FACT SHEET
(Pursuant to Nevada Administrative Code (NAC) 445A.401)

Permittee Name: **Springer Mining Company**

Project Name: **Humboldt Modular Mill Project**

Permit Number: **NEV2009111**
Review Type/Year/Revision: **Renewal 2016, Fact Sheet Revision 00**

A. Location and General Description

Location: The Humboldt Modular Mill Project (Project) facilities are located in northwestern Nevada in north-central Pershing County on private land within Section 35, Township 34 North, Range 34 East, Mount Diablo Baseline and Meridian. The Project facilities are situated 7 miles north-northwest of Mill City, north of the Humboldt River on the southeast side of the Eugene Mountains. Elevations in the area range from over 6,000 feet above mean sea level (AMSL) in the mountain range to approximately 4,000 feet AMSL in the valley. The elevation of the Project facilities is approximately 4,400 feet AMSL, at the upper reaches of the alluvial fan. The Project site may be accessed by traveling 26 miles west from Winnemucca, or 44 miles east from Lovelock, on Interstate Highway 80 to the Mill City/Dun Glen exit #149, then approximately 7 miles north-northwest along the 'Tungsten Road' to the Project site. The Project is located adjacent to and downgradient of the proposed Springer Tungsten Facility (NEV2007108) and, except for monitoring wells, shares none of those permitted facilities.

General Description: The Humboldt Modular Mill, a lined, self-contained unit, is permitted as a large-scale facility designed for chemical processing and recovery of gold and associated metals from off-site ores, which may include sulfide-bearing ores, using a modular milling, gravity separation and flotation concentration circuit with a design processing rate of 200 tons per day (TPD). Auxiliary facilities in the design include a lined stockpile area with a capacity of approximately 43,000 tons of off-site ore; a Lower Tailings Storage Facility (TSF) and a future Upper TSF. The Lower TSF and Upper TSF are both designed as double-lined and leak-detected facilities, equipped with underdrains, with tailings solids capacities of approximately 92,000 and 200,000 tons, respectively; and a double-lined evaporation cell for management of flows from the TSF leakage collection and conveyance system. The design includes stormwater controls and diversions engineered for the 100-year, 24-hour storm event flows. The approved design is based on a 4-year operating life, which could be extended with off-site ore production schedule changes.

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B. Synopsis

The Humboldt Modular Mill Project is permitted only as a beneficiation facility designed primarily for the recovery of gold and silver. No mining of ore is planned or authorized for the permitted facility. Characterized off-site ores, which may include ores obtained from third-party operations or derived from other properties owned or operated by the Permittee, will be transported to the facility for beneficiation. The metal-bearing gravity concentrates and flotation concentrates produced will be sent off site for refining.

This Permit (NEV2009111) was originally issued on 17 December 2010 to Golden Predator Mines US, Inc. The Permit was transferred to Wolfpack Gold (Nevada) Corp., effective 04 April 2014. The Permit was then transferred to Nevada Royalty Corp., effective 14 July 2015. The Permit was then transferred to Springer Mining Company effective DAY August 2016.

Beneficiation: The Humboldt Modular Mill is comprised of a 'train' of pre-fabricated, skid-mounted process modules constructed by North Fringe Group, Inc. and is designed to process approximately 200 tons per day (TPD) of off-site ore. The modules will be placed on a compacted gravel overliner layer within a high-density polyethylene (HDPE)-lined Process Plant Area located adjacent to the upgradient HDPE-lined and hydraulically segregated Ore Stockpile Area. Analysis indicates the gravel overliner will provide stability for the skid-mounted components and no additional foundation construction is required.

The bermed **Process Plant Area** measures approximately 196 feet by 122 feet in plan and is accessed via a ramp constructed across the portion of the berm shared with the upgradient Ore Stockpile Area. The containment construction consists of a minimum 12-inch thick subgrade layer of scarified native soil compacted to 95%, ± 2%, maximum dry density (ASTM Method D-1557). In subgrade areas requiring fill, the fill must be placed in maximum 12-inch thick lifts compacted to 95%, ± 2%, maximum dry density (ASTM Method D-1557). The subgrade may contain no particle larger than ½-inch diameter within 6 inches of the finished surface. The entire subgrade is lined with a layer of 80-mil HDPE that is covered with 2 feet of protective overliner drainage material with a maximum 2-inch dimension.

The process plant containment is designed with a 3-foot high containment berm, overlapped by the synthetic liner, and has a containment volume of approximately 125,000 gallons with a 1-foot lined freeboard remaining. This capacity will easily contain 110% of the volume of the largest container (50,000 gallon Reclaim Water Tank) in the event of a spill and is more than adequate to accommodate the 25-year, 24-hour storm event accumulation of 19,700 gallons. The base of the containment and an internal collection channel cut into the overliner material along the interior side of the west containment berm, are sloped at a minimum

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0.5% gradient toward a lined subgrade stormwater collection sump. The collection sump is equipped with a submersible pump for evacuation, at a rate of approximately 60 gallons per minute (gpm), of collected fluid to the Reclaim Water Tank or, if volumes are excessive, a TSF. Fluid conveyance is through a 2-inch diameter HDPE pipeline placed within an 8-inch diameter HDPE secondary containment pipeline, where necessary.

The bermed **Ore Stockpile Area** measures approximately 408 feet by 256 feet (about 2.40 acres within a total 4.13-acre operating area), is designed to hold approximately 43,000 tons of run-of-mine ore, and is accessed from the north side by a ramp constructed across the containment berm from an unlined laydown pad. Except for a 3-foot thick layer of protective overliner drainage material, rather than the 2-foot thick layer specified in the Process Plant Area, and internal collection channels cut into the overliner material along the interior side of both the west and the south containment berms, the containment design and construction specifications are the same as those for the Process Plant Area (see above). The maximum average ore stacking height is 15 feet above the overliner surface and material may be placed no less than 20 feet from the interior containment berm toe or the edge of an internal collection channel.

The Ore Stockpile Area, as measured between the lined berm and the toe of a fully loaded stockpile, has a containment volume of approximately 100,000 gallons with a 1-foot lined freeboard remaining. This will accommodate the calculated 25-year, 24-hour storm event accumulation of 97,600 gallons. The Ore Stockpile Area design includes a stormwater collection sump and evacuation system identical to and connected to that of the Process Plant Area.

Run-of-mine ore is transported from the Ore Stockpile Area with a front-end loader and dropped through a grizzly. All material fed to the grizzly is processed through a jaw crusher then conveyed to a secondary screen where the undersize is conveyed to a 150 ton surge hopper. Oversize from the screen is crushed using a cone crusher prior to reintroduction to the circuit. Sized material is fed with water from the surge hopper to a single ball mill with trommel. Oversize material is returned to the mill for additional grinding and underflow material passes through cyclones and on to a gravity concentrator. Underflow concentrate and water are fed to a pair of shaker tables from which the heavier gold particles, in the form of a ‘table concentrate’, are separated from the ground ore slurry, collected, and sent to an off-site refiner for final metal recovery.

Gravity concentrator tails are pumped to the flotation circuit to recover metal content not recovered in the gravity circuit. The head end of the flotation circuit includes a conditioning tank where water conditioners and flotation chemicals, such as xanthates and frothers, are added prior to pumping the slurry through a series of rougher, cleaner, and scavenger flotation cells that utilize the chemically modified slurry density and composition to remove concentrate from the slurry.

Concentrate from the flotation cells is pumped to a thickener to increase densities prior to being pumped to a pair of concentrate filters for dewatering and production of a concentrate filter cake, which will be sent to an offsite refiner for final metals recovery. Excess solution from the concentrate process is recirculated to the 20-foot tall by 21.5-foot diameter, bolted steel Reclaim Water Tank for use as make-up water or used to slurry the tailings solids for deposition in the tailings storage facilities.

The Ore Stockpile Area and the Process Plant Area are protected from storm event flows by an upgradient stormwater diversion channel. The channel is designed as a 2-foot-deep trapezoidal channel with a 10-foot base width and 2H:1V sideslopes. The channel design will divert to existing drainages the 100-year, 24-hour storm event flow reporting to the 52.3 acre upgradient watershed with a maximum flow depth of 1.25 feet.

Tailings Storage Facilities: The design includes two (2) HDPE-lined and leak detected tailings storage facilities identified as the Lower TSF and the Upper TSF. The Lower TSF, which will be constructed first as Phase 1, is designed to contain approximately 92,000 tons of consolidated tailings solids. The Upper TSF, to be constructed as Phase 2, is designed to contain approximately 200,000 tons of consolidated tailings solids.

Tailings slurry will be conveyed to each TSF through a separate 2-inch diameter HDPE pipeline. The pipeline diameter was based on a maximum production at the mill of 200 TPD tailings solids being conveyed as slurry containing 40 to 45% solids at a rate ranging from 55 to 65 gpm.

Lower TSF: The Phase 1 Lower TSF will be constructed approximately 1,000 feet south of the Process Plant Area using cut and fill methods. Material excavated during embankment construction will be used as a source of screened overliner material for the Process Plant Area and Ore Stockpile Area and to construct a portion of the Upper TSF embankment that will act as an upgradient 100-year, 24-hour event stormwater diversion for the Lower TSF.

The Lower TSF will have a quadrilateral footprint measuring approximately 750 feet and 800 feet long on the west and east sides, respectively, and 300 feet and 450 feet wide on the north and south sides, respectively. The footprint will cover approximately 6.7 acres. The embankment will be constructed with 2.5H:1V downstream and 3H:1V upstream slopes with a maximum outside toe-to-crest height of 32 feet. Slope stability analysis of the maximum design tailings elevation of 4,623 feet AMSL and maximum design embankment crest elevation of 4,625 feet AMSL yields a static factor of safety of 2.10 and a pseudo-static factor of safety of 1.34; values which are above Division minimum requirements.

The Lower TSF is a double-lined and leak-detected design. The impoundment basin and embankment secondary liner will be placed over a minimum 12-inch thick underliner layer of scarified or fill material compacted to 95%, ± 2%, maximum dry density (ASTM Method D-1557). In areas requiring fill, the fill must be placed in maximum 12-inch thick lifts compacted to 95%, ± 2%, maximum dry density (ASTM Method D-1557). The underliner may contain no particle larger than ½-inch diameter within 6 inches of the finished surface. Depending upon material availability at the time of construction, the secondary liner will consist of either a layer of 60-mil HDPE Agru Drainliner™, which is designed to create a leakage conveyance layer once the primary liner is placed, or 60-mil smooth HDPE. If smooth liner is used, a layer of geonet will be placed over the secondary liner to act as the leakage conveyance layer. For either option, the primary liner is a layer of 80-mil smooth HDPE and fugitive solution collected in the leakage conveyance layer will report to the External Leakage Collection and Evaporation Cell (see below).

The base of the Lower TSF is gently graded toward the southeast corner. Tailings will be deposited directly onto the primary liner. As designed, tailings slurry underdrain solution will report to a single 4-inch diameter perforated corrugated polyethylene (CPe) drainage pipeline placed on the primary liner along the east and south interior toe of the embankment. The drainage pipeline is encased in a 12-inch thick envelope of clean drainage gravel wrapped in 12-ounce/yard^2 non-woven geotextile and covered with a minimum 12-inch thick layer of drainage sand. Collected underdrain solution will flow through the pipeline and encasing gravel to a 4-foot square by 2-foot deep, gravel-filled subgrade, underdrain solution sump. The sump is equipped with an inclined 6-inch diameter polyvinyl chloride (PVC) or HDPE evacuation riser pipe placed on the primary liner to the crest of the embankment. The sump will be equipped with an automated evacuation pump and a pipeline within the riser to convey collected solution to the surface of the tailings mass for evaporation.

The design tailings slurry pipeline measures approximately 1,000 feet long from the Process Plant Area to the north crest of the Lower TSF. Tailings slurry will be pumped from the mill at a rate to reach the furthest point along the impoundment embankment at 55 to 65 gpm. Tailings discharge spigot pipes, constructed of 3-foot long sections of two-inch diameter HDPE Pipe, will be located at minimum 150- to 200-foot spacing on all sides of the embankment along the interior of the embankment crest. Valves will be used to ensure only one (1) spigot will be operational at a time to minimize the potential for solids deposition or sanding in the conveyance pipeline.

Reclaim supernatant solution will be pumped at an average design rate of 55 gpm from the surface of the deposited tailings to the Reclaim Water Tank located at the Process Plant Area via a 2-inch diameter HDPE, standard dimension ratio (SDR) 17, primary conveyance pipeline. The reclaim collection system will

consist of two groups of intake pipes located at the northwest and southwest end of the embankment. Two intake locations will provide flexibility in supernatant solution management in addition to a stand-by system in the event of equipment malfunction.

Each 'battery' of intake pipes will consist of six 24-inch diameter HDPE SDR 32.5 pipelines spaced approximately 6 feet apart and placed directly on the embankment primary liner from embankment crest to impoundment base. Each intake pipe will be capped at the bottom and have a 12-inch wide by 8-foot long cut-out on the upper side that will act as a supernatant solution inlet. The first intake pipe will have the cut-out located approximately 5 feet off the bottom and the cut-outs for the remaining intake pipes will be staggered upward to ensure continuous recovery of the supernatant solution as the tailings mass rises. Solution will be recovered with a submersible pump and a 2-inch diameter HDPE branch pipeline placed in the intake pipe and connected with a valve and tee to the main 2-inch diameter HDPE reclaim water pipeline. The pump will be relocated to the adjacent intake pipe with the next-higher inlet elevation as the tailings mass rises. The abandoned connection to the reclaim water pipeline will be closed with a blind flange.

Upper TSF: The Phase 2 Upper TSF will be constructed approximately 100 feet south of the Process Plant Area and roughly parallel to the adjacent Lower TSF on the east. The Upper TSF will have a rectangle footprint measuring approximately 1,200 feet long and 350 feet wide that will create a disturbance footprint covering approximately 9.6 acres. The embankment will be constructed to the same specification as that specified for the Lower TSF and yields the same factors of safety that exceed Division minimum requirements based on stability analysis. The maximum outside toe-to-crest embankment height is 38 feet at a crest elevation of 4,662 feet AMSL. Tailings may be placed to a maximum elevation of 4,660 feet AMSL in accordance with the approved design.

Like the Lower TSF, the Upper TSF will be a double-lined and leak-detected facility constructed to the same design specifications with a leakage conveyance layer that reports to the External Leakage Collection and Evaporation Cell (see below). The underdrain solution collection system is also of the same general design as that for the Lower TSF but will consist of only a single pipeline that grades from the north and the south to a collection sump located equidistant along the interior toe of the east embankment.

The tailings discharge system is also identical to the Lower TSF design except for greater spacing of spigots at 300- to 350-foot intervals. Spigots will be located on all sides of the impoundment except for the extreme southeast corner. Finally, the reclaim system construction and function are the same as for the Lower TSF design but each 'battery' of intake pipes, to be located at the northwest and

southwest corners of the impoundment, will consist of seven pipelines instead of six.

External Leakage Collection and Evaporation Cell: The Lower TSF and Upper TSF designs incorporate a unique external leakage collection sump identified as the External Leakage Collection and Evaporation Cell. If the design functions reliably for the Lower TSF, the Upper TSF leakage conveyance layer, when constructed, will also be connected to the External Leakage Collection and Evaporation Cell. As proposed, the concept is to enable "passive management", if necessary, by evaporation of potential leakage flow and to reduce long-term maintenance of each TSF leakage collection system at closure.

The collection system for the External Leakage Collection and Evaporation Cell design incorporates a pre-fabricated 6-inch by 2-inch diameter dual containment elbow drain, factory-welded to a 12-inch diameter flange, to which a 4-foot by 4-foot square, 80-mil HDPE apron is welded at the factory. In the Lower TSF, the drain will be located in the southeast corner of the impoundment, the lowest point in the impoundment basin, and at the midpoint of the Upper TSF east embankment interior toe. The dual-wall elbow drain will be set into a 4-foot by 4-foot square, by 2-foot deep, cast-in-place concrete foundation. The top surface of the concrete will be gently sloped toward the central drain and the pre-fabricated apron assembly will be overlapped onto the secondary liner and wedge-welded into place. A 2-inch diameter HDPE primary conveyance pipeline placed within a 6-inch diameter HDPE secondary containment pipeline, field-welded to the pre-fabricated elbow fittings, will convey any fugitive solution to the External Leakage Collection and Evaporation Cell.

The External Leakage Collection and Evaporation Cell conveyance pipeline design requires the portion of the conveyance pipeline beneath the embankment be placed a minimum of 5 feet below the surface in a pipe trench and encased in a minimum 1-foot thick, multi-pour layer of minimum 3,000 pound per square inch concrete prior to backfilling the trench with bentonite-amended soil compacted to 90%, ± 2%, maximum dry density (ASTM Method D-1557). Portions of the pipeline outside the embankment will be placed a minimum of 3 feet below the surface in a pipe trench backfilled with native soil compacted to 90%, ± 2%, maximum dry density (ASTM Method D-1557) and with no particle larger than 1-inch diameter within 12 inches of the pipeline. The collection sump conveyance pipelines for both the Lower TSF and Upper TSF will daylight on the northwest crest of the External Leakage Collection and Evaporation Cell.

The design operating balance for the External Leakage Collection and Evaporation Cell was developed using a maximum allowable liner leakage rate of 150 gallons per day (gpd) for each TSF (300 gpd total) and inflows from 100% of the average monthly precipitation reporting directly to the cell. The water balance calculations indicate approximately 10,000 feet^2 of cell floor is required to

evaporate the potential cell inventory with seasonal fluctuations and to avoid carry-over of any inventory from year to year. The design for the base of the cell, which will be 5 feet deep with 3H:1V sideslopes, measures 120 feet by 85 feet (155 feet by 110 feet as measured at the interior of the 30-foot wide crest). The peak seasonal volume of 80,000 gallons will not exceed the high water mark of 0.9 feet freeboard, which would typically occur during the February/March time period. The cell is protected from upgradient stormwater flows with a 12-foot wide by 24-inch deep, unlined vee channel with compacted subgrade.

The External Leakage Collection and Evaporation Cell will collect and evaporate fugitive solution from the TSF leakage collection and conveyance systems and will, therefore, be constructed as a double-lined and leak detected pond. The containment construction consists of a minimum 12-inch thick subgrade layer of scarified native soil compacted to 95%, ± 2%, maximum dry density (ASTM Method D-1557). Depending upon material availability at the time of construction, the secondary liner will consist of either a layer of 60-mil HDPE Agru Drainliner™, which is designed to create a leakage conveyance layer once the primary liner is placed. As with the TSF construction, if 60-mil HDPE Agru Drainliner™ is not available at the time of construction, a layer of geonet will be placed over a 60-mil smooth HDPE secondary liner to create a leakage conveyance layer. For either option, the primary liner will be a layer of 80-mil smooth HDPE.

The External Leakage Collection and Evaporation Cell leakage collection sump will be of conventional construction as a subgrade sump located in the southeast corner of the cell. The sump will be backfilled with clean gravel enclosed in 8 ounce/yard^2 non-woven geotextile. The sump can be evacuated through a 6-inch diameter HDPE or PVC inclined riser pipe that will be sandwiched between the primary and secondary liners and will daylight at the cell crest.

Solution Pipeline Corridor: The tailings slurry pipeline, reclaim water pipeline, and stormwater collection sump pipeline will be routed along a pipeline corridor. The pipeline corridor is designed as an unlined trapezoidal channel approximately 1,000 feet in length with a 2-foot depth and a 2-foot wide base. Design hydraulic head and pumping rate calculations indicate a 2-inch diameter HDPE SDR 17 pipeline meets all requirements for all conveyance pipelines. Because the corridor channel is unlined, each primary conveyance pipeline is placed within a 4-inch diameter HDPE secondary containment pipeline.

C. Receiving Water Characteristics

In the Project area, no surface water occurs within a 1-mile radius of the proposed process facilities. The closest non-ephemeral surface water, the Humboldt River, is located over 5 miles southeast and downgradient of the proposed Humboldt Modular Mill. Other local drainages report flow only in response to storm events.

There are no known springs within a 1-mile radius of the proposed Humboldt Modular Mill. Two proposed production wells (PW-3 and PW-4), which could potentially be used as a source of drinking water, are located within a 5-mile radius of the proposed facility and are all upgradient and owned by the Permittee.

Groundwater in the general Project area has been identified both in alluvial sediments, which occur as basin and valley fill, and in bedrock exposed in the adjacent mountain ranges and beneath the alluvium. Recharge to the bedrock is principally from precipitation in the mountain ranges. Recharge to the alluvium is from surface recharge in the form of direct precipitation and runoff into ephemeral drainages, recharge from bedrock springs into the alluvial veneer, and subsurface recharge at the contact between bedrock and alluvium. However, alluvial groundwater has not been identified in the immediate area of the proposed Humboldt Modular Mill.

Bedrock in the immediate vicinity of the proposed Humboldt Modular Mill was encountered at a depth of 17 feet below ground surface (bgs) in downgradient monitor well MW-11. Bedrock groundwater was encountered at a depth of 352 feet bgs in the same monitor well but ranges from 49.5 feet bgs in MW-7, located 0.75 miles north and cross-gradient, to 446 feet bgs in MW-13, located 0.5 miles west and upgradient. The general bedrock groundwater flow gradient direction is south-southeast.

Based on analysis of water quality samples collected from MW-11 during the 3rd and 4th quarter of 2009, bedrock groundwater chemistry exceeds the Division Profile I reference values for chloride (2,200 to 2,300 milligrams per liter (mg/L)), iron (0.74 to 1.2 mg/L), and total dissolved solids (5,300 to 6,100 mg/L). Manganese and sulfate may be elevated (0.24 to 0.26 mg/L and 320 to 340 mg/L, respectively).

D. Procedures for Public Comment

The Notice of the Division's intent to issue a Permit authorizing the facility to construct, operate and close, subject to the conditions within the Permit, is being sent to the **Lovelock Review-Miner** newspaper for publication. The Notice is being mailed to interested persons on the Bureau of Mining Regulation and Reclamation mailing list. Anyone wishing to comment on the proposed Permit can do so in writing within a period of 30 days following the date of public notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected intrastate agency, or any interested agency, person or group of persons. The request must be filed within the comment period and

must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.403 through NAC 445A.406.

E. Proposed Determination

The Division has made the tentative determination to issue the renewed Permit.

F. Proposed Limitations, Schedule of Compliance, Monitoring, Special Conditions

See Section I of the Permit.

G. Rationale for Permit Requirements

The facility is located in an area where annual evaporation is greater than annual precipitation. Therefore, it must operate under a standard of performance which authorizes no discharge(s) except for those accumulations resulting from a storm event beyond that required by design for containment.

The primary method for identification of escaping process solution will be placed on required routine monitoring of leak detection systems, component inspections, and routine sampling of monitoring wells. Specific monitoring requirements can be found in the Water Pollution Control Permit.

H. Federal Migratory Bird Treaty Act

Under the Federal Migratory Bird Treaty Act, 16 U.S. Code 701-718, it is unlawful to kill migratory birds without license or permit, and no permits are issued to take migratory birds using toxic ponds. The Federal list of migratory birds (50 Code of Federal Regulations 10, 15 April 1985) includes nearly every bird species found in the State of Nevada. The U.S. Fish and Wildlife Service is authorized to enforce the prevention of migratory bird mortalities at ponds and tailings impoundments. Compliance with State permits may not be adequate to ensure protection of migratory birds for compliance with provisions of Federal statutes to protect wildlife.

Open waters attract migratory waterfowl and other avian species. High mortality rates of birds have resulted from contact with toxic ponds at operations utilizing toxic substances. The Service is aware of two approaches that are available to prevent migratory bird mortality: 1) physical isolation of toxic water bodies

through barriers (covering with netting), and 2) chemical detoxification. These approaches may be facilitated by minimizing the extent of the toxic water. Methods which attempt to make uncovered ponds unattractive to wildlife are not always effective. Contact the U.S. Fish and Wildlife Service at 1340 Financial Boulevard, Suite 234, Reno, Nevada 89502-7147, (775) 861-6300, for additional information.

Prepared by: Natasha Zittel
Date: 26 August 2016

Revision 00: Renewal Permit, Permit Transfer from Nevada Royalty Corp. to Springer Mining Company

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