

1 BEFORE THE STATE OF NEVADA, STATE ENVIRONMENTAL COMMISSION

2 In Re:

3)
4 Appeal of Solid Waste Disposal Site Permit)
5 #SW495REV00)
6 Operator: Recology)

DECISION

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8 This matter came before a panel of the State Environmental Commission
9 ("Commission") on May 21 and 22, 2012. Appellants Richard Cook ("Cook") and Robert
10 Hannum ("Hannum") and the Clean Desert Foundation appeared and were represented by
11 Robert Dolan, Esq. and Massey Mayo, Esq. Respondent Nevada Division of Environmental
12 Protection ("NDEP") appeared and was represented by its counsel, Cassandra Joseph, Esq.
13 Intervener Recology ("Recology") appeared and was represented by its counsel, John
14 Frankovich, Esq. and Debbie A. Leonard, Esq.

15 Appellants Cook, Hannum and Clean Desert Foundation appealed NDEP's issuance
16 on February 29, 2012 of Permit No. SW495REV00 to Recology for a Class I solid waste
17 disposal site, Jungo Landfill ("Jungo"), in Humboldt County, Nevada. At the beginning of the
18 hearing, Clean Desert Foundation withdrew its appeal.

19 On April 25, 2012, Recology filed a motion to dismiss, and on April 27, Cook filed his
20 response. After hearing arguments from counsel regarding standing, the Commission denied
21 Recology's motion to dismiss. The Commission then heard opening statements, followed by
22 testimony from Cook, Charles Schlarb and Hannum.

23 After appellants presented their case-in-chief, counsel for NDEP moved to dismiss
24 because appellants had not presented evidence that NDEP had acted arbitrarily or
25 capriciously in issuing the permit. Recology joined NDEP's motion. The Commission heard
26 arguments from counsel for NDEP and Recology in support of the motion and counsel for
27 appellants in opposition. The Commission denied the motion to dismiss.

28 After hearing testimony from John Taylor, counsel for Recology moved to dismiss

1 because appellants had not presented evidence that NDEP had acted improperly or arbitrarily
2 or capriciously in issuing the permit. NDEP joined Recology's motion. The Commission
3 heard arguments from counsel for Recology and NDEP in support of the motion and counsel
4 for appellants in opposition. The Commission denied the motion to dismiss and then heard
5 testimony from Ken Haskell, Kris Johnson, and Tim Daleiden.

6 After review of the admitted documentary evidence, after hearing witness testimony,
7 and after hearing arguments of counsel, the Commission finds and decides as follows:

8 FINDINGS OF FACT

9 1. Jungo, a Class I solid waste disposal site, has a disposal footprint encompassing
10 about 562 acres. Permit No. SW495REV00 estimates acceptance of about 4,000 tons of solid
11 waste per day. Certain wastes, such as asbestos and hazardous waste as defined in NAC
12 444.580 and NRS 495.430, are prohibited.

13 2. Jungo will be comprised of ten different modules, each about 55 to 60 acres.
14 Each module, also called a cell, will be built in stages. The initial cell is sized to be 25 acres.
15 Once the first portion of the module baseline is constructed, waste will be placed up to a total
16 depth of about 80 to 100 feet initially. The waste will be placed gradually in lifts that are 15 to
17 20 feet thick. Each lift will go along the entire base area. The largest exposed area at any
18 time is approximately the size of a football field. At end of the day, Jungo is required to cover
19 with daily cover, which can be 6 inches of soil. As each discrete cell reaches capacity and is
20 finished, a minimum of five years for waste settlement will pass before the final cover is
21 placed. The final cover consists of three feet of soil and a geomembrane. It will take about 90
22 years before Jungo is built out.

23 3. A landfill has three basic components consisting of design, monitoring, and
24 operations. The design component, with respect to the national standard, typically includes a
25 single liner of two feet of clay. Site conditions relevant to landfill design include proximity to
26 groundwater and the stratigraphy and lithology of the area. The monitoring component
27 includes monitoring groundwater and different gases generated by the landfill. The
28 operational component includes site contingency plans, training, experience, education,

1 operating the site consistent with the submitted design and ensuring the monitoring is
2 reflective of the conditions.

3 4. The permitting process for Jungo took about four years. In response to public
4 comments, NDEP added three items to the compliance schedule in Permit No. SW495REV00:
5 submission of a liner degradation evaluation program, emplace an on-site meteorological
6 station, and provide more detailed engineering construction details and certification for the
7 run-on berms.

8 5. During NDEP's technical review of Permit No. SW495REV00, several areas of
9 concern were noted including seismic activity, condition of the soils, and depth to
10 groundwater. There is a limited amount of displacement possible in a landfill before the
11 containment system is compromised. Additional information provided by Recology showed
12 the displacement in the one to three inch range. NDEP determined that the landfill design
13 was sufficient to accommodate any seismic activity. As far as soil conditions, the site has a
14 somewhat compressible clay, which means Recology will have to import material or add to the
15 clay. Based on the soil and consolidation reports, NDEP determined that the soils would be
16 able to withstand the waste mass. An aquifer runs below the landfill and at the aquifer's
17 highest point there is 29 feet between it and the base of the landfill. Groundwater at the
18 Jungo site flows toward the southwest.

19 6. Recology initially submitted a permit application for a single liner, but NDEP
20 required a double liner. Jungo is the only municipal landfill in Nevada with a double liner.
21 Other landfills in Nevada with a double liner accept hazardous waste.

22 7. Leachate is a liquid that drains out of the bottom of a landfill. It is predominantly
23 rain water that has traveled through waste. Contaminants found in leachate are measured in
24 parts per million or billion. The largest volume in leachate is water.

25 8. The landfill double liner design has two feet of protective operations soil on top.
26 Below that is geotextile layer, which is like a fabric that allows liquid to pass but prevents
27 bigger material from passing through. Below that is the high capacity leachate collection
28 system, which consists of a leachate collection pipe and a gas collection system for gas

1 generated by the landfill. Below that is a geotextile cushion, HDPE liner, two feet of low
2 permeability soil, a secondary collection system, which is another geotextile, and then a
3 secondary HDPE liner. The basic design is HDPE liner, dirt, HDPE liner and subsoil
4 subgrade. The HDPE liner thickness is 60 mil, which is the national standard. There is about
5 five and a half feet of insulation.

6 9. Damage to the liner is more likely to occur during construction rather than
7 operation. Part of Recology's construction quality assurance is a geoelectric leak location
8 survey which allows it to assess whether the geomembrane has been damaged during
9 construction. An electrode liner system is installed underneath the liner system and a copper
10 wire is buried out to the edge of the landfill. An electrical current is applied. HDPE is an
11 electrical isolator so no electric current goes through if it is intact. If there is a defect, an
12 electrical current travels through the system and the electrical potential is measured.
13 Recology creates holes in the liner at survey locations, unknown to the third party who
14 conducts the test, so that it knows it has an effective test. A liner contractor then patches the
15 holes after the test is concluded.

16 10. Jungo cannot have more than 12 inches of leachate on the upper HDPE liner.
17 Jungo's design allows an estimated depth of leachate upon the liner to be fractions of an inch.
18 Reducing the amount of leachate on the liner protects groundwater because the more liquid
19 there is, the greater the head and the opportunity to find weaknesses in the liner. Reducing
20 leachate to the extent practicable, even if the liner integrity is compromised, means there is no
21 liquid available to pass through.

22 11. Individual modules at Jungo are sloped down. Leachate will find its way down the
23 middle to the large leachate pipe through the gravel and then out to the sumps that are on the
24 north and south side. The lowest points of Jungo are where the sumps are. Sumps are the
25 collection point for all leachate.

26 12. Should leachate leak through the first HDPE liner, the two feet of low permeability
27 soil would act like a sponge. Once the soil begins to saturate, the other geotextile would keep
28 the geograde from loading up and then passing through the HDPE liner. That layer is also

1 passed out to the sumps.

2 13. NDEP determined Jungo's double liner system, with redundant leachate controls
3 and a secondary ability to tell if a first layer has failed, was protective of the waters of the state
4 because of the multiple barriers in the design.

5 14. Permit No. SW495REV00 requires a settlement monitoring plan. Settlement is
6 measured along the modules to ensure positive drainage grades. Leachate would pool if the
7 grade was flat. There should always be a grade out to the sumps so that the leachate moves
8 to the exterior sumps and the liner stays dry. Recology has a settlement model of what is
9 expected as the landfill is filled with refuse. If the settlement is greater than expected,
10 Recology can make adjustments and reduce the height of the landfill.

11 15. Permit No. SW495REV00 requires groundwater monitoring. There are at least
12 fifteen monitoring wells at the site. There are four interior wells that are interim monitoring
13 wells for the two initial cells to be developed. These wells will monitor the first 25-year section
14 of the landfill. There are about nine wells installed along the southern and western boundaries
15 down gradient of the leachate sumps. The southern perimeter was chosen because that is
16 the greatest accumulation of leachate and the most likely location to have release from the
17 facility. The wells along the western perimeter are similarly spaced to the wells along the
18 southern edge. These wells are down gradient of the leachate sumps that will be located
19 along the northern part of the facility. There are two up gradient wells. By the sumps above
20 the landfill, there are two angled borings. The angled borings are designed to detect at the
21 earliest possible point any contamination and are located below the second liner system. The
22 angled borings will sample the water directly below the first two installed sumps about ten feet
23 down below and down gradient. If there is a leachate release from the landfill, it would take
24 half a year to a couple of years before the release is detected.

25 16. As part of the groundwater monitoring program, background and groundwater
26 quality at the site is assessed before the landfill is in place. Once leachate begins to be
27 generated in the sumps, sampling will be done in the sumps and specific constituents from the
28 sumps will be included in the groundwater monitoring program. This type of customized

1 sampling is unusual. The regulations require a standard suite of monitoring constituents.

2 17. Water does not pond on about 95 percent of the Jungo site; however, there is
3 frequent ponding on the other five percent, primarily in the upper right portion of the site.
4 Jungo will construct perimeter run-on berms as soon as construction begins. The typical berm
5 elevation is about five feet, which is about the same height as the railroad berm. There will be
6 a run-on channel and there will be berms to control surface waters. There will also be a
7 detention basin to control waters that come on to the site and fall off the landfill.

8 18. Any rain that comes in contact with refuse, called contact water, will be treated as
9 leachate. Soil berms will be built around the area to prevent rain water that has come in
10 contact with the garbage from running off and mixing in the storm water run-off system. Rain
11 that comes in contact with soil cover and runs off will be treated as non-contact water. At
12 most sites, storm water is pumped to an unlined detention basin. At Jungo, the storm water
13 will be pumped to a lined, interior storm water detention basin so it can be sampled and tested
14 before released to an exterior, unlined basin. Jungo is designed for two back-to-back 25-year
15 24-hour storm events, which is greater than the state design requirement of a 25-year, 24-
16 hour storm event.

17 19. The northern part of the groundwater basin discharges to the Kings and Quinn
18 River basins. There is a groundwater divide north of the Jungo Hills, and groundwater north
19 of the Jungo Hills, which is north of the Jungo landfill site, flows to the north. Groundwater
20 south of the Jungo Hills in the area where the Jungo landfill is located flows to the south. A
21 topographic divide prevents flood waters from accumulating in the southern part of the basin.
22 The groundwater divide separates groundwater in the northern part of the basin from the
23 southern part of the basin. There is no data to indicate that leachate from the Jungo landfill
24 could reach the rivers because of the southwest flow of the groundwater and the groundwater
25 divide.

26 20. Most of the research done on HDPE liners indicate liners last out in to hundreds of
27 years. However, NDEP included a liner degradation program requirement in Permit No.
28 SW495REV00 in order to assess the actual structural integrity of the containment system as

1 the landfill is used. This program is not typically included in a landfill permit.

2 21. NDEP also required a groundwater protection evaluation plan which requires two
3 comprehensive design reviews at the 10-year and 25-year mark. This plan is to ensure that
4 the facility is operating as permitted as a containment facility.

5 22. Recology is required to submit reports about its quarterly samplings of
6 groundwater as well as methane monitoring. Annual reports regarding waste acceptance are
7 required.

8 23. Landfill gas is primarily 50 percent carbon dioxide and 50 percent methane.
9 There is a small component of volatile organic compounds in landfill gas. If exposed to water,
10 the compounds can enter into the water, which is a concern. Landfill gas is a greater concern
11 with respect to potential harm to the groundwater than leachate. Landfill gas has a higher
12 probability of transporting constituents of concern off the site.

13 24. The gas control system adjacent to the liner system is designed to collect and
14 dispose of landfill gas. Piping as part of the leachate collection system will create a vacuum
15 that will collect and move gases from the waste disposal area to perimeter collection points
16 where the gases will be eliminated.

17 CONCLUSIONS OF LAW

18 1. The Commission has jurisdiction to hear this appeal pursuant to NRS 444.560 and
19 NAC 444.980.

20 2. NAC 444.678(9) states that the location of a Class I site must "[u]nless approved
21 by the solid waste management authority, not be within 1,000 feet of any surface water or 100
22 feet of the uppermost aquifer if the site is approved after September 2, 1992."

23 3. NDEP did not abuse its discretion in issuing Permit No. SW495REV00 in light of
24 the permit features which compensate for the close proximity to groundwater. NDEP worked
25 diligently to ensure that the groundwater of the state is protected.

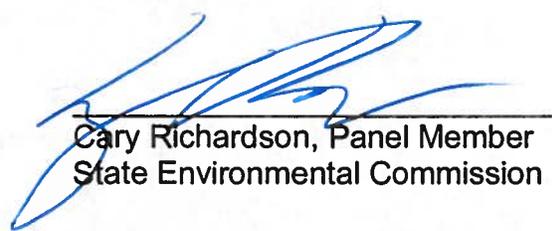
26 4. NDEP followed the applicable statutes and regulations and did not act arbitrarily
27 or capriciously in issuing Permit No. SW495REV00 for the Jungo landfill.

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ORDER

Based on the foregoing findings of fact and conclusions of law, NDEP's issuance of Permit No. SW495REV00 to Recology for a Class I solid waste disposal site, Jungo Landfill, on February 29, 2012 is AFFIRMED.

Dated this 18 day of July, 2012.



Cary Richardson, Panel Member
State Environmental Commission

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CERTIFICATE OF SERVICE

The undersigned, an employee of the State of Nevada, State Environmental Commission, does hereby certify that on the date shown below, a true and correct copy of the foregoing DECISION was duly mailed, postage prepaid, to the following:

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DATED: July 18, 2012

