Off-Grid Septic System - Spec Package

Turquoise Estates, Dolan Springs, Mohave County AZ (A-R, ~5-acre lots, hauled water, rocky desert soils). Prepared 2026-10-20. Labels: Documented = from a cited source; Claimed = a source says so, not verified; Estimate = our number.

1. Key numbers

- Total cost: about $5,318-22,018 owner-builder conventional; $9,018-30,018 contractor conventional; $17,940-49,440 alternative (Estimate; see Sec. 6).
- County fee: $518 conventional, $940 most alternative systems, $518 composting toilet (4.03) (Documented, Mohave County, Ordinance 2024-04 and live fee page). Fee includes one review and 2 inspections.
- Typical home: 3 bedrooms = 450 gal/day design flow and a 1,000-gal minimum tank; 4 bedrooms = 600 gal/day and 1,250 gal (Documented, A.A.C. R18-9-A314).
- Setbacks: 100 ft to any well; 50 ft to lot lines shared with lots not on a common water system (Turquoise lots), reducible to 5 ft only with a recorded neighbor agreement; 10 ft to buildings; 50 ft to a wash draining >20 acres (Documented, R18-9-A312(C)).
- Owner-builder is allowed only for conventional 4.02 systems; 4.03 and up need engineering and a contractor. The site investigation must be done by a county-approved third party, never the owner (Documented, Mohave County Builder Packet).

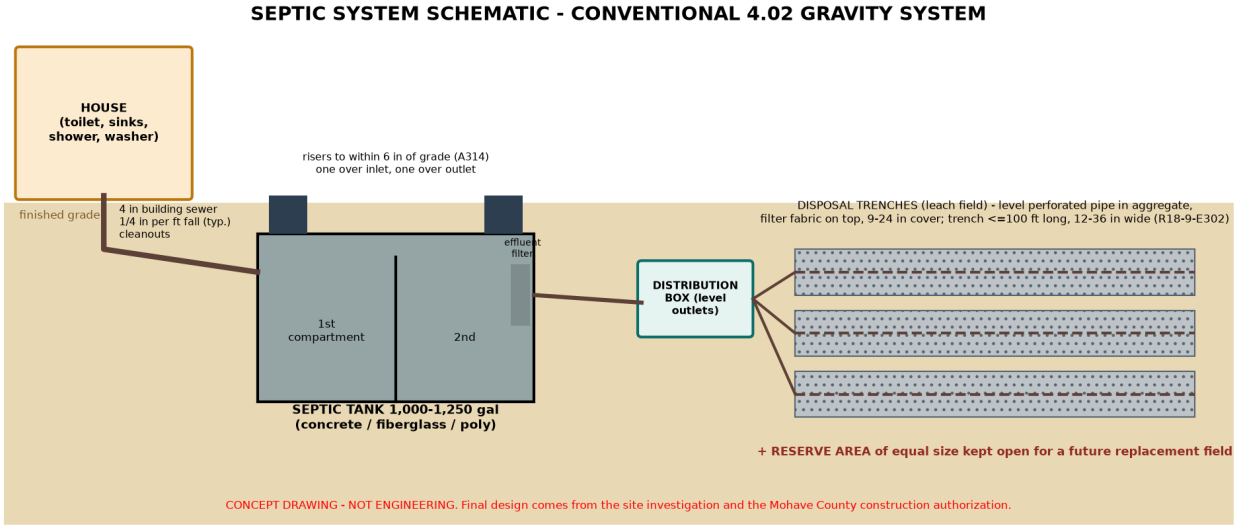
2. Tank comparison: concrete vs fiberglass vs poly

Type	Price (1,000 / 1,250 gal)	Weight	Delivery / setting	Buoyancy / water table	Cracking / corrosion	Lifespan
Concrete (precast)	1,000 gal: $1,412.50 avg retail, NH (Documented, A.J. Foss); $2,785, PA (Documented, Hess Ready Mix). 1,250 gal AZ-market: Jensen PJS-1250 (quote only). Kingman	1,000 gal ~8,600 lb (A.J. Foss); 1,250 gal 15,004 lb (Jensen AZ)	Boom truck or crane; supplier sets it in your hole (Yavapai Precast includes setting)	Heavy - resists flotation. Not a concern on dry Dolan Springs sites (Estimate)	Can crack if set on rock points or if trucks drive over; hydrogen sulfide can corrode concrete above the waterline (Claimed, industry)	40+ years when sound (Claimed, industry; Estimate)

	delivery: Yavapai Precast quote, 928-445-4340.					
Fiberglass (FRP)	1,000 gal: $2,072 (Loomis LGB1000DS); 1,250 gal: $2,572 (LGB1250DS) (Documented, Loomis Tank Centers, CA dealer). Xerxes: quote only.	1,000 gal 370 lb (Loomis); Xerxes 1,000 gal ~700 lb	Pickup/ trailer + small machine or a few people	Light - can float when empty in high groundwater; needs anchoring there (Claimed)	Won't rust or corrode; can crack or deform if bedded on rock or backfilled badly - needs sand/pea-gravel bedding (Claimed, makers)	Long life; makers claim decades (Claimed)
Polyethylene (poly)	1,000 gal: $1,799.99 low-profile (L&M Supply); $2,350-2,535 Norwesco 41718 (Documented, One Source Plastics / Go To Tanks). Freight extra.	~318 lb (Norwesco 41718)	Pickup; two people can move it (Claimed, dealer)	Light - must be kept full; can float or collapse if pumped dry (Claimed, Go To Tanks: 'must be kept full at all times' for Legacy model)	No corrosion; thin walls can deform under rocky backfill or traffic (Claimed)	3-year warranty on Norwesco listing (Documented); life varies (Estimate)

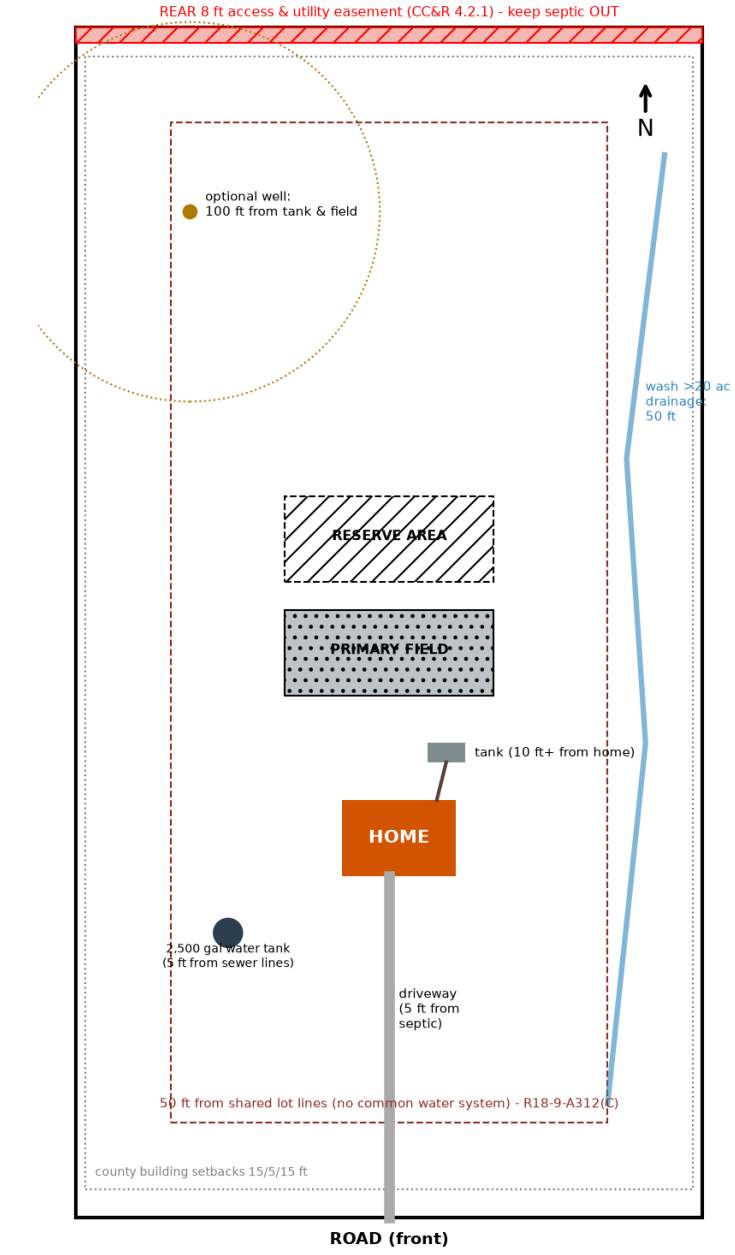
Bottom line (Estimate): On a dry, rocky Dolan Springs lot, concrete is the default contractor choice and the supplier sets it, but it needs boom-truck access on your road. Fiberglass or poly are easier for owner-builders and remote lots, but need careful sand bedding with no rocks against the shell. Whatever you buy must meet A.A.C. R18-9-A314 (watertight, 2 access openings 20 in+, risers to within 6 in of grade, 1,000-gal tank at least 8 ft long) and be accepted by the county; ask before buying a plastic tank (several online Norwesco listings show state approvals for other states only).

3. System schematic



4. Site layout with setbacks

SEPTIC SITE LAYOUT - ~4.75 ac lot, 330 x 627 ft (illustrative, not to survey)



CONCEPT DRAWING - NOT ENGINEERING. Final design comes from the site investigation and the Mohave County construction authorization.

5. Disposal field sizing

Field area = design flow / soil absorption rate (SAR). SAR comes from the perc test (R18-9-A312(D)): e.g. 3 min/in = 1.10, 10 min/in = 0.63, 30 min/in = 0.36 gal/day/sq ft (Documented). Each trench foot counts bottom + both sidewalls, max 11 sq ft per foot; trenches max 100 ft long, 12-36 in wide (Documented, R18-9-E302). The table assumes the 11 sq ft/ft maximum (Estimate - real designs vary).

Home	Design flow gpd	Min tank gal	Soil	SAR	Absorption area sq ft	Trench length ft (min)
2 bedrooms (<=14 fixture units)	300	1000	fast (3 min/in)	1.1	273	25
2 bedrooms (<=14 fixture units)	300	1000	medium (10 min/in)	0.63	476	43
2 bedrooms (<=14 fixture units)	300	1000	slow (30 min/in)	0.36	833	76
3 bedrooms (<=21 fixture units)	450	1000	fast (3 min/in)	1.1	409	37
3 bedrooms (<=21 fixture units)	450	1000	medium (10 min/in)	0.63	714	65
3 bedrooms (<=21 fixture units)	450	1000	slow (30 min/in)	0.36	1250	114
4 bedrooms (<=28 fixture units)	600	1250	fast (3 min/in)	1.1	545	50
4 bedrooms (<=28	600	1250	medium (10 min/in)	0.63	952	87

fixture units)						
4 bedrooms (<=28 fixture units)	600	1250	slow (30 min/in)	0.36	1667	152

A same-size reserve area must be kept open. Faster than ~1 min/in or slower than 120 min/in needs a site-specific SAR, and very fast soils (SAR over 1.20) or shallow rock trigger an alternative system (Documented, R18-9-A310/A312).

6. Cost breakdown

Item	Low $	High $	Basis
Site investigation / perc test by approved site investigator	500	1,500	Claimed (septicfast.com AZ guide); get local quotes from county list
Mohave County permit, conventional 4.02 (review + 2 inspections)	518	518	Documented (mohave.gov fee table)
Mohave County permit, alternative 4.04-4.22	940	940	Documented (mohave.gov)
Engineering design - conventional (owner-builder may prepare own)	0	1,500	Estimate
Engineering design - alternative (required)	1,500	4,000	Estimate
Septic tank 1,000-1,250 gal + risers/lids	1,800	3,500	Estimate from listed prices above + freight/delivery
Disposal trenches: pipe, D-box, aggregate/chambers, filter fabric	1,000	3,000	Estimate
Excavation - normal soil	1,500	4,000	Estimate
Extra for rock/caliche (breaker, larger machine, imported fill)	1,000	8,000	Estimate; 'rock can add thousands' (Claimed, excavatingphoenix.com)

Scenario	Low $	High $
A. Owner-builder conventional (DIY install, rented machine)	5,318	22,018
B. Contractor-installed conventional	9,018	30,018
C. Alternative system (engineered, contractor only)	17,940	49,440

- Kingman septic installs: $1,539-$10,836, average $6,187, excluding permits (Claimed, Manta cost page - likely low for new rocky-site systems).
- Arizona: $8,000-$20,000 conventional, $15,000-$35,000+ alternative (ATU, mound, pressure); rock/caliche "can add thousands" (Claimed, excavatingphoenix.com).
- Ongoing: pump the tank every few years; alternative systems often need a service contract (Claimed, Mohave County/parcel-records guidance). Costs not totaled here.

7. Arizona rules (ADEQ, A.A.C. Title 18, Ch. 9, Art. 3)

- Permit type: a home septic system is a Type 4 General Aquifer Protection Permit. The conventional septic tank + trench/bed/chamber/seepage-pit system is the 4.02 general permit (R18-9-E302), gravity flow only. Note: 4.01 is for sewage collection systems (sewer lines), not home septic (Documented, Mohave fee ordinance and R18-9-E302).
- Alternative systems 4.03-4.23 (R18-9-E303 to E323): e.g. 4.03 composting toilet, 4.04 pressure distribution, 4.05 gravelless trench, 4.08 Wisconsin mound, 4.09 engineered pad, 4.12 textile filter, 4.14 vault and haul, 4.15 aerobic, 4.22 subsurface drip (Documented). Used when the site investigation finds a limiting condition - high water table, lots of rock, or soils that drain too fast (Documented, Mohave County FAQ).
- Site investigation (R18-9-A310): surface check (slope >15%, setbacks, drainage, flood zone, rock outcrops, fill) and subsurface check by ASTM soil method and/or perc test. Perc holes at least 12 in deep, 12x12 in. Test pits/borings go to 12 ft or refusal (Documented; 12 ft per Perc Test AZ - Claimed). Uses ADEQ Form 423.
- Who can do it: AZ-registered engineer, geologist or sanitarian, or a person with an ADEQ-recognized training certificate (Documented, R18-9-A310(H)). Mohave County also requires the investigator to be on its approved list (Ordinance 2006-02) and to give 2 business days' notice (Documented, county forms list).
- Depth to groundwater: for trenches, at least 5-10 ft between the trench bottom and seasonal high water, depending on SAR; seepage pits 60 ft (Documented, R18-9-A312(E)). Dolan Springs water table is ~520 ft deep (Claimed, ADWR-based data in the water package), so groundwater is not the issue - rock and very fast or very slow soil are.
- Other setbacks (R18-9-A312(C)): domestic water lines and holding tanks 5 ft; driveways 5 ft; downslope cut banks >15% 10-50 ft (Documented).
- Design life: systems must be designed for a 20-year operating life (Documented, R18-9-A312(A)).

8. Mohave County process and timeline

- 1. Hire an approved site investigator (county list) - perc/soil tests; investigator notifies the county 2 business days ahead.
- 2. Prepare the application packet: Permit Application Worksheet, Notice of Intent to Discharge, Fixture Count worksheet, Design Configuration sheet, plot plan (engineer scale, max 1 in = 60 ft), sewer availability sheet, temporary agreement, materials list, Property Floodplain Information sheet, Site Investigation Report; O&M manual for alternative systems. Fee due at submittal, non-refundable (Documented, Builder Packet).
- 3. County reviews; a Construction Authorization is issued. No construction until it is signed. Installing before the permit costs an extra $407 (Documented).
- 4. Install; request the inspection (Request for Discharge Authorization) BEFORE backfilling so the inspector sees the open tank, pipe and trenches. Extra inspections $114 each (Documented fees; pre-backfill timing Claimed/standard practice - confirm with inspector).
- 5. County issues the Discharge Authorization - the system can be used.
- Timeline (Estimate): perc test 1-3 weeks to schedule and report; county review 2-6 weeks; install 2-5 days; inspection within days. Plan 1-3 months. Apply together with the building permit - the county recommends it (Documented FAQ).
- Sale of a property with a septic system: within 6 months before transfer, the seller hires a qualified inspector (e.g. B-4/C-41 contractor, licensed pumper, registered engineer/sanitarian with ADEQ training) for a Transfer of Ownership Inspection; the buyer files a Notice of Transfer; county fee $50 (Documented, R18-9-A316, Mohave fee page).
- Contact: Mohave County Development Services, Environmental Quality, 3250 E. Kino Ave, Kingman, 928-757-0903, EQpermits@mohave.gov (Documented).

9. Low-water and off-grid notes

- Hauled-water homes use far less than the design flow: 2 people at 35-50 gal/day = 70-100 gal/day (Estimate, from water package). The county still sizes by bedrooms/fixtures, not actual use - low use just means longer system life and fewer pump-outs (Estimate).
- Graywater: ADEQ Type 1 reclaimed water general permit, now R18-9-D701 (old R18-9-711). Under 400 gal/day per household, no application needed if you follow the rules: stay on your property; garden/landscape/compost only; no human contact; no food crops except fruit/nut trees with no contact; no kitchen sink, toilet or diaper water; flood or drip only, no spraying; 5 ft above groundwater; not in a floodway (Documented, ADEQ graywater page / LII summary).
- Composting toilet: ADEQ 4.03 general permit, county fee $518 (Documented). It removes the toilet from the wastewater stream but does NOT replace the need for a permitted disposal works: the rule requires the other wastewater (sinks, shower, laundry) to go to a subsurface disposal field, sized from soil tests, with a reserve area, and soils that support it (Documented, R18-9-E303). Graywater reuse under D701 can carry some of it. Composting toilets need engineering + a contractor in Mohave County (Documented, Builder Packet).
- Vault and haul (4.14, $518): a sealed holding tank pumped by a licensed hauler - a fallback for sites that fail perc, but pumping costs add up (Estimate).

- Off-grid power: a gravity 4.02 system needs no power. Pressure, aerobic and drip systems need pumps/blowers running on your solar system (Estimate).

10. RV living link (Mohave County A-R)

- The A-R temporary RV-living permit (Zoning Ord. Sec. 37.K.1.d; 1-year, renewable) requires a permitted septic system. So the septic permit is step one for anyone who wants to live in an RV on the lot before or instead of building (Documented, county zoning ordinance - see earlier permitting guide).
- Smart move (Estimate): size the septic for the future house (e.g. 3-4 bedrooms) and put the tank where both the RV pad and the future house can drain to it, so the system does not need to be rebuilt.

11. Turquoise Estates CC&Rs (2nd Recording)

- Art. 4.2: "no wastewater systems, electrical lines, waterlines, or other utility or service lines may be installed or located on the Common Area or Lots, except as initially designed, approved and constructed, or as approved by the Declarant." This expressly covers septic/wastewater systems and sewer lines: each lot owner needs Declarant (Lost Horizon, LLC / Lost World, LLC) approval for the septic system (Documented). Recommend a simple written approval tied to the county permit.
- Art. 4.2.1: the rear 8 ft of every lot is a common access and utility easement that must stay free of fences or other obstructions (Documented). It is not written as a no-build ban, but keep the tank, field and reserve area out of it; the 50-ft ADEQ lot-line setback already does that in practice.
- Art. 3.4: owners may not record easements or restrictions on a lot without developer approval in writing (Documented). A recorded neighbor agreement to cut the 50-ft lot-line septic setback (R18-9-A312(C)) would therefore also need developer sign-off.
- Art. 3.2: structures and systems must meet Mohave County standards; Art. 3.5: no improvement may obstruct drainage - keep fields out of washes (Documented). No other septic-specific rule was found.

12. Sources

- Mohave County septic & well permitting (fees, FAQ, forms): mohave.gov/departments/development-services/environmental-qualitywaste-disposal/septic-well-permitting/
- Mohave County Ordinance 2024-04 (fees): mohave.gov/media/hltlxtld/mc-fee-ordinance-2024-04.pdf
- Mohave County Builder Packet: mohave.gov/media/u1oc2m3z/builder-packet.pdf
- A.A.C. R18-9-A310, A312, A314, A316, E302, E303, D701: law.cornell.edu/regulations/arizona/ (e.g. Ariz-Admin-Code-SS-R18-9-A312)
- ADEQ Uniform Site Investigation Report (Form 423): static.azdeq.gov/forms/uniform_site_investigation.pdf

- ADEQ graywater: azdeq.gov/graywater
- Yavapai Precast (delivers to Kingman/Lake Havasu, sets tank): yblock.com/precast/septic-tanks/ ; yblock.com/delivery-area/
- Jensen PJS-1250 AZ market: jensenprecast.com/products/septic-tank-pjs-1250-gal-24e-24e-pedestrian-rated/
- A.J. Foss 1,000-gal concrete: ajfoss.com/products/wastewater/1000-gallon-precast-concrete-septic-tank/ ; Hess Ready Mix: hess-services.store/precast-concrete-products/septic-tanks/
- Loomis fiberglass: loomistank.com/fiberglass-septic ; Xerxes specs: rainharvest.com/xerxes-fiberglass-tanks.asp
- Norwesco poly: landmsupply.com/norwesco-1000-gallon-low-profile-septic-tank ; onesourceplastics.com (N-41718) ; gototanks.com
- Cost guides: manta.com/cost-septic-tank-installation-kingman-az ; excavatingphoenix.com/how-much-does-septic-tank-installation-cost-in-arizona ; septicfast.com ; perctestaz.com/blog/septic-design-cost-arizona/
- Turquoise Estates CC&Rs 2nd Recording (Dropbox), Art. 3.2, 3.4, 3.5, 4.2, 4.2.1