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**CRYSTAL RIVER / FLORIDA**

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In May 2003, GBI implemented *Butane Biostimulation Technologies*<sup>™</sup> at the Pure Gasoline & Convenience Store located in Crystal River, Florida. The primary environmental contractor for the Site is ECS Marin located in Tampa, Florida. Historically, the Site consisted of four petroleum underground storage tanks (USTs). During contamination assessment activities in 1987, dissolved petroleum hydrocarbons were encountered in two Site monitoring wells and in a potable water well. The potable well was abandoned. The geology at the Site consists of fine-grained sand to approximately 10 feet below land surface (bls), followed by a clay layer from 11 to 16 feet bls and continuing to a depth of at least 23 feet bls. The target contaminants at the site include benzene, toluene, ethylbenzene, xylenes, MTBE and naphthalene. Butane is being injected into eight shallow *Butane Biosparging*<sup>™</sup> wells and one deep *Butane Biosparging*<sup>™</sup> well. The groundwater analytical results obtained after two weeks of system operation are presented in the table below. The table includes the Florida Department of Environmental Protection Groundwater Cleanup Target Levels (CGTL) for petroleum products contaminants and the Natural Attenuation Default Concentrations for each analyte listed.

**BUTANE BIOSTIMULATION TECHNOLOGIES<sup>™</sup>**  
**Site Photos**

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**Summary of Groundwater Quality Data  
Crystal River, Florida  
System Startup in May 2003**

Sample Location	Sample Date	Analytical Method	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	Naphthalene
MW-1	9/14/1999	8260 VOCs	<b>1,200</b>	36	<b>1,400</b>	<b>1,684</b>	<25	<b>68</b>
	4/22/2004	8260 VOCs	<b>164</b>	<b>42.3</b>	<b>43</b>	<b>198</b>	2.0	3.0
MW-4	8/24/2000	8260 VOCs	<b>3,500</b>	<b>3,300</b>	<b>1,300</b>	<b>8,100</b>	37	NS
	5/13/2003*	8260 VOCs	<b>1,210</b>	<b>1,710</b>	<b>1360</b>	<b>8320</b>	23	<b>164</b>
	4/22/2004	8260 VOCs	<b>314</b>	<b>48.4</b>	<b>182</b>	<b>841</b>	10.4	<b>56.1</b>
MW-9	8/24/2000	8260 VOCs	<b>310</b>	<b>70</b>	<b>250</b>	<b>441</b>	16	NS
	5/13/2003*	8260 VOCs	<b>68</b>	3.0	<b>44</b>	<b>33</b>	7	18
	4/22/2004	8260 VOCs	<b>76.1</b>	6.8	<b>125</b>	<b>88.4</b>	5.1	<b>69.4</b>
RW-1R	8/7/2002	8260 VOCs	<b>108</b>	<b>47.1</b>	<b>114</b>	<b>287</b>	8.0	<b>77.2</b>
	5/13/2003*	8260 VOCs	<b>92.4</b>	5.5	<b>46.4</b>	<b>39.4</b>	9.0	17.6
	4/22/2004	8260 VOCs	<b>4.5</b>	2.0	5.2	10.4	1.0	<0.2
MW-15	8/24/2000	8260 VOCs	<b>99</b>	<b>260</b>	<b>160</b>	<b>860</b>	<2.0	NS
	5/13/2003*	8260 VOCs	<b>15</b>	<1.0	12	<b>20</b>	<1.0	1.0
	4/22/2004	8260 VOCs	<b>11.7</b>	<1.0	13.1	4.6	<1.0	2.4
<b>Groundwater Cleanup Target Levels (CGTLs)</b>			<b>1.0</b>	<b>40</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>20</b>
<b>Natural Attenuation Default Concentrations (NADCs)</b>			<b>100</b>	<b>400</b>	<b>300</b>	<b>200</b>	<b>500</b>	<b>200</b>
<b>NOTES:</b> All concentrations expressed in µg/l (ppb) NS = Not sampled / reported * Sampling data obtained after two weeks of system operation <b>Bold</b> values exceed Groundwater Cleanup Target Level Yellow shading indicates pre-treatment concentrations								

## REFERENCES

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