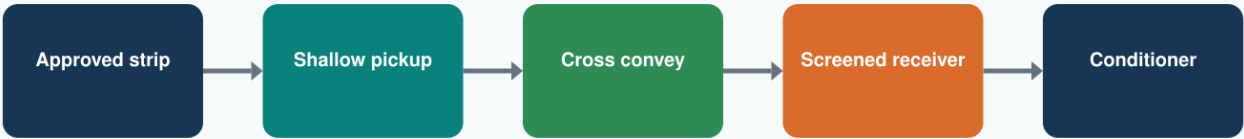
Tow-Behind Linear Soil Harvester

Material modes: Local and prepared material | Scale: Tow-behind | Status: research concept

SSR-A02 • Material acquisition

Tow-Behind Linear Soil Harvester

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

source documentation • debris and contamination screening • guarding/stability review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Collect a wider, shallow strip of suitable local mineral material behind a UTV, tractor, or purpose-built test carrier.
Operating concept	A guarded rotary, chain, or shallow scarifying head loosens material into a cross-auger or belt that feeds a central screened receiver without requiring the towing vehicle to process solids through its own pump.
Principal assemblies	tow frame and articulation; depth-limited collection head; cross conveyor; scalping grate; receiver hopper; load sensor; lift/transport lock; remote emergency stop
Functional sequence	survey and approve collection strip → lower depth-limited head → loosen and convey material → reject oversize → accumulate in receiver → transfer to separate conditioner → raise and lock for transport
Instrumentation	material-source record; feed-rate indication; jam/overload status
Safeguards	guard exposed motion; reject debris before metering; provide emergency stop and lockout points
Failure modes for review	tow instability; buried-object strike; excessive soil disturbance; conveyor entanglement; overloaded receiver
Disclosed variants	rotary tine; chain trencher; flail pickup; belt windrow pickup; three-point-hitch research attachment
Minimum validation gates	source documentation; debris and contamination screening; guarding/stability review; repeatable feed trial

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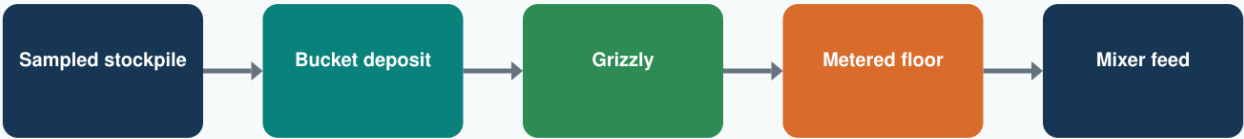
Screened Loader-Bucket Receiver

Material modes: Local and prepared material | Scale: Bulk | Status: research concept

SSR-A03 • Material acquisition

Screened Loader-Bucket Receiver

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

source documentation • debris and contamination screening • guarding/stability review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Use common earthmoving equipment only as a bulk transfer source while a purpose-built receiver performs screening, documentation, and controlled feed.
Operating concept	A loader, skid-steer, or excavator deposits material into a guarded receiving hopper with grizzly bars and a low-speed metering floor; the fire-water system remains physically separate.
Principal assemblies	wide receiving hopper; grizzly/scalper; live-bottom or apron feeder; oversize dump gate; dust/spray enclosure; load cells; camera; interlocked access panels
Functional sequence	sample stockpile → deposit bucket load → separate oversize → measure received mass → meter to classifier or mixer → capture rejects → wash down in containment
Instrumentation	material-source record; feed-rate indication; jam/overload status
Safeguards	guard exposed motion; reject debris before metering; provide emergency stop and lockout points
Failure modes for review	falling material; hopper engulfment; bridge collapse; foreign metal; dust and contaminated stockpile
Disclosed variants	fixed hopper; trailer hopper; low-profile skid-steer hopper; excavator-fed highwall hopper
Minimum validation gates	source documentation; debris and contamination screening; guarding/stability review; repeatable feed trial

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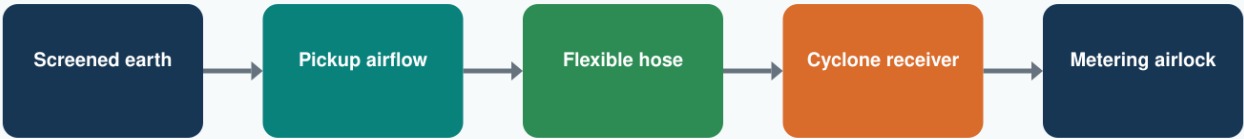
Flexible Pneumatic Material Conveyance — Dirt Hose

Material modes: Primarily dry local or stockpiled material | Scale: Portable to vehicle-mounted | Status: research concept

SSR-A04 • Material acquisition

Flexible Pneumatic Material Conveyance — Dirt Hose

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

source documentation • debris and contamination screening • guarding/stability review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Move suitable dry or damp loose mineral material from a stockpile or collection head through a flexible path to a remote receiver.
Operating concept	A guarded pickup head and controlled airflow entrain material through abrasion-resistant hose; a cyclone or receiver separates solids from transport air before metering.
Principal assemblies	pickup wand or hood; air mover; abrasion-resistant hose; grounding/bonding path; cyclone receiver; dust filter; airlock feeder; hose-support and wear indicators
Functional sequence	inspect and pre-screen source → entrain acceptable material → convey through grounded hose → separate transport air → filter exhaust → meter captured solids → inspect hose wear
Instrumentation	material-source record; feed-rate indication; jam/overload status
Safeguards	guard exposed motion; reject debris before metering; provide emergency stop and lockout points
Failure modes for review	dust exposure; static charge; hose plugging; abrasive wear-through; biological or contaminant transport
Disclosed variants	vacuum pickup; positive-pressure conveyance; short flexible auger hose; vehicle-mounted boom hose; enclosed stockpile reclaim
Minimum validation gates	source documentation; debris and contamination screening; guarding/stability review; repeatable feed trial

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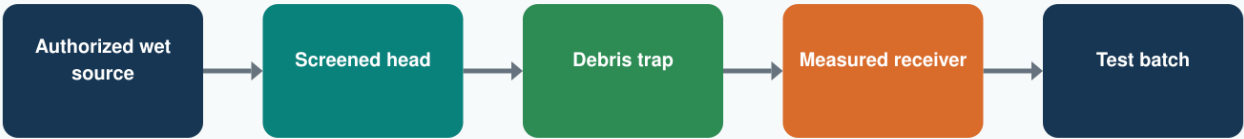
Wet-Sediment Suction and Dredge Intake

Material modes: Wet local sediment only | Scale: Portable to marine research | Status: research concept

SSR-A05 • Material acquisition

Wet-Sediment Suction and Dredge Intake

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

source documentation • debris and contamination screening • guarding/stability review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Acquire already-wet sediment or muddy water for characterization and bounded testing without assuming that the source is environmentally or mechanically suitable.
Operating concept	A low-disturbance screened suction head draws a water-sediment stream to a settling/measurement receiver; oversize and foreign matter are excluded before any research mixing loop.
Principal assemblies	screened suction head; low-shear suction pump; debris trap; sample port; density/turbidity spool; settling receiver; return-water control; containment hose
Functional sequence	obtain site/environmental authorization → sample source → lower screened head → draw low-disturbance stream → trap debris → measure and retain batch → route only approved test fraction onward
Instrumentation	material-source record; feed-rate indication; jam/overload status
Safeguards	guard exposed motion; reject debris before metering; provide emergency stop and lockout points
Failure modes for review	aquatic disturbance; unapproved withdrawal/discharge; pump ingestion; organism transport; unstable or contaminated sediment
Disclosed variants	shoreline head; shallow sump intake; floating intake; boat-mounted research intake; closed-tank simulated sediment source
Minimum validation gates	source documentation; debris and contamination screening; guarding/stability review; repeatable feed trial

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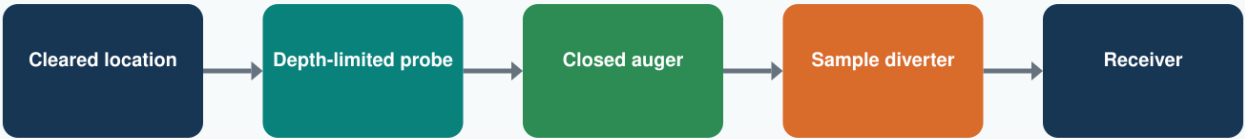
Auger/Probe Earth Feeder

Material modes: Local and prepared material | Scale: Point collection | Status: research concept

SSR-A06 • Material acquisition

Auger/Probe Earth Feeder

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

source documentation • debris and contamination screening • guarding/stability review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Collect and elevate a narrow, depth-limited stream of suitable mineral soil into a closed receiver where broad surface harvesting is unsuitable.
Operating concept	A guarded low-speed screw or coring probe advances only within an approved shallow envelope and discharges through a closed tube to a sample-and-meter hopper.
Principal assemblies	depth stop; guarded auger/probe; torque limiter; closed transfer tube; sample diverter; receiver hopper; jam reverse; two-step enable control
Functional sequence	locate utilities and approve point → set depth limit → advance probe → monitor torque → divert representative sample → collect remaining material → withdraw and isolate
Instrumentation	material-source record; feed-rate indication; jam/overload status
Safeguards	guard exposed motion; reject debris before metering; provide emergency stop and lockout points
Failure modes for review	buried-utility strike; entanglement; high torque reaction; cross-layer contamination; jammed or compacted material
Disclosed variants	vertical probe; inclined auger; horizontal stockpile screw; hand-cart micro-auger; robot-mounted probe
Minimum validation gates	source documentation; debris and contamination screening; guarding/stability review; repeatable feed trial

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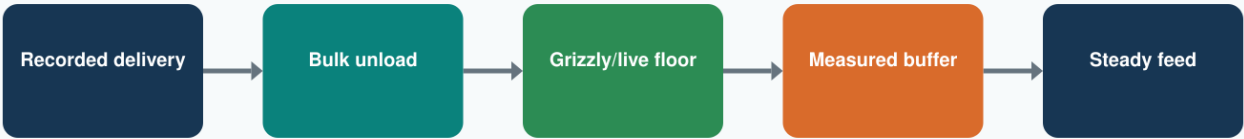
Bulk Hopper, Dump-Truck, and Stockpile Receiver

Material modes: Local and prepared material | Scale: Bulk stationary/mobile | Status: research concept

SSR-A07 • Material acquisition

Bulk Hopper, Dump-Truck, and Stockpile Receiver

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

source documentation • debris and contamination screening • guarding/stability review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Receive local, transported, stockpiled, or prepared mineral material at high volume while separating vehicle unloading from the controlled process line.
Operating concept	A low-profile hopper with a live bottom, grizzly, load measurement, and controlled discharge buffers irregular truck or loader deliveries into a steady conditioner feed.
Principal assemblies	vehicle stop and wheel control; receiving hopper; grizzly bars; live-bottom feeder; load cells; dust/spray hood; reject bay; conveyor interface
Functional sequence	verify delivery record → position vehicle → unload under controlled conditions → reject oversize → measure inventory → meter to conditioner → contain washdown
Instrumentation	material-source record; feed-rate indication; jam/overload status
Safeguards	guard exposed motion; reject debris before metering; provide emergency stop and lockout points
Failure modes for review	vehicle movement; surge loading; bridging/engulfment; dust; mixed or mislabeled loads
Disclosed variants	dump-truck hopper; walking-floor receiver; stockpile reclaimers; railcar/bulk-bin concept; portable construction-hopper adaptation
Minimum validation gates	source documentation; debris and contamination screening; guarding/stability review; repeatable feed trial

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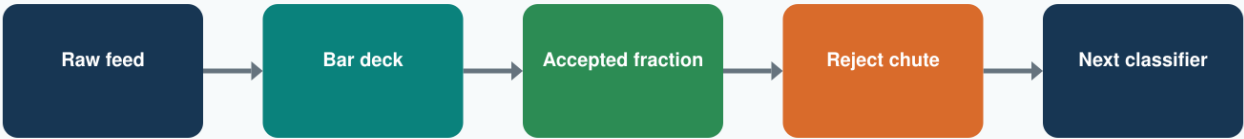
Grizzly and Debris Scalper

Material modes: Local and prepared material | Scale: All scales | Status: research concept

SSR-B01 • Conditioning and classification

Grizzly and Debris Scalper

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

particle-distribution check • foreign-object challenge • dust/splash review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Remove rocks, roots, branches, trash, and gross oversize before fine classification or metering.
Operating concept	Fixed or vibrating bars create a first-pass opening; accepted material falls to the process path while rejects move to a visible, separately contained chute.
Principal assemblies	replaceable bar deck; vibration drive if used; reject chute; accepted-material chute; spray/dust control; access guards; inspection camera; cleanout tool points
Functional sequence	feed documented material → spread across deck → pass acceptable fraction → divert oversize → record reject rate → isolate before clearing → dispose or retain rejects
Instrumentation	oversize/reject indication; sample point; conditioned-output rate
Safeguards	contain dust and splash; isolate stored energy; retain representative material sample
Failure modes for review	pinch/crush points; flying debris; deck blinding; hand clearing; incorrect opening size
Disclosed variants	fixed grizzly; vibrating bar deck; finger screen; wet scalper; folding mobile deck
Minimum validation gates	particle-distribution check; foreign-object challenge; dust/splash review; cleanout verification

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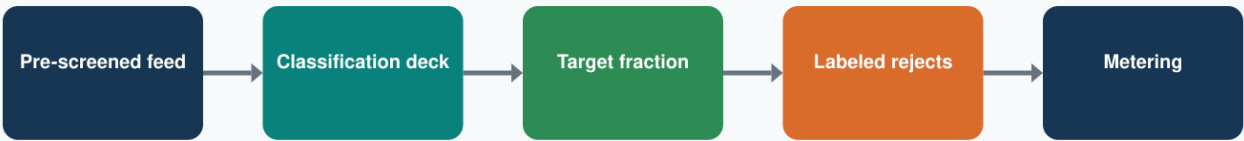
Vibrating, Trommel, and Multi-Deck Classifier

Material modes: Local and prepared material | Scale: Bench to bulk | Status: research concept

SSR-B02 • Conditioning and classification

Vibrating, Trommel, and Multi-Deck Classifier

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

particle-distribution check • foreign-object challenge • dust/splash review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Separate candidate mineral feed into defined particle bands that can be tested for pumpability, coating behavior, and environmental burden.
Operating concept	A vibrating deck, rotary trommel, or wet screen routes undersize, target fraction, and oversize to separate containers with retained samples.
Principal assemblies	one or more screen decks; controlled feed distributor; drive and isolation mounts; wetting sprays if used; fraction chutes; sample ports; deck-cleaning system; guards
Functional sequence	select target screen set → meter feed → separate fractions → sample each fraction → measure yield → route target fraction → contain and label rejects
Instrumentation	oversize/reject indication; sample point; conditioned-output rate
Safeguards	contain dust and splash; isolate stored energy; retain representative material sample
Failure modes for review	screen blinding; vibration exposure; dust/splash; misrouted fractions; unbalanced rotating mass
Disclosed variants	dry vibratory; wet vibratory; rotary trommel; multi-deck laboratory shaker; mobile fold-out classifier
Minimum validation gates	particle-distribution check; foreign-object challenge; dust/splash review; cleanout verification

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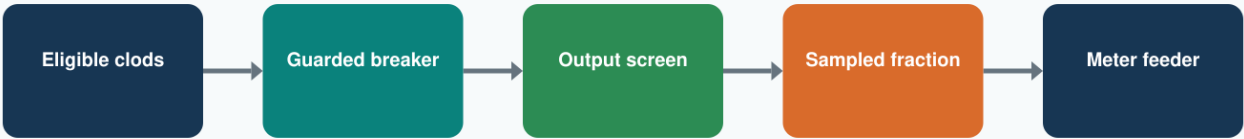
Lump Breaker and Mineral Pulverizer

Material modes: Prepared or stockpiled material | Scale: Bench to mobile plant | Status: research concept

SSR-B03 • Conditioning and classification

Lump Breaker and Mineral Pulverizer

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

particle-distribution check • foreign-object challenge • dust/splash review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Reduce soft agglomerates or dried clods to a controlled testable feed without implying that hard rock crushing is suitable at the point of fire use.
Operating concept	Low-speed counter-rotating teeth, cage elements, or a roll crusher break friable lumps behind guards; a downstream screen prevents uncontrolled coarse output.
Principal assemblies	guarded low-speed breaker; torque limiter; feed gate; downstream screen; metal detection; dust enclosure; jam reverse; wear liners
Functional sequence	confirm material is eligible → meter clods → break friable agglomerates → screen output → return oversize if allowed → sample product → clean under lockout
Instrumentation	oversize/reject indication; sample point; conditioned-output rate
Safeguards	contain dust and splash; isolate stored energy; retain representative material sample
Failure modes for review	flying fragments; silica/mineral dust; metal strike; overgrinding; stored-energy jam
Disclosed variants	toothed-roll breaker; cage mill research unit; paddle delumper; wet attrition chamber; closed laboratory mill
Minimum validation gates	particle-distribution check; foreign-object challenge; dust/splash review; cleanout verification

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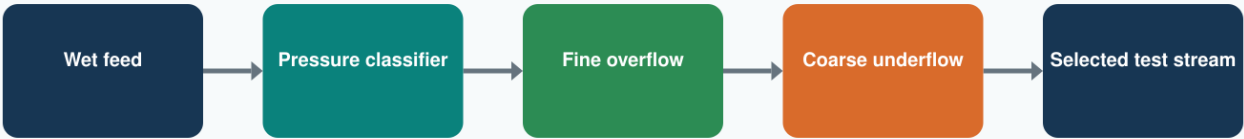
Wet Hydroclassifier and Hydrocyclone

Material modes: Wet local or prepared slurry | Scale: Bench to skid | Status: research concept

SSR-B04 • Conditioning and classification

Wet Hydroclassifier and Hydrocyclone

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

particle-distribution check • foreign-object challenge • dust/splash review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Classify an already-wet mineral stream by hydraulic behavior and remove unwanted coarse grit before fine mixing trials.
Operating concept	A controlled slurry stream enters a hydrocyclone, settling cone, or elutriation column; heavy/coarse material exits separately from the fine overflow selected for research.
Principal assemblies	feed pump approved for raw stream; pressure-controlled hydrocyclone; underflow pot; overflow receiver; density/turbidity sensors; sample valves; flush manifold; containment
Functional sequence	characterize feed → pump into classifier → separate coarse underflow → capture fine overflow → sample both streams → select test fraction → flush and recover solids
Instrumentation	oversize/reject indication; sample point; conditioned-output rate
Safeguards	contain dust and splash; isolate stored energy; retain representative material sample
Failure modes for review	erosive wear; plugged apex; uncontrolled overflow; misclassification as density changes; pressurized sample hazard
Disclosed variants	hydrocyclone; settling cone; elutriation column; lamella clarifier; laboratory wet-sieve loop
Minimum validation gates	particle-distribution check; foreign-object challenge; dust/splash review; cleanout verification

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

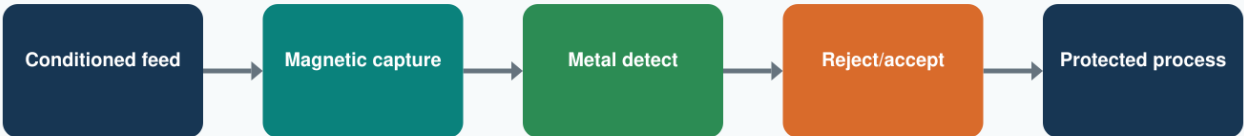
Foreign-Object and Magnetic Separator

Material modes: Local and prepared material | Scale: All scales | Status: research concept

SSR-B05 • Conditioning and classification

Foreign-Object and Magnetic Separator

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

particle-distribution check • foreign-object challenge • dust/splash review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Intercept ferrous metal, wire, fasteners, and other foreign objects that could damage feeders, pumps, hoses, or nozzles.
Operating concept	Magnetic bars, a suspended magnet, metal detection, and a visible reject gate protect the downstream path; nonferrous hazards remain subject to visual and screen rejection.
Principal assemblies	magnetic grid or suspended magnet; metal detector; reject flap; inspection belt; collection bin; access interlock; cleaning sleeve; event counter
Functional sequence	spread conditioned feed → capture ferrous objects → detect remaining metal → stop or reject event → inspect feed → record contamination → clean under isolation
Instrumentation	oversize/reject indication; sample point; conditioned-output rate
Safeguards	contain dust and splash; isolate stored energy; retain representative material sample
Failure modes for review	magnet pinch; missed nonferrous object; contaminated sharp rejects; false trips; loss of magnetic strength
Disclosed variants	magnetic drawer; overbelt magnet; pipeline magnet; detector-triggered gate; manual inspection conveyor
Minimum validation gates	particle-distribution check; foreign-object challenge; dust/splash review; cleanout verification

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

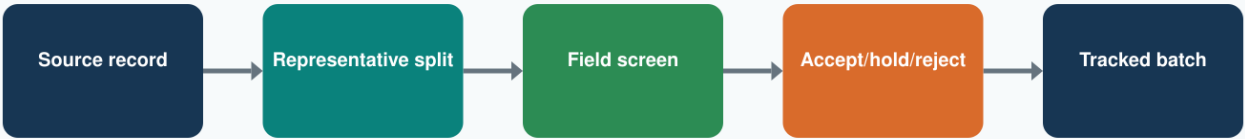
Source Sampling, Characterization, and Reject Station

Material modes: Local and prepared material | Scale: Field to stationary | Status: research concept

SSR-B06 • Conditioning and classification

Source Sampling, Characterization, and Reject Station

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

particle-distribution check • foreign-object challenge • dust/splash review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Make source identity and suitability a physical part of the machinery workflow rather than an afterthought.
Operating concept	A lockable sample splitter, labeled container rack, basic field measurements, photo station, and reject quarantine bay create a traceable decision point before material enters the process.
Principal assemblies	sample splitter; sealed sample containers; barcode/QR labels; scale and moisture check; photo/light station; field screening instruments; accept/reject gate; quarantine bin
Functional sequence	record source and permission → split representative sample → label and photograph → perform authorized screening → accept, hold, or reject → retain chain-of-custody record → release only approved batch
Instrumentation	oversize/reject indication; sample point; conditioned-output rate
Safeguards	contain dust and splash; isolate stored energy; retain representative material sample
Failure modes for review	nonrepresentative sample; label mix-up; false confidence from limited field screening; exposure to unknown contaminants; unauthorized release
Disclosed variants	portable field cart; trailer laboratory; station kiosk; automated sample diverter; third-party laboratory handoff
Minimum validation gates	particle-distribution check; foreign-object challenge; dust/splash review; cleanout verification

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

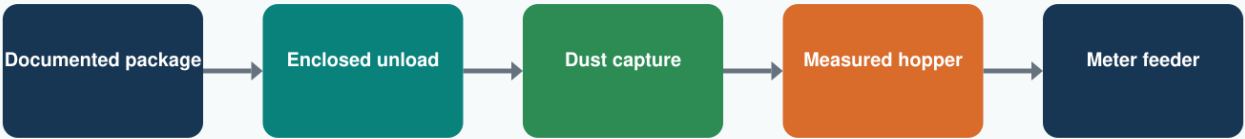
Bag and Supersack Prepared-Material Induction Station

Material modes: Prepared material only | Scale: Bench to bulk | Status: research concept

SSR-C01 • Metering and mixing

Bag and Supersack Prepared-Material Induction Station

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only baseline • ratio repeatability • settling/bridging trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Receive documented prepared mineral material in bags, drums, or supersacks without exposing operators to uncontrolled dust or manual lifting hazards.
Operating concept	A guarded bag-break or supersack frame empties into an enclosed hopper; dust extraction and a sealed airlock or screw feeder deliver the material to metering.
Principal assemblies	bag-break cabinet; supersack frame and hoist interface; dust collector; sealed hopper; airlock/screw feeder; load cells; lot-code scanner; empty-container control
Functional sequence	verify lot and safety information → dock container → open within enclosure → capture dust → measure inventory → meter to mixer → retain lot/sample record
Instrumentation	water flow; mineral feed rate; ratio proxy; mixed-stream pressure
Safeguards	preserve water-only bypass; prevent dry running; provide sample, drain, and clean-water purge points
Failure modes for review	suspended load; dust exposure; bag collapse; wrong material/lot; bridging
Disclosed variants	small-bag cabinet; supersack unloader; drum tipper; vacuum transfer receiver; sealed cartridge system
Minimum validation gates	water-only baseline; ratio repeatability; settling/bridging trial; complete purge demonstration

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

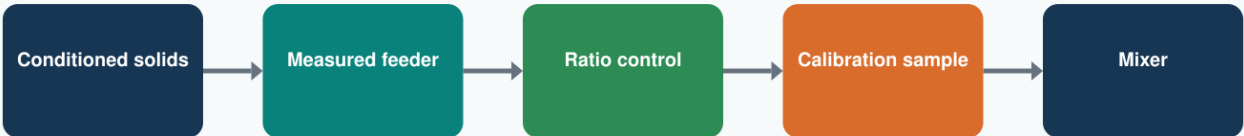
Loss-in-Weight, Belt, and Auger Metering Feeder

Material modes: Local and prepared material | Scale: All scales | Status: research concept

SSR-C02 • Metering and mixing

Loss-in-Weight, Belt, and Auger Metering Feeder

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only baseline • ratio repeatability • settling/bridging trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Deliver a measured mineral feed relative to water flow so each research batch or continuous run can be reconstructed.
Operating concept	A weigh hopper, belt scale, or calibrated screw feeder controls solids mass flow; feedback adjusts speed within a bounded test range while independent shutdown prevents uncontrolled feed.
Principal assemblies	buffer hopper; load cells or belt scale; variable-speed feeder; agitator/bridge breaker; isolation gate; calibration catch pan; controller; manual safe-state
Functional sequence	load documented batch → zero/calibrate → command bounded feed → measure actual loss or belt flow → compare with water flow → divert calibration sample → stop and isolate
Instrumentation	water flow; mineral feed rate; ratio proxy; mixed-stream pressure
Safeguards	preserve water-only bypass; prevent dry running; provide sample, drain, and clean-water purge points
Failure modes for review	feed drift; bridging; overfeed; load-cell vibration error; uncontrolled restart
Disclosed variants	loss-in-weight screw; weigh belt; volumetric screw for preliminary trials; rotary valve; micro-feeder
Minimum validation gates	water-only baseline; ratio repeatability; settling/bridging trial; complete purge demonstration

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

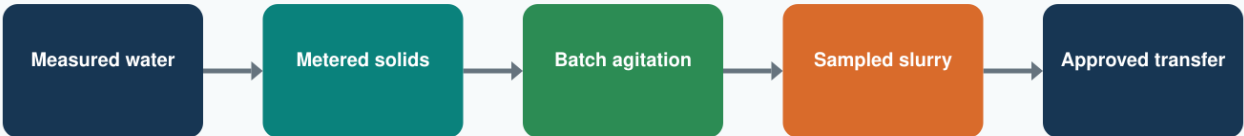
Batch Paddle-Mixer Tank

Material modes: Local and prepared material | Scale: Batch | Status: research concept

SSR-C03 • Metering and mixing

Batch Paddle-Mixer Tank

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only baseline • ratio repeatability • settling/bridging trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Prepare a contained, fully documented test batch before pumping, allowing direct sampling and adjustment under controlled conditions.
Operating concept	Water enters a baffled tank first; conditioned mineral feed is introduced gradually while low-speed paddles or sweep agitators suspend solids without requiring conventional fire-pump ingestion.
Principal assemblies	baffled tank; guarded paddle/sweep agitator; water inlet and meter; solids inlet; load cells or level measurement; sample port; bottom drain; recirculation/purge manifold
Functional sequence	add measured water → start guarded agitation → meter solids gradually → mix for defined interval → sample and record → transfer through approved slurry path → drain, recover, and wash
Instrumentation	water flow; mineral feed rate; ratio proxy; mixed-stream pressure
Safeguards	preserve water-only bypass; prevent dry running; provide sample, drain, and clean-water purge points
Failure modes for review	agitator entanglement; tank overflow; settling during hold; nonuniform batch; confined-space/service hazard
Disclosed variants	small tote mixer; trailer tank; vertical sweep tank; horizontal paddle tank; dual-tank alternating batch system
Minimum validation gates	water-only baseline; ratio repeatability; settling/bridging trial; complete purge demonstration

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

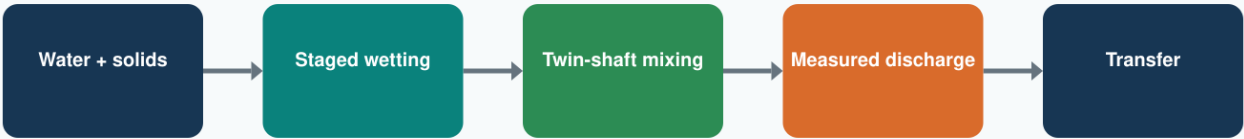
Continuous Twin-Shaft or Twin-Auger Mixer

Material modes: Local and prepared material | Scale: Continuous mobile/stationary | Status: research concept

SSR-C04 • Metering and mixing

Continuous Twin-Shaft or Twin-Auger Mixer

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only baseline • ratio repeatability • settling/bridging trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Produce a continuously controlled slurry stream where local or prepared solids and water are metered independently.
Operating concept	Intermeshing low-speed shafts or augers wet and fold incoming solids across staged water-injection zones; residence time and discharge are bounded by feed controls.
Principal assemblies	enclosed twin-shaft trough; multiple water spray zones; solids feeder interface; variable-speed drives; torque monitoring; discharge weir/gate; sample port; cleanout doors with interlocks
Functional sequence	establish water flow → start mixer → ramp measured solids → wet/fold through stages → monitor torque and discharge → sample stream → stop solids, continue water purge
Instrumentation	water flow; mineral feed rate; ratio proxy; mixed-stream pressure
Safeguards	preserve water-only bypass; prevent dry running; provide sample, drain, and clean-water purge points
Failure modes for review	shaft jam; dry pockets; surge discharge; wear; unsafe access to paddles
Disclosed variants	twin-auger; pugmill; twin-shaft paddle; replaceable modular mixing elements; trailer continuous plant
Minimum validation gates	water-only baseline; ratio repeatability; settling/bridging trial; complete purge demonstration

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

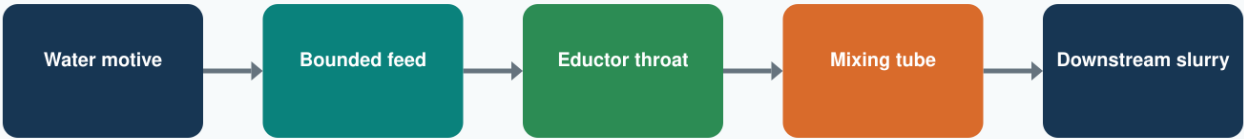
Venturi/Eductor Mineral Induction Mixer

Material modes: Local and prepared material | Scale: Inline | Status: research concept

SSR-C05 • Metering and mixing

Venturi/Eductor Mineral Induction Mixer

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only baseline • ratio repeatability • settling/bridging trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Use a controlled water stream to draw a fine, conditioned mineral feed into a side stream without sending raw sediment through the main water pump.
Operating concept	A water-powered eductor creates suction at a sealed solids or slurry inlet; the induced stream enters a downstream mixing tube with anti-backflow isolation.
Principal assemblies	water motive inlet; eductor throat; sealed feed inlet; anti-backflow valve; feed isolation; mixing tube; pressure taps; bypass/purge manifold
Functional sequence	establish water-only flow → verify downstream pressure → open bounded feed → induce material → mix through tube → measure output → close feed and water-purge
Instrumentation	water flow; mineral feed rate; ratio proxy; mixed-stream pressure
Safeguards	preserve water-only bypass; prevent dry running; provide sample, drain, and clean-water purge points
Failure modes for review	backflow into feeder; loss of suction; throat erosion; plugging; ratio sensitivity to pressure
Disclosed variants	dry-powder eductor; pre-slurry eductor; portable inline unit; multi-eductor manifold; recirculation eductor
Minimum validation gates	water-only baseline; ratio repeatability; settling/bridging trial; complete purge demonstration

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

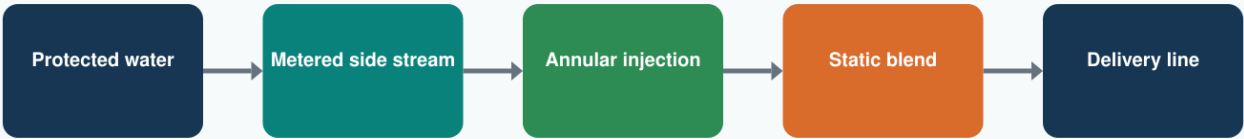
Annular Downstream Injection and Mixing Collar

Material modes: Local and prepared material | Scale: Inline attachment | Status: research concept

SSR-C06 • Metering and mixing

Annular Downstream Injection and Mixing Collar

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only baseline • ratio repeatability • settling/bridging trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Introduce a prepared side-stream slurry around or into a conventional water line downstream of the protected main pump.
Operating concept	An annular ring or multi-port sleeve injects metered slurry into the water stream through distributed ports; a removable static-mixing section promotes blending before the hose/nozzle.
Principal assemblies	rated water-line body; annular injection gallery; multiple replaceable ports; check valves; side-stream connector; static mixer cartridge; pressure taps; bypass and purge ports
Functional sequence	run water-only baseline → pressurize approved side stream → open injection gradually → blend through static section → monitor differential pressure → close side stream → purge collar and downstream line
Instrumentation	water flow; mineral feed rate; ratio proxy; mixed-stream pressure
Safeguards	preserve water-only bypass; prevent dry running; provide sample, drain, and clean-water purge points
Failure modes for review	port plugging; reverse flow; pressure mismatch; mixer erosion; coupling incompatibility
Disclosed variants	annular ring; radial multi-port sleeve; tangential swirl collar; replaceable mixer spool; large-diameter manifold
Minimum validation gates	water-only baseline; ratio repeatability; settling/bridging trial; complete purge demonstration

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

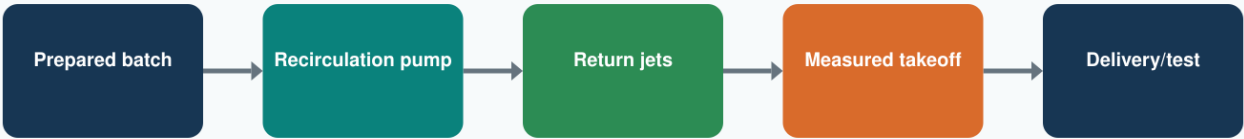
Recirculating Slurry Conditioning Tank

Material modes: Local and prepared material | Scale: Batch/continuous buffer | Status: research concept

SSR-C07 • Metering and mixing

Recirculating Slurry Conditioning Tank

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only baseline • ratio repeatability • settling/bridging trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Maintain suspension, measure stability, and supply a consistent test stream from a prepared batch without continuous raw-feed collection.
Operating concept	A slurry-rated recirculation loop draws from a baffled tank, returns through directed jets, and provides a controlled takeoff to the delivery/test circuit.
Principal assemblies	baffled reservoir; slurry-rated recirculation pump; return jet manifold; takeoff valve; density/pressure spool; sample loop; settling cone; flush connection
Functional sequence	load documented batch → begin low-energy recirculation → verify stable measurements → open controlled takeoff → return unused flow → sample over time → recover solids and flush
Instrumentation	water flow; mineral feed rate; ratio proxy; mixed-stream pressure
Safeguards	preserve water-only bypass; prevent dry running; provide sample, drain, and clean-water purge points
Failure modes for review	settling dead zones; air entrainment; pump wear; tank vortex; uncontrolled drain
Disclosed variants	single tank; dual alternating tank; IBC tote skid; cone-bottom tank; stationary test reservoir
Minimum validation gates	water-only baseline; ratio repeatability; settling/bridging trial; complete purge demonstration

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

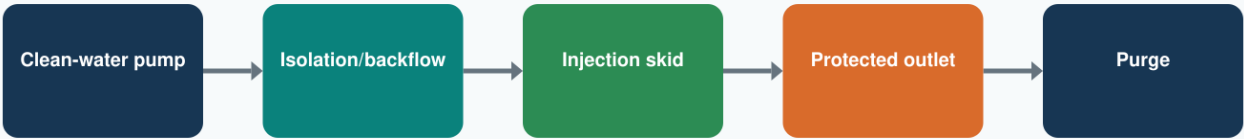
Conventional Fire-Pump Isolation Skid

Material modes: Clean water plus separate slurry side stream | Scale: Apparatus interface | Status: research concept

SSR-D01 • Hydraulic protection and transfer

Conventional Fire-Pump Isolation Skid

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

closed-loop pressure test • leak/coupling review • abrasion trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Keep raw sediment and test slurry out of a conventional engine's main pump while retaining the engine as a clean-water source in approved research configurations.
Operating concept	A clean-water inlet from the owner-approved apparatus feeds a physically separated downstream injection skid; check valves, isolation, and a break/containment strategy prevent solids backflow.
Principal assemblies	clean-water inlet; double isolation/check arrangement; backflow monitoring; injection connection; pressure relief; drain/containment tray; water-only outlet; owner lockout interface
Functional sequence	obtain equipment-owner approval → connect clean-water path → verify backflow protection → run baseline → enable separate slurry injection → monitor separation → disable injection and flush before disconnect
Instrumentation	intake/discharge pressure; flow; vibration or motor load; bypass state
Safeguards	pressure relief; rated hose/couplings; isolation and depressurization; wear inspection points
Failure modes for review	backflow into pump; overpressure; wrong coupling; operator mode confusion; residual solids at disconnect
Disclosed variants	portable skid; apparatus sidecar; fixed training-loop interface; dual-check monitored spool; air-gap tank-fed concept
Minimum validation gates	closed-loop pressure test; leak/coupling review; abrasion trial; fail-safe bypass and purge

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

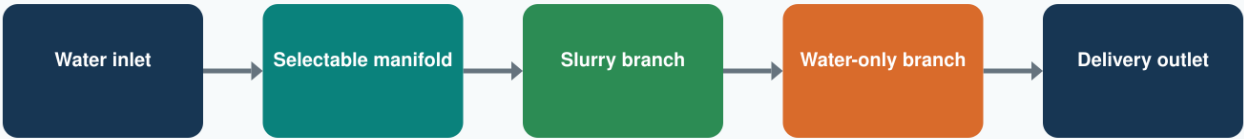
Water-Only Bypass and Failover Manifold

Material modes: Local and prepared material | Scale: All delivery systems | Status: research concept

SSR-D02 • Hydraulic protection and transfer

Water-Only Bypass and Failover Manifold

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

closed-loop pressure test • leak/coupling review • abrasion trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Allow immediate transition to water-only flow and isolate the solids path during a clog, sensor fault, power loss, or operator stop.
Operating concept	A normally available water path runs parallel to the injection/mixing path; mechanically clear valve indication and a safe-state actuation scheme favor water-only operation.
Principal assemblies	parallel water leg; slurry leg isolation; three-way or paired valves; position indicators; manual override; pressure equalization; drains; purge cross-connect
Functional sequence	establish water-only route → verify valve indication → enable slurry leg for bounded test → detect stop condition → isolate slurry → maintain/restore water flow → purge isolated leg
Instrumentation	intake/discharge pressure; flow; vibration or motor load; bypass state
Safeguards	pressure relief; rated hose/couplings; isolation and depressurization; wear inspection points
Failure modes for review	valve misalignment; common-mode blockage; actuator power loss; pressure surge; ambiguous indication
Disclosed variants	manual manifold; pneumatic safe-state; electric actuator with manual override; dual-outlet selector; remote crawler manifold
Minimum validation gates	closed-loop pressure test; leak/coupling review; abrasion trial; fail-safe bypass and purge

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

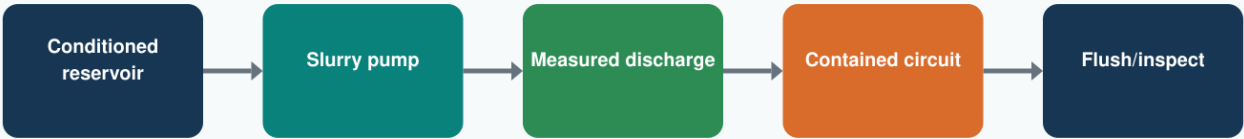
Slurry-Rated Centrifugal Transfer-Pump Skid

Material modes: Local and prepared material | Scale: Skid to bulk | Status: research concept

SSR-D03 • Hydraulic protection and transfer

Slurry-Rated Centrifugal Transfer-Pump Skid

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

closed-loop pressure test • leak/coupling review • abrasion trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Transfer screened, characterized slurry through a dedicated abrasion-tolerant pump rather than conventional clean-water hardware.
Operating concept	A solids-handling centrifugal pump with replaceable wet-end components draws from a conditioned reservoir and supplies a closed test or approved delivery circuit.
Principal assemblies	solids-handling centrifugal pump; replaceable impeller/liner; priming system; suction strainer; motor/engine drive; pressure/flow spool; relief/bypass; drain and washdown
Functional sequence	verify particle envelope → prime with water → start at bounded condition → introduce characterized slurry → monitor flow/load/vibration → return or discharge to contained circuit → water-flush and inspect
Instrumentation	intake/discharge pressure; flow; vibration or motor load; bypass state
Safeguards	pressure relief; rated hose/couplings; isolation and depressurization; wear inspection points
Failure modes for review	cavitation; erosion; seal failure; loss of prime; suction blockage
Disclosed variants	electric skid; hydraulic-drive skid; trailer pump; submersible solids pump; lined end-suction test pump
Minimum validation gates	closed-loop pressure test; leak/coupling review; abrasion trial; fail-safe bypass and purge

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

Progressive-Cavity Positive-Displacement Module

Material modes: Local and prepared material | Scale: Metering to transfer | Status: research concept

SSR-D04 • Hydraulic protection and transfer

Progressive-Cavity Positive-Displacement Module

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

closed-loop pressure test • leak/coupling review • abrasion trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Meter and move higher-viscosity or shear-sensitive research slurries at controlled low-to-moderate flow.
Operating concept	A rotor-stator pump advances discrete cavities, providing feed proportional to speed; relief and dry-run protection are mandatory because the pump can generate pressure against a blockage.
Principal assemblies	progressive-cavity pump; variable-speed drive; dry-run detection; torque/load monitoring; pressure relief; pulsation damping if needed; flush ports; replaceable stator
Functional sequence	wet/prime pump → verify relief path → start at low speed → meter characterized slurry → monitor pressure and torque → stop on blockage → water-flush immediately
Instrumentation	intake/discharge pressure; flow; vibration or motor load; bypass state
Safeguards	pressure relief; rated hose/couplings; isolation and depressurization; wear inspection points
Failure modes for review	dead-head overpressure; dry-run stator damage; abrasive wear; rotor jam; difficult cleanout
Disclosed variants	compact feeder; trailer transfer pump; hygienic-style removable stator research unit; multi-pump dosing bank
Minimum validation gates	closed-loop pressure test; leak/coupling review; abrasion trial; fail-safe bypass and purge

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

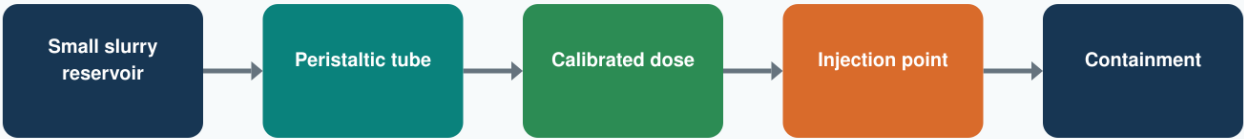
Peristaltic Small-Flow Test Feeder

Material modes: Local and prepared material | Scale: Laboratory/small pilot | Status: research concept

SSR-D05 • Hydraulic protection and transfer

Peristaltic Small-Flow Test Feeder

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

closed-loop pressure test • leak/coupling review • abrasion trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Dose a contained slurry side stream in laboratory or small pilot tests while keeping the moving mechanism outside the wetted path.
Operating concept	Rollers compress replaceable tubing, moving discrete volumes; the tube becomes the primary wear and containment component and is inspected/replaced by protocol.
Principal assemblies	peristaltic pump head; replaceable abrasion-rated tube; variable-speed drive; tube rupture tray; pressure limit; inlet agitator; check/sample valves; guard
Functional sequence	select compatible tube → prime with water → calibrate volume per revolution → dose test slurry → monitor pressure and leak tray → stop and isolate → replace/flush tube
Instrumentation	intake/discharge pressure; flow; vibration or motor load; bypass state
Safeguards	pressure relief; rated hose/couplings; isolation and depressurization; wear inspection points
Failure modes for review	tube rupture; pulsation; limited particle size; overpressure; unnoticed wear
Disclosed variants	single-channel; multi-channel dosing; portable bench unit; remote enclosed feeder
Minimum validation gates	closed-loop pressure test; leak/coupling review; abrasion trial; fail-safe bypass and purge

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

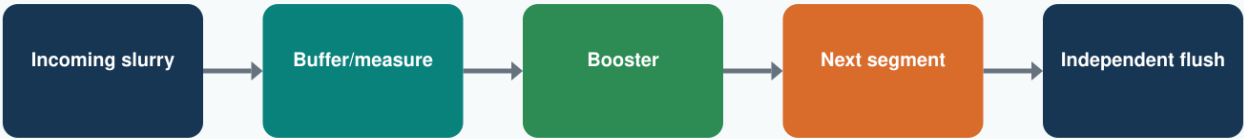
Booster and Relay Slurry Station

Material modes: Local and prepared material | Scale: Long-line research | Status: research concept

SSR-D06 • Hydraulic protection and transfer

Booster and Relay Slurry Station

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

closed-loop pressure test • leak/coupling review • abrasion trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Restore pressure or divide a long slurry delivery path into inspectable segments without assuming compatibility with conventional relay-pumping practice.
Operating concept	A dedicated slurry-rated booster receives a fully conditioned stream in a contained buffer, measures its condition, and sends it through the next approved segment with bypass and cleanout.
Principal assemblies	buffer/degassing vessel; slurry-rated booster pump; segment isolation; pressure/flow sensors; relief return; water bypass; flush tank; communications link
Functional sequence	receive conditioned slurry → verify buffer condition → start booster → control downstream pressure → monitor segment → isolate on fault → flush each segment independently
Instrumentation	intake/discharge pressure; flow; vibration or motor load; bypass state
Safeguards	pressure relief; rated hose/couplings; isolation and depressurization; wear inspection points
Failure modes for review	pressure coordination error; settling during interruption; segment blockage; communications loss; excess hose load
Disclosed variants	portable relay skid; trailer relay; stationary hill-climb booster; dual-pump duty/standby; remote crawler relay
Minimum validation gates	closed-loop pressure test; leak/coupling review; abrasion trial; fail-safe bypass and purge

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

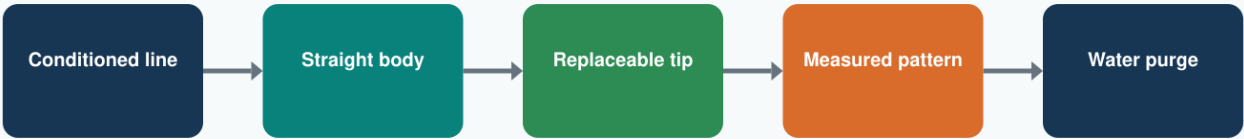
Solids-Compatible Handline Nozzle

Material modes: Local and prepared material | Scale: Handline research | Status: research concept

SSR-E01 • Application and delivery

Solids-Compatible Handline Nozzle

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only pattern baseline • slurry reach/pattern test • clog-and-clear trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Provide a manually controlled research outlet for screened slurry while accommodating larger internal passages, replaceable wear surfaces, and tool-free external clearing.
Operating concept	A straight-through body with minimal internal obstructions uses interchangeable tips to compare stream and fan patterns; a separate water purge connection clears residual material.
Principal assemblies	straight-through body; replaceable wear sleeve; interchangeable tips; large-handle shutoff; pressure tap; reaction-force support point; purge connection; external cleanout cap
Functional sequence	run water-only pattern → confirm screened particle envelope → introduce slurry → select test tip → measure reach/pattern/reaction → return to water-only → purge and inspect
Instrumentation	flow and pressure; selected pattern or outlet mode; operator/remote stop
Safeguards	manage reaction force; avoid occupied-area use; provide clearing without hands entering the material path
Failure modes for review	nozzle clog; excess reaction force; erosive tip wear; uncontrolled pattern change; operator slip/exposure
Disclosed variants	smooth-bore research tip; wide-fan tip; low-flow mop-up tip; remote-mounted version; transparent low-pressure laboratory body
Minimum validation gates	water-only pattern baseline; slurry reach/pattern test; clog-and-clear trial; operator human-factors review

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

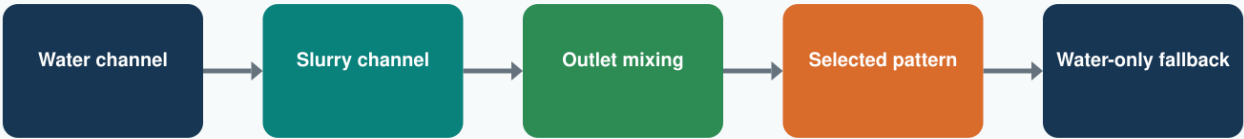
Dual-Channel Water/Slurry Nozzle

Material modes: Local and prepared material | Scale: Handline/monitor | Status: research concept

SSR-E02 • Application and delivery

Dual-Channel Water/Slurry Nozzle

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only pattern baseline • slurry reach/pattern test • clog-and-clear trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Keep water and mineral side stream separate until the applicator, allowing independent control and a water-only fallback at the point of discharge.
Operating concept	Concentric or side-by-side channels discharge water and metered slurry through a mixing/impingement zone at or just beyond the nozzle body.
Principal assemblies	water channel; slurry channel; independent check valves; selector/ratio control; mixing head; replaceable tips; pressure taps; purge port
Functional sequence	establish water channel → verify slurry channel pressure → enable bounded secondary flow → combine at outlet → observe pattern → close slurry first → water-purge head
Instrumentation	flow and pressure; selected pattern or outlet mode; operator/remote stop
Safeguards	manage reaction force; avoid occupied-area use; provide clearing without hands entering the material path
Failure modes for review	channel imbalance; backflow; asymmetric reaction; outlet deposition; operator confusion
Disclosed variants	concentric; side-by-side; external impingement; air-assisted laboratory atomization; fixed-ratio test head
Minimum validation gates	water-only pattern baseline; slurry reach/pattern test; clog-and-clear trial; operator human-factors review

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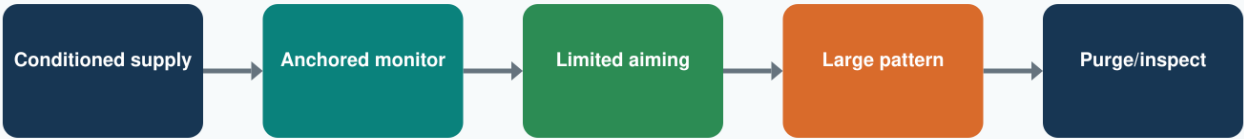
Master-Stream Monitor and Turret

Material modes: Local and prepared material | Scale: Master stream | Status: research concept

SSR-E03 • Application and delivery

Master-Stream Monitor and Turret

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only pattern baseline • slurry reach/pattern test • clog-and-clear trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Apply larger controlled flows from a fixed or vehicle-supported position after hose/nozzle compatibility and reaction loads are established.
Operating concept	A remotely or manually aimed monitor uses a solids-compatible waterway, replaceable nozzle modules, position limits, and a water-only purge sequence.
Principal assemblies	anchored monitor base; large-bore waterway; azimuth/elevation drives; position limits; replaceable nozzle; reaction/load sensors; remote camera; purge manifold
Functional sequence	stabilize and establish exclusion zone → run water-only → introduce approved slurry → aim within programmed limits → record reach/pattern → return to water → purge and inspect
Instrumentation	flow and pressure; selected pattern or outlet mode; operator/remote stop
Safeguards	manage reaction force; avoid occupied-area use; provide clearing without hands entering the material path
Failure modes for review	base instability; high reaction load; remote-control loss; large-volume blockage; unintended occupied-area aim
Disclosed variants	portable ground monitor; vehicle turret; stationary test monitor; robot-mounted monitor; oscillating research head
Minimum validation gates	water-only pattern baseline; slurry reach/pattern test; clog-and-clear trial; operator human-factors review

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

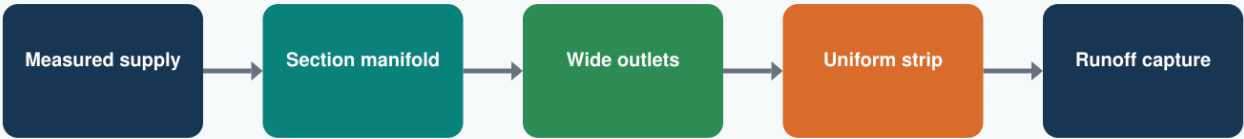
Wide-Fan Ground-Coating Boom

Material modes: Local and prepared material | Scale: Plot/line application | Status: research concept

SSR-E04 • Application and delivery

Wide-Fan Ground-Coating Boom

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only pattern baseline • slurry reach/pattern test • clog-and-clear trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Apply a measured strip of slurry to a prepared test surface, firebreak analog, or controlled vegetation plot with repeatable width and mass per area.
Operating concept	A low-mounted boom distributes flow across multiple large-passage outlets; section valves and catch-pan calibration support uniformity studies.
Principal assemblies	folding boom; section manifold; large-passage outlets; height control; flow per section; catch-pan calibration kit; drip containment; breakaway joints
Functional sequence	define contained test lane → calibrate with water → verify outlet uniformity → introduce slurry → apply at measured speed → collect edge/runoff data → water-flush each section
Instrumentation	flow and pressure; selected pattern or outlet mode; operator/remote stop
Safeguards	manage reaction force; avoid occupied-area use; provide clearing without hands entering the material path
Failure modes for review	uneven application; outlet plugging; boom strike; runoff; vehicle/operator exposure
Disclosed variants	hand-cart boom; UTV boom; trailer boom; fixed gantry; sectional fireline applicator
Minimum validation gates	water-only pattern baseline; slurry reach/pattern test; clog-and-clear trial; operator human-factors review

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

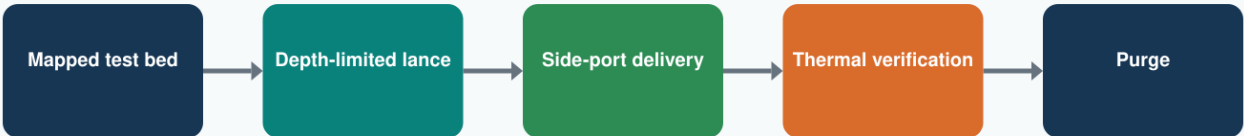
Ember Mop-Up and Penetration Lance

Material modes: Local and prepared material | Scale: Mop-up research | Status: research concept

SSR-E05 • Application and delivery

Ember Mop-Up and Penetration Lance

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only pattern baseline • slurry reach/pattern test • clog-and-clear trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Study whether a low-flow slurry stream can reach controlled ember pockets, debris piles, or subsurface test media while retaining water-only capability.
Operating concept	A rigid or semi-rigid lance with side ports or a guarded terminal head delivers a low-flow stream; thermal sensing and depth stops prevent blind insertion beyond the test plan.
Principal assemblies	insulated lance; depth stop; side-port head; thermal sensor; flow control; reaction handle; water-only selector; external clearing rod interface
Functional sequence	map controlled hot zone → apply water baseline → insert only to set depth → deliver bounded slurry → monitor temperatures → withdraw and verify cooling → water-purge
Instrumentation	flow and pressure; selected pattern or outlet mode; operator/remote stop
Safeguards	manage reaction force; avoid occupied-area use; provide clearing without hands entering the material path
Failure modes for review	steam/heat exposure; hidden sharp objects; lance clog; unintended spread of embers; false cooling inference
Disclosed variants	straight lance; flexible probe; side-port rake head; remote robot lance; transparent laboratory packed-bed probe
Minimum validation gates	water-only pattern baseline; slurry reach/pattern test; clog-and-clear trial; operator human-factors review

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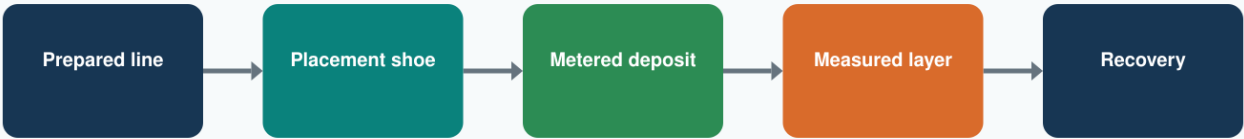
Fireline and Trench Applicator

Material modes: Local and prepared material | Scale: Contained field analog | Status: research concept

SSR-E06 • Application and delivery

Fireline and Trench Applicator

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only pattern baseline • slurry reach/pattern test • clog-and-clear trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Place a controlled slurry layer into a prepared non-burning trench or fireline analog for retention, drying, and barrier research—not as an operational tactic instruction.
Operating concept	A low-mounted shoe, chute, or manifold deposits slurry at controlled depth and width behind a separately authorized earthworking platform.
Principal assemblies	adjustable placement shoe; wide-passage chute; flow control; height/depth gauge; camera; breakaway mount; drip tray; wash manifold
Functional sequence	prepare contained line → measure geometry → run water trial → deposit controlled slurry → measure mass/coverage → observe drying/runoff → recover and clean
Instrumentation	flow and pressure; selected pattern or outlet mode; operator/remote stop
Safeguards	manage reaction force; avoid occupied-area use; provide clearing without hands entering the material path
Failure modes for review	terrain strike; uncontrolled discharge; operator proximity; erosion/runoff; misuse as approved fireline tactic
Disclosed variants	trailing shoe; side-cast chute; trench injection manifold; fixed laboratory channel; robot-mounted line applicator
Minimum validation gates	water-only pattern baseline; slurry reach/pattern test; clog-and-clear trial; operator human-factors review

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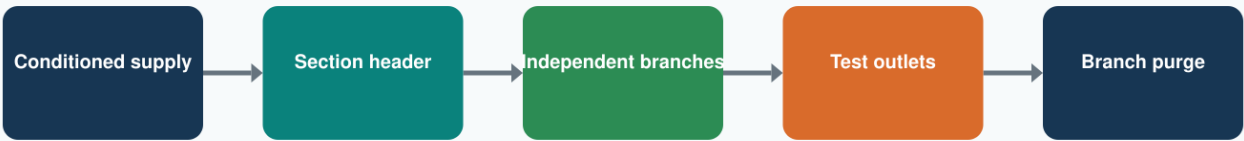
Hose-Lay Distribution and Section Manifold

Material modes: Local and prepared material | Scale: Multi-outlet | Status: research concept

SSR-E07 • Application and delivery

Hose-Lay Distribution and Section Manifold

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only pattern baseline • slurry reach/pattern test • clog-and-clear trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Divide one conditioned supply into independently isolated research branches so patterns, outlets, or plot sections can be compared.
Operating concept	A large-bore header with low-dead-space branches, pressure balancing, visible valve state, and branch-specific purge points feeds multiple approved outlets.
Principal assemblies	main header; branch isolation valves; pressure-balancing orifices if tested; branch flow sensors; drains; purge connections; labeled couplings; containment frame
Functional sequence	run water-only through all branches → balance/record baseline → enable selected slurry branches → compare branch performance → isolate any fault → flush branches individually → inspect header
Instrumentation	flow and pressure; selected pattern or outlet mode; operator/remote stop
Safeguards	manage reaction force; avoid occupied-area use; provide clearing without hands entering the material path
Failure modes for review	unequal flow; valve error; dead-leg settling; coupling leak; complex hose trip hazards
Disclosed variants	two-way wye; multi-branch skid; plot manifold; ring-main test loop; remote-valve manifold
Minimum validation gates	water-only pattern baseline; slurry reach/pattern test; clog-and-clear trial; operator human-factors review

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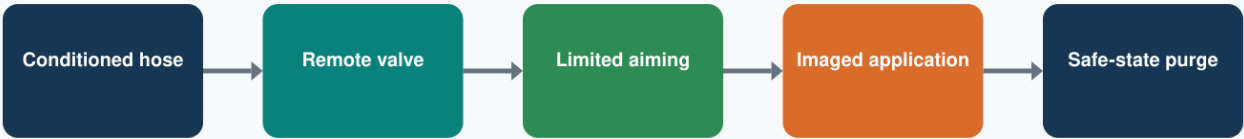
Remote Applicator Head

Material modes: Local and prepared material | Scale: Remote research | Status: research concept

SSR-E08 • Application and delivery

Remote Applicator Head

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

water-only pattern baseline • slurry reach/pattern test • clog-and-clear trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Place the final outlet on a teleoperated boom, crawler, or fixed test stand to increase distance from heat, pressure reaction, or contaminated splash.
Operating concept	A remotely aimed solids-compatible head combines camera/thermal feedback, limited motion, local valve isolation, and automatic return to water-only or stop on communications loss.
Principal assemblies	pan/tilt or boom mount; solids-compatible outlet; local shutoff; camera/thermal imager; position encoders; communications link; safe-state controller; purge line
Functional sequence	establish exclusion zone → verify communications and safe state → water-only aim test → enable slurry → apply within limits → stop on fault → purge remotely before approach
Instrumentation	flow and pressure; selected pattern or outlet mode; operator/remote stop
Safeguards	manage reaction force; avoid occupied-area use; provide clearing without hands entering the material path
Failure modes for review	communications loss; unexpected motion; hose torque; camera obscuration; unsafe manual recovery
Disclosed variants	fixed stand; crawler head; vehicle boom; gantry head; laboratory robotic positioner
Minimum validation gates	water-only pattern baseline; slurry reach/pattern test; clog-and-clear trial; operator human-factors review

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

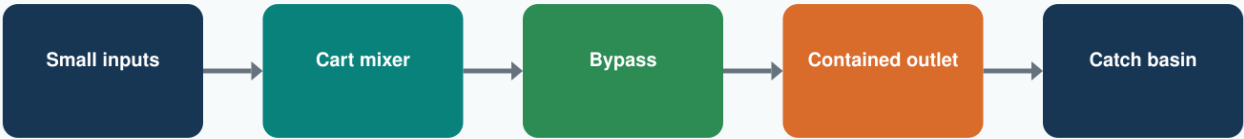
Hand-Cart and Microprototype Unit

Material modes: Local and prepared material | Scale: Bench/microprototype | Status: research concept

SSR-F01 • Mobile and stationary platforms

Hand-Cart and Microprototype Unit

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

weight/stability review • transport and tie-down review • contained operation trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Combine small tanks, metering, mixing, and a contained outlet into the lowest practical scale for hydraulic learning before larger machinery.
Operating concept	A wheeled frame carries a clean-water tank, small documented-material hopper or pre-slurry vessel, protected mixer/injector, water-only bypass, and catch-basin return.
Principal assemblies	braked hand cart; small water tank; sealed feed vessel; micro-metering pump/feeder; mixing spool; bypass; short test hose; catch basin
Functional sequence	stabilize cart → load small documented batch → run water baseline → meter test stream → return discharge to containment → collect data → drain and clean
Instrumentation	tank level or material inventory; platform attitude/load status; system mode; containment status
Safeguards	stability and load analysis; transport isolation; spill/runoff containment; authorized-user controls
Failure modes for review	tip-over; manual-handling strain; small passages clogging; splash; incorrect extrapolation to field scale
Disclosed variants	bench cart; folding field cart; battery-powered cart; tethered laboratory cart; transparent demonstration unit
Minimum validation gates	weight/stability review; transport and tie-down review; contained operation trial; maintenance-access review

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

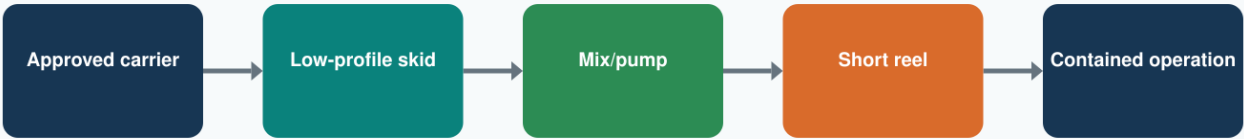
UTV/ATV Modular Skid

Material modes: Local and prepared material | Scale: Light mobile | Status: research concept

SSR-F02 • Mobile and stationary platforms

UTV/ATV Modular Skid

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

weight/stability review • transport and tie-down review • contained operation trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Carry a small prepared batch or conditioned local-material module across approved test terrain while preserving vehicle payload and stability limits.
Operating concept	A removable skid integrates tank/hopper, metering, dedicated slurry pump or downstream injector, short reel, controls, and full secondary containment.
Principal assemblies	vehicle-specific mounting frame; low-profile tank/hopper; metering/mixing module; dedicated pump; hose reel; control panel; containment pan; transport locks
Functional sequence	verify payload/center of gravity → secure skid → load only at test site → operate parked or within approved motion plan → apply bounded test → recover contents → remove/inspect skid
Instrumentation	tank level or material inventory; platform attitude/load status; system mode; containment status
Safeguards	stability and load analysis; transport isolation; spill/runoff containment; authorized-user controls
Failure modes for review	rollover; payload exceedance; heat near vehicle; spill during travel; hose entanglement
Disclosed variants	UTV bed skid; small trailer; tracked utility carrier; electric utility vehicle; receiver-only transport skid
Minimum validation gates	weight/stability review; transport and tie-down review; contained operation trial; maintenance-access review

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

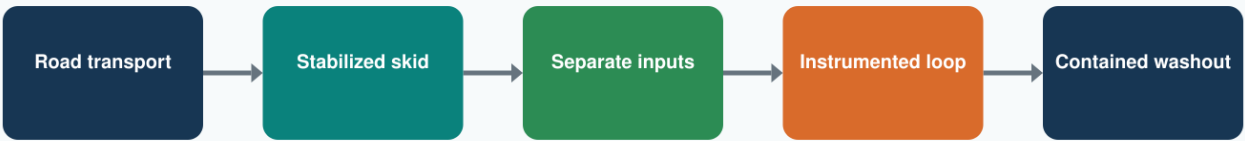
Pickup and Trailer Research Skid

Material modes: Local and prepared material | Scale: Mobile pilot | Status: research concept

SSR-F03 • Mobile and stationary platforms

Pickup and Trailer Research Skid

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

weight/stability review • transport and tie-down review • contained operation trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Provide a road-transportable, self-contained platform for mechanical, hydraulic, and controlled-site testing without modifying a fire engine.
Operating concept	A pickup-bed or trailer skid carries separate water and material systems, classification/mixing modules, dedicated power, containment, and an instrumented delivery loop.
Principal assemblies	rated bed/trailer frame; water tank; material hopper or batch tank; mixer/injector; dedicated pump; generator/hydraulic power; controls/data; washout containment
Functional sequence	complete load plan → transport dry/isolated → stabilize at site → connect contained test loop → run staged protocol → recover/wash → secure for transport
Instrumentation	tank level or material inventory; platform attitude/load status; system mode; containment status
Safeguards	stability and load analysis; transport isolation; spill/runoff containment; authorized-user controls
Failure modes for review	overweight trailer; tongue/axle imbalance; fuel/electrical hazards; spill; public-road contamination
Disclosed variants	pickup-bed skid; single-axle laboratory trailer; tandem-axle process trailer; enclosed trailer; flatbed modular rack
Minimum validation gates	weight/stability review; transport and tie-down review; contained operation trial; maintenance-access review

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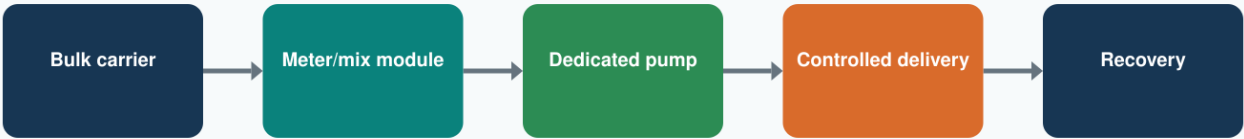
Tender and Dump-Truck Batch Module

Material modes: Local and prepared material | Scale: Heavy mobile | Status: research concept

SSR-F04 • Mobile and stationary platforms

Tender and Dump-Truck Batch Module

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

weight/stability review • transport and tie-down review • contained operation trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Use a high-capacity carrier as a material or batch platform while isolating the Sedi-Slurry process from conventional firefighting pumps.
Operating concept	A removable or body-mounted module provides bulk receiving, agitation or live-bottom feed, water addition, dedicated slurry transfer, and contained cleaning.
Principal assemblies	engineered subframe; bulk hopper or baffled tank; live bottom/agitation; water manifold; dedicated slurry pump; downstream injection/delivery; operator station; washout recovery
Functional sequence	verify axle/load distribution → receive documented material → prepare or meter batch → operate dedicated system → monitor stability/inventory → recover residuals → inspect carrier
Instrumentation	tank level or material inventory; platform attitude/load status; system mode; containment status
Safeguards	stability and load analysis; transport isolation; spill/runoff containment; authorized-user controls
Failure modes for review	vehicle overload; surge/slosh; rollover; bulk jam; large-volume release
Disclosed variants	water tender side module; dump-truck hopper mixer; walking-floor feed truck; vacuum tanker adaptation; swap-body module
Minimum validation gates	weight/stability review; transport and tie-down review; contained operation trial; maintenance-access review

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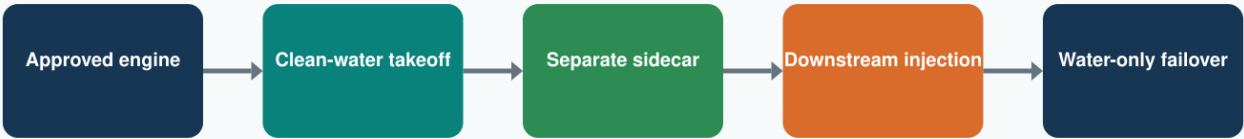
Fire-Engine Retrofit Sidecar

Material modes: Local and prepared material | Scale: Professional research interface | Status: research concept

SSR-F05 • Mobile and stationary platforms

Fire-Engine Retrofit Sidecar

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

weight/stability review • transport and tie-down review • contained operation trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Provide an externally mounted research attachment that uses approved clean water from an engine while keeping mineral material and slurry in a separate removable system.
Operating concept	A sidecar or rear skid accepts clean water after an owner-approved point, meters a separate slurry side stream, injects downstream, and returns to water-only on any fault.
Principal assemblies	apparatus-specific mounting frame; clean-water interface; separate material vessel; metering feeder/pump; injection collar; bypass/failover; controls; purge/wash containment
Functional sequence	obtain owner and engineering approval → mount without defeating apparatus functions → connect clean-water point → run water baseline → enable bounded side stream → fail back to water → remove and inspect
Instrumentation	tank level or material inventory; platform attitude/load status; system mode; containment status
Safeguards	stability and load analysis; transport isolation; spill/runoff containment; authorized-user controls
Failure modes for review	interference with certified apparatus; backflow; weight/clearance; operator confusion; warranty/standards conflict
Disclosed variants	side cabinet; rear skid; tow-behind side-stream module; training-engine-only retrofit; demountable quick-change module
Minimum validation gates	weight/stability review; transport and tie-down review; contained operation trial; maintenance-access review

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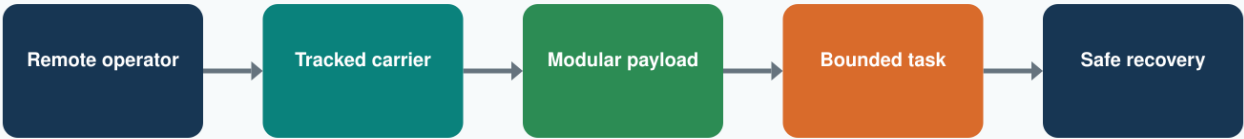
Tracked Teleoperated Crawler

Material modes: Local and prepared material | Scale: Remote mobile | Status: research concept

SSR-F06 • Mobile and stationary platforms

Tracked Teleoperated Crawler

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

weight/stability review • transport and tie-down review • contained operation trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Carry a small collection, mixing, or application module into a controlled high-heat, unstable, or exposure-prone test area while keeping operators remote.
Operating concept	A low-center-of-gravity tracked base supports modular payloads, tethered or wireless control, onboard cameras, safe-state valves, and a recoverable tow point.
Principal assemblies	tracked chassis; payload deck; remote drive control; camera/thermal system; hose management; safe-state controller; recovery winch/tow points; protective enclosure
Functional sequence	map route and recovery plan → attach approved payload → verify tether/comms → enter contained test zone → perform bounded task → safe-state on fault → recover before servicing
Instrumentation	tank level or material inventory; platform attitude/load status; system mode; containment status
Safeguards	stability and load analysis; transport isolation; spill/runoff containment; authorized-user controls
Failure modes for review	loss of communications; rollover/stuck vehicle; hose snag; battery/thermal damage; unsafe recovery approach
Disclosed variants	small electric crawler; tethered hydraulic crawler; articulated tracked carrier; wheeled robot; autonomous navigation research with human authorization
Minimum validation gates	weight/stability review; transport and tie-down review; contained operation trial; maintenance-access review

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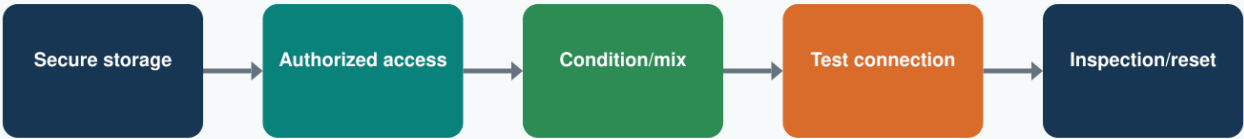
Stationary Community Sedi-Slurry Station

Material modes: Local and prepared material | Scale: Stationary | Status: research concept

SSR-F07 • Mobile and stationary platforms

Stationary Community Sedi-Slurry Station

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

weight/stability review • transport and tie-down review • contained operation trial

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Pre-position documented material, water connections, modular equipment, controls, and records at an authorized site for training and research readiness.
Operating concept	A secure weatherproof station contains separate material storage, receiving/conditioning modules, water-only bypass, mixing/transfer equipment, containment, and inspection records.
Principal assemblies	secure enclosure; documented material storage; water connection; conditioning/mixing skid; delivery connections; controls/data; spill/washout containment; inspection/training records
Functional sequence	authorize site and users → inspect stored material/equipment → connect approved water → run water-only check → prepare bounded test → recover and reset → log maintenance
Instrumentation	tank level or material inventory; platform attitude/load status; system mode; containment status
Safeguards	stability and load analysis; transport isolation; spill/runoff containment; authorized-user controls
Failure modes for review	unauthorized use; weather degradation; stale/contaminated material; frozen lines; false impression of emergency approval
Disclosed variants	industrial-site station; community research station; university test station; wildland training-center station; containerized station
Minimum validation gates	weight/stability review; transport and tie-down review; contained operation trial; maintenance-access review

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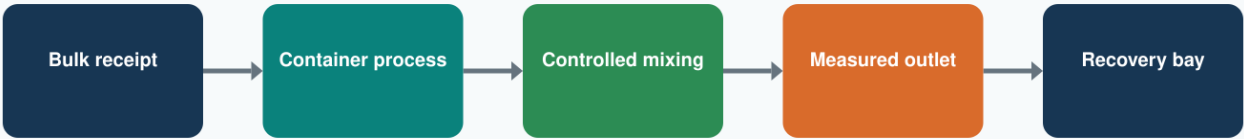
Containerized Mobile Mixing Plant

Material modes: Local and prepared material | Scale: Institutional pilot | Status: research concept

SSR-G01 • Specialized, thermal, and recovery systems

Containerized Mobile Mixing Plant

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Combine bulk receiving, classification, metering, mixing, controls, and recovery in a transportable container for qualified institutional testing.
Operating concept	A standard container or modular shelter houses segregated process bays with external receiving, conditioned feed, water connection, mixing skids, operator controls, and contained washout.
Principal assemblies	engineered container frame; external receiving interface; classifier; metering/mixing skids; ventilation/dust control; electrical/hydraulic distribution; control room separation; washout/recovery bay
Functional sequence	site and level container → connect utilities/containment → receive documented material → condition and meter → produce contained stream → recover residuals → secure for transport
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	container weight/structural load; confined access; dust accumulation; utility fault; transport with residual material
Disclosed variants	20-foot research plant; 40-foot pilot plant; two-container process/control system; open skid shelter; rapid-deploy tent enclosure
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

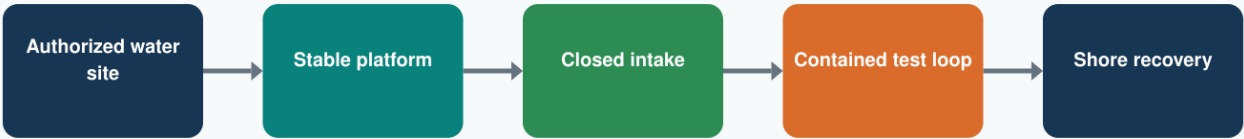
Marine and Wetland Research Platform

Material modes: Local and prepared material | Scale: Marine research | Status: research concept

SSR-G02 • Specialized, thermal, and recovery systems

Marine and Wetland Research Platform

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Support authorized study near water or wet sediment while prioritizing containment and avoiding unapproved discharge or ecological disturbance.
Operating concept	A stable barge, boat, or floating dock carries a low-disturbance intake, closed sample/conditioning loop, clean-water system, and full return/recovery path.
Principal assemblies	stability-rated floating platform; screened low-disturbance intake; closed sample receiver; conditioner; contained test loop; spill barriers; recovery tank; environmental monitoring
Functional sequence	obtain environmental and navigation authorization → stabilize platform → sample wet source → operate closed loop → retain all test media → monitor water quality → return to shore for disposition
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	capsize/stability; aquatic impact; uncontrolled release; organism transport; corrosion/electrical exposure
Disclosed variants	shore pontoon; research barge; small workboat skid; floating dock station; fully simulated tank-based wetland rig
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

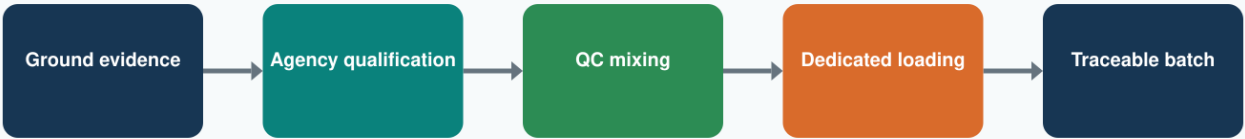
Aerial and Airbase Loading Pathway

Material modes: Future qualified formulation only | Scale: Future airbase; not early prototype | Status: research concept

SSR-G03 • Specialized, thermal, and recovery systems

Aerial and Airbase Loading Pathway

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Disclose a future ground-side formulation, storage, mixing, quality-control, and loading pathway without proposing early aircraft modification or operational drops.
Operating concept	A qualified airbase concept would receive only an aviation-approved formulation, verify batch properties, transfer through dedicated equipment, preserve traceability, and follow agency-controlled loading and washout procedures.
Principal assemblies	segregated approved-material storage; quality-control laboratory; batch/continuous mixing plant; dedicated transfer pump; aircraft-compatible loading connection to be defined by authority; batch traceability; spill response; washout recovery
Functional sequence	complete ground evidence first → obtain aviation/agency program authority → qualify formulation and equipment → prepare and test batch → verify release criteria → load only under approved procedure → recover washout and records
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	aircraft compatibility; drop safety; weight/center of gravity; environmental exposure; premature public inference of approval
Disclosed variants	airtanker base concept; helicopter tank loading concept; bucket-fill research interface; portable helibase module; ground-only mock loading rig
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

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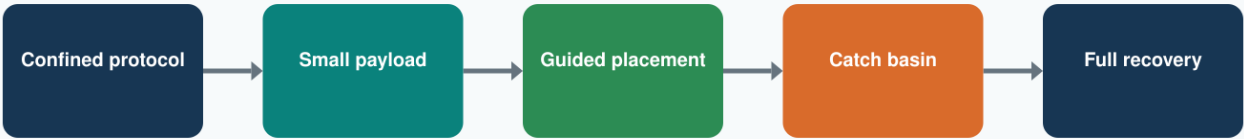
UAS Small-Sample Test Applicator

Material modes: Local and prepared material | Scale: Laboratory only | Status: research concept

SSR-G04 • Specialized, thermal, and recovery systems

UAS Small-Sample Test Applicator

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Evaluate sensor-guided placement of very small contained samples in a closed or netted research environment, not wildfire deployment.
Operating concept	A tethered or confined unmanned aircraft carries a minimal liquid payload and releases into a catch basin or test coupon under independent containment and emergency termination.
Principal assemblies	confined/tethered UAS; small sealed reservoir; low-flow valve; weight sensor; camera; geofence; independent kill; full catch basin
Functional sequence	approve indoor/confined protocol → load inert or authorized sample → verify weight and tether → hover over containment → release measured sample → land immediately → recover all material
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	rotor injury; loss of control; payload release; battery fire; misuse as an operational aerial system
Disclosed variants	tethered quadrotor; overhead gantry simulator; cable-suspended drop head; ground robot substitute
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

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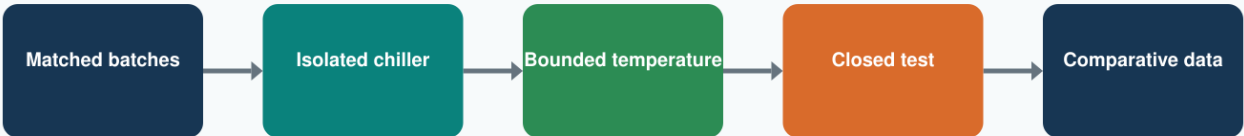
Chilled-Water Heat-Exchange Module

Material modes: Local and prepared material | Scale: Bench/pilot | Status: research concept

SSR-G05 • Specialized, thermal, and recovery systems

Chilled-Water Heat-Exchange Module

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Compare ambient and chilled water or fully pumpable chilled slurry in a closed test loop to determine whether initial temperature changes measured outcomes.
Operating concept	A secondary refrigeration loop cools a clean-water or approved slurry reservoir through an isolated heat exchanger; temperature is bounded above freezing unless a separate contained protocol applies.
Principal assemblies	insulated reservoir; isolated heat exchanger; refrigeration/chiller; temperature sensors; mixing/recirculation; condensation control; bypass; energy meter
Functional sequence	prepare identical control batches → cool test batch to approved setpoint → verify pumpability → run closed hydraulic test → conduct qualified comparison → record energy/temperature → warm, recover, and clean
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	freezing blockage; condensation/slip; thermal shock; refrigerant hazard; confounding from unequal formulation
Disclosed variants	chilled clean-water module; jacketed slurry tank; plate exchanger side loop; ice-bank cooling without solids; mobile refrigerated skid
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

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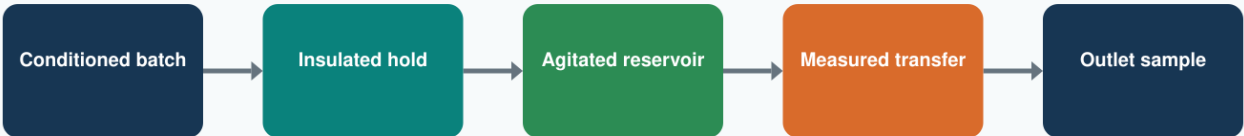
Thermal Reservoir and Insulated Transfer System

Material modes: Local and prepared material | Scale: Contained thermal research | Status: research concept

SSR-G06 • Specialized, thermal, and recovery systems

Thermal Reservoir and Insulated Transfer System

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE
contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Hold a temperature-managed test medium long enough to measure heat gain, settling, and delivery effects before any fire comparison.
Operating concept	An insulated, agitated reservoir and insulated short transfer line track temperature at multiple points and prevent misleading assumptions about outlet temperature.
Principal assemblies	insulated tank; gentle agitator; multi-depth temperature probes; insulated hose; heat-trace disabled/controlled as appropriate; sample port; recirculation; drain/recovery
Functional sequence	prepare characterized batch → condition temperature → hold for defined period → measure stratification → transfer through short loop → measure outlet condition → recover batch
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	temperature stratification; settling; hose heat gain; frozen valves; excess system weight
Disclosed variants	laboratory Dewar-style vessel; jacketed tote; refrigerated trailer tank; short insulated hose reel
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

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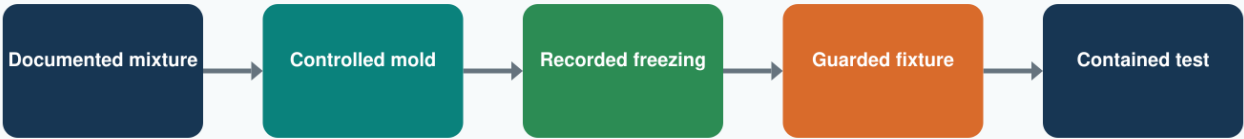
Frozen Mineral-Water Article Former and Contained Feeder

Material modes: Local and prepared material | Scale: Laboratory only | Status: research concept

SSR-G07 • Specialized, thermal, and recovery systems

Frozen Mineral-Water Article Former and Contained Feeder

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Create reproducible frozen or partially frozen mineral-water test articles for contained calorimetry or fixture-based research only.
Operating concept	A mold, controlled freezing chamber, instrumented storage tray, and guarded fixture transfer test articles into a stationary containment vessel—never a launcher, aerial system, or occupied-area applicator.
Principal assemblies	measured molds; freezing chamber; core/surface temperature probes; weigh station; insulated tray; guarded transfer fixture; contained test vessel; meltwater recovery
Functional sequence	prepare documented mixture → fill identical molds → freeze under recorded cycle → measure mass/temperature → transfer by guarded fixture → test only in contained vessel → recover melt/residue
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	pressure from freezing; cold-contact injury; slip/meltwater; projectile misuse; nonuniform frozen core
Disclosed variants	cube mold; pellet mold; layered article; partially frozen slush cartridge; instrumented single-article calorimetry
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

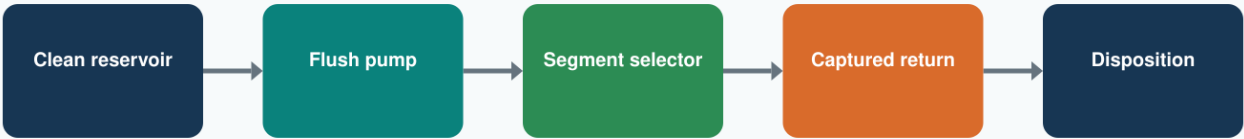
Clean-Water Purge and Flush Skid

Material modes: Local and prepared material | Scale: All systems | Status: research concept

SSR-G08 • Specialized, thermal, and recovery systems

Clean-Water Purge and Flush Skid

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Provide a dedicated, measured clean-water source to clear feeders, mixers, pumps, hoses, and outlets after each test or fault.
Operating concept	A clean reservoir, pump, selectable connection manifold, and captured return deliver a defined flush sequence to isolated segments without sending washwater to the environment.
Principal assemblies	clean-water tank; flush pump; segment selector; backflow prevention; flow/volume meter; return/capture hose; washwater tank; conductivity/turbidity observation
Functional sequence	stop mineral feed → isolate process source → connect selected segment → flush at approved condition → capture return → verify visual/measurement endpoint → label washwater for disposition
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	cross-contamination; uncontained washwater; overpressure; incomplete dead-leg cleaning; slip hazard
Disclosed variants	portable flush cart; trailer skid; integrated station tank; hot-water research option after compatibility review; multi-segment automated flush
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

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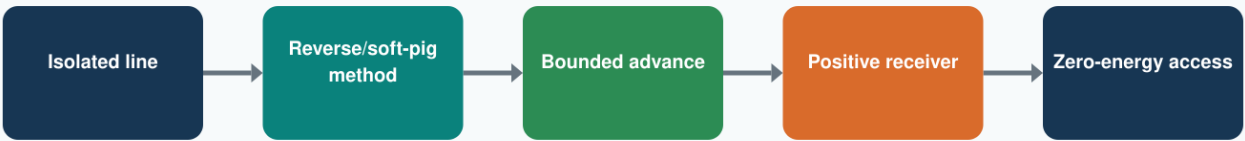
Reverse-Flush and Line-Pigging Station

Material modes: Local and prepared material | Scale: Purpose-designed lines only | Status: research concept

SSR-G09 • Specialized, thermal, and recovery systems

Reverse-Flush and Line-Pigging Station

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Remove settled material from approved large-bore test lines by reverse flow or a fully captured soft cleaning projectile, without treating pigging as universally compatible.
Operating concept	A reversible connection manifold or guarded pig launcher/receiver works only on a purpose-designed isolated line with positive capture and depressurization.
Principal assemblies	reversible manifold; isolation valves; depressurization ports; soft pig launcher; positive receiver/cage; position indication; capture tank; access interlocks
Functional sequence	confirm line is designed for method → isolate/depressurize → configure reverse flow or soft pig → close/guard receiver → advance under bounded pressure → confirm capture → open only after zero energy
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	projectile hazard; trapped pressure; pig stuck in line; wrong line geometry; uncontained discharge
Disclosed variants	reverse-water-only flush; foam pig; brush-free soft pig; mechanical rodding port for unpressurized bench line
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

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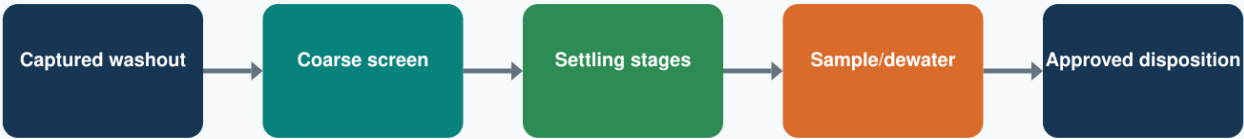
Washout, Settling, and Solids-Recovery Station

Material modes: Local and prepared material | Scale: Pilot to institutional | Status: research concept

SSR-G10 • Specialized, thermal, and recovery systems

Washout, Settling, and Solids-Recovery Station

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Capture all washwater and residual mineral material from bounded tests so solids can settle, be sampled, dewatered, and disposed through an approved route.
Operating concept	A curbed wash pad drains through staged settling compartments or tanks; decanted water and recovered solids remain contained pending characterization and disposition.
Principal assemblies	curbed wash pad; sump; coarse basket; settling tanks; baffles; sample ports; decant pump; labeled solids bins
Functional sequence	direct all cleaning to pad → screen coarse debris → settle suspended solids → sample liquid/solids → decant only under approved plan → dewater solids → document disposition
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	overflow; slip/fall; misclassified waste; resuspension; unapproved discharge
Disclosed variants	portable berm and tanks; fixed concrete pad; roll-off settling box; lamella clarifier; geotextile dewatering bag after review
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

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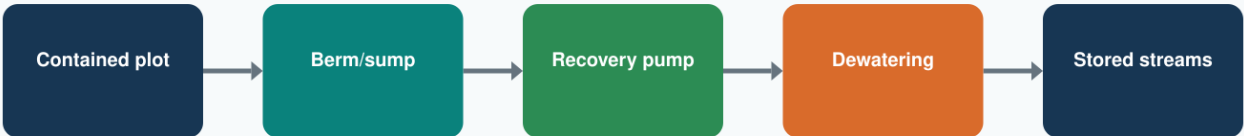
Runoff Capture and Mobile Dewatering Module

Material modes: Local and prepared material | Scale: Controlled outdoor testing | Status: research concept

SSR-G11 • Specialized, thermal, and recovery systems

Runoff Capture and Mobile Dewatering Module

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

contained bench trial • thermal/material compatibility • recovery efficiency

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Intercept slurry runoff from a controlled test plot and reduce its volume for sampling, reuse research, or approved disposal.
Operating concept	Temporary berms and sumps direct runoff to a vacuum or pump module; staged screens, settling, or dewatering separate reusable water from retained solids only under a written environmental plan.
Principal assemblies	temporary impermeable berm; sump; screened vacuum pickup; transfer pump; settling/dewatering unit; sample ports; storage tanks; level alarms
Functional sequence	line test plot → route runoff to sump → recover before overflow → screen and settle → sample streams → store water/solids → close site after inspection
Instrumentation	process temperature or recovery level; flow; containment status; stop condition
Safeguards	contained research only where stated; prevent uncontrolled discharge; define waste and recovery route
Failure modes for review	berm failure; overflow; erosion; contaminant concentration; cross-site organism transport
Disclosed variants	portable berm; vacuum trailer; dewatering bag; filter press research module; closed recirculation plot
Minimum validation gates	contained bench trial; thermal/material compatibility; recovery efficiency; environmental disposition review

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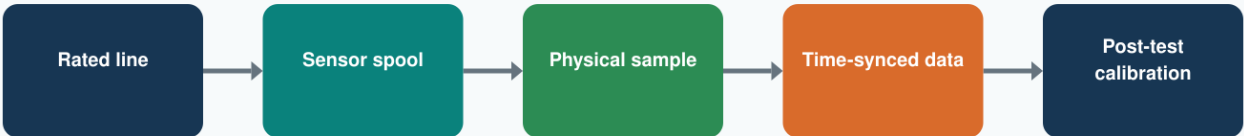
Sensor Spool and Inline Measurement Package

Material modes: Local and prepared material | Scale: All test scales | Status: research concept

SSR-H01 • Controls, interfaces, and test systems

Sensor Spool and Inline Measurement Package

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

calibration check • fault-injection test • data-integrity review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Create a removable measurement section for water and slurry lines so flow, pressure, temperature, density proxy, and differential pressure can be compared.
Operating concept	A straight spool with flush-mounted or isolated sensors, upstream/downstream pressure taps, sample valves, and a cleanable geometry installs only in a rated test loop.
Principal assemblies	rated spool body; pressure taps; flowmeter selected for slurry research; temperature sensors; density/attenuation proxy; sample valve; differential-pressure ports; flush manifold
Functional sequence	calibrate on water → install in rated loop → zero sensors → run water baseline → measure characterized slurry → take physical sample → flush and inspect drift
Instrumentation	calibration state; time-synchronized data; mode and alarm history; operator acknowledgment
Safeguards	sensor failure must not defeat mechanical protection; preserve raw data; separate research controls from deployment authority
Failure modes for review	sensor fouling; false readings; pressure tap clog; unrated installation; data/time mismatch
Disclosed variants	small bench spool; large-line spool; clamp-on auxiliary sensors; transparent low-pressure visualization section; portable calibration loop
Minimum validation gates	calibration check; fault-injection test; data-integrity review; qualified protocol approval

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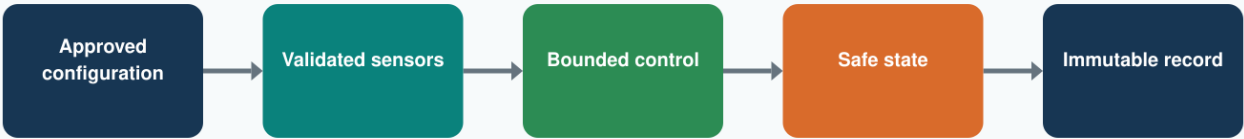
Control and Data-Logging Cabinet

Material modes: Local and prepared material | Scale: All instrumented systems | Status: research concept

SSR-H02 • Controls, interfaces, and test systems

Control and Data-Logging Cabinet

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

calibration check • fault-injection test • data-integrity review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Coordinate bounded commands, alarms, safe states, and a traceable record of material, ratio, pressure, flow, purge, and test events.
Operating concept	A rugged controller receives validated sensor inputs, commands only approved actuators, records raw and processed data, and defaults to stop-solids/water-only or full stop as the hazard analysis requires.
Principal assemblies	industrial controller; independent emergency-stop chain; manual mode selector; data logger; time source; operator display; network isolation; uninterruptible safe shutdown
Functional sequence	load approved test configuration → verify sensor/calibration state → perform pre-start checklist → run bounded sequence → alarm and safe-state on fault → lock record → export signed test package
Instrumentation	calibration state; time-synchronized data; mode and alarm history; operator acknowledgment
Safeguards	sensor failure must not defeat mechanical protection; preserve raw data; separate research controls from deployment authority
Failure modes for review	software mode error; sensor failure; cyber/network exposure; loss of power; overreliance on automation
Disclosed variants	portable pelican-case controller; trailer cabinet; station control room; robot controller; air-gapped laboratory logger
Minimum validation gates	calibration check; fault-injection test; data-integrity review; qualified protocol approval

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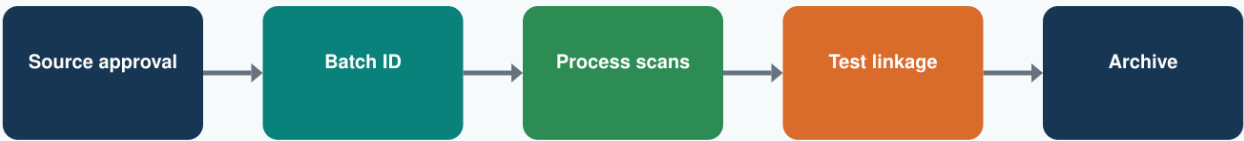
Material Chain-of-Custody Kiosk

Material modes: Local and prepared material | Scale: All research | Status: research concept

SSR-H03 • Controls, interfaces, and test systems

Material Chain-of-Custody Kiosk

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

calibration check • fault-injection test • data-integrity review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Link every physical batch, retained sample, machine setting, and test result to a source and responsible approval record.
Operating concept	A label printer/scanner, sealed sample cabinet, scale, camera, and offline-capable database create a batch identifier that follows material through conditioning, mixing, application, and recovery.
Principal assemblies	scanner/label printer; scale; camera; sealed sample cabinet; batch database; user authentication; sample checkout log; export/archive function
Functional sequence	create source record → assign batch ID → label samples/containers → scan at each process step → link machine data → record recovery/disposition → archive public/private fields appropriately
Instrumentation	calibration state; time-synchronized data; mode and alarm history; operator acknowledgment
Safeguards	sensor failure must not defeat mechanical protection; preserve raw data; separate research controls from deployment authority
Failure modes for review	privacy leakage; label loss; unauthorized edits; sample mismatch; database dependence
Disclosed variants	field tablet kit; station kiosk; barcode system; QR plus paper backup; laboratory LIMS handoff
Minimum validation gates	calibration check; fault-injection test; data-integrity review; qualified protocol approval

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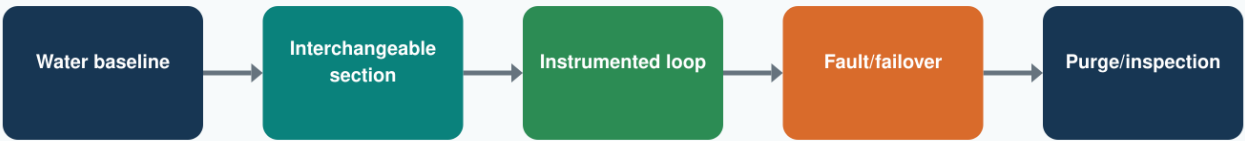
Closed Hydraulic and Mechanical Test Loop

Material modes: Local and prepared material | Scale: Bench to full-scale hydraulic | Status: research concept

SSR-H04 • Controls, interfaces, and test systems

Closed Hydraulic and Mechanical Test Loop

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

calibration check • fault-injection test • data-integrity review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Evaluate pumpability, pressure loss, settling, bridging, leakage, shutdown, bypass, and purge without fire.
Operating concept	A contained reservoir, interchangeable pump/mixer sections, instrumented hose and fittings, test outlet return, and guarded fault-insertion points form a recirculating loop.
Principal assemblies	contained reservoir; interchangeable pump/mixer bay; sensor spools; representative hose/couplings; test nozzle return box; bypass/relief; sample ports; recovery/flush system
Functional sequence	run water baseline → introduce characterized material → step through bounded flow conditions → observe settling/clogging → trigger planned stop/failover → purge → disassemble under zero energy and inspect
Instrumentation	calibration state; time-synchronized data; mode and alarm history; operator acknowledgment
Safeguards	sensor failure must not defeat mechanical protection; preserve raw data; separate research controls from deployment authority
Failure modes for review	hose rupture; stored pressure; unplanned spray; pump damage; unsafe fault insertion
Disclosed variants	bench loop; trailer loop; full-length hose loop; cold-room loop; elevated/head-loss simulation loop
Minimum validation gates	calibration check; fault-injection test; data-integrity review; qualified protocol approval

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

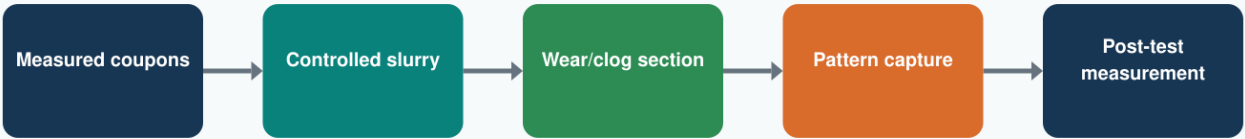
Abrasion, Clogging, and Nozzle-Pattern Bench

Material modes: Local and prepared material | Scale: Laboratory/pilot | Status: research concept

SSR-H05 • Controls, interfaces, and test systems

Abrasion, Clogging, and Nozzle-Pattern Bench

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

calibration check • fault-injection test • data-integrity review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Compare material-machine combinations using replaceable wear coupons, controlled restrictions, and captured outlet patterns.
Operating concept	A short instrumented loop circulates measured slurry through test coupons and interchangeable outlets into a pattern wall/catch grid; differential pressure and mass loss quantify changes.
Principal assemblies	slurry reservoir; test pump; wear-coupon holder; restriction/clog test spool; interchangeable nozzle mount; pattern grid/catch pans; high-speed/thermal imaging as approved; recovery tank
Functional sequence	characterize material → weigh/measure coupons → run water reference → run bounded slurry cycles → record pressure/pattern → recover all output → clean, remeasure, and inspect
Instrumentation	calibration state; time-synchronized data; mode and alarm history; operator acknowledgment
Safeguards	sensor failure must not defeat mechanical protection; preserve raw data; separate research controls from deployment authority
Failure modes for review	coupon failure; projected debris; pressurized clearing; measurement bias; erosive leakage
Disclosed variants	coupon wheel; elbow-wear rig; hose-liner loop; nozzle pattern wall; automated cycle bench
Minimum validation gates	calibration check; fault-injection test; data-integrity review; qualified protocol approval

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

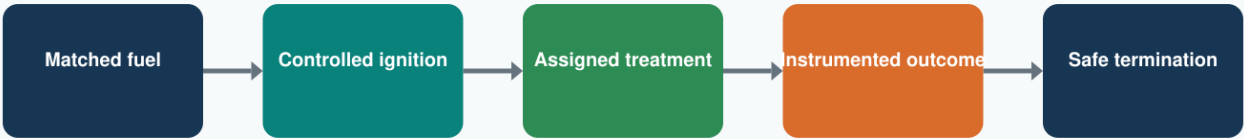
Instrumented Comparative Fire-Test Rig

Material modes: Local and prepared material | Scale: Qualified fire facility only | Status: research concept

SSR-H06 • Controls, interfaces, and test systems

Instrumented Comparative Fire-Test Rig

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE

calibration check • fault-injection test • data-integrity review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Compare water alone with one documented Sedi-Slurry candidate under qualified, repeatable, contained fire-test conditions.
Operating concept	A qualified facility uses matched fuel packages or ember beds, identical delivery geometry, thermal and combustion instrumentation, runoff capture, randomized treatment order, and predefined stop conditions.
Principal assemblies	qualified fire enclosure or pad; matched fuel fixtures; fixed applicator mount; water/slurry selector outside hazard zone; thermocouples/thermal imaging; mass/heat-release proxy as available; runoff capture; emergency suppression
Functional sequence	approve protocol and hazards → prepare matched controls → ignite repeatedly → apply assigned treatment → measure cooling/flame/ember/reignition → terminate safely → recover residues and publish limitations
Instrumentation	calibration state; time-synchronized data; mode and alarm history; operator acknowledgment
Safeguards	sensor failure must not defeat mechanical protection; preserve raw data; separate research controls from deployment authority
Failure modes for review	uncontrolled fire growth; steam/splash; confounded fuels; insufficient replication; misrepresentation of limited results
Disclosed variants	ember-bed calorimetry; small crib test; vegetation-coupon test; surface-coating ignition test; mop-up/reignition test
Minimum validation gates	calibration check; fault-injection test; data-integrity review; qualified protocol approval

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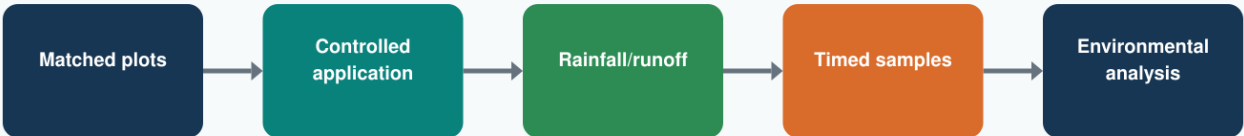
Environmental and Runoff Test Station

Material modes: Local and prepared material | Scale: Laboratory/contained plot | Status: research concept

SSR-H07 • Controls, interfaces, and test systems

Environmental and Runoff Test Station

Conceptual functional flow — not fabrication or deployment instruction



DESIGN GATE
calibration check • fault-injection test • data-integrity review

Originator of Sedi-Slurry platform architecture: Christopher Alan Woody • Prepared August 18, 2026

Design field	Concept definition
Purpose	Measure turbidity, suspended solids, deposition, leachate, cleanup burden, and selected soil/aquatic endpoints before outdoor scale-up.
Operating concept	Contained soil trays, rainfall/runoff simulators, collection vessels, and sample ports compare water-only, untreated, and slurry-treated plots without discharge to the environment.
Principal assemblies	contained soil/vegetation trays; controlled application mount; rainfall simulator; runoff gutters; fraction collectors; soil/leachate sample ports; weather/temperature sensors; waste storage
Functional sequence	prepare characterized media → apply matched treatments → condition/dry as protocol states → run controlled rainfall → collect timed fractions → analyze approved endpoints → retain/dispose materials
Instrumentation	calibration state; time-synchronized data; mode and alarm history; operator acknowledgment
Safeguards	sensor failure must not defeat mechanical protection; preserve raw data; separate research controls from deployment authority
Failure modes for review	cross-contamination; overflow; unrepresentative soil; biological exposure; overgeneralized conclusions
Disclosed variants	bench tray; greenhouse lysimeter; outdoor lined plot; aquatic microcosm under qualified review; cleanup-comparison station
Minimum validation gates	calibration check; fault-injection test; data-integrity review; qualified protocol approval

CLAIM BOUNDARY: No certified design, validated recipe, performance guarantee, regulatory approval, or authorization for uncontrolled-fire use is represented.

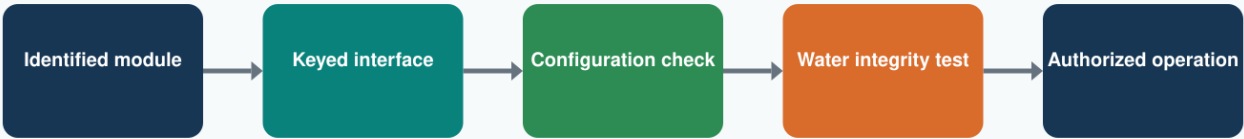
Modular Interface and Quick-Connect Architecture

Material modes: Local and prepared material | Scale: Entire platform family | Status: research concept

SSR-H08 • Controls, interfaces, and test systems

Modular Interface and Quick-Connect Architecture

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DESIGN GATE

calibration check • fault-injection test • data-integrity review

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Design field	Concept definition
Purpose	Define a research-only mechanical and data interface family so acquisition, conditioning, mixing, pump, delivery, purge, and sensor modules can be changed without redesigning the entire platform.
Operating concept	Keyed mechanical connections, size-coded hoses, physically incompatible clean-water/raw-material ports, module IDs, and a shared data/power handshake reduce cross-connection and configuration error.
Principal assemblies	keyed mechanical flanges/couplings; color/shape coding; clean-water segregation; module identification; pressure/flow class labels; data connector; interlock loop; blanking and drain caps
Functional sequence	classify each module interface → prevent incompatible connection physically → scan/identify modules → verify configuration → run water-only integrity check → enable test → cap/drain and record removal
Instrumentation	calibration state; time-synchronized data; mode and alarm history; operator acknowledgment
Safeguards	sensor failure must not defeat mechanical protection; preserve raw data; separate research controls from deployment authority
Failure modes for review	false compatibility; wrong pressure class; cross-connection; connector fouling; software accepting unsafe combination
Disclosed variants	bench interface set; trailer module rack; large-bore skid standard; sensor-spool standard; future professional interface after qualification
Minimum validation gates	calibration check; fault-injection test; data-integrity review; qualified protocol approval

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4. Cross-platform validation ladder

Stage	Work	Release gate
0 — Governance	Responsible institution, hazard analysis, permits, roles, data/publication terms, emergency plan.	Named authority approves material, equipment, location, personnel, and stop conditions.
1 — Source and bench screening	Document source; sample; inspect; characterize as appropriate; exclude obvious hazards.	Candidate is eligible only for the bounded test—not certified or approved.
2 — Dry mechanical checks	Guarding, motion, stability, feed, jam, reject, maintenance access.	System stops, isolates, clears, and remains stable without fire or pressure.
3 — Closed hydraulic loop	Water baseline; slurry circulation; pressure, flow, settling, clogging, wear, bypass, purge.	System remains controllable, clearable, inspectable, and within defined limits.
4 — Qualified controlled fire	Matched water/slurry controls, repeatable fuel, thermal/combustion endpoints, runoff capture.	Documented comparative signal without unacceptable mechanical, exposure, or containment event.
5 — Environmental/health characterization	Dust, runoff, turbidity, leachate, soil/aquatic endpoints, corrosion, exposure, cleanup.	Results define limitations, redesign, or a justified limited next stage.
6 — Durability/human factors	Repeated cycles, wear, hose/nozzle behavior, ergonomics, maintenance, training errors.	Stable bounded operating envelope and service requirements.
7 — Supervised field pilot/qualification	Only with fire authority, environmental review, trained operators, applicable approvals and formal qualification pathway.	No extrapolation beyond the formally accepted material, machine, and use.

5. Official-reference basis

- U.S. Forest Service and National Park Service campfire guidance: water, stirring, cooling verification, and the risk of merely banking coals with dirt.
- U.S. Forest Service Wildland Fire Chemical Systems: federal products undergo qualification before agency use; open publication does not bypass that process.
- OSHA machine guarding and hazardous-energy principles: moving rotors, augers, conveyors, mixers, and drives require guarding and safe servicing.
- EPA stormwater and discharge programs: earth disturbance, runoff, pollutants, and disposal may trigger federal, state, Tribal, or local requirements.
- NIST particle-suspension research: slurry flow behavior can change under stress, reinforcing the need for rheology, pump, hose, nozzle, and clearing tests.
- Applicable current NFPA and owner requirements must be identified by qualified professionals for any interface with fire apparatus, pumps, hose, couplings, nozzles, or emergency-service operations.

OPEN HARDWARE DESIGNATION

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FINAL BOUNDARY

Public disclosure is not engineering approval. Qualified mechanical, hydraulic, fire-protection, environmental, electrical, controls, vehicle, aviation, occupational-safety, and human-factors professionals must determine whether any concept can proceed to a controlled prototype or test.