NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

F A C T S H E E T
(pursuant to NAC 445A.874)

Permittee Name: **Atlantic Richfield Company (ARCO)**
Permit Project: **Atlantic Richfield Company Station #5328**
Permit Number: **UNEV2001203**

A. Description of Injection

Location: The nine (9) injection wells are located at 1500 West Bonanza Road, Las Vegas, Nevada 89101 in the SW ¼ of Section 28 within T20S, R61E, MDB&M, in Clark County. Seven wells are currently being used for injection. Additional wells may be used for injection upon approval by NDEP.

Characteristics: The injectate consists of a 3 % hydrogen peroxide solution prepared with dechlorinated water. It will be injected at a maximum of 4,500 gallons per quarter into nine (9) injection wells.

B. Synopsis

ARCO Station #5328 operates as a convenience store and a fueling station. An initial characterization was conducted at this site in May of 1999. Petroleum hydrocarbon concentrations were determined to be present in both the soil and groundwater at concentrations exceeding the regulatory limits, and a remediation effort was consequently initiated.

A chlorinated solvent, 1,2-dichlorethane, was also identified in MW-8 at a concentration of 13 parts per billion (ppb), from an unknown source. The maximum contaminant level (MCL) for 1,2-dichlorethane is 5 ppb, and monitoring for this constituent, as well as a complete list of volatile organic compounds (VOCs), has been performed quarterly for the past seven years to evaluate the impact of injection on all contaminants at the site. Monitoring for volatile organic compounds (VOCs) will be removed from the renewed permit. 1,2-dichloroethane hasn't been detected since December 2004. Other VOCs detected have been at levels below those regulated by the Safe Drinking Water Act.

Nitrate as nitrogen was also identified at this site with concentrations exceeding the MCL. The elevated levels of nitrate may prove beneficial due to nitrogen's ability to serve as a nutrient source for indigenous microbes, which will potentially enhance biodegradation of the hydrocarbon contamination.

A former Conoco Station is downgradient of the Atlantic Richfield Company station. Due to the contaminant plume migrating towards the Conoco property, ARCO Station #5328 will continue injecting hydrogen peroxide solution into Conoco wells concurrently with ARCO's scheduled injection events.

A 3 % hydrogen peroxide solution will continue to be used at this site. The solution will be generated using dechlorinated water. The solution will be injected directly into the authorized injection wells, which include MW-1B, MW-2B, MW-5B, MW-6B, MW-8B, SMW-1 and SMW-12. (As of February 2006, injection into wells MW-7 and MW-10, which a re located in Martin Luther King Boulevard, has ceased, due to dangerous night-time working conditions. Other wells may be added upon approval by NDEP)

The hydrogen peroxide is expected to provide a source of oxygen for indigenous microbes, which should enhance the aerobic in-situ bioremediation process for the contaminants present at this site. Monitoring will continue to be implemented to ensure contamination does not migrate as a result of injection.

C. Receiving Water Characteristics:

Groundwater sampling at this site has demonstrated the presence of light-end (gasoline fraction) petroleum hydrocarbons. Various contaminant concentrations exceed the State and Federal action levels. In addition to the petroleum hydrocarbons, 1,2-dichloroethane was reported at 13 ppb and nitrogen as nitrate at 11 ppm at this site. Monitoring for contaminants will be required.

The geology encountered during well construction consists of predominantly clay-bearing silt to a depth of approximately 10 feet below ground surface (bgs). Caliche exists from approximately 10 feet bgs to 17 feet bgs. Clayey silt lies from below the caliche layer to well-depth, which is approximately 25 to 30 feet bgs. Groundwater is present at approximately 15 feet bgs and the average local gradient is estimated to be approximately 0.01 ft/ft in the easterly direction.

The groundwater quality at this site has demonstrated the following concentrations, as determined by groundwater samples analyzed in July of 2008:

Constituent	Existing Groundwater Concentration	Limit
Benzene	1,140 ppb	5 ppb (State and Federal Limit)
Toluene	4,200 ppb	100 ppb (State Limit)
Ethylbenzene	674 ppb	100 ppb (State Limit)

Xylenes (total)	5,720 ppb	200 ppb (State Limit)
MTBE	102 ppb	200 ppb (Site Specific Target Limit)
1,2-Dichlorethane	ND	5 ppb (Federal Limit)

D. **Procedures for Public Comment**

Notice of the Division's intent to issue a permit authorizing the facility to inject into the groundwater of the State of Nevada will be published in the Las Vegas Review Journal.

Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the publication date of the 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 interstate agency, the regional administrator of EPA Region IX or any interested agency, person or group of persons.

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 will be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

E. **Proposed Determination**

The Division has made the tentative determination to renew the permit for a five year period.

F. **Limitations and Special Conditions**

Parameter	Frequency	Location	Limitations
Benzene, Toluene, Ethylbenzene, total Xylenes (BTEX), and methyl tertiary butyl ether (MTBE)	Quarterly (Samples shall be taken no sooner than 10 days following injection event)	MW-1B, MW-2B, MW-5B, MW-6B, MW-8B, SMW-1 and SMW-12	Monitor and Report

Dissolved Oxygen and pH	Quarterly	MW-1B, MW-2B, MW-5B, MW-6B, MW-8B, SMW-1 and SMW-12	Monitor and Report
Ferrous Iron	Quarterly	MW-1B, MW-2B, MW-5B, MW-6B, MW-8B, SMW-1 and SMW-12	Monitor and Report
Hydrogen peroxide: Concentration Volume Date Injected	Each Injection Event	MW-1B, MW-2B, MW-5B, MW-6B, MW-8B, SMW-1 and SMW-12	3 % Solution with a maximum of 4,500 gallons / quarter
Groundwater Elevation and Depth to Groundwater	Quarterly	All Site-Related Monitoring Wells	Monitor and Report

G. Rationale for Permit Requirements

The permit conditions will help to ensure that the injectate does not adversely affect the existing water quality or hydrologic regime.

Update prepared by Janet Melander, September 2008

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