Table 2. Significant Events of McGuff's Effort to Assure Ascorbic Acid Injection Availability

Date	Event	Intent	Result
6/2006	FDA publishes *Guidance for FDA Staff and Industry Marketed Unapproved Drugs – Marketed New Drugs Without Approved NDAs or ANDAs.*	Possible immediate effect of removing AAI as a manufactured drug.	"The writing is on the wall." FDA warns industry that drugs marketed without approval may be removed from market. AAI does not have NDA or ANDA approval.
7/2006	Ronald M. McGuff declares the strategic goal of the McGuff family of companies is to obtain FDA approval of AAI, which will assure future unrestricted availability in the US.	As a strategic goal McGuff will direct a major share of all future profit to the pursuit of AAI NDA approval.	Inter-organizational expertise is brought together to prioritize the Orphan Drug and NDA projects. Process to obtain NDA approval created and implemented. FDA notified of intent.
8/2007	The FDA Office of Orphan Drug Products Development grants MPI's orphan-drug request of Ascorbic Acid Injection.[9]	An orphan drug is a pharmaceutical agent that has been developed specifically to treat a rare medical condition, the condition itself being referred to as an orphan disease.	Completion of the first major step for McGuff Pharmaceuticals to submit NDA to FDA.
8/2015	McGuff starts a human clinical trial "A Pharmacokinetics Study of Intravenous Ascorbic Acid."[10]	This is a Phase 1, single-dose study to evaluate the pharmacokinetics of intravenous ascorbic acid.	One Secondary Outcome Measure: Incidence of treatment-emergent Adverse Events (AEs) and Serious Adverse Events (SAEs) grouped by body system.
9/2016	FDA Center for Drug Evaluation and Research (CDER) acknowledges the receipt of MPI's new drug application (NDA) for ascorbic acid injection assigning NDA Reference Number 209112.	The NDA application is the vehicle through which drug sponsors formally propose that the FDA approve a new pharmaceutical for sale and marketing in the US	10/2016 FDA review team formally decides the NDA application is complete. This is an important milestone towards gaining AAI approval.
3/2017	McGuff Pharmaceuticals undergoes a 7-day pre-approval inspection (PAI) by FDA. A (PAI) is performed to contribute to FDA's assurance that a manufacturing establishment named in a drug application is capable of manufacturing a drug, and that submitted data are accurate and complete. The PAI is one of the last reviews of the drug approval process, which may affect the availability to the consumer.	Audited for: • Compliance with Current Good Manufacturing Practices. • For conformance with application commitments. • Authentic and accurate data. • Laboratory testing of product, including evaluations of the adequacy of analytical methodology.	Result of FDA PAI inspection: FDA recommendation for approval of McGuff Pharmaceuticals manufacturing facility.
6/2017	McGuff designs and validates a new stability-indicating assay using advanced analytical methodologies to further quantify ascorbic acid. This assay includes the ability to identify dehydroascorbic acid.	Validated laboratory methods approved by FDA as part of the NDA requirements.	Utilization of new highly sensitive stability-indicating assay methods assures greater product quality.
10/2017	McGuff Pharmaceuticals receives approval of NDA 209112 for Ascor® (Ascorbic Acid Injection).	Ascorbic acid injection becomes an FDA approved drug in the US.	The approved Ascor® (Ascorbic Acid Injection) drug will be sold by the manufacturer, wholesalers and pharmacies as any other approved drug.