

107 至 110 年環境水體(中區)河川 海域地下水質監測計畫 期末報告(定稿本)

計畫編號：EPA-107-L101-02-A110-2

受託單位：安美謙德環保股份有限公司
全程期間：107 年 4 月至 110 年 4 月

中華民國 110 年 5 月

107 至 110 年環境水體(中區)河川 海域地下水質監測計畫 期末報告 (修正稿)

計畫編號：EPA-107-L101-02-A110-2

受託單位：安美謙德環保股份有限公司

全程期間：107 年 4 月至 110 年 4 月

本計畫經費：伍仟參佰萬元整

計畫主持人：許姝羚

品保負責人：鄒家蘭

實驗室主任：陳資聰

中華民國 110 年 5 月

107 至 110 年環境水體(中區)河川海域地下水質監測計畫 期末報告基本資料表

甲、委辦單位	行政院環境保護署			
乙、執行單位	安美謙德環保股份有限公司			
丙、年 度	107 年至 110 年	計畫編號	EPA-107-L101-02-A110-2	
丁、專案性質	環境檢測(2H) (請填寫標的分類代碼)			
戊、專案領域	環境水質監測			
己、計畫屬性	<input type="checkbox"/> 科技類 <input checked="" type="checkbox"/> 非科技類			
庚、全程期間	107 年 4 月 ~ 110 年 4 月			
辛、本期期間	107 年 4 月 ~ 110 年 4 月			
壬、本期經費	伍仟參佰萬元整			
	資本支出	經常支出		
	土地建築	千元	人事費 千元	
	儀器設備	千元	業務費 千元	
	其 他	千元	材料費 千元	
			其 他 千元	
癸、摘要關鍵詞（中英文各三則） <u>水質監測 Water Quality Monitoring</u> <u>水質標準 Quality Standards</u> <u>方法偵測極限 Method Detection Limit</u>				
參與計畫人力資料：（如僅代表簽約而未參與實際專案工作計畫者則免填以下資料）				
參與計畫 人員姓名	工作要項 或撰稿章節	現職與簡要學經歷	參與時間 (人月)	聯絡電話及 e-mail 帳號
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何嘉華	計畫執行及計畫撰寫	1.專案管理組長 2.碩士	20 個月	03-5545022 JiahuaHe@eurofins.com
鄒家蘭	數據審核	1.品保負責人 2.學士	20 個月	04-23507780 ChialanTsou@eurofins.com

行政院環境保護署計畫成果中英文摘要（簡要版）

一、中文計畫名稱：

107 至 110 年環境水體(中區)河川海域地下水質監測計畫

二、英文計畫名稱：

The Environmental Monitoring of the River, Ocean and Groundwater
Water Quality in the Middle Area of Taiwan from 2018 to 2021

三、計畫編號

EPA-107-L101-02-A110-2

四、執行單位：

安美謙德環保股份有限公司

五、計畫主持人：

許姝羚

六、執行開始時間：

107/04/01

七、執行結束時間：

110/04/30

八、報告完成日期：

110/04/30

九、報告總頁數：

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十一、使用語文：

中文

十二、報告電子檔名稱：

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十三、報告電子檔格式：

Office 2007 Word 12 版

十四、中文摘要關鍵詞：

水質監測，水質標準、方法偵測極限

十五、英文摘要關鍵詞：

Water Quality Monitoring, Water Quality Standards, Method Detection Limit

十六、中文摘要：

本計畫主要針對中區五縣市各類水體水質監測，掌握各水體水質隨時間的變化趨勢，並進行各水體污染評估分析，以提供環保單位污染防治決策之參考。

河川水質計有 19 條河川主支流，72 個監測站，每月監測一次。監測結果顯示，中部地區河川未(稍)受污染等級，以西湖流域占最高比例(85 % ~ 98 %)，嚴重污染等級以新虎尾流域占較高比例 (25 % ~ 53 %)。部分河川因河道屬礫石狀，易受降雨冲刷河道造成水中懸浮固體偏高，例如大安河流域、烏河流域、濁水河流域及、新虎尾流域及北港流域等。於天候良好狀況下，中部地區河川以大甲流域以北之河川水質狀況較佳，僅於下游測站有污染累積情形。大甲流域以南流域之河川，可能受工業廢水及民生污水排放等因素，水中污染物濃度相對較高。

海域水質計有 23 個測站，分屬甲類及乙類海域環境。每季監測一次。監測結果顯示，均符合所屬各類海域海洋環境品質標準。各沿海海域水質於距離陸源排放較近之測站，水質狀況較易變動，整體水質狀況與歷年監測結果相近。

海灘水質計有 1 個測站，於 6 至 9 月每月監測一次。通霄海水浴場監測結果以水質分級評估，均屬優良級，結果顯示水質狀況良好。

地下水水質監測共計有 5 縣市，108 口監測井，其中 19 口監測井每季監測一次，35 口監測井每半年監測一次，54 口測井每年監測一次。全部地下水監測井揮發性有機物每年監測一次。監測結果顯示，地下水監測井水質超過地下水第二類監測標準之項目與歷年結果相近，主要以氨氮、鐵及錳為主。彰化縣及雲林縣境內監測井之氨氮測值，較其他縣市之測值為高。地下水揮發性有機物監測結果，僅四口監測井分別檢出微

量氣仿、甲苯及甲基第三丁基醚，測值均未超過地下水第二類污染監測標準。各監測井之水質，以 Stiff 水質形狀圖與 Piper 水質菱形圖方式評估，各季次變化大致呈現一致趨勢。

The aim of this project was to properly understand the changing trend of water quality in those types of water bodies over the passage of time by monitoring the water quality of rivers, beach, oceans, reservoirs and groundwater in the 5 counties located in the central part of Taiwan.

Water quality was assessed by 72 water-monitoring stations along 19 rivers and affiliated branches, which monitoring was conducted once every month. The results showed that in central Taiwan, most of monitoring stations (about 85%~98%) were categorized to non(slightly)-polluted level in the Shihu river Basin, besides, the highest ratio of monitoring stations (about 25%~53%) categorized to severely-polluted level was observed in the Sin Huwei River Basins.

The river channel in some waterways consisted of loose gravel so rain water runoff led to a higher level of suspended solids in the waters, which examples include the Da-an River, Wu River, Jhuoshuei River, Sin Huwei River and Beigang River basins. The better water quality from the rivers north of the Dajia River Basin (upstream) can be observed, which may resulted from good weather conditions, however, the down stream monitoring showed that accumulation of pollutants was observed, which may resulted from the discharge of industrial effluent and household sewage.

The sea water quality monitoring consisted of 23 monitoring stations located in Class-A and Class-B marine environments, which monitoring was conducted once every season. There was a

significant variation of water quality can be observed in the monitoring stations which placed near terrestrial discharge sources, however, overall water quality was similar to the previous reported results in recent years.

The beach water quality consisted of 1 monitoring station, which were monitored once per month from June to September. The findings from West-Ocean Educational Sea World beach was classified, the results showed that not only the water quality was normally excellent but also the highest ratio was classified as “Good” category.

The groundwater quality monitoring was conducted through 108 wells spread across 5 counties in past years. For general monitoring items except volatile organic compounds (VOCs), the 19 monitoring wells among the total ones were conducted once every season, other 35 monitoring wells were conducted once every 6 months, the other 54 monitoring wells were conducted once a year, respectively; however, as for VOCs, which was monitored once a year for total 108 wells.

The results showed that the main findings including ammonia nitrogen, iron, and manganese, exceeding groundwater Class-B monitoring criteria were similar as previous reported results in recent years. Ammonia nitrogen readings from monitoring wells in Changhua County and Yunlin County were higher than that from other regions. Moreover, the groundwater monitoring of VOCs showed that a slight concentration of chloroform, toluene and methyl-tert-butyl ether was measured within only 4 wells, which did not exceed the second category groundwater pollution control standard. Eventually, the water quality of each monitoring wells was evaluated by means of both Stiff diagram (Stiff pattern) and Piper diagram, which exhibited a

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中華民國 110 年 5 月