FarmSense: Strategic Patent Portfolio (V3.0)

Status: Provisional Filing Ready
Objective: Protection of the "Synthetic Synthesis" and the "Basin Oracle" Logic.

1. Tier 1: Core Operational IP (The "Operating System")

Focus: Protecting the unique ways we ingest and align data.

PPA 1: "Method for High-Resolution Gravimetric Downscaling via Multispectral Texture Anchoring"

- **The Claim:** Utilizing high-resolution (10m-30m) multispectral spatial proxies to disaggregate low-resolution (300km) gravimetric mass anomalies.
- **The Moat:** Prevents competitors from offering field-level aquifer monitoring using public NASA GRACE-FO data without infringing on our downscaling logic.

PPA 2: "System for Detecting Subsurface Structural Lag (The Ghost Water Alert)"

- **The Claim:** A method for identifying aquifer compaction by cross-referencing declining total water mass (Gravimetric) against stable hydraulic head levels (Well Pressure).
- **The Moat:** Owns the definitive detection method for "False Stability" in collapsing aquifers.

2. Tier 2: Financial & Profitability IP (The "FinTech" Layer)

Focus: Turning hydrological data into risk-management and cash-flow tools.

PPA 3: "Parametric Insurance Trigger Engine via Synthetic Stress Benchmarking"

- **The Claim:** An automated payout trigger for crop insurance based on the divergence between Predicted Evapotranspiration (ET) and actual physiological stress (ECOSTRESS ESI).
- **The Moat:** Replaces manual adjusters with an objective, satellite-based "Oracle" for instant drought payouts.

PPA 4: "Method for Predictive Irrigation Load Balancing via Energy Market Integration"

- **The Claim:** Scheduling irrigation cycles based on the intersection of Crop Thirst (Thermal Index) and real-time Utility Spot Pricing/Grid Load.
- **The Moat:** Positions FarmSense as a "Virtual Power Plant" (VPP) participant.

3. Tier 3: Trust & Compliance (The "Acquisition" Layer)

Focus: Scaling for exit and regulatory integration.

PPA 5: "Zero-Knowledge Verification for Environmental Compliance"

- **The Claim:** A cryptographic method (ZKP) to verify a farm's compliance with nitrogen or water limits without disclosing sensitive yield or machine application data to third parties.
- **The Moat:** The "Privacy Standard" for the next generation of environmental regulation.

4. Strategic Filing Roadmap

1. **Phase I (Immediate):** File PPAs 1 and 2 to anchor the "Scientific Truth."
2. **Phase II (Seed + 90 Days):** File PPAs 3 and 4 to establish the "Revenue Hooks."
3. **Phase III (Series A):** File PPA 5 to prepare for institutional or OEM acquisition.

Closing Summary: FarmSense is a **Divergence Engine**. We do not sell raw data; we sell the **Resolution of Conflict** between sensors. If you own the logic that decides which sensor is "lying," you own the truth of the basin's economy.